



Central  
Lake Ontario  
Conservation



2014

YEAR IN  
REVIEW

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# A MESSAGE FROM THE CHAIR



It has been a pleasure to serve as Chair of Central Lake Ontario Conservation (CLOCA) in 2014. Please find below a number of this year's highlights.

- The University of Ontario Institute of Technology (UOIT), City of Oshawa and CLOCA continue to work collaboratively to implement a surface water quality monitoring program for the Oshawa Creek watershed. In 2014, UOIT students prepared a report to summarize data collected in 2013 and continued their monitoring activities.
- Land Management and Operations staff once again assisted with the delivery of the 8th annual Step Into Nature Conservation Areas Workshop for Conservation Area staff across Ontario, providing a full day tour of Purple Woods Conservation Area, Heritage Hall and our maple syrup production facilities.
- Completed acquisition of 2 properties (Gill 50.38 hectares) (Carruthers 40.4 hectares) and received 1 property donation (Rogers 177 hectares) for a total of 268.31 hectares. The donation of the Rogers tract came with a \$2 million endowment to manage and maintain the property. This brings

the CLOCA land acquisition total from 1998 to 2014 to 1,681 hectares and total current land holdings to 2,691 hectares.

- CLOCA provided advice and comments on 38 special studies and reviewed 191 development proposals to ensure protection of natural features, and keep development away from flooding and natural hazards.
- Completed and submitted a revised Source Water Protection Plan and an updated Assessment Report for the Central Lake Ontario Source Protection Authority jurisdiction.
- Established a satellite based telemetry rain gauge station at the Grandview Reservoir located in the Harmony Creek Watershed in partnership with the Region of Durham and City of Oshawa.
- Completed the Phase 1 construction of the Waterfront Trail through Lynde Shores Conservation Area.
- Completed the Oshawa Creek Floodplain Mapping Study to aid development review, regulations, flood forecasting and warning programs.
- Hosted our 39th Purple Woods Maple Syrup Festival introducing pre event online ticket sales, iPad based computer cash and inventory, reducing wait time for visitors and enhancing operational efficiencies. More than 9,000 people attended the festival and staff produced 970 litres of maple syrup.
- Hosted our 17th Durham Children's Groundwater Festival with more than 4,266 grade 4 students attending and now acting as good water stewards in their communities.

Thank you,

**Pat Perkins**  
Chair, Central Lake Ontario Conservation

# CENTRAL LAKE ONTARIO CONSERVATION



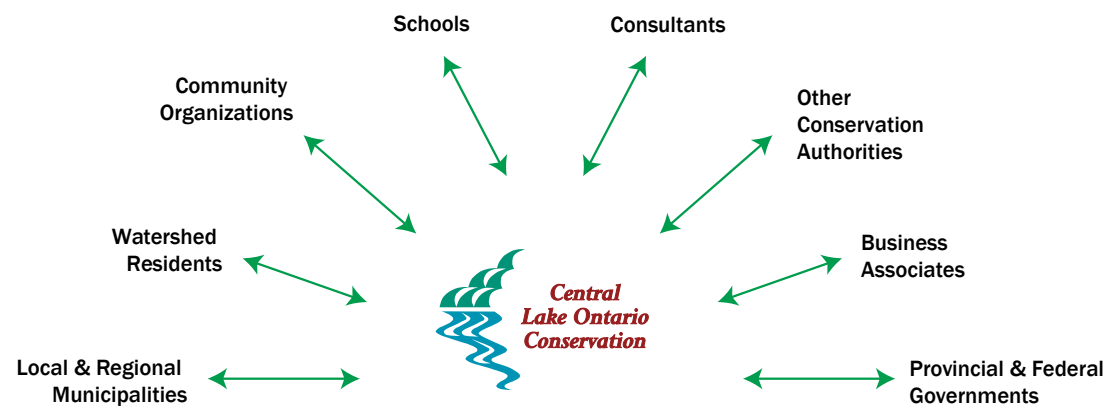
Carruthers Tract

## Who We Are

The Central Lake Ontario Conservation Authority was established in 1958 by the Government of Ontario at the request of the municipalities located within the watersheds of the following creek systems: Bennett, Black, Bowmanville Corbett, Darlington, Farewell, Goodman, Harmony, Lynde, Oshawa, Pringle, Robinson, Soper, Tooley and Westside.

## Our Mission

"To increase the awareness, understanding, wise use and enhancement of our watershed resources for the benefit of the natural environment in partnership with the Region of Durham including: Cities of Oshawa and Pickering, Towns of Ajax and Whitby, Municipality of Clarington, Townships of Scugog and Uxbridge and our watershed communities."



## 2014 Board of Directors



Front Row: Councillor Joe Drumm, Councillor Larry Corrigan, Councillor Bob Chapman, Mayor Pat Perkins (Chair), Councillor Mary Novak, Councillor Amy England, Councillor Corinna Traill.

Back Row: Councillor Don Mitchell, Councillor Shaun Collier, Councillor Lorne Coe, Councillor John Neal, Councillor Ron Hooper, Councillor Peter Rodrigues (Vice-Chair), Councillor Tito-Dante Marimpietri, Russ Powell (CAO)

Insert: Councillor John Aker joined CLOCA in 2014, replacing Councillor Amy England.

**Town of Ajax**  
Councillor S. Collier

**City of Oshawa**  
Councillor B. Chapman  
Councillor T.D. Marimpietri  
Councillor J. Neal  
Councillor J. R. Aker

**Municipality of Clarington**  
Councillor R. Hooper  
Councillor M. Novak  
Councillor C. Traill

**Townships of Scugog & Uxbridge**  
Councillor L. Corrigan

**City of Pickering**  
Councillor P. Rodrigues (Vice Chair)

**Town of Whitby**  
Councillor L. Coe  
Councillor J. Drumm  
Councillor D. Mitchell  
Mayor P. Perkins (Chair)

# WATERSHED MANAGEMENT



Healthy Watersheds – Healthy Living

## Watershed Action Plans

As a key component in the implementation of CLOCA's Watershed Plans, CLOCA staff continue to prepare and complete a series of Watershed Action Plans. These Action Plans provide an implementation framework to carry out monitoring, restoration, rehabilitation and research to achieve watershed health targets. Examples of broadly-focused or jurisdiction wide Action Plans include the Natural Heritage System Restoration Plan and the CLOCA Community Engagement Plan. More specific Action Plans include a CLOCA Salt Management Plan and the Montgomery Creek Action Plan. There are also Action Plans focused on improving CLOCA's analytical and data capabilities to ensure CLOCA continues to offer relevant data for internal and external clients.

The Lichen Pilot Project was also completed in 2014. In this Action Plan, CLOCA examined the value and logistics of monitoring lichen as a means to measure air quality and ecosystem health. With partnership support, a long term lichen monitoring and mapping program could be developed. The delineation of Ecologically Significant Groundwater Recharge Areas was completed in 2014. As one of CLOCA's Watershed Action Plans, this work supports Development Plan Review services and guides lower tier municipality's preservation of significant groundwater features. These recharge areas were delineated using numerical

models developed under the Source Water Protection program.

Work continues on the preparation and completion of many of the other Watershed Action Plans, including the Climate Change, Goods & Services, Ecosystem Compensation, Wildlife Corridor, Riparian Corridors Restoration, In-Stream Barriers, Connected Imperviousness Action Plans and others.

On-going watershed plan implementation continues through CLOCA's daily plan review responsibilities. In addition, a number of CLOCA's partner municipalities are reviewing their Official Plans and staff will continue to seek inclusion of Watershed Plan recommendations into those landuse planning documents.

## Restoration in our Watersheds

A number of restoration projects across CLOCA's watershed were initiated in 2014, beginning with planning for aquatic habitat improvement efforts, in several conservation areas.

**Bowmanville Westside Marshes Conservation Area:** This restoration involved the collection and placement of logs, stumps and root wads along the existing cattail edge. The addition of natural woody debris will improve habitat structure, adding features for spawning, cover, refuge and contributing nutrients and food to this coastal wetland system. CLOCA

received a \$50,000 grant from the Recreational Fisheries Conservation Partnership Program (DFO) and with the generous financial/ in-kind donations and support provided by community partners (below) this project will be completed in 2015.

## Thank You

- Recreational Fisheries Conservation Partnerships Program (DFO)
- St Marys Cement (Major Sponsor)
- Canadian Woodland Contractors Inc.
- KAPP Contracting Inc.
- Municipality of Clarington
- TBG Landscape Inc.
- Metrus Development
- Cosburn Giberson Landscape Architects
- Kettleby Contracting

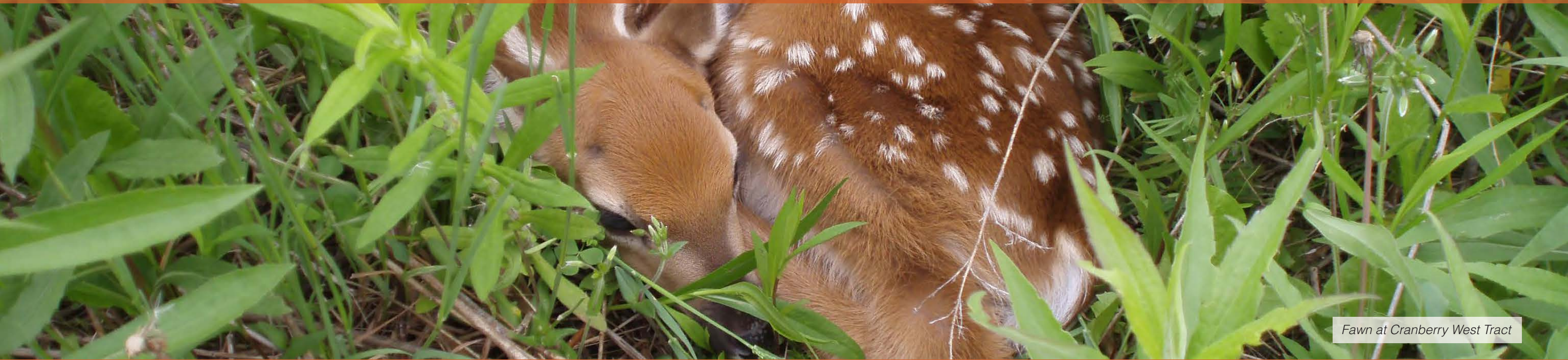
**McLaughlin Bay:** A donation was received from the National Wetland Conservation Fund to support the planning and installation of aquatic habitat improvements in McLaughlin Bay. These improvements will provide new and improved fish habitat supporting the McLaughlin Bay Restoration Strategy and recreational fishing opportunities for Ontario Parks. Planning for the design, construction and placement of aquatic habitat structures was completed in 2014. With the support of volunteers from General Motors and Ontario Federation of Anglers and Hunters, combined with the generous in-kind contributions made by

Ontario Parks; assembly and placement of these structures will get underway in January 2015.

**Lynde Creek Watershed:** The development of two other aquatic habitat improvement projects; one at Heber Down Conservation Area, the other at Lynde Shores Conservation Area, were advanced significantly in 2014. Implementation of these restoration projects are scheduled to occur in 2015 and 2016. These projects are part of larger restoration initiatives to improve overall habitat quality at CLOCA's Conservation Areas.

**407 Restoration Compensation:** CLOCA's watersheds and conservation areas will benefit from compensation requirements for habitat restoration and creation in response to construction of Highway 407. Opportunities for wetland restoration, stream and riparian enhancements, water quality improvements and compensation plantings within CLOCA's watershed were prioritized and shared with Ministry of Transportation (MTO) staff. CLOCA will continue dialogue with MTO to develop these opportunities for future implementation.

# NATURAL HERITAGE & MONITORING



Fawn at Cranberry West Tract

## Aquatic Monitoring

Long term monitoring focused on the Lynde Creek Watershed with deployment of seventy five temperature loggers, fishery surveys at more than fifty sites and collection of biological water quality information. Work on development of a smart phone app to be used by the public to record fish migration activities across our watersheds is anticipated to be in place for the spring 2015 migration and spawning season. CLOCA aquatic staff continue to expand the use of seine netting across the jurisdiction to capture fish species community information and abundance in previously unmonitored sections of creeks and Lake Ontario shoreline. In 2014, the statistical method (Aquatic Indicators of Biological Integrity (IBI)) used to assess aquatic system health was refined and tested. The Aquatic IBI provides a foundation for reporting, determining health and examining restoration opportunities for aquatic systems. This critical framework supports the evaluation and assessment of aquatic health and change over time. Additionally, the CLOCA Aquatic Assessment and Adjustment Report was prepared, critically assessing and evaluating the Aquatic Monitoring Program over the past 5 years. Changes to the monitoring program will be implemented in 2015 and the Monitoring Protocol Report has been updated to reflect this.

Continuing in 2014 was CLOCA's participation in the development and consultation of the Lake Ontario Northwest Waterfront: An Urban Recreational Fisheries Strategy. In partnership with Ministry of Natural Resources and Forestry, Toronto and Region Conservation, Credit Valley Conservation and Ganaraska Conservation Authorities, the focus of this fisheries plan is on improving urban recreational fishing opportunities through effective marketing, improving access and promoting fisheries restoration.



Electrofishing

## Terrestrial Monitoring

Terrestrial monitoring activities in 2014 included the maintenance and monitoring of established plots in the Bowmanville/Soper Creek Watershed. At many of these sites, significant change is not anticipated in a five year cycle, however, disturbances, pests, disease, land use and climate change are captured in monitoring results.

The 2014 results were compared to 2009 monitoring data collected in this same watershed and no significant changes have occurred.

An Assessment and Adjustment report for the terrestrial monitoring program was prepared to inform future annual monitoring work. The Ecological Land Classification (ELC) pilot project initiated in 2013 continued in 2014, focusing on lands within the Provincially Significant Maple Grove Wetland Complex. This project promotes best management practices, stewardship and education services to landowners as well as collecting information on vegetation communities from those same landowners to augment the CLOCA ELC database.

Work continued on the invasive species monitoring program with an emphasis on outreach to urban and rural landowners and plant nurseries.



Red Trillium

## Wildlife Monitoring

The bird and amphibian monitoring program focused on the Lynde Creek watershed in 2014. Owl surveys were conducted in the winter, with satisfactory results and roadside amphibian surveys were completed during the spring breeding season. Using the results of the roadside amphibian surveys and CLOCA's Ecological Land Classification (ELC) mapping, significant amphibian breeding locations in the watershed have now been mapped. CLOCA continues to update the Species at Risk habitat database and submitting annual reports to the Natural Heritage Information Centre (NHIC) network. A multi-year monitoring project, with funding support from the Ministry of Natural Resources and Forests (MNRF) Species at Risk Stewardship Fund, continued in 2014 at the Cranberry West Tract, monitoring Bobolink and Eastern Meadowlark populations and breeding activities. This project includes a rotational annual habitat management regime of mowing and seeding 4 specific fields within the Cranberry West Tract and the preparation of an annual report for MNRF.

MONITORING cont'd.....

# NATURAL HERITAGE & MONITORING



Costal Wetlands: Oshawa Second Marsh and McLaughlin Bay

## MONITORING from page 7

Muskrat Monitoring continued at 8 Coastal Wetlands during the winter of 2014 with funding support from the Ministry of Natural Resources and Forests Lake, Ontario Branch.

Work continued on documenting wildlife crossing barriers across the watershed with this effort to be reported on in the Wildlife Corridors Protection and Enhancement Action Plan in 2015. An extensive program to refine this work and receive input and educate partners was conducted by staff through formal and informal presentations at conferences and workshops.

## Species at Risk

Thanks to a generous grant from the Ontario Ministry of Natural Resources Forests Species at Risk Branch and their Species at Risk Stewardship Fund, Central Lake Ontario Conservation was the recipient of some much needed financial support for the Species at Risk Habitat Improvement Program at Lynde Shores Conservation Area. The project focused on 3 specific bird species, the Bobolink, Chimney Swift and Barn Swallow, all of which are listed as threatened. Monitoring, habitat management, a workshop for practitioners and an education program for senior

elementary grades was developed to support long term efforts at this conservation area for these species. The workshop, attended by academics, conservationists, and ornithologists, examined the existing habitat functionality of the abandoned silos at Lynde Shores for Chimney Swift and Barn Swallow and generated possible retrofit designs to support the creation of a nesting habitat project in the future.



Species at Risk Workshop

## Conservation Authorities Moraine Coalition

The Conservation Authorities Moraine Coalition (CAMC) developed the "Report Card on the Environmental Health of the Oak Ridges Moraine and Adjacent Greenbelt Lands", for release in February 2015. This science-based document reports on the environmental health of the ORM and adjacent Greenbelt lands with

a focus on Forest Conditions, Surface Water Quality, Groundwater Quality and Coldwater Fish and Stream Temperature as health indicators. Actions and a suite of tools are recommended to maintain, improve and restore the ecological health of these areas. CLOCA, as a member of the CAMC, provided data, analysis, technical information and on-going support in the preparation and development of the Report Card. To provide information on local conditions, CLOCA has prepared a watershed scale report for these 4 ecological indicators, now available on our website.

## Durham Region Coastal Wetland Monitoring Program

Monitoring of Durham Region's 18 coastal wetlands continued with data collected for birds, amphibians, fish, macro invertebrates, water quality, water levels, and submerged aquatic vegetation. An E-newsletter was published focusing on health conditions and trends and development of a restoration plan and objectives for Bowmanville Marsh. Compilation of more than ten years of data for Lynde Creek Marsh was completed and work developing a restoration plan and objectives was initiated and will continue in 2015. A partnership with the Bay of Quinte Conservation Authority continues, with 5 of their coastal marshes surveyed annually.

## Lynde Creek Manure Release

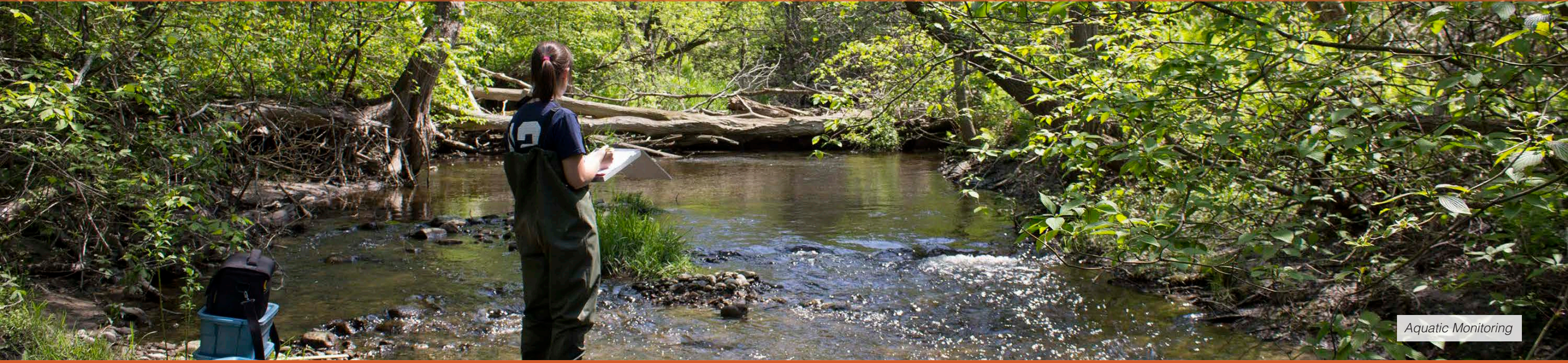
In July, a livestock manure spill occurred in the Heber Down branch of Lynde Creek. The Spills Action Centre was notified and the Ministry of the Environment and Climate Change (MOECC) investigated the occurrence. Lynde Creek supports a healthy and diverse fish community with 22 fish species including Brook Trout, Rainbow Trout and Mottled Sculpin. Known populations of the provincially endangered Redside Dace were reported in this stretch of creek and populations of the federally endangered Eastern Pond Mussel are found at Lynde Marsh.

LYNDE cont'd.....



Lynde Creek Fish Kill

# NATURAL HERITAGE & MONITORING



Aquatic Monitoring

## LYNDE from page 9

This manure spill had an immediate and significant impact on water quality, and aquatic resources in over 21 kilometres of stream. CLOCA staff estimated that 98% of the fish within this stream died as a result of the manure spill.

As landowners in the impacted areas, CLOCA posted a notice on our website and signs throughout our Conservation Areas advising visitors to stay out of the water. As resource managers, CLOCA conducted aquatic and water quality monitoring after the event and shared historical and current data for fishery resources in this branch to the MOECC. Ten days after the spill, water quality appeared to return to normal levels. CLOCA developed a restoration and recovery plan identifying ongoing monitoring, restoration opportunities and actions to document and support the recovery of the fishery in Lynde Creek. The MOECC team continues to investigate.

## Sharing Watershed Monitoring Experiences

It is not uncommon for the Authority's Natural Heritage and Watershed Planning staff to be asked to present our work and projects at various conferences and workshops and to share this information with community groups and organizations. Usually no more than 5 of these requests are made in any one

year, however there were fifteen formal presentations made in 2014. These opportunities showcase CLOCA's projects, programs, and expertise with a range of audiences. CLOCA staff along with Ducks Unlimited Canada and the City of Oshawa welcomed the Minister of Natural Resources and Forests, the Honourable Bill Mauro to Oshawa Second Marsh in October. His presence at one of the largest Provincially Significant Wetlands in the GTA reinforced the importance of our work as part of wetland protection efforts across Ontario.



Northern Pike

## Oshawa Creek Water Quality Study

Beginning in May, the monitoring consortium (the City of Oshawa, Durham College/University of Ontario Instituted of Technology (UOIT) and CLOCA) began the second year of monitoring in the Oshawa Creek, by deploying data loggers and conducting seasonal water quality samples. Based on the first year monitoring report prepared by UOIT and group discussion regarding water quality results, it was decided to add a new water quality site to provide an indication of "pristine" conditions. This site is intended to provide a baseline for water quality at a site that is not impacted by land use or human activity. The location of the new site is the headwater discharge point at Pine Valley Springs Ltd.

CLOCA's contribution to this study is the maintenance and deployment of data loggers at each location to measure water levels, water temperature and conductivity. Once a month, CLOCA takes water quality samples at each site and delivers them to the York-Durham Lab for analysis. Durham College/UOIT students conducted on-site water quality samples, measured light penetration and algae growth at storm sewer discharge points for each monitoring site. UOIT will be preparing a report in early 2015, which will add a second year of data and allow the consortium to make decisions on continued monitoring.



Bird Monitoring

# CONSERVATION AREAS & LAND HOLDINGS



Long Sault CA Plantation Harvest

## LAND MANAGEMENT

### Emerald Ash Borer

Emerald Ash Borer (EAB) was first detected in Durham Region in 2011. Beyond the environmental impact of ash tree loss, the dead and falling ash trees pose a risk to public safety and property. Ash trees often succumb to EAB within 4 years of becoming infested. It is expected that decimation of ash trees in Durham will peak in approximately 6 years. Once a tree has succumbed to EAB, it typically falls within one to five years.

CLOCA staff continue to remove hazard ash trees located next to trails and public use areas in Conservation Areas. Hazard ash trees have now been identified and sites prioritized for removal by evaluating potential risk to public safety or property damage.

## CONSERVATION AREAS

### Heber Down Conservation Area

In February 2014, staff reached an agreement for a proposed pit rehabilitation project in cooperation with The Ontario Aggregate Resources Corporation (TOARC) and the Management of Abandoned

Aggregate Properties Program. Work commenced on the Heber Down CA project, with the clearing of vegetation from an eroded gully on the Lynde Creek valley wall adjacent to Devil's Den pond. TOARC retained Canadian Woodlands Inc. to remove trees from the edges of the gully, and expose concrete and rebar rubble. TOARC will tender a contract early in 2015 for concrete and rebar removal, grading, and restoration. In addition to removing a public hazard, the completed project will provide access to the Devil's Den pond for future restoration and habitat enhancement projects.



Heber Down Pit Rehab

### Deloitte Impact Day

Staff at Deloitte continued lending a helping hand with some much needed improvements to trails and features within the Heber Down Conservation Area. They completed the environmental education trail loop at Green Heron Pond; a new trail alignment and trail closure; installed a new secondary sign and

formalized the trail to enhance a connection to the Town of Whitby Cullen Gardens property.

### Purple Woods Conservation Area

Land Management and Operations staff were instrumental in organizing the 8th Annual "Step into Nature" Conservation Areas Workshop held October 29 - 31, 2014 at the YMCA Geneva Park in Orillia. The workshop was well attended with over 150 staff from 30 different Conservation Authorities throughout the Province of Ontario. The first day of the workshop offered participants a stop at the Purple Woods Conservation Area and subsequent tour of Heritage Hall and our maple syrup production facility.

### Long Sault Conservation Area

A September CLOCA Board report recommended the acceptance of a tender bid by Laverne Heideman and Sons Ltd. for the harvesting of coniferous plantations in the northeast portion of the Long Sault Conservation Area. The harvesting occurred from September to November with over 2,000 cubic meters of timber removed from the plantation. This forestry work allows for the remaining pine and spruce trees to grow larger, and encourages natural regeneration of the forest as tree seedlings from nearby forest communities

establish in the understory. The Long Sault Conservation Area Management Plan recommends continuing the timber management of coniferous plantations with the goal of creating a mixed deciduous forest community.

### Lynde Shores Conservation Area

In October 2013, CLOCA received provincial funding for construction of the Waterfront Trail through the Lynde Shores Conservation Area. Staff completed the planning, consultation, design work and tendered the project for trail construction in early July 2014. With CLOCA Board approval, Hawkins Contracting Ltd. was retained for trail construction in late August with phase 1 completed in October. The trail base materials and drainage features were installed and fine grading of the trail surface and asphalt will be completed in the spring of 2015.

Authority staff received funding from the Ontario Community Environment Fund to assist with the removal of a deteriorated section of the Lynde Shores Boardwalk. In August and September 2014, staff removed, recycled and disposed of approximately 30 metres of boardwalk, consisting of pressure treated materials and used automotive tires.



# LAND ACQUISITION

## 1 Gill Tract

The Gill Tract is a 50.38 hectare parcel located in the Mackie Creek Subwatershed of the Soper Creek and includes approximately 1.5 km of the creek and associated valleylands. This acquisition represents the first property within the new Mount Hope Conservation Area lying adjacent to the Hamlet of Tyrone. The southerly part of this tract makes up a portion of the Mackie Creek Core Habitat Area and the valley is identified as a high sensitivity area possessing significant forest, wildlife and fishery resources. The mixed forest and valleyland wetlands offer excellent habitat for a variety of species including Rainbow and Brown Trout with Brook Trout present upstream. This property has important groundwater recharge and discharge functions and significant terrain features, including a thirty metre elevation change and bluffs along the valley. These are important to maintain creek baseflow. This steep and well-vegetated valley is an important north-south landscape corridor for wildlife movement between Tyrone-Upper Soper Core Habitat Area and the Mackie Creek and Iroquois Beach Core Habitat Area found at Stephen's Gulch.

## 2 Carruthers Tract

This 40.4 hectare property, located in part on the Oak Ridges Moraine and entirely within the Greenbelt Natural Heritage System, the Carruthers Tract lies within the Hampton Subwatershed of the Bowmanville/Soper Creek Watershed. To the east, west and north of these lands are the existing CLOCA Enniskillen Conservation Area landholdings. This is the last parcel of significant size south of Regional Road #3 and acquisition of this tract secures CLOCA's continuous land holdings along this road.

The west slope of the Enniskillen Valley runs through this property, resulting in a forty five metre elevation change between the east and west property limit throughout the extent of the parcel. These lands are identified in CLOCA's



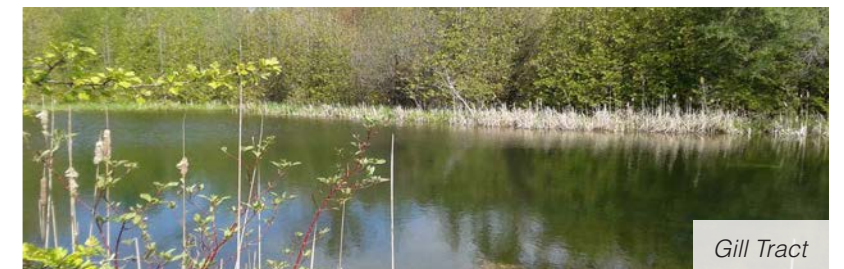
Gill Tract



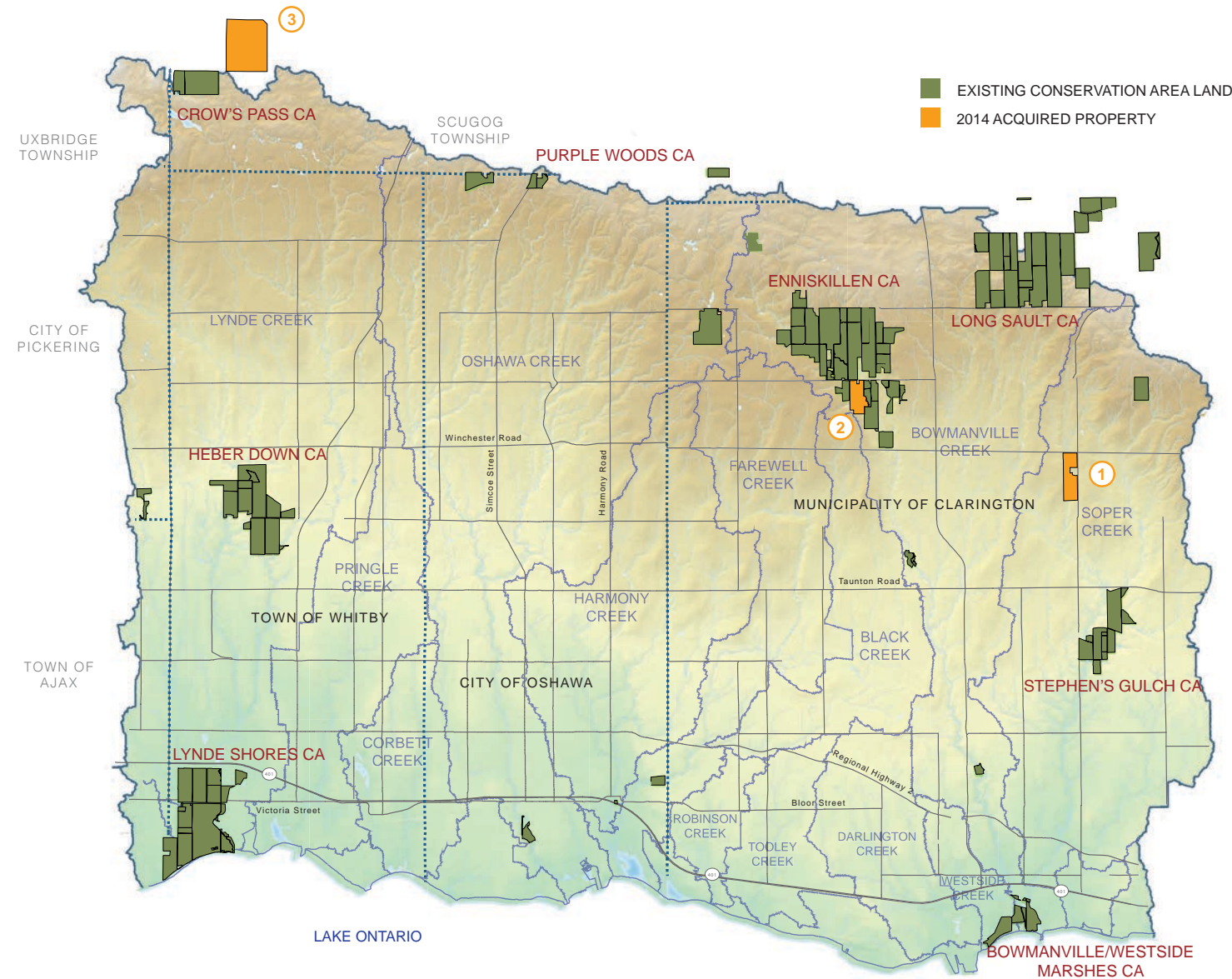
Gill Tract



Rogers Tract



Gill Tract



Natural Heritage System for the existing features present on the property and as providing valuable opportunities to improve overall watershed health. Much of this property is old pasture which is slowly regenerating to grassland habitat, but remains easily susceptible to erosion along the steep valley slopes. Some mixed, deciduous and coniferous forest blocks are found on this property with the north east sector identified as possessing medium-high sensitivity. This section of the property is part of the Enniskillen Valley Core Habitat Area, an important habitat area for many species, as it functions as a landscape corridor for wildlife movement.

CLOCA's ownership of this parcel will enable the grassland side slope to continue to succeed to a diverse and productive natural habitat, supporting many species, including endangered grassland dependent bird species. The 4 headwater tributaries that flow down this valley slope toward a main tributary of Bowmanville Creek, will be protected with re-established riparian vegetation to stabilize these headwater tributaries reducing erosion, sedimentation and improving stream temperature; all crucial elements necessary to maintain downstream sensitive fisheries habitat.

## 3 Rogers Tract

The Rogers Property is 177 hectares in size and is located almost adjacent to Crows Pass Conservation Area. This property, which is located on the Oak Ridges Moraine, includes 69 hectares of Provincially Significant Wetlands, 127.5 hectares of ANSI (Area of Scientific Interest), and includes managed forest, grasslands, and headwaters of the Nonquon River. The owner donated these lands to CLOCA with the expressed desire that they be protected in perpetuity and that the lands not be accessible to the public. CLOCA has committed to managing these lands in keeping with the donors wishes. The donor also provided a generous endowment of \$2 million for management of the lands.

# PLANNING & REGULATION



## Statistics 2014

In 2014, CLOCA provided formal planning advice, comments and/or clearances relating to protection of natural features, functions and systems and protection of people and property from natural hazards on 191 municipal policy documents or development applications as follows:

- 9 Official Plan Amendments
- 16 Zoning By-law Amendments
- 65 Site Plan Applications
- 70 Plans of Subdivision/condominiums
- 20 Land Divisions
- 11 Minor Variances

Advice and comments were also provided on 38 Special Studies (Environmental Assessments, Master Environmental Servicing Plans, and Secondary Plans and Good Forest Practices applications). Staff continue to attend over 100 pre-consultation meetings annually with our municipal partners.

Under the authority of Ontario Regulation 42/06, staff issued 252 permits for development activity within our Regulated Area. Over 95% of the permit applications received were reviewed and issued within the time frame guidelines of the Ontario Ministry of Natural Resources and Forestry. Staff commented on 68 solicitor inquiries. CLOCA continues to pursue outstanding

violations from previous years with 3 currently before the courts.

## Regulation and Plan Review Policy and Procedure Document

Authority staff carry out a continuous review of CLOCA's Policy and Procedural Document for Plan Review and Regulation. As a result of the ongoing review, a number of revisions were made to clarify the intent of certain policy directions related to development review.

## Review of Provincial Greenbelt and Oak Ridges Moraine Conservation Plan

Authority staff participated in two working groups for the purpose of providing input into the upcoming provincial review of the Greenbelt Plan. Staff participated in Greenbelt Plan working groups established by Conservation Ontario and the Region of Durham, both of which submitted comments to the province.

## Implementation of Changes to the Federal Fisheries Act

Arising from the amendments made to the Fisheries Act in 2013, the Department of Fisheries and Oceans (DFO) established a proponent driven self-assessment process to determine the extent

of impacts on fish and fish habitat. The self-assessment process involves the use of a qualified environmental professional (QP). In 2014, the Authority Board approved a recommendation providing that CLOCA's Aquatic Biologist staff could provide this QP service on a cost recovery basis.

## Hydro One Transformer Station Monitoring Cluster

Staff were involved in the review of the Hydro One Transformer Station development project in 2014. Staff participated in the review of technical reports, conducted in-house calculations using advanced tools, assisted and continued to provide support to municipal staff regarding technical and administrative matters. Staff are currently assisting with supporting documentation for additional assessment and ongoing long term monitoring at the site.

## A Guide for Best Management Practices Management of Excess Soil and Revised Large Fill Policy

In 2014, as a result the release of the Ministry of Environment and Climate Change (MOECC) document entitled Management of Excess Soil – A Guide for Best Management Practices, revisions were incorporated into CLOCA's Large Fill Policy. The revisions dealt with matters such as definition of Large Fill Sites, locational considerations, requirement for soil management plans, and site security measures.

## Rural and Agriculture Guide to Permits

In 2014, the Authority Board approved a Guideline Document for Rural and Agricultural Permits. The Guideline helps rural and agricultural land owners identify the requirements for obtaining permissions under Ontario Regulation 42/06 as administered by CLOCA.

## Hwy 407 East – Phase 1 and 2

Hwy 407 East continues to develop across the CLOCA watershed with a full year of construction of Phase 1 (Brock Road to Harmony Road including the West Link) in 2014. CLOCA meets regularly with provincial agencies and the 407 East Development Group through Regulatory Agency Group and Advisory Committee meetings. CLOCA plays an important role to ensure appropriate restoration opportunities to compensate for impacts to natural heritage features, for both Phase 1 and Phase 2 of the project.



Jack-In-The-Pulpit

# GROUNDWATER RESOURCES



Headwaters in the Oak Ridges Moraine

## Source Water Protection

In December 2014, CLOCA submitted its revised Source Water Protection (SWP) Plan and an updated Assessment report. Policies have been developed to address all significant municipal drinking water threats. The SPC has also prepared several strategic action policies to address future potential threats. CLOCA's ongoing activities are focused on the provision of support services to the SWP implementers (primarily the province and municipalities), database and technical tool maintenance and annual reporting. The technical studies/tools developed under the SWP initiative are regularly used to assess potential impacts to ground and surface water resources and serve to support the majority of CLOCA and lower tier municipal technical requirements.

The Source Water Protection initiative is fully funded by the Province and has provided \$2.6 million in provincial funding to CLOCA from 2005 to 2014.

## Hydrogeological Peer Review for Development Plans

Increasingly, development applications are required to submit hydrogeological studies to demonstrate 'no impact' to ground and surface water resources. On behalf of individual municipalities, CLOCA hydrogeologists provide technical comments on these

applications. Staff also provide review services for Large Fill Sites and Environmental Assessment (EA) studies. In 2014 Groundwater staff reviewed fifty consultant hydrogeological studies in support of development and or Environmental Assessments.

## Provincial Groundwater Monitoring Program

CLOCA continues to operate and maintain a provincial groundwater monitoring network with 16 monitoring wells collecting water level and water quality data. Over the past 14 years, CLOCA modified the network in response to technical studies completed under the Groundwater Resource Inventory Program (GRIP) and Source Water Protection (SWP) programs. In 2014, CLOCA added a newly rehabilitated well to the network in response to study findings and documented monitoring gaps. The hydrological network was also modified as a result of groundwater model findings and data gaps to collect additional low flow, baseflow and Precipitation Runoff Modeling System (PRMS) calibration data. The coupled surface water – groundwater model is used and maintained by CLOCA hydrogeologists along with the responsibilities associated with the maintenance of the monitoring network. The monitoring data and model results are analyzed to support SWP, watershed management planning and watershed report card reporting activities. The network revisions documentation, data and metadata (data

descriptors) are maintained within the Groundwater Resources department.

## Advancement of Scientific Assessment Tools and Products

Groundwater staff developed several advanced tools used in the assessment of potential ecological and hydrogeological impacts from development. These include two numerical and one geological model. Staff also maintain and continue to populate a shared database York Peel Durham Toronto (YPDT) and Conservation Authorities Moraine Coalition (CAMC). A Hydrogeological guideline for development plan applications was created by CLOCA staff in 2014 for use by CA's across the province. It will be reviewed and updated in 2015.

## SPECIAL PROJECTS

### Enbridge Line Nine

Staff continue to follow the line 9b reversal project and provide comments to the National Energy Board (NEB) and Enbridge. Staff also participate in a GTA municipal planning/legal group to monitor Enbridge's activities for compliance with NEB approval conditions particularly with respect to environmental matters. During 2014, CLOCA provided comments to the NEB regarding Enbridge's Intelligent Valve Placement Program in CLOCA's jurisdiction.

## Trans Canada Eastern Mainline Project

Planning, Engineering and Groundwater Resources staff continue to monitor activities related to the construction of a new Trans Canada natural gas pipeline. Staff have provided comments to influence the selected route ensuring it is not located in environmentally sensitive areas.

## Great Lakes Water Quality Agreement Annex 8: Groundwater (under the International Joint Commission - Canada U.S)

CLOCA Groundwater Resources staff represent the Conservation Authorities on the Annex 8 (Groundwater) sub-committee for the Great Lakes Water Quality Agreement. A key deliverable is a Groundwater Report outlining the impact of groundwater on Great Lakes water quality, to present science needs and identify gaps in scientific understanding. In 2014, a draft report was completed and consultation and a final report will be completed in 2015.



ID Tag on Rehabilitated Well - Heber Down CA



Significant Rain Event – Lynde Creek

## Flood Forecasting and Warning System

CLOCA monitors, on an ongoing basis, weather forecasts and watershed conditions at locations across the watershed. Water level and related information is recorded through an extensive network of stream gauges and snow course sites creating a sophisticated monitoring network. These measurements, weather forecasts and radar information on temperatures and rainfall predictions, along with historic data, are all taken into consideration when developing a flood forecast.

The winter of 2013/14 recorded higher than normal snowfall and lower than normal temperatures. A late December warm spell associated with the ice storm, condensed the snowpack and created a frozen layer. Early spring started with an above normal snowpack and a higher than normal water equivalent. Forecasts for warm temperatures and heavy rains had us in potential flooding conditions with rainfall and melting snow flowing across the frozen bottom layer. Fortunately, the heavy rainfall didn't accumulate and the snowpack melted slowly. The spring of 2014 was highlighted with average rainfall throughout our watershed for the months of April and June. July's rainfall was above average, causing creek baseflows to remain above normal. The monthly averages for the balance of the summer and fall, remained at or above normal averages and creek baseflows above normal. As a result, CLOCA did not issue any Low Water Condition messages in 2014.

In total 10 Flood Warning messages were issued in 2014; 5 Watershed Conditions Statements for "Water Safety" and 5 Watershed Conditions Statements for "Flood Outlook".

Throughout 2014, staff from the Engineering and IT/GIS departments worked on several projects related to the Flood Forecasting and Warning System.

## Water Monitoring

CLOCA's Water Monitoring Network (WMN), similar to the Flood Forecasting and Warning System, is a collection of stream gauges, rain gauges, air and water temperature probes, groundwater monitoring wells, snow measurement sites, surface water, and groundwater quality sites. The WMN collects valuable data to better understand and predict the impacts of land use activities on water quality and quantity, allowing informed decisions about the management and protection of water resources. The data is catalogued and analyzed to develop effective watershed wide management programs and policies like our Flood Forecasting and Warning System, Low Water Response and Source Water Protection programs.

Through Ministry of Natural Resources and Forestry initiated programs, CLOCA received two rain gauges and 3 used dataloggers to replace aging equipment and establish new monitoring sites.

In an attempt to fill rainfall monitoring gaps, CLOCA partnered with the City of Oshawa and Durham Region in establishing a new precipitation

monitoring site at the Taunton Reservoir property. With the parties sharing in the equipment purchase cost, it was an opportunity to test new satellite based data logging and communication technologies. We have installed the new FTS Axiom datalogger and a GOES transmitter. A tipping bucket rain gauge was also installed with a heater which will measure snow fall providing an annual precipitation record. The data will be fully accessible to the project partners.

To better monitor low water conditions in the Lynde Creek watershed (identified as a stressor in Source Water Protection studies), five monitoring locations were located within headwater streams and cross-sections were surveyed at each site to generate rating tables to convert water level data to discharge rates.

## FLOODPLAIN AND NATURAL HAZARDS

### Oshawa Creek Flood Plain Mapping

Flood plain maps are an important component of CLOCA's flood forecasting system and are essential for development review and regulation. Staff completed mapping for the Oshawa Creek Watershed within the municipalities of Whitby, Oshawa, and Clarington, and replaced multiple previous mapping studies completed on a municipal boundary basis. In 2014, a draft study with mapping was provided to municipal partners, and CLOCA staff met with and responded to comments from staff at the Region of Durham and the City of Oshawa. The study and mapping were peer reviewed by an engineering consultant. The final mapping product has been provided

to our municipal partners, and added to the CLOCA Natural Hazards Regulation mapping.

## Natural Hazard Mapping

Erosion hazards associated with streams and valley systems are one of the key components for CLOCA's Regulation of Development, Interference with Wetlands and Alteration to Shorelines and Watercourses. CLOCA began updating our natural hazard mapping using an automated process developed to assist with generating hazard limits associated with stream erosion processes. The automated process utilizes our Geographical Information System to calculate stream meander belts, and identify steep slopes associated with valleys.

The hazard mapping was completed for the Clarington portion of CLOCA's watershed in 2014, and the mapping has been shared with our municipal partner to assist with their land use planning. The hazard mapping will be incorporated into our Regulation mapping during the annual update in the spring of 2015.



Heber Down CA Stream Work



2014 Earth Day Tree Planting

## Private Land Tree and Shrub Program

This program, in its 9th year, has sold 80,000 native trees and shrubs to an estimated 200 landowners across our jurisdiction. Designed to encourage rural private land tree planting we provide affordable, native tree and shrub seedlings grown and sourced locally. In 2014 we coordinated the pickup of 950 native trees and shrubs by 8 landowners. This distribution provides us with a face to face opportunity to engage landowners and discuss local issues and concerns, continuing to build relationships with our neighbours, many who border our conservation lands.

## Trees for Rural Roads

Staff have been working with the Municipality of Clarington and Ganaraska Region Conservation Stewardship staff since 2012 to deliver the Trees for Rural Roads program. Clarington is taking steps toward the renewal of the majestic roadside trees that were planted more than 100 years ago. Through the program, the Municipality offers free trees to rural landowners willing to plant them along their roadsides properties. We have had a tremendous response to date with over 2,100 trees planted along the rural roads in Clarington.

## Community Tree Plantings

In 2014, Central Lake Ontario Conservation staff worked with TD Friends of the Environment Tree Days, to assist them with their tree planting activities in Durham Region. We hosted 3 fall plantings in our Conservation Areas and 1 planting event in partnership with Ontario Shores Centre for Mental Health Services in Whitby. We estimate that one hectare of forest was established in our jurisdiction through the 2014 TD Tree Days program.



Kate Lally TD Staff Planting at Ontario Shores

## Earth Day Event 2014

CLOCA's annual Earth Day Tree Planting Event was hosted at the Sanderson Tract, part of the Enniskillen Conservation Area with an estimated 75 volunteers assisting us with restoring .80 hectares with the planting of 2014 native trees and shrubs. The event was graciously sponsored by RBC Bank with their employees and families helping with the planting.

## Community Outreach

We hosted the 15th annual Jerry Ouellette Kids Fishing Day at Heber Down, attracting a wide audience of families and their kids to this free event. Participants are treated to a lunch, lots of hands on activities and of course can bring their own tackle or borrow ours to take their chances at the 700 or so trout that are stocked in the Devil's Den Pond.

## Farm Connections

The 9th annual Farm Connections event was hosted in Brooklin to give 1,200 grade 3 students across Durham Region a chance to be a farmer for the day. There are 8 learning activity centres which host livestock demonstrations and showcase the farm community's commitment to land and water stewardship. An estimated 1,000 people attended the public evening open

house with many students returning with their families to share their "farmer for a day" experience.



Farm Connections

# STEWARDSHIP, EDUCATION & COMMUNICATION



Purple Woods Maple Syrup Festival

## In Your Watershed

For more than 25 years, CLOCA has delivered curriculum based outdoor education programs offering hands-on experiential opportunities to students from kindergarten to grade 12. Our attendance for the 2013 and 2014 school year was an estimated 6,700. A very successful Family Day snowshoe, our first ever Summer Solstice Dinner and Fire Fly Hike and a Big Drum Social engaged more than 400 participants. A grant was received from TD Friends of the Environment to have volunteers construct and install 2 floating docks at the Enniskillen Conservation Area, and purchase a digital projector and screen for the education program.



Volunteers



Summer Solstice Dinner and Fire Fly Hike

## Purple Woods Maple Syrup Festival

Lots of firsts for 2014 which included online ticket purchases; iPad technology to track product and sales; taffy on ice and cedar tea for guests; an improved volunteer solicitation process and community groups managing Heritage Hall and Kitchen raising funds for their programs. Despite the weather which was extremely cold and uncooperative, our more than 9,000 visitors gave us nothing but positive feedback to the changes, enjoying the traditions of maple syrup, horse and wagon rides and experiencing the history of our province, literally in their backyard.

## Durham Children's Groundwater Festival

The 2014 Durham Children's Groundwater Festival was held at Camp Samac in 2014 celebrating our 17th anniversary with 4,266 grade four students attending. Since our first Festival in 1998, over 67,200 grade four students, 7,280 high school students and 7,765 teachers and parent volunteers have participated. The Region of Durham funded \$50,000 toward the 2014 Festival along with an additional twenty three organizations and businesses joining them to sponsor the Festival.

## Communications and Marketing

In 2014, we continue to sustain an online presence with our social media initiatives, website and Conservation Area smartphone app. We also updated our primary, secondary and regulatory signage for our Conservation Areas. Products like our Year In Review, development information brochures, updating our website and preparing reports and fact pages are all prepared in-house by CLOCA Communication staff. Corporately we attended more than twelve public environmentally themed events as we continue to link our organization to our community stakeholders.



Enniskillen Dock



Purple Woods CA Sign

# A RETIREMENT TRIBUTE TO J. R. POWELL, CLOCA CAO



Russ Powell, whose distinguished career has spanned more than five decades, has been an influential and critical figure in natural resources management in Ontario. He spent the majority of his career serving the people of Ontario through the Conservation Authorities program at both the field and provincial levels. Russ received a Bachelor of Science in Forestry from the University of Toronto in 1965. A varied career has included the forest industry in Alberta and northern Ontario, the land development industry in southwestern Ontario, CAO of five conservation authorities and the first Executive Director of the Association of Conservation Authorities, now Conservation Ontario. Since joining the Central Lake Ontario Conservation Authority in 1995, Russ has provided leadership and innovation in pioneering an effective and committed conservation authority in Durham Region to advance environmental protection and preservation, education and the environmental ethic of our citizens. The following is a list of projects, programs and processes established under Russ's guidance and direction ensuring that Central Lake Ontario Conservation remained progressive and relevant after Provincial financial support was withdrawn in 1995. The majority of these initiatives are collaborative to ensure resources are shared and long term and lasting impacts are made on the environment.

Under Russ's vision, staff across departments have worked on comprehensive watershed management plans, a provincial wide watershed health report card and municipal, provincial and federal Environmental Assessments. He streamlined the CLOCA plan review process to the envy of other Conservation Authorities, allowing our staff to respond to development approvals in a timely and cost effective manner. CLOCA played a lead role in putting Ontario Regulation 42-06 into place for Conservation Authorities across the Province. A CLOCA large fill policy was developed in 2012, one of the first in the GTA. This has been adopted by other Conservation Authorities and we continue to evolve this product in consultation with stakeholders across the Region.

Our Engineering Department and Global Information Systems (GIS) departments continue to lead the way with state of the art database management, analysis and modeling tools to fully understand the complexities of flooding. Russ has provided leadership and directed resources to creating a more predictive flood warning system that will respond and adapt to the impacts of climate change.

Since 1995, CLOCA has collected data on a variety of biotic and abiotic indicators both in aquatic and terrestrial systems, providing a foundation for determining trends for ecosystem health within our conservation areas and land holdings, creek and wetland systems. Russ was responsible for assembling a comprehensive partnership between Environment Canada and multiple Conservation Authorities in Durham Region to monitor the biological health of 15 Provincially Significant Coastal Wetlands across the North Shore of Lake Ontario. This undertaking, now including 3 wetlands of the Quinte Conservation Authority, has provided significant insights into restoration opportunities and protection strategies for these vulnerable habitats throughout both the Canadian and American side of the Great Lakes.

CLOCA continues to excel in its efforts to protect vulnerable groundwater resources through a multi-regional effort championed by Russ since 2001. With the support of regional governments in Peel, York, Durham and Toronto, he assembled an exceptional team of hydrogeologists, who have

received international recognition for their work on the York Peel Durham Toronto Groundwater Study.

In 1998, Russ initiated an aggressive land acquisition project across the jurisdiction, bringing together multi-level governments, foundations and non-profit organizations to leverage the financial resources for their purchase. To date he has orchestrated the purchase of 1,681 hectares of environmentally sensitive lands to place in long term public ownership and grow with the community they support.

One of his most significant undertakings has been the Enniskillen Valley Land Acquisition Project, initiated in 2004 to protect over 650 hectares of Environmentally Sensitive Area, the Oak Ridges Moraine, significant groundwater resources, open meadows, mature forests and wetland features in the headwaters of Bowmanville Creek. Russ wisely determined in the beginning to keep the price per hectare consistent for each offer and provided every landowner with the same options, knowing full well this tight knit community would discuss their dealings at church on Sunday. In 2012, Russ Powell was the recipient of the Oak Ridges Moraine Foundation's Proactive Approaches Award for the innovation and success of his Enniskillen Valley Land Acquisition Project and years of patience and strategic thinking, securing over 1,075 hectares of land on the Oak Ridges Moraine in Durham Region. In 2013 Russ was one of five individuals who received the Latornell Leadership Award. These individuals were recognized by their peers for helping to celebrate and inspire innovation in the conservation field and have made a difference in their field of expertise. Recipients have encouraged and motivated others to take similar leadership roles towards conservation work.

Russ has been responsible for realigning the role and function of CLOCA's lands for public use placing emphasis on environment first, enlisting a public consultation process and management plans with long term goals and objectives for implementation and ongoing evaluation. Our Conservation Areas now offer more than 45 kilometres of trails with minimum impact to the resources which our visitors come to see. Our visitation now exceeds more than 80,000 visitors a year.

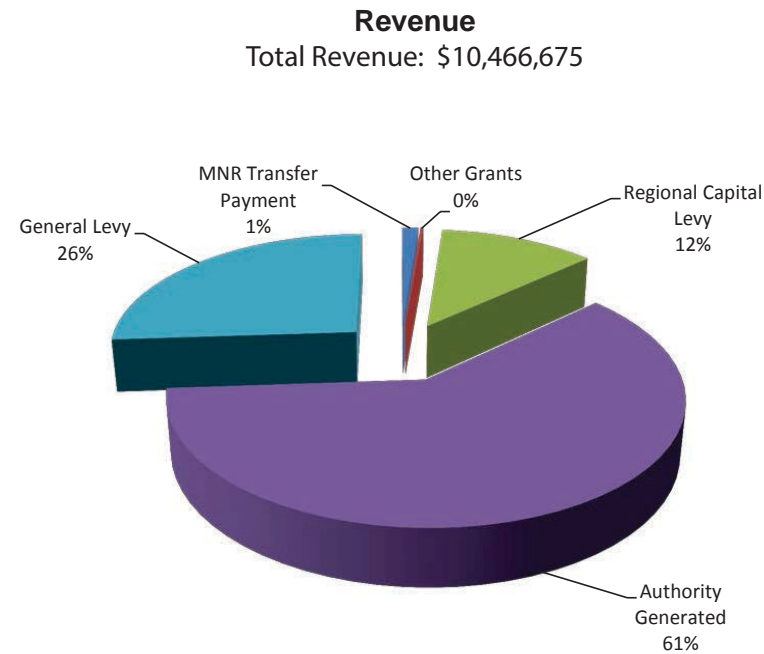
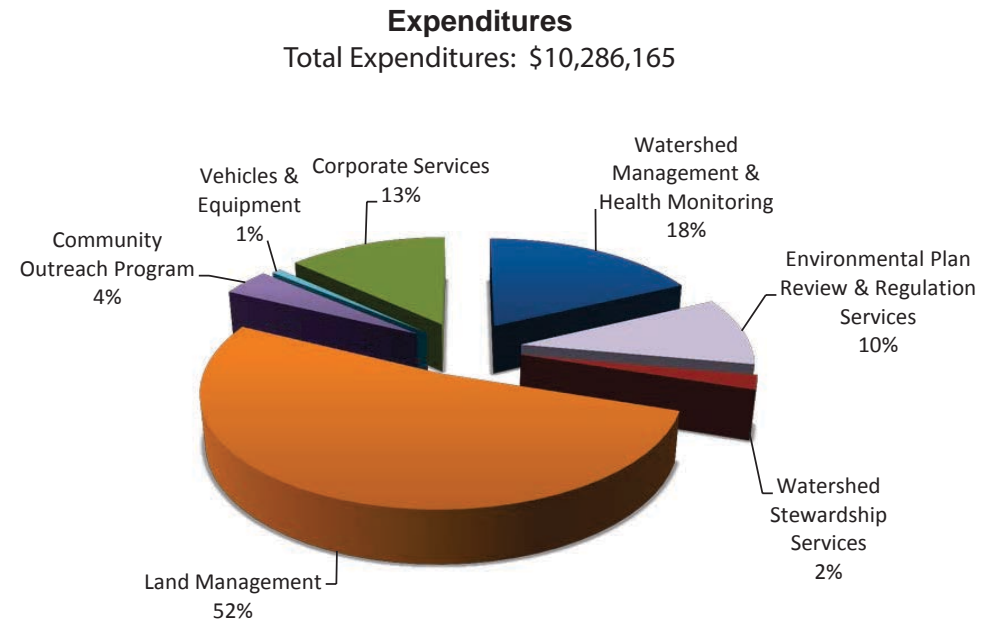
The Durham Children's Groundwater Festival is a model for success and to date has reached 78,200 grade 4 students across Durham Region since 1998. The intent of this program is twofold, having high school students lead the more than 40 hands-on activities, gives them a learning and a teaching opportunity from which impressionable 9 year olds become better water stewards. The Festival offers teachers resources to take back to the classroom, engages community sponsors to maintain an affordable cost to students and helps students and their parents put a value on clean water and its continued stewardship.

While Russ focused on the internal workings of our organization, it has not been without a view to our presence in the community. He has ensured that cultural and heritage traditions are preserved and promoted to the broader community through the recent redevelopment of the Purple Woods Conservation Area, Heritage Hall, a fully accessible trail system and a state of the art maple syrup production facility on the Oak Ridges Moraine. The annual Purple Woods Maple Syrup Festival, a multi-stakeholder regional event completed its 39th year in 2014. It is now considered a family tradition to for Durham Region residents and visitors to experience and celebrate the history of maple syrup, our connection to the land and what it means to steward the gifts of nature literally in our backyard.

Russ was one of the individuals personally recruited by Art Latornell to perpetuate Art's legacy by mentoring young conservationists, through programs such as the Junior Conservationist Program, and challenging them to be bold, entrepreneurial and independent, but with a strong sense of public service. His influence has been province wide, and his legacy will endure, both in terms of the wealth of natural heritage lands he secured and the wealth of people—conservationists, citizens, politicians—that he has mentored and influenced.

Russ, we wish you and your family good health and enjoyment of the journey to come. Thank you from conservationists across the province for giving all of us a great legacy and foundation for our work, today and tomorrow. You will be missed.

## 2014 FINANCIAL SUMMARY



Corporate Services is an important part of the day to day operations of Central Lake Ontario Conservation (CLOCA). Corporate Services includes all aspects of administration including Full Authority Board meeting agendas and minutes, accounting, IT support, general inquiries from the public and reception.



### Solar Application at CLOCA Office Site

CLOCA's venture into solar electricity generation under the Province's Micro Feed – In Tariff Program is now in its fourth year of operation.

In 2014, CLOCA generated a net revenue of \$6,782.92 (2013 - \$6,936.85) to be replenished into the reserve for working capital. In 2013 a small electrical fire caused by a voltage overload into the inverter caused unexpected costs to be incurred as one of the inverters had to be replaced. In 2014, Vickery Electric in conjunction with Oshawa PUC continued to test the system for safety and as a result CLOCA was recommended to install a third inverter. As such, CLOCA incurred additional costs in 2014 to add the third inverter. We are now expecting the payback period to be July 2020.

### NOTES

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