

# What Are We Doing?

The overall health of the Central Lake Ontario Conservation watershed declines as you travel from the headwater areas in the Oak Ridges Moraine to the more urban and developing areas located in the mid reaches and along the Lake Ontario Waterfront. Are we surprised? No. Typically watershed health decreases in urban areas and increases in undeveloped upper reaches of our creek systems. Why? There are still significant areas of habitat features such as wetlands, forests and riparian buffers in these areas that protect our ground and surface water resources. Science and ongoing monitoring data clearly show that a decrease in individual and collective natural features within a watershed is directly related to poor water quality. Our goal is to increase public awareness about the value of these features and implement our projects and programs to ensure we protect, and where feasible, enhance these natural resources. The following is a list of some of the work we do and will continue to do in order to achieve our goals for healthy watersheds and healthy communities.

- Plan Review & Regulation Administration
- Watershed Management Plans
- Invasive Species Management Strategy
- Conservation Education
- Conservation Area Management Plans
- Natural Heritage Systems Planning
- Aquatic Resource and Fisheries Management Plans
- Private Land and Community Stewardship Programs
- Flood Forecasting and Warning Program
- Terrestrial and Aquatic Monitoring
- Coastal Wetland Monitoring

For more information on these programs, check out our website at [www.cloca.com](http://www.cloca.com).

## Climate Change

This is a critical issue facing our community today. We are engaged in long term environmental planning with the best scientific information available so that we can adapt to these changes. There are tremendous implications to our forests, tree species diversity, water quality, flooding and aquatic species. The native Brook Trout relies on specific cold water temperatures and clean water in its resident habitat, which could be impacted by more frequent and higher intensity storm events. Since these climate changes are largely a result of human activities, we will continue to work with watershed residents to help reduce environmental impacts on our land and water resources. Planting native plants for native pollinators, encouraging no till farming practices and creating wetlands and forests, will all go a long way to reducing our carbon emissions, the major contributor to climate change.



# What You Can Do

## Be a Watershed Steward!

You might be doing more than you think for a healthy watershed for your family, friends those with two legs, four legs, no legs and six legs with wings. If you recently added your compost to the garden, cooked a meal from locally produced vegetables, took your canvas bags to the grocery store, planted native plants in your garden to attract more pollinators, washed your car on the lawn instead of the driveway, helped plant trees with a local community group, switched to green home care products or checked your well water for contaminants, you are already part of the solution. We thank you. Is there more that you could do? Certainly, but look no further than your own backyard, school, business or community park.

### At Work

Start a green team in your office to develop strategies for reducing waste, improving landscaping practices, buying sustainable products and reducing energy consumption. Make a pledge or donation to a local environmental group, better yet, plan a team building day, helping to plant trees or cleanup a creek in your community.

### At Play

Come out to one of our many Conservation Areas with family or friends and reconnect to the natural environment. It will reduce your stress levels and maybe become a healthy habit. Volunteer in your community or sign up for one of our Conservation Area workdays or Watershed Wilderness Nature Hikes.

### At Home

Install a rain barrel under your downspout to reduce runoff of untreated water to your local catch basin, which incidentally drains directly into your creek. Not only will that help improve water quality and reduce creek erosion, but you get a great clean source of water for your garden during the long dry summer months. If you have a creek running through your property, stop mowing to the edge and don't dump your yard waste there, it only smothers the vegetation, leads to more erosion and creates opportunities for invasive plants to displace native ones.



**Central Lake Ontario Conservation**  
 Central Lake Ontario Conservation  
 100 Whiting Ave., Oshawa, Ontario L1H 3T3  
 T: (905) 579-0411 F: (905) 579-0994  
 E: [mail@cloca.com](mailto:mail@cloca.com)  
[www.cloca.com](http://www.cloca.com)

# Central Lake Ontario WATERSHED Report Card 2013



# Where Are We?



Central Lake Ontario Conservation (CLOCA) is one of 36 Conservation Authorities across Ontario under the umbrella organization of Conservation Ontario.

## What Does This Report Card Measure?

- Surface Water Quality
- Forest Conditions
- Groundwater Quality
- Wetland Conditions

## Why Measure?

Natural landscape features like forests, wetlands and water quality are excellent indicators of environmental health and make up the natural heritage system that defines our watersheds. Conveniently enough, they are also easily measurable with a variety of in field and desk top mapping, sampling and analytical tools. This in turn provides us with the ability to grade those indicators, summing up current conditions and how and where we need to all make strides toward improvements. This report card is based on data for surface water quality, forest conditions, groundwater quality and wetland conditions collected from 2007 to 2011. For more information on the indicators, grading standards and monitoring protocols and guidelines we followed to create this report card, refer to the Guide to Developing Conservation Authority Watershed Report Cards online in our Library at [www.cloca.com](http://www.cloca.com).

## What is a Watershed?

A Watershed is an area of land drained by a river or creek. Similar to the branch of a tree, small creeks empty into larger creeks, which then empty into still larger creeks, eventually forming one main trunk and in our case, draining into Lake Ontario where the majority of us get our drinking water. Within this system 'everything is connected to everything else'. In other words, actions, negative or positive, which take place from the start of the creek, can and do affect water resources further downstream and into Lake Ontario. So how healthy are our watersheds?

Grading	
<b>A</b>	Excellent
<b>B</b>	Good
<b>C</b>	Fair
<b>D</b>	Poor
<b>F</b>	Very Poor
	Insufficient Data

The standards used in this report card were developed by Conservation Authorities to ensure consistent reporting across the Province of Ontario and are intended to provide watershed residents with information to protect, enhance and improve the precious resources that surround us.

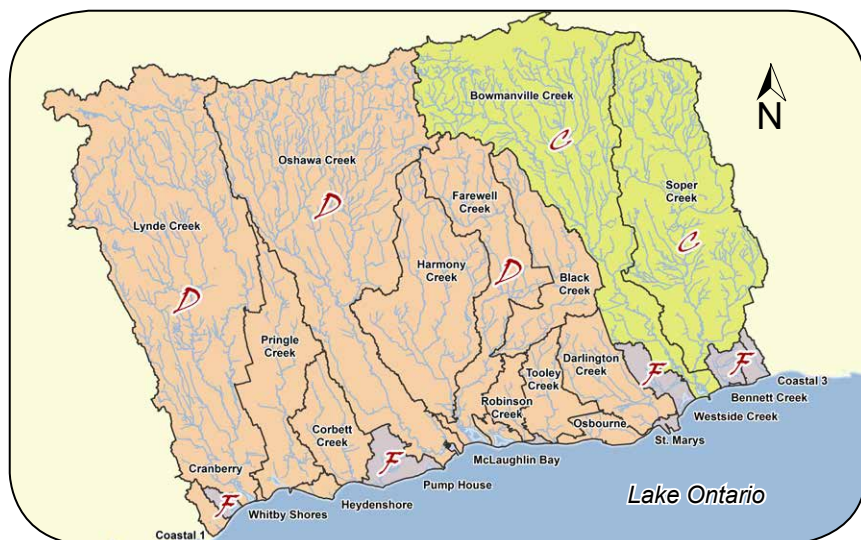
Central Lake Ontario Conservation has prepared this report card as a summary on the state of our forests, wetlands, surface water, and ground water resources.





# Forest Conditions

We know that trees clean our air and water, prevent erosion, reduce flooding and provide important habitat for wildlife. We also know that the more forested a watershed is, the healthier and more resilient it will be to change.



The variety of forest species in our watershed is important. It makes our forests more attractive to a greater number of wildlife species, contributing to overall biodiversity. Research shows that water taken from a forested watershed is cleaner and more abundant than water taken from a non-forested watershed.

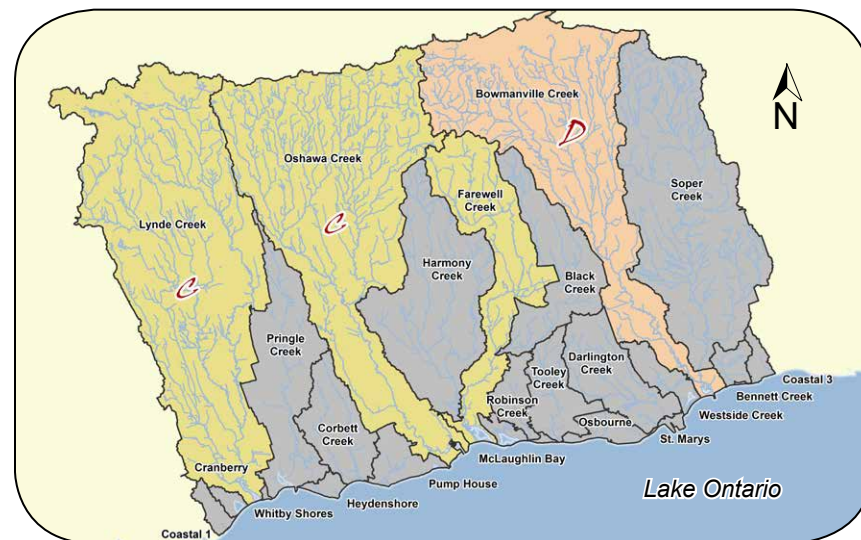
A few hundred years ago, most of Southern Ontario was covered by vast forests, but settlement and land clearing has resulted in the loss of these original landscape features. While there are still large forested areas in our watershed, most are isolated and not connected to other forests, creating what we call a fragmented landscape. Knowing that larger forests are important, we also look at the shape of a forest to determine how much interior forest habitat it contains. Some of our more sensitive bird species only breed successfully in this interior habitat, found at least 100 metres inside the forest edge. These areas are more humid, offer less light, more cover and fewer invasive species and predators than that typically found along the edge of a forest. Another important aspect of forest cover on a watershed scale is the riparian forest found along a creek's valleylands and floodplains.

In this report card we used all 3 of the above indicators, forest cover, interior forest and riparian forest to determine overall forest conditions for each major watershed. Forest condition grades are based on current scientific literature which suggests watershed health is achieved with 25% to 35% overall forest cover, 10% forest interior, and a 30 metre vegetation buffer along creek edges for at least 75% of its length. The Bowmanville Soper Creek watershed received a "C", and the other major watersheds received a "D". And not surprisingly, the small watersheds, which are primarily urban or agriculture, received an "F". Unfortunately, interior forest is becoming increasingly rare in all of our major watersheds, with Bowmanville and Soper Creek watershed having the highest percent of interior forest habitat at 3.5 %, well below the recommended 10%.



# Surface Water Quality

Clean water is key to a healthy watershed. Creeks with impaired water quality can pose health risks for humans, livestock and wildlife. Water in a creek is affected by the surrounding land cover and how that land is managed.



The categories for grading water quality in the context of this report card include biological and non-biological parameters, specifically benthic invertebrates ( a scientific name for aquatic bugs like mayflies and stoneflies), total phosphorous and E. coli. One of our biological monitoring programs measures the presence and absence of aquatic bugs living in the bottom sediments of creek and river systems. They are good indicators of water quality because their limited mobility makes them vulnerable to creek stresses, they have short life cycles, are easily collected and identified, and lastly, exist pretty much everywhere. Since initiating the Ontario Benthic Biomonitoring Network (OBBN) protocol in 2005, CLOCA has sampled 119 sites for aquatic bugs using this standard methodology. During the period of this report card, we have collected one year of data for the Oshawa (2007), Black Harmony Farewell (2008), Lynde (2009) and Bowmanville Soper (2011) and the small watersheds (2010).

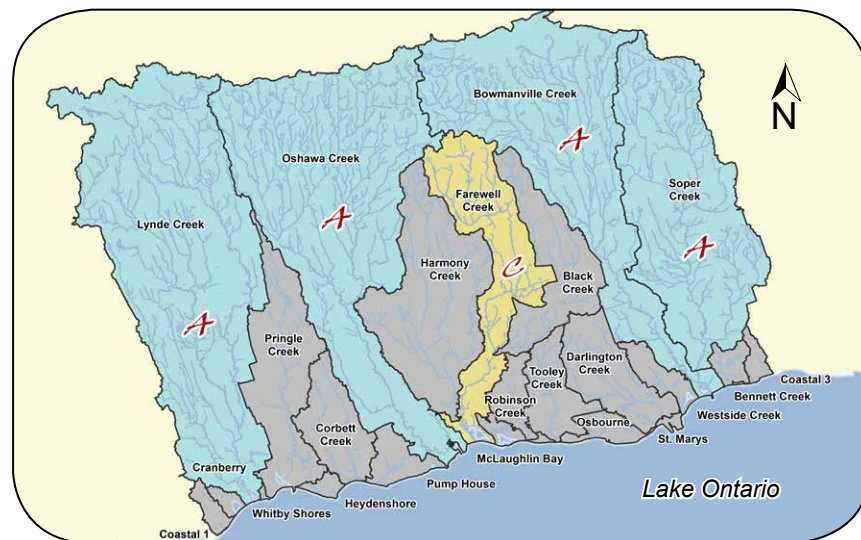
Total phosphorous is a nutrient that contributes to plant growth and is key in supporting aquatic ecosystems. However, excessive amounts of phosphorous can have detrimental impacts like excessive plant and algae growth and depletion of oxygen supplies when those plants die and decompose. Sources of phosphorous in our creek systems include failing and aging septic systems, animal feces from a concentrated animal population like Canada Geese and synthetic and natural fertilizers.

As we currently do not sample for E. coli and have insufficient data for benthic invertebrates, the grades for watershed surface water quality are only for phosphorus, and only where adequate data has been collected. The phosphorous conditions found in Lynde, Oshawa, Farewell and Bowmanville Creeks are not surprising given the types of land use, high levels of impervious surfaces and reduced natural vegetation in those watersheds. The Lynde, Oshawa and Farewell Creek watersheds received a "C" and the Bowmanville Creek a "D" for their phosphorous levels.



# Groundwater Quality

Groundwater comes from rain and snow, soaking into the ground where it is filtered by sand and gravel and captured in a large network of underground storage areas called aquifers. Groundwater provides an important source of baseflow to our creeks and potable water to residents and businesses in our rural areas.



Groundwater can be contaminated by abandoned or existing landfills, faulty septic beds, underground fuel storage tanks and contaminated runoff containing fertilizers, pesticides, road salt and residential and industrial wastewater. Since 2002, in partnership with the Ontario Ministry of Environment, CLOCA has been collecting water samples twice a year, from 16 water sampling wells across our jurisdiction under the Provincial Groundwater Monitoring Network (PGMN) Program.

For this Report Card, data for chlorides (dissolved salts) and nitrate + nitrite (dissolved nitrogen) were measured. High concentrations of chloride can be toxic to aquatic organisms and water must be treated prior to human consumption. Nitrate + nitrite is toxic to aquatic organisms and can cause blood oxygen deficiencies in infants and nursing mothers. North American studies suggest that chloride and nitrate are increasingly impacting water quality in urban and rural areas, especially where aquifers and water table depths are shallow. Although chloride concentrations in CLOCA well samples generally meet the provincial aesthetic standard for drinking water, some samples exceeded this standard, likely as a result of local land-use impacts. High chloride concentrations in drinking water are not usually a health issue, but salty taste can readily be detected. The three wells exceeding the chloride limit were in highly urbanized areas and two of them are less than 10 metres deep. Higher than average nitrate + nitrite concentrations, but still way below the prescribed limit, were observed in four wells, with two of the wells located in urbanized areas and two in agricultural areas.

Generally the results for both chloride and nitrate + nitrite show that, except for Farewell Creek, all subwatersheds obtained a rating of "A", or excellent. It should be noted the distribution of monitoring wells in CLOCA's jurisdiction and the infrequent sampling (once or twice a year) is not fully representative of groundwater quality. Further analysis and data collection would be required to identify the exact cause (human or naturally occurring) of concentration changes for these and other chemical parameters in our sampling wells.



# Wetland Conditions

Across Ontario there are 4 types of wetlands, bogs, fens, marshes and swamps. In the Central Lake Ontario Conservation jurisdiction, we have marshes, swamps and a few remnant fens. Wetlands help maintain good surface and groundwater quality.



Their unique plant communities help to filter sediment and excess nutrients and pollutants from the water, reducing concentrations. Wetlands hold water like a giant sponge, slowly releasing it over time to maintain steady baseflows in our creek systems as well as providing important spawning and nursery habitat for fish, amphibians, turtles and salamanders.

We have 18 Provincially Evaluated Wetlands, 16 of which are deemed to be Provincially Significant and protected under the Provincial Policy Statement. At a local level, CLOCA recognizes the importance of all wetlands and affords protection through regulation. Wetland loss and degradation has been significant across Ontario since European settlement, with an estimated 75 percent of our wetlands lost to development and filling activities. Current scientific literatures suggests that at a minimum, 10 percent of a watershed should be comprised of wetlands in order to maintain overall health and function.

Not surprisingly, some of our smaller watersheds, like Cranberry for example, that contain a Provincially Significant Wetland with surrounding upland habitat, received an "A". Black and Farewell Creek watersheds also received an "A". Some of our larger watersheds like the Lynde and Bowmanville received a "B" and Oshawa and Soper a "C".

