

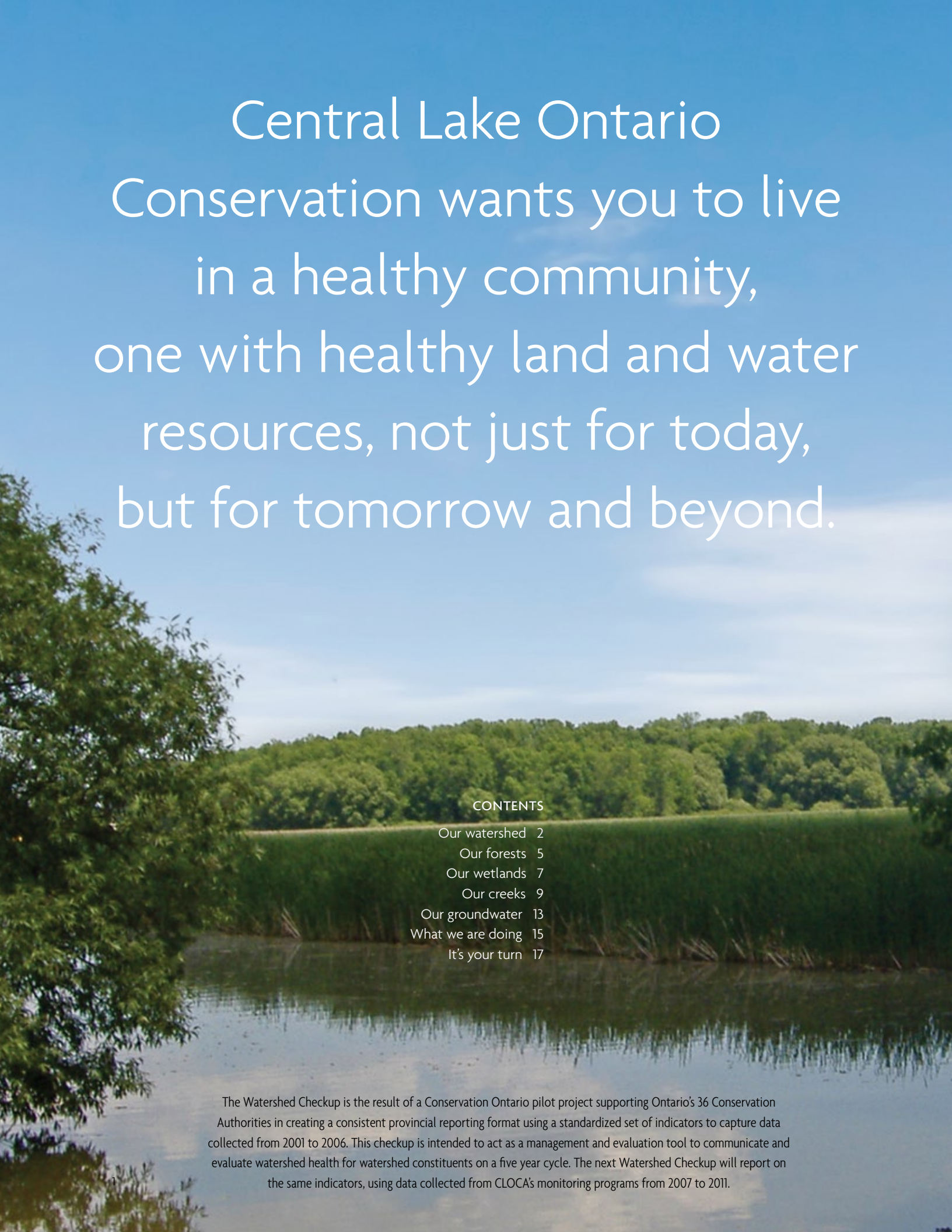
Protecting Our Watershed

Nature's Precious Resource



*Central
Lake Ontario
Conservation*

A WATERSHED CHECKUP REPORT



Central Lake Ontario
Conservation wants you to live
in a healthy community,
one with healthy land and water
resources, not just for today,
but for tomorrow and beyond.

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The Watershed Checkup is the result of a Conservation Ontario pilot project supporting Ontario's 36 Conservation Authorities in creating a consistent provincial reporting format using a standardized set of indicators to capture data collected from 2001 to 2006. This checkup is intended to act as a management and evaluation tool to communicate and evaluate watershed health for watershed constituents on a five year cycle. The next Watershed Checkup will report on the same indicators, using data collected from CLOCA's monitoring programs from 2007 to 2011.

Our watershed

How healthy is it?

“Our Watershed” is like a checkup report from the doctor taking into account our past and current lifestyles and how to maintain and improve our level of health in the future. We have collected a lot of data during our 51 years as a Conservation Authority, but include only our most recent information to determine where we are at today. Consider this as a snapshot in time. While we don’t have all the answers, this is meant to help us move forward. As you read through “Our Watershed”, think of what you already do and some things you, your family, your colleagues, neighbours and friends can do together to help us create and maintain healthy watersheds and healthy communities. We will even provide you with some suggestions and ideas on how to get started in our “It’s Your Turn” section at the end.

You probably already know this, but natural landscape features like forests, wetlands and creeks are excellent indicators of environmental health and make up the natural heritage system that defines our watersheds. This report looks at how these systems are doing in these tough environmental times and how and where we can all make improvements. We will start with answering your first question, “Just what is a watershed anyway?”

What is a Watershed?

Melting snow and rainwater drain into a common body of water such as a creek, river, lake or pond. A watershed is the total area of land drained by a primary creek, river or lake. Like the branches of a tree, smaller streams or tributaries are connected and drain into the larger system, eventually forming one main trunk. The water, land, air and climate within that watershed are all linked and contribute to creating an ecosystem, one that includes people.



Some of the better known watersheds in Durham Region belong to the Lynde Creek, Oshawa Creek, Black, Harmony and Farewell Creeks, and the Bowmanville and Soper Creeks.

We are responsible for managing these and eight other smaller watersheds, all of which drain into Lake Ontario, a very important source of our drinking water. You may actually live in any one of these 15 watersheds, and

know that the creek itself is quite far away, running through a local park or crossing under a road you travel on. Rest assured, through smaller drainage networks and natural or human created stormwater systems, you are actually very connected to that creek, despite the distance and separation by roads, buildings and landscape features. Homes, businesses, farms, forests, hamlets, towns and cities are

all an integral part of their watershed, and our “living and lifestyles” can have both positive and negative impacts on our watersheds and their creeks. The purpose of this report is to help us understand that impact and how it affects the health of our environment, set some realistic goals, and work together toward positive and sustainable improvements. So read on to find out how our watersheds are fairing.



Yellow Warbler

The following is a summary of the environmental indicators we mentioned earlier, to help you get your head around these systems and why they are important tools for measuring watershed health. They will form the framework of this report.

OUR FORESTS



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 it will be.

OUR WETLANDS



A wetland is a place where land and water come together. Wetlands can be a swamp, a marsh, a bog or a fen, deriving this classification from the type of plant life they host. All wetlands, whether a treed swamp or a cattail marsh, provide us with a host of services such as improving water quality, reducing erosion and flooding, and providing habitat for both land and water wildlife.

OUR CREEKS



Our creeks form the circulatory system of our watersheds and are complex, dynamic and very beneficial. The natural vegetation found growing along the banks of our creeks is called a riparian buffer and creates an efficient filter for surface runoff from adjacent lands, an effective means of controlling erosion and pollution. It provides habitat for fish, birds and mammals traveling through or living within this unique ecosystem.

OUR GROUNDWATER



Not all water travels overland. Much of our rain and snow is absorbed by the ground in large porous storage areas called aquifers. The water is cleaned and stored, then released slowly back into our creeks and wells, reducing the risk of erosion, flooding and contamination from surface pollutants.

Central Lake Ontario Conservation Authority Watersheds



LEGEND

- Road Network
- CLOCA Boundary
- Municipal Boundary
- Watershed Boundary
- Drainage
- Lake Iroquois Beach
- CLOCA Land Holdings
- Oak Ridges Moraine
- Greenbelt

0 3,300 6,600 9,900 13,200 Metres

The Central Lake Ontario Conservation's jurisdiction is completely contained within the Region of Durham and is 638 square kilometres (246 square miles). It is defined as the land drained by the above fifteen watersheds.

Our Municipal Partners:

- Regional Municipality of Durham
- City of Pickering
- Town of Ajax
- Township of Scugog
- Municipality of Clarington
- Town of Whitby
- City of Oshawa
- Township of Uxbridge

Keep this detailed map handy when reviewing the rest of the checkup maps to help navigate the watersheds and landscape features we reference.

Our forests

Protecting our land



The variety of forest tree species in our watershed is important. It makes our forests more attractive to a variety of wildlife, creating biodiversity. Forests also provide many essential functions. They reduce soil erosion, sedimentation, and stormwater runoff. They help to recharge groundwater by providing places for water to seep into the soil and feed our wells and underground water systems. Research shows that water taken from forested watersheds is cleaner and more abundant than water taken from non-forested watersheds.

Environment Canada's Habitat Guidelines (EC 2004) suggest a minimum of 30 per cent forest cover across a watershed to maintain the important

functions that forests provide to both humans and wildlife.

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. There are still large forested areas in our watershed, but unfortunately, they are isolated and not connected to other forests, creating what we call a fragmented landscape. This is not a sign of good health.

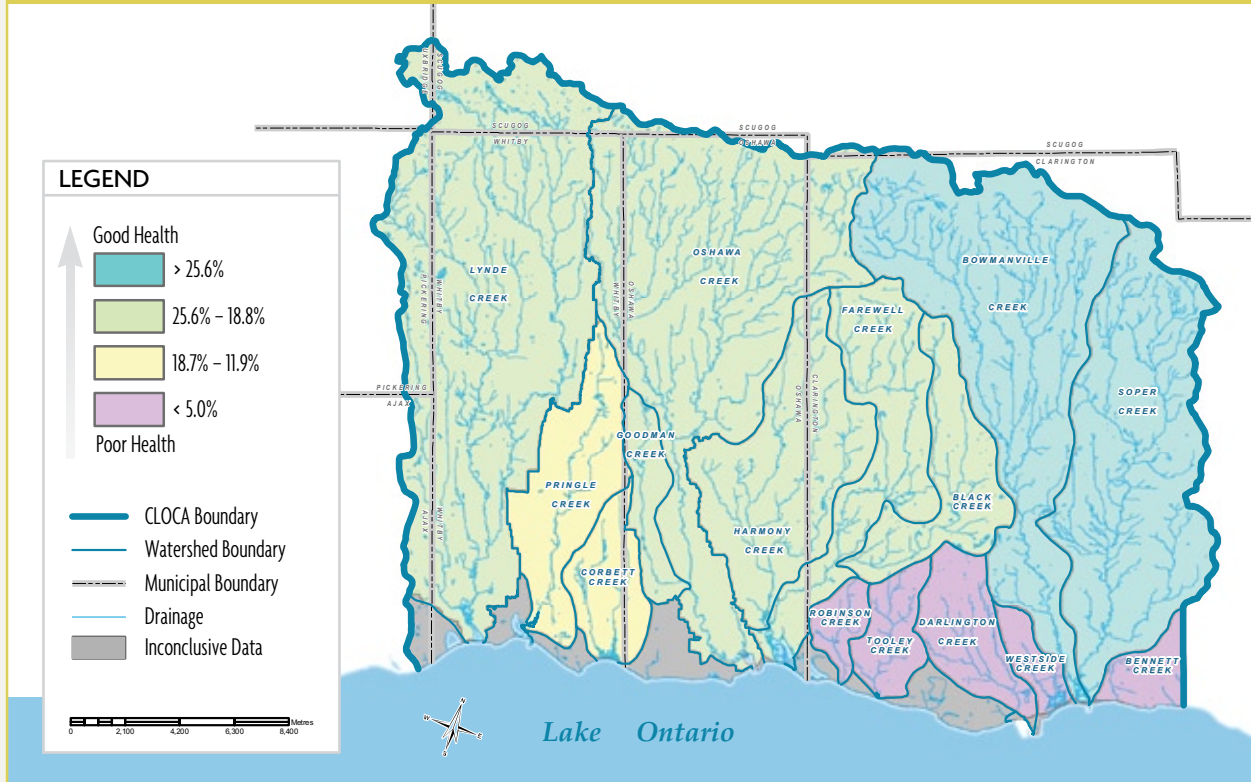
Our upland forests are generally composed of sugar maple, American beech, white ash, red oak, white pine and white birch. Common valley species include eastern white cedar, eastern hemlock, green ash, Manitoba maple (not native) and yellow birch. Area swamps contain poplar, American white elm, basswood, willow, silver maple, red maple, black ash, eastern hemlock, yellow birch and eastern white cedar.

Red pine, Scots pine and white pine are the most common plantation species and represent only about two per cent of the total vegetation within CLOCA's watersheds.

INTERIOR FOREST

The sizes and shapes of forest areas are also important. For example, some songbirds breed more successfully at least 100 metres (328 feet) away from the forest edge, and Environment Canada's Habitat Guidelines (EC 2004) suggest a minimum of 10 percent interior forest should exist within a given watershed. That's because forest edges are subject to stresses including the effects of wind, sun, and exposure to fire, flood and general disturbance. Interior forests are typically more humid, with less light and fewer invasive species and predators. Unfortunately, interior forest is becoming increasingly rare, making it a key habitat type for preservation efforts.

Forest Cover by Watershed



Guidelines provided by Environment Canada, How Much Habitat is Enough, A framework for Guiding Habitat Rehabilitation in the Great Lakes Areas of Concern, Ministry of Public Works and Government Services Canada, 2004

SO, HOW ARE WE DOING?



Unfortunately in reviewing current satellite imagery using Global Information Systems (GIS) technology and Ecological Land Classification (ELC) data, which is collected in the field, we have determined that none of Central Lake Ontario Conservation Authority's (CLOCA) major watersheds meet the minimum guideline of 30 per cent forest cover. The Bowmanville Soper watershed has the best forest and interior forest cover at about 25 percent and 3.5 percent respectively. The percentage of forest interior is well below the guideline of 10% in all the major watersheds.

In the headwater areas (the top or highest elevated land in a watershed) of Lynde, Bowmanville and Soper Creeks on the

Oak Ridges Moraine, larger expanses of continuous forest exist with a significant linkage to natural forests located in neighbouring Conservation Authority jurisdictions.

A relatively uniform band of natural vegetation occurs across the glacial Lake Iroquois Beach from Pickering to the Municipality of Clarington. These forests and swamps are remnants of what would have been characteristic of the region prior to European settlement more than 200 years ago.

In an effort to enhance and protect existing forest cover, we have made excellent progress through watershed planning, review of development applications and land acquisition. There are now provincial policies like the Oak Ridges Moraine Conservation Plan and the Greenbelt Plan, further contributing to better protecting the forests that remain. Since 2004, CLOCA stewardship initiatives focused on key areas where forest cover enhancement could increase the percentage cover on both private and public lands. To date, we have planted more than 200,000 native trees and shrubs contributing to an additional 150 hectares (370 acres) of forest cover. A significant percentage of some of our public land holdings that have not been reforested are meadow or successional habitat. This means that over time these areas will mature into forests, further contributing to increasing forest cover.

Our wetlands

Sustaining our water



Wetlands maintain good surface and groundwater quality. The plant community within a wetland filters sediment and harmful nutrients from the water, reducing the concentration of phosphorus and nitrogen. Wetlands also hold water like a giant sponge, slowly releasing it over time and helping to maintain steady baseflows in our creeks. Wetlands in Central Lake Ontario Conservation's (CLOCA) jurisdiction provide important spawning and nursery habitat for fish, as well as for other aquatic and terrestrial species such as turtles and salamanders.

Within the CLOCA jurisdiction, there are 16 provincially and two locally significant wetlands and wetland complexes. That is pretty significant because they receive extra protection through legislation.

Temporary wetlands, called vernal pools, are small but important features on the landscape. They may dry up during the summer months, so fish are rarely found in these pools, and that makes them a "predator-reduced" environment for a variety of amphibians to complete their life cycles. These types of wetlands, unfortunately, do not receive the same protection as the Provincially

Significant Wetlands mentioned previously, but are equally as important in adding to overall wetland cover on a watershed scale.

Wetland loss and degradation has been significant across Southern Ontario; we have lost an estimated 75 percent of our wetlands. The Environment Canada Habitat Guidelines (EC 2004) recommend that, at a minimum, 10 percent of a watershed should be comprised of wetlands in order to maintain its overall health and function.

There are four types of wetlands. Do you know the difference?

SWAMP



A swamp is a forested wetland with occasional water cover. Plants may include red maple and silver maple, but you can also find ash and elm trees, eastern white cedar, speckled alder, winterberry holly, marsh marigold and two orchids, grass pink and showy lady's slipper.

MARSH



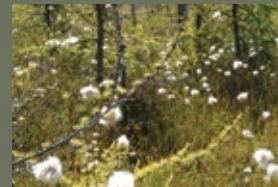
A marsh is subject to frequent or continuous water cover. Typically the water is shallow and features grasses, rushes, reeds, sedges, and other herbaceous plants which may include arrowhead, bulrush, cattail, pond weed, sphagnum moss and wild rice.

BOG



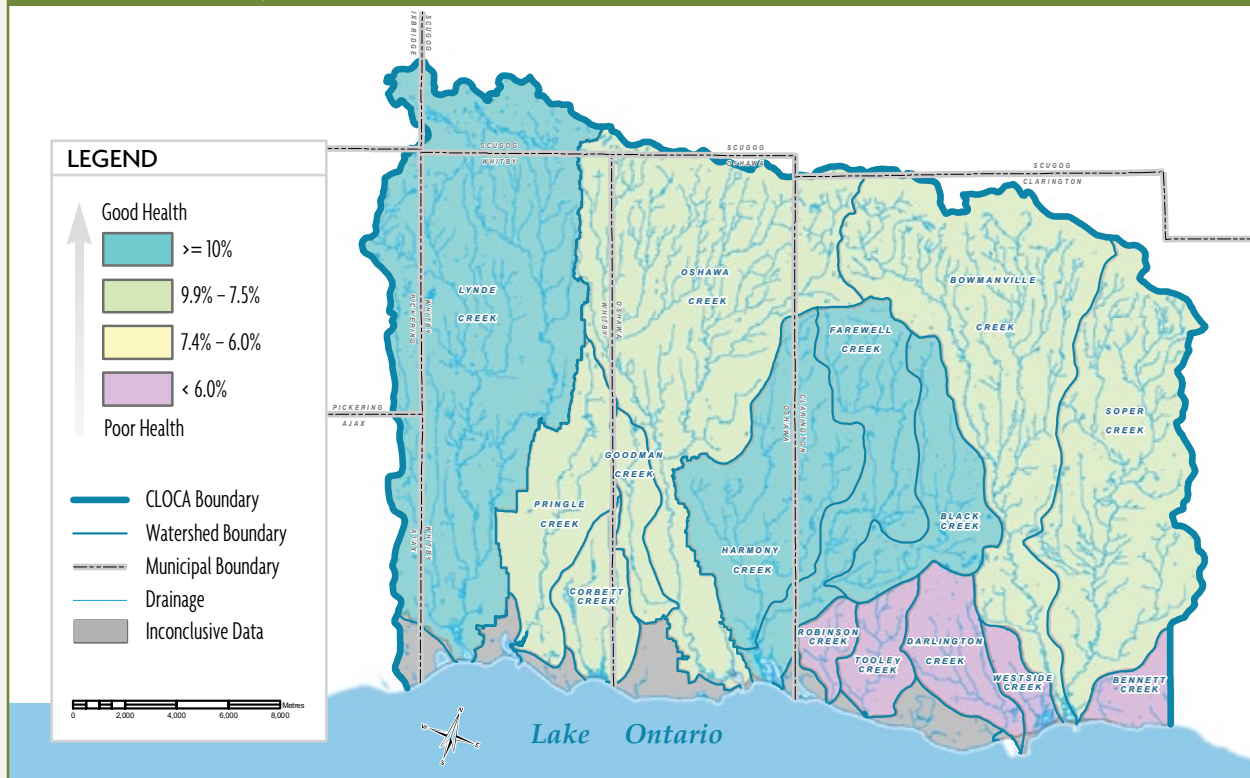
A bog receives only precipitation and is characterized by acidic water, low alkalinity, and low nutrients. Bog plants have many extraordinary physical adaptations that allow them to survive in very nutrient-poor soil and several of these species are carnivorous. Examples of these carnivorous plants are the sundews and pitcher plants.

FEN



A fen receives some surface runoff and/or ground water, which has neutral pH, neither acidic or alkaline and moderate to high nutrients. A fen may be dominated by sedge, reed, shrub or forest and can contain bladderwort, cottongrass, marsh marigold and water-mint.

Wetland Cover by Watershed



Guidelines provided by Environment Canada, How Much Habitat is Enough, A framework for Guiding Habitat Rehabilitation in the Great Lakes Areas of Concern, Ministry of Public Works and Government Services Canada, 2004

SO, HOW ARE WE DOING?

Only the Lynde and Black/Harmony/Farewell Creek watersheds are at or above the Environment Canada Habitat Guidelines recommended minimum percentage for wetlands with 10, and 12 percent wetland cover respectively. A number of new planning tools currently exist to assist us in maintaining and enhancing wetland cover within our jurisdiction.

The Conservation Authorities across Ontario have developed clear standards for regulating development activities within or near all wetlands of a certain minimum size. This is significant as it further protects locally significant wetland features that are not protected by provincial legislation.

One of the ongoing projects at Central Lake Ontario Conservation, is mapping natural heritage features using current Geographic Information Systems (GIS) technology and site visits to update and confirm the quantity and quality of our wetland resources.



Other provincial planning tools, like the Oak Ridges Moraine Conservation Plan and the Greenbelt Plan have further strengthened our ability to protect, enhance and re-create wetlands to improve wetland coverage across our watershed.

Our creeks

The foundation of our watersheds

Clean water is essential for a healthy watershed. Creeks with impaired water quality can pose health risks for humans, livestock or wildlife. Water in a creek is affected by the surrounding land cover and how that land is managed or mis-managed. Within the creek itself, there are a number of parameters used to measure overall health including water chemistry like pH and nutrients, water flows and quantity, temperature as well as fish and aquatic insect presence and absence. Outside of the creek, we measure the length and width of the

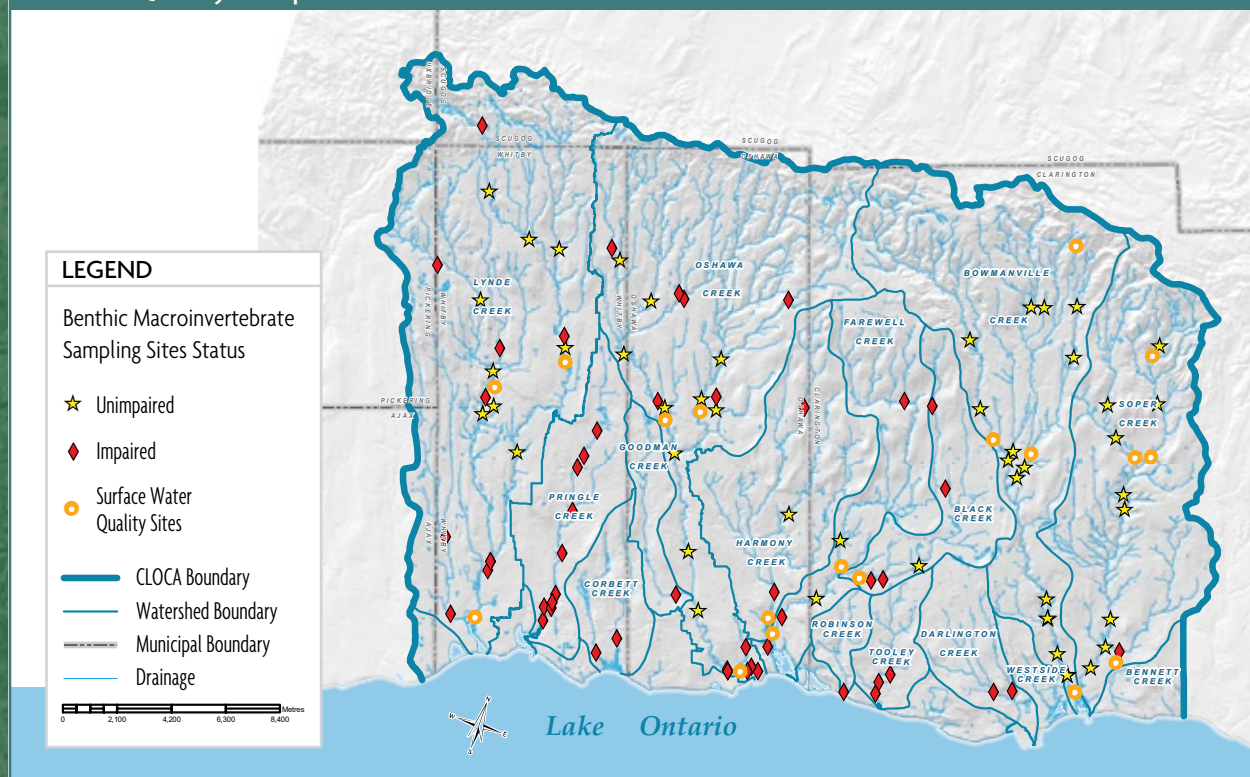
riparian vegetation found on the banks and floodplains associated with the creek. The following is an introduction to creek monitoring and highlights the type of data collected and more specifically, reports on the overall health of our creeks.

WATER QUALITY MONITORING

The Ministry of Environment operates the Provincial Surface Water Quality Monitoring Network (PWQMN) across Ontario. Central Lake Ontario Conservation Authority (CLOCA), like the other 36 Conservation Authorities

in Ontario, assists with this program by collecting water quality samples on monthly intervals from April through November at 21 stations across our jurisdiction. As part of CLOCA's long-term watershed health monitoring, these water quality samples are assessed for information on living and non-living conditions in our creek.

Water Quality Sample Sites





IT'S ALIVE...

Biological sampling measures water quality based on the living things we find in the water including benthic macro-invertebrates (we call them aquatic bugs, so you can too) and fish. We do this with a core group of trained field staff and some very sophisticated monitoring equipment. We target one watershed each year, conducting spring and fall sampling in a number of tributaries in rural and urban communities. Generally, the more life we find in our samples —the higher the quality of the water.

Macroinvertebrates, sorry we should say the aquatic bugs, are good indicators because they have limited mobility that makes them vulnerable to creek stresses; they have short life cycles; they are easily collected and identified; and they exist pretty much everywhere.

SO, HOW ARE WE DOING?



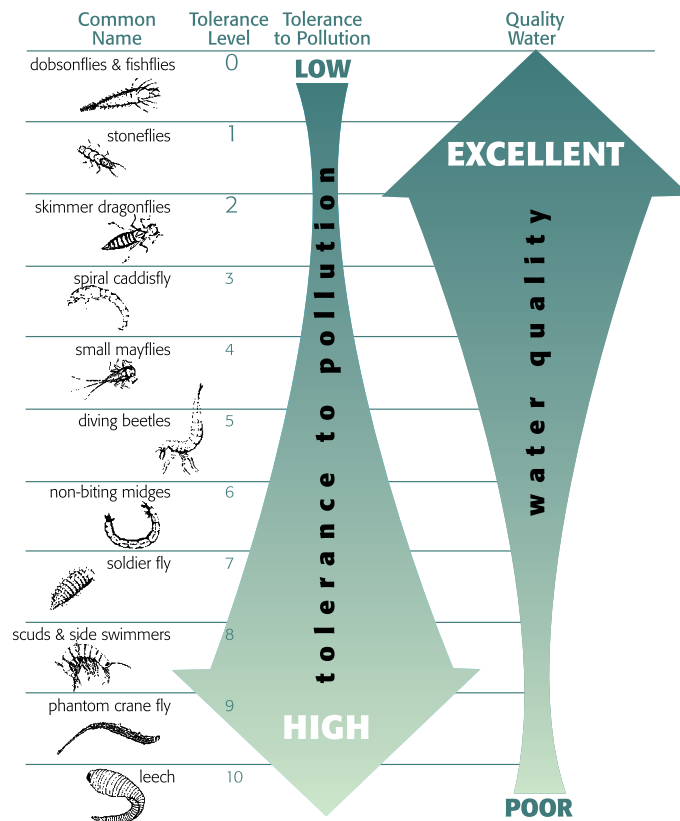
This report highlights only the results of our aquatic bug monitoring with reference to impaired and unimpaired sites within our creek systems. The data that is collected cannot be interpreted on a watershed basis as there is not enough years of data to date. Also we find within a healthy creek system or healthy watershed, impaired and unimpaired sites exist regardless.

Checking for Bugs

Central Lake Ontario Conservation is part of the Ontario Benthos Biomonitoring Network (OBBN). This allows us to follow a standardized methodology, compare results on a provincial scale, share resources, and receive ongoing technical support to this developing science. Since 1995, we have collected biological data at approximately 100 stations in our watersheds, and most recently, have used this new protocol to complete data collection in the Oshawa and Black/Harmony/Farewell Creek watersheds.

Certain species of bugs have specific tolerances to various stresses and are referred to as indicator species. Therefore, the presence or absence of these indicator species can be related to the quality of the water. Leeches, for example, tolerate polluted conditions while fish flies are totally intolerant and will disappear from the creek if water quality is poor. Just by sampling these organisms in the bottom of our streams, our biologists can identify changes in the stream water conditions.

Graphic courtesy of Rideau Valley Conservation Authority



Water chemistry 101

While biological water sampling provides information about stream life, water chemistry measures the physical characteristics of water and its contents, such as temperature, turbidity (how cloudy the water is from suspended sediments or algae) and nutrients. The chemical makeup of water also includes pH (the water may be alkaline or acidic), dissolved solids, and metals. While we collect data on these and other physical characteristics, the data reported on here is the phosphorous levels present at our sample sites. The intent of focusing on this nutrient is to provide a consistent indicator for creek health allowing us to compare watersheds across Ontario. Sources of phosphorous include failing and aging septic systems, animal feces (for example large Canada goose populations) and fertilizers.

SO HOW ARE WE DOING?

The phosphorous concentrations found in Lynde, Oshawa, Black, Harmony, Farewell and Bowmanville Soper Creeks, are consistently rated good to excellent and in most cases, well below or slightly above the 0.03 mg/Litre Provincial Water Quality Objectives (PWQO) for an excellent to good water quality rating. Removal of phosphorous from a number of cleaning products in the 1960's, a movement toward nutrient management by the agricultural community and the willingness of golf courses and homeowners to opt for alternative lawn care products, contributes to this low concentration of phosphorous in our creeks.

Storm Water Management— Improving Water Quality

Stormwater management is the practice of controlling runoff to prevent downstream erosion, flooding and water quality degradation as well as helping to maintain groundwater recharge where relevant. It is a vital component to maintaining health in an urbanizing watershed.

Pollutants such as oil/gas, cosmetic fertilizers/pesticides, and sediments are washed off the urban landscape by rainfall. Stormwater management helps to remove these pollutants by allowing them to settle out before being discharged to streams and creeks.



Life on the edge – are we covered?



More than just a creek bank, riparian buffers are all about good water quality and quantity in our creeks. Riparian buffers consist of a variety of shrubs, trees and grasses growing along banks to control water flow, maintain water temperatures by providing shade, improve bank stability, store water during flooding, remove harmful bacteria, sediments and pollutants, and provide habitat for a rich diversity

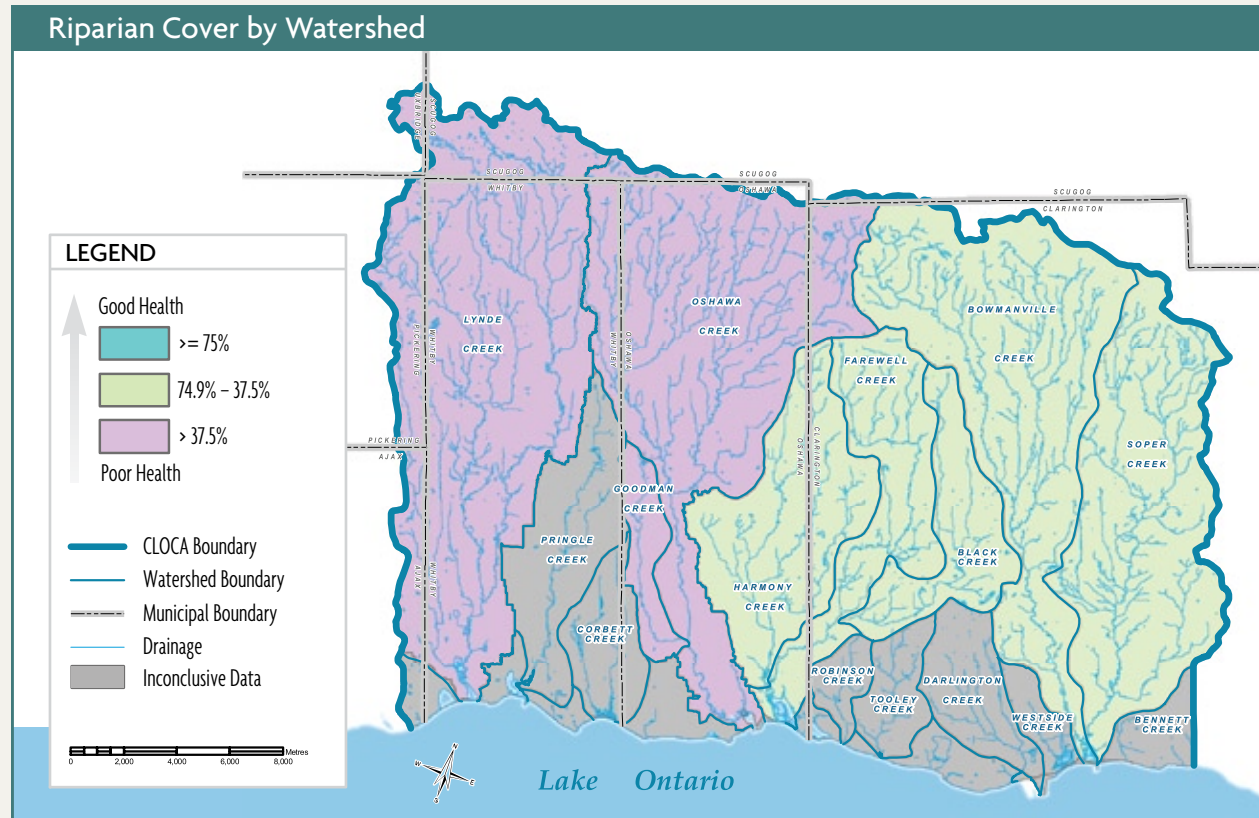
of plants and animals. Environment Canada's Habitat Guidelines (EC 2004) recommend a minimum of 75 percent of the total stream length should have at least a 30 metre (100 foot) riparian buffer along cold water creeks and a 15 metre (50 foot) riparian buffer along warm water creeks.

Which poses another question. What does it mean when we say a creek is either a warm water or cold water system anyway?

FISHERIES CLASSIFICATION:

Water bodies and streams are classed as either having a cold water or warm water fishery. This designation is dependent upon the dominant species of fish occupying the creek.

- Warm water fisheries support fish able to tolerate warm water temperatures. These circumstances are usually, but not always, found within urban environments. Warm water fish include such species as crappies, small and largemouth bass, sunfish, yellow perch, and catfish.
- Cold water fisheries support fish that prefer clear, cold waters; are not tolerant of extreme temperature changes; and cannot survive for long periods outside of their coldwater habitats. These circumstances are typically found in the headwater and middle reaches of our watershed, in our more natural areas. Species such as trout and salmon are recognized as cold water fish.



Guidelines provided by Environment Canada, How Much Habitat is Enough, A framework for Guiding Habitat Rehabilitation in the Great Lakes Areas of Concern, Ministry of Public Works and Government Services Canada, 2004

SO, HOW ARE WE DOING?

Typically, the contributing factors to poor water quality are directly related to a reduction in vegetation cover in the riparian zone, an increase in impervious surfaces such as concrete and asphalt within the watershed, ongoing use of road salts and fertilizers, and lack of stormwater management ponds. Riparian vegetation cover is kind of like the last line of defence in handling surface water runoff in both our urban and rural landscapes. It is no surprise that we fall short of Environment Canada's Guidelines (EC2004). The 30 metre riparian zones were analyzed using our Geographic Information System (GIS) to determine their total area and relative composition of vegetation cover based on 2005 Ecological Land Classification (ELC) data. The Bowmanville Soper Creek watershed has the best riparian cover and is rated good at 45 percent along with the Black/Harmony/Farewell Creek watershed which has 40 percent.



The valley lands within the jurisdiction are generally more vegetated through the developed areas than in the undeveloped, with the exception of the Bowmanville and Soper Creeks. Farming practices in the rural headwater areas of these watersheds have contributed significantly

to protecting and maintaining riparian habitat through a variety of Beneficial Management Practices, called BMP's. The BMP's most common in these areas include protecting natural vegetation buffers, fencing of livestock and providing alternative water sources and retiring unproductive marginal agricultural lands that traditionally provide low yields. These lands are either allowed to naturalize or planted to improve overall biodiversity and habitat with native trees and shrubs.

Our groundwater

It's beneath us



Groundwater is water that comes from rain and snow and soaks into the ground where it is stored beneath the surface in aquifers that supply wells and natural springs. The speed at which groundwater recharges the aquifers is dependent on the local cycle of rainfall, snow, evaporation, and by the composition of the aquifer in which the water is stored.

While most of our urban areas are serviced by municipally-supplied water from Lake Ontario, groundwater still remains an important source of base flow to our creeks and potable water to residents and businesses with an estimated 5,500 privately-owned wells in Central Lake Ontario Conser-

vation Authority's (CLOCA) jurisdiction. In some of our watershed, people face periodic water shortages and we report low water level warnings, because the available groundwater is used faster than it is replenished.

Groundwater can be polluted by abandoned and existing landfills, private wells (both operating and abandoned), faulty septic beds, underground fuel tanks, and from contaminated runoff containing fertilizers, pesticides, road salt, and residential and industrial wastewater.

The groundwater quality data we use, is obtained from the Provincial Groundwater Monitoring Network

(PGMN). CLOCA has collected water quality samples from 16 contributing wells since 2002. To date, approximately 13 water quality samples (twice annually) have been taken from each of these wells, following standard sampling protocols to ensure our results are comparable.

The general groundwater chemistry is assessed using a variety of inorganic and organic solids, organic liquids and gases. Their presence, absence and abundance help us to understand general trends and changing conditions over time.

Groundwater Level and Water Quality Monitoring Sites



SO, HOW ARE WE DOING?

Due to the lack of long term groundwater quality data from these wells, only a general statement of current conditions can be made. After several more years of data collection from these sites, groundwater quality trends can be interpreted and discussed in more detail. Most water testing wells in the CLOCA jurisdiction produce fresh water supplies. However, some wells produce salty supplies and a few are reported as sulphurous or mineralized supplies. All water quality samples show high concentrations of calcium, sodium, potassium, bicarbonate and chloride.

This is generally naturally occurring and typical of groundwater found in the CLOCA jurisdiction as a result of geological evolution and local bedrock.

For this Report, only chlorides and nitrogen (Nitrate+Nitrites) are portrayed to provide a comparison to other watershed health monitoring efforts across the province. Data is only available for Lynde, Oshawa, Black, Farewell, Bowmanville and Soper Creek watersheds.

We know that some of our groundwater resources are vulnerable and susceptible to contamination, particularly where the aquifers and water table depths are shallow or where sand and gravel allow water to move through easily.

Areas within the Oak Ridges Moraine and the Lake Iroquois Beach are two areas within our jurisdiction that are considered areas of high vulnerability and must be afforded some degree of source water protection.

It is within these areas that we have seen increasing levels of chloride concentrations. Once chloride is dissolved in a solution, it tends to remain there. Typically chloride is found in road salt, fertilizers and industrial wastewater. In high concentrations, chloride can be toxic to aquatic organisms and water must be treated prior to consumption.

Nitrate + Nitrite is the dissolved form of nitrogen and can come from a variety of sources including industrial and residential wastewater, fertilizers, pesticides and leaching septic beds. In high concentrations, Nitrate+Nitrite is toxic to aquatic organisms. Some wells, typically those that are shallow and vulnerable to surface runoff, can show elevated Nitrate+Nitrite levels. Within the 16 Provincial Groundwater Monitoring Network wells in CLOCA's jurisdiction, Nitrate+Nitrite concentrations remain extremely low, with 15 of the 16 wells scoring between 0 and 3.0mg per litre. Only one well scored between 3.1 and 7.0 mg per litre. The Ontario Drinking Water Standards for Nitrate + Nitrite is 10 mg per litre.

What we are doing

Mission possible



WHAT DOES THIS ALL MEAN?

The overall health of the Central Lake Ontario Conservation watershed declines as you travel from the headwater areas in the upper reaches 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 headwater areas. Why? There are still significant areas of habitat features such as wetlands, forests and riparian buffers in the headwater areas that protect 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 protective features and implement watershed management plans and education programs to ensure we protect these natural resources.



Midland Painted Turtle

Here's a brief description of some of Central Lake Ontario Conservation Authority's (CLOCA) programs. If you see something that interests you, contact us. We can provide more information and maybe we can plan how to work together for healthier watersheds.

SOURCE WATER PROTECTION

Source Water Protection is the first step in protecting drinking water and human health. Central Lake Ontario Conservation, Credit Valley Conservation, and Toronto and Region Conservation have been working together on source protection activities for municipal water supply systems that rely on ground-water.

WATERSHED MANAGEMENT PLANS

Generally, watershed planning asks the question, "What do we need to do to have a healthy watershed?" It also provides a foundation upon which to make environmentally sound decisions to maintain and improve the watershed's future health.

TERRESTRIAL NATURAL HERITAGE LANDSCAPE ANALYSIS MODEL

This is a mapping tool that provides information on the current Natural Terrestrial Heritage resources and informs our watershed management decisions.

PLANNING AND REGULATIONS

We provide an environmental review of development proposals submitted by municipalities, developers and the general public. By directing development away from important natural heritage features, flood and erosion prone areas, we reduce the risk to life and property that results from flooding and erosion and contributes to a healthier watershed.

INVASIVE SPECIES MANAGEMENT

A number of invasive plant species are impacting our wetlands, forests and meadows. The successful release of the galeucella beetle to control purple loosestrife in local wetlands has set the framework for us to work with others across the province on managing a variety of introduced species which threaten our native plant communities, and our overall biodiversity.

CENTRAL LAKE ONTARIO FISHERIES MANAGEMENT PLAN

Another important tool that identifies fisheries issues, provides recommendations, initiates action items and timelines to establish self-sustaining native fisheries to further encourage healthy fish habitat in our watersheds.

LAND ACQUISITION

CLOCA has been protecting areas of natural significance through direct ownership for 51 years. Today, we own over 2,198 hectares (5,431 Acres) of conservation land that protects significant wetlands, valleylands, forests, meadows, groundwater resources, aquatic environments and other important wildlife habitats.

STEWARDSHIP PROGRAMS

Since 2004, funding and free technical advice has been offered to private landowners for land and water stewardship projects which include reforestation, agricultural Beneficial Management Practices, terrestrial and aquatic habitat restoration, well decommissioning and upgrading.

EDUCATION & OUTREACH

An average of 7,000 students a year attend our Conservation Area "In Your Watershed" program, experiencing a variety of curriculum based hands-on programs for grades 1 through 12. We partner with our community to deliver the Durham Children's Ground-water Festival to 5,000 grade 4 students each year and engage thousands of Durham families at the Purple Woods Maple Syrup Festival on the Oak Ridges Moraine.

DURHAM REGION COASTAL WETLAND MONITORING PROGRAM

Great Lakes coastal wetlands are unique and provide habitat for many endangered and threatened birds, reptiles and amphibians as well as spawning grounds for more than two-thirds of all Great Lakes fish species. CLOCA is home to 13 of these coastal wetland features. To date we have collected 7 years

of data and produced a fact booklet, a methodology handbook and technical report to help us and others around the Great Lakes with coastal wetland restoration strategies.

CONSERVATION AREA MANAGEMENT

Conservation Areas are managed with the primary goal of protecting significant natural heritage features and secondly to provide complimentary public use. We have eight publically accessible Conservation Areas with over 45 kilometres (27 miles) of trails and public facilities for passive activities including hiking, cycling, cross-country skiing, picnics and wildlife viewing. Science based Conservation Area Management Plans are being developed to help guide management activities on these lands.

FLOOD FORECASTING AND WARNING

CLOCA continues to reduce the risk to life and damage to property by providing local agencies and the public with advanced notice, information and advice so that they can respond to potential flooding and flood emergencies.

CLIMATE CHANGE

This is a critical issue facing our watersheds today. We are engaged in long-range environmental planning with the best scientific information available. We see the impacts of a changing climate through our watershed planning and management activities, with particular focus on the implications to forestry, tree species diversity, water quality, flooding and aquatic species like brook trout, that rely on cold water stream habitats. Since global warming is attributed to human activity, we work on our own lands and private lands throughout our jurisdiction to implement projects that help reduce our climate change footprint. Planting of native trees, no till farming and the creation of wetlands and forests all contribute to reducing CO₂, the major contributor to climate change. So that's what we have been up to.

It's your turn

We need you



You might be doing more than you think for a healthy watershed for your family and friends those with two legs, four legs, no legs and wings. If you recently composted your food waste, cooked a meal from locally-grown produce, installed a back flow valve on your water tap, installed a bird box in the backyard, planted a tree, practiced environmentally friendly lawn and garden care, or checked your well water recently for contaminants, you are already doing what needs to be done.



Is there more you could do? Of course there is, but you need look no further than your own backyard.

If you want to make our watersheds healthier and contribute to a greener planet, here are some more ideas.

At home

- Look for environmentally friendly products for inside and outside your home.



- Use reusable cloth shopping bags or bins and stop purchasing over-packaged products.
- Donate old furniture and clothing to a local secondhand store.
- Plant native trees, create a meadow of native grasses and wildflowers or a small pond. All of these plants will attract native birds and insects.

- Check your well water a minimum of three times a year for bacteria counts. Just call the Region of Durham at 905-668-7711 for more information. It's free.

- If you have a creek running through your property, stop mowing the grass to the edge. Instead, let it naturalize and plant some native plants to attract beneficial insects.

- Buy a mulching blade for your lawn mower and stop collecting grass clippings, they do more to create a healthy lawn when you leave them, on the lawn. Go figure!

- Resist the advertising for a perfect lawn; avoid chemical fertilizers and look for environmentally friendly alternatives. Your children and pets will thank you.

- Whether you live in the city or the country, conserve water by installing water saving devices on your faucets and showerheads and install a low flow toilet.



- Install a rain barrel under your downspout to provide you with a handy source of clean water for your garden during the dry summer months.

At work

- Develop an Integrated Pest Management (IPM) plan and hire a maintenance company that offers alternative services to improve your soil, lawn and garden areas naturally.
- Use sand or environmentally friendly products on walkways and parking areas to prevent ice and increase traction during winter snow removal.
- Do an energy conservation audit inside and out.
- Use environmentally friendly cleaning products for routine office maintenance.
- Look before you buy paper. Use paper that contains recycled content or is produced using sustainable forestry management practices.
- Incorporate a “flick-off” policy for lights or motion sensors in offices and meeting rooms to reduce consumption.
- Modify computer settings to reduce energy use.



- Build a green roof to store storm-water, living walls to clean office air, solar and wind systems to generate heat and power.
- Set up a green bin in your lunch room or cafeteria for composting food waste.

At play

- Schools all over Durham Region can get involved in EcoSchools. To find out more contact www.ontarioecoschools.org.
- Help local birds by putting up a bird feeder or two in your backyard: Remember to keep it filled during the winter months.
- Get out there and Geocache. Find out more on our website and borrow one of our Durham Lives GPS Units. It's free!



- Sign up for one of our Watershed Wilderness Nature Hikes, there is one for each season and something of interest for everyone.
- Volunteer for tree planting, or habitat creation from Earth Day until Halloween, and maybe take a walk at a local conservation area on Family Day or anyday.
- Volunteer and check out our web site www.cloca.com for a calendar of volunteer events and opportunities.



Did you know?

By planting one tree, you are taking a small step to reduce CO₂ levels. By planting an acre of trees or 2.5 hectares, you can take pride in knowing that these trees will eventually absorb enough CO₂ over one year to compensate for driving a car almost 14,000 kilometres. Since 2004, private landowners in our jurisdiction have planted trees on about 40 hectares (100 acres) of their lands.

On the land



- More than 27,000 farmers across Ontario have voluntarily developed something called an Environmental Farm Plan, approved by their peers and supported through partnerships with Conservation Authorities like CLOCA. The program helps farmers improve crop production, water, soil, fish and wildlife habitat, livestock manure handling and applying nutrients to crops on their properties. Contact the Ontario Soil and Crop office 705-374-4975 or durham@ontariosoilcrop.org for more information.
- If you are interested in creating a legacy with your property, there are land conservation options that help landowners provide long-term protection to natural areas. Land donations and conservation tax incentive programs are some options designed to recognize, encourage and support the long-term private stewardship of Ontario's provincially significant conservation lands. Contact us to find out more and see if you qualify.

Central Lake Ontario Conservation

Central Lake Ontario Conservation Authority (CLOCA), is a local community based environmental organization and one of 36 Conservation Authorities responsible for managing watershed resources across Ontario. We were established in 1958 with a mandate to establish and undertake programs to promote conservation, restoration, development and management of natural resources in partnership with local Municipalities and the Province. Our mission is to work towards the awareness, understanding, wise use and enhancement of our watershed resources for the benefit of the natural environment. We are long term landowners in Durham Region, providing environmental experiences and recreational activities for our constituents with respect to significant ecological features including the Oak Ridges Moraine, the Lake Iroquois Shoreline, Lake Ontario Waterfront, valleylands, Environmentally Sensitive Areas and Provincially Significant Wetlands. You might say we are in the business of creating an environmental ethic in our communities.

EDUCATION

Delivering education and information about conservation and the environment by providing hands on learning opportunities.

FLOOD FORECASTING & WARNING

Implementation of our Flood Forecasting & Warning Program protects watershed residents from the impacts of extreme rainfall and snow melt. This involves continuous water level monitoring of watercourses, computerized flood forecasting and monitoring of snow conditions.

LAND & WATER CONSERVATION

Undertakes a range of programs aimed at improving land and water conservation within our watersheds. These programs include the management of our lands, the inventory, evaluation and management of watershed resources and the monitoring of components of the natural environment to determine trends in watershed health.

DEVELOPMENT REVIEW & REGULATION/PERMITS

Land use planning input, review and administration of the Ontario Regulation 42/06 Regulation of Development, Interference with Wetlands and Alteration to Shorelines.

STEWARDSHIP

Deliver programs to landowners promoting natural heritage stewardship projects throughout the watershed.

VOLUNTEER PROGRAM

Engage volunteers across our jurisdiction in a number of hands-on environmental and cultural activities.



**Central
Lake Ontario
Conservation**

For More Information

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Working In Partnership



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