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Read it on the web at <https://arcg.is/0ifmXT>.





Quinte Conservation is a community based environmental protection agency located in eastern Ontario. As one of Ontario's 36 conservation authorities, Quinte Conservation's goals include providing environmental expertise and leadership to deliver programs that ensure the coexistence of the communities, environments, and economies under its jurisdiction.



Quinte Conservation's mission is to create a healthy, sustainable ecosystem where people and nature live in harmony. Quinte Conservation evaluates its success based on its commitment to supporting local initiatives, promoting ecological

justice on a watershed jurisdiction, and building lasting partnerships in resource management. This annual report will detail how, over the course of 2019, the Authority has upheld these values advocated by the organization's mission statement.

A message from the CAO and Board Chair

"What happens upstream affects the downstream."

This fundamental motto adopted by conservation authorities is valid to this day and can be applied to the current political environment.

Conservation authorities across Ontario are facing many challenges, but we continue to do our job of managing our watersheds in a time of increasing climate variability. We have been trying our best to work with a provincial government that has, without consultation, reduced their share of our funding by 50%. Support from our advocacy agency, Conservation Ontario, has led to open discussions and consultations with the Ministry of Environment, Conservation and Parks (MECP), Provincial leaders, municipalities, and interest groups. This consultation process is an opportunity for the 36 conservation authorities in Ontario to showcase important and necessary conservation programs as well as assist with the development and restructuring of the Conservation Authorities Act - amendments and associated regulations.

The work that Quinte Conservation provides, greatly benefits our residents, ensures responsible development, and protects the environment. We are hopeful that the consultation process taking place will result in improvements and efficiencies that will sustain the Authority, and validate the watershed approach to monitoring, planning, and management.

Our dedicated staff at Quinte Conservation work tirelessly to deliver beneficial programs and services to residents, municipalities, and partner organizations throughout the entire watershed. Our Board Members, who represent the best interests of the Watershed's 18 municipalities, continue to show their support for staff and the organization. As well, several of the watershed's municipalities maintain their support through the passing of council resolutions.

The watershed model approach that conservation authorities were based on is the only way to deliver efficient and effective programs and services. As we look into 2020 we will continue to focus on our core mandate to ensure the conservation, restoration, development and management of Ontario's natural resources.



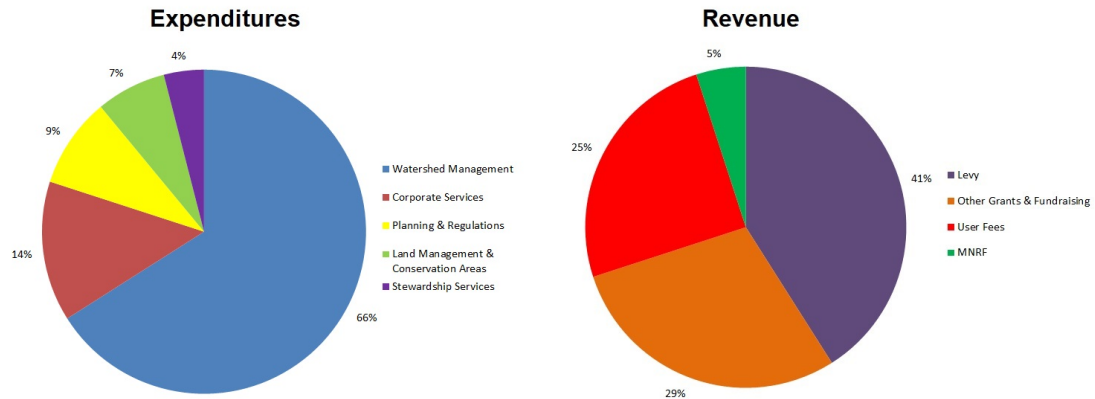
Brad McNevin, CAO



John Wise, Chair

Financial Summary

2019 Budget - \$4,056,647



Planning & Regulations



The Planning and Regulations Department at Quinte Conservation continues to play an integral role in the community by adhering to our mandate of protecting people and property from flooding and other natural hazards. Our permitting and plan review process also helps to ensure that we are helping conserve our natural resources for economic, social and environmental benefits.

The ability for landowners to access clear and reliable information is part of an initiative that Quinte Conservation is undergoing to ensure a consistent and transparent permitting and plan review process. To that end several resources have been developed this past year to make the review process more streamlined. These include:

- An updated Watershed Regulations Policy Manual.
- An updated permit application form which includes a checklist to ensure a complete application is submitted.
- An online mapping viewer that gives landowners the opportunity to search for their property and see if it falls within a regulated area.
- Planning Memorandum's of Understanding (MOU) with our member municipalities.



Quinte Conservation adheres to the *Ontario Regulation 319/09. - Development, Interference with Wetlands and Alterations to Shorelines and Watercourses* made under the Conservation Authorities Act. This regulation prevents or restricts development and site alterations near wetlands, shorelines and waterways to protect landowners from flooding, erosion and other hazards.

A permit is required any time that development (construction/site grading/filling/excavation) is proposed adjacent to water or hazardous lands. Examples of this include:

- Development adjacent to a slope, escarpment or on unstable soils or bedrock such as karst.
- New construction or reconstruction of any kind, or placing a building or structure of any kind, or the change of use of a structure.
- Site grading, whether importing fill or removing fill.
- New infrastructure and infrastructure maintenance.

Planning & Regulations Cont'd.

In 2019, staff issued a total of 316 permits and attended 479 site visits at various locations throughout the watershed. High water levels in 2019 were a primary concern for residents and although this led to many residents requesting site visits, it also resulted in landowners postponing their applications or development until water levels recede.



VIDEO: Quinte Conservation Planning & Regulations

Video: www.youtube.com/watch?v=7HEuxIUSIH0

Our Plan Review Services direct development to areas that are not hazardous, maintain natural features and ecological functions, and protect water quality and quantity. Staff members provide written comments to municipalities on applications made under the Planning Act. Our comments are guided by provincial government policies as well as by Quinte Conservation's Planning Act Policies and Procedures Manual (adopted by the Executive Board in 2006).

Planning staff also reviewed 313 files including plans of subdivision and condominium, site plan control applications, official plan and zoning by-law amendments, severances, and minor variances.



479

site visits



316

permits issued



313

planning files
reviewed

Drought Management

Drought in the Quinte Region



While many Quinte Region residents living along the shoreline of Lake Ontario and the Bay of Quinte experienced above average water levels in the summer of 2019, the remainder of the Quinte Region was in the midst of a moderate drought. The coincidental timing of such events has many wondering about the impacts of climate change and what the new normal will be.



Over the past decade, the Quinte Region has experienced its fair share of extreme weather events, ranging from wind and ice storms to flooding and drought. One of the worst droughts to impact the Region occurred in 2016. During this time, municipal and residential wells, which provide water supply to approximately 50% of the people living in the Quinte Conservation watershed, experienced historically low levels.

- Municipalities where residents rely 100% on private wells had difficulty identifying alternative sources of water for their residents.
- Farmers struggled to find alternative supplies to sustain crops and livestock.
- Fire management water sources became compromised.
- Low levels in rivers, inland lakes, and streams resulted in damaged fish habitat.

Local residents, Emergency Management Response Teams, and various municipal departments turned to Quinte Conservation for expert advice to help deal with the drought and minimize the environmental, social, and economic impacts.

Drought Management Project

To better prepare for future droughts, Quinte Conservation has committed to help local residents and municipalities adapt to a changing climate. In 2019 funding was secured from the [Federation of Canadian Municipalities \(link: https://fcm.ca/en\)](https://fcm.ca/en) which has allowed us to start the process. This project is to extend over a 2 year period, with the biggest item being the development of a Drought Management Plan for the Quinte Region. Such a plan will identify the measures to be taken in an effort to prepare for drought and actions to be taken during a drought to help maintain a level of water supply to residents of the watershed; both human and animal. Municipalities will be more informed of watershed conditions and be better prepared to respond to droughts with developed action and communications plans.

Other environmental benefits of the project include the review of Quinte Conservation's dam operations in order to best ensure environmental protection of critical fish habitat. Additional flow and level monitoring stations will be installed at key locations to enhance forecasting and protection of water resources throughout the watershed.

To help guide the development of the drought management plan, a steering committee has been formed. The committee consists of a comprehensive group with representation by municipal staff members, a municipal councillor, members from the Ontario Federation of Agriculture, First Nations, local Friends of Groups, the Ministries of Agriculture, Food and Rural Affairs, Environment, Conservation and Parks, Natural Resources and Forestry.

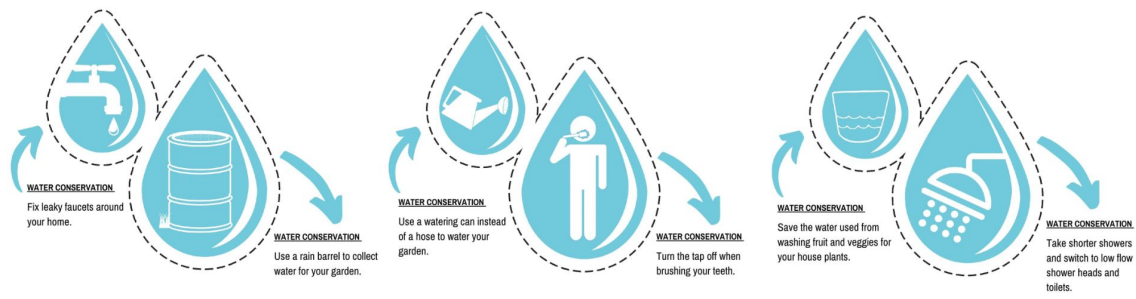
Some of the project activities to date have included a review of future climate predictions and the potential impact on the Quinte Region's water resource. Lake level gauges on 4 large lakes in the upper part of the watershed and the development of the drought management plan has been initiated.

Video:

Coming up in 2020 for the Drought Management Plan

During 2020, work will include public consultation on the content of a drought management plan, development of a drought management plan template for implementation by local municipalities, continued enhancement of the Quinte Conservation water monitoring network, and improvements to the Quinte Conservation website for communicating near real time water level data.

If you are concerned about the future security of your water supply have experiences to share please do not hesitate to reach out to us at Quinte Conservation to learn more about this project or to share your ideas. Watch the Quinte Conservation website for notices about public consultation and when real time water level data is available.



Water Resources

Spring Freshet



At the beginning of March, snow water equivalent ranged from 60 – 100 per cent of normal south of Highway 7 and to the north was 100 – 300 per cent of normal. Over the course of March the snow in the southern portions of the watershed began to melt slowly with above freezing daytime temperatures and below freezing temperatures overnight. However, by the end of March, the far north regions of the watershed had approximately twice the amount of snow-water equivalent compared to normal for that time of year. The snow-covered land made up a very small portion of the watershed, so the impacts of the northern snowmelt did not have enough volume of water to cause flooding.

A large rainfall event at the end of March saw the Moira River approach normal spring flows and then decline. An early April rain once again caused flows to rise to normal spring levels while filling up wetlands, reservoirs, and saturating the ground. There were multiple rainfall events in the latter part of April which caused water levels to rise further.

The Skootamatta River in Actinolite peaked at the 1 in 5 year storm. The Moira River in Tweed peaked at the 1 in 10 year storm. The Moira River in Foxboro approached the 1 in 5 year flood.

Bay of Quinte & Lake Ontario High Water



Lake Ontario water levels have been above average since 2017. Lake Ontario outflows from the Moses-Saunders Dam are regulated by the International Joint Commission's Plan 2014. For much of the winter and early spring, Lake Ontario outflows were significantly above average in efforts to try and reduce water levels to normal conditions. By mid-March Lake Ontario water levels were comparable to those experienced in 2018, which was not a flood event.

Lake Ontario water levels are influenced by uncontrolled inflow from Lake Erie, precipitation, local runoff directly into Lake Ontario, and allowable Lake Ontario outflows.

Lake Erie monthly average water levels reached record highs for 5 months in 2019 and were significantly above average throughout 2019. Flows from Lake Erie, over Niagara Falls are not controlled.



During the spring of 2019 the Ottawa River experienced record-setting flooding. In order to mitigate the downstream flooding, Lake Ontario outflows were reduced during periods of high St. Lawrence River flows.

Lake Ontario and the Bay of Quinte experienced record high water levels in 2019. The peak daily water level on Lake Ontario reached 75.92 metres between the dates of June 6, 2019 to June 15, 2019. Water levels were 85 centimetres above average over the month of June.

High winds and waves caused additional flooding, wave uprush, damage, and erosion to shoreline properties.

Staff issued flood messages and forecasts to municipalities which included the affected areas, water level resources, and key messages to the public. Throughout the high water event, Quinte Conservation participated in many meetings to brief municipal staff on conditions and water level forecasts. In addition, Quinte Conservation hosted a Shoreline Regulation and Water Levels Open House in July so that residents could meet with staff in order to gain concise and comprehensive knowledge about flood information, as well as current permit and regulations procedures

Water Resources Cont'd.



VIDEO: Quinte Conservation Flood Forecasting

Video: www.youtube.com/watch?v=JUaTcYaW5sU

Table 1: Peak River Flows

Location	2019 Peak	2014 Peak	2017 Peak	Return Period
Foxboro	242	316	282	2 year = 209
	April 24	April 17	May 9	5 year = 265
				10 year = 295
				25 year = 325
				50 year = 343
Tweed	215	284	218	2 year = 152
	April 22	April 16	May 7	5 year = 192
				10 year = 214
				25 year = 235
				50 year = 248
Deloro	47.3	54.7	47.2	2 year = 258
	April 22	April 15	May 7	
Skootamatta	91.9	105	90.2	2 year = 74
	April 22	April 15	May 7	5 year = 92
				10 year = 103
				25 year = 113
				50 year = 119
Shannonville	79.7	105	99.2	100 year = 124
	April 26	April 8	May 7	10 year = 112
				25 year = 129
				50 year = 143
				100 year = 156
Tamworth	44.1	60.7	38.4	10 year = 86
	April 27	April 18	May 11	25 year = 97
				50 year = 108
				100 year = 116
Camden East	48.3	79.7	58.9	
	April 21	April 15	May 9	

A 1 in 100 year flood has a 1% probability of occurring each year, or a 22.2% chance of occurring over the course of a 25 year mortgage.

Table 2: Peak Lake Levels

Location	2019 Peak	2014 Peak	100 year
Stoco	141.29	141.685	141.5
	April 23	April 17	
Moir	155.61	156.03	156.2
	April 23	April 16	
Beaver	166.325	~166.48	166.36
	April 27	April 18	
Horseshoe	192.01	192.41	
	April 23	April 17	
Third Depot	167.3	167.61	
	April 16	April 15	

Stoco Lake on the Moira River, Beaver Lake on the Salmon River, and Roblin Lake in Prince Edward County approached their 1 in 100 year flood levels.

Water Control Structures



Quinte Conservation staff operates and maintains over 40 unique dams, the purpose of each varies by structure and ranges from flood control, low flow augmentation, seasonal recreation, and water supply.

Throughout 2019, several projects were completed at some of the water control structures to help improve dam operator and public safety. Four of the structures had safety upgrades including:

- Access improvements
- Catwalk upgrades
- Deck replacement
- Safety/debris boom installation

James Lazier Dam

The catwalk at James Lazier Dam was replaced with a more robust structure that included appropriate railings/guardrails for working at heights. A tender was sent out for this project; however, all quotes significantly exceeded the budget of \$15,500. Fortunately, Quinte Conservation was able to secure a local contractor to complete the work within budget and for \$10,000.



James Lazier Dam catwalk replacement

Lingham Lake Dam

Four trail crossings were installed to assist with access to the site during the high water season. This will help Quinte Conservation better operate the dam during the spring freshet. In addition, safety booms have been purchased for this structure and will be installed when water levels permit. Quinte Conservation was able to complete this work internally on budget.



Newly constructed trail crossing at Lingham Lake Dam

Demorestville Dam

The deck at Demorestville Dam has been replaced and will improve safety for our dam operators. The previous timber deck was a slip/trip hazard for staff. To help reduce the cost of this project, the same contractor was used for the James Lazier Dam as well.

Second Depot Lake Dam

The safety booms located at Second Depot Lake Dam were replaced with new booms and debris panels. Safety booms at this location are critical to ensure the public is aware of the danger zone associated with the dam (especially near the campground facilities). In addition, the debris panels will assist the dam operators by reducing the amount of debris that needs to be cleaned off the trash rack system.



New booms at Second Depot Lake Dam



VIDEO: Quinte Conservation Dam Operations & Maintenance

Video: www.youtube.com/watch?v=3j8HXu_3fKc

Water Monitoring

Benthos

The [Ontario Benthos Biomonitoring Network](https://data.ontario.ca/dataset/ontario-benthos-biomonitoring-network) (link: <https://data.ontario.ca/dataset/ontario-benthos-biomonitoring-network>) (link: <https://desc.ca/programs/obbn>) (OBBN) is an environmental tool designed to use benthic (bottom-dwelling) organisms as indicators of stream health. These bottom-dwellers can be seen with the naked eye (macro) and are without backbones (invertebrates). Benthic macroinvertebrates are sensitive to environmental impacts and that is why their community structures are significant for determining the ecological health of aquatic ecosystems. Benthic invertebrates were sampled at 38 stream sites as part of the OBBN.

Surface Water

170 surface water quality samples were collected from 26 monitoring sites from April to October for the [Provincial Water Quality Monitoring Network](https://www.ontario.ca/environment-and-energy/map-provincial-stream-water-quality-monitoring-network) (link: <https://www.ontario.ca/environment-and-energy/map-provincial-stream-water-quality-monitoring-network>) (PWQMN). The samples were analyzed for various general chemistry parameters such as metals, biochemical oxygen demand, mercury, suspended solids, dissolved and total nutrients, turbidity, and many others.

Groundwater

Water level data collection and ongoing maintenance was performed at 29 [Provincial Groundwater Monitoring Network](https://www.ontario.ca/environment-and-energy/map-provincial-groundwater-monitoring-network) (link: <https://www.ontario.ca/environment-and-energy/map-provincial-groundwater-monitoring-network>) (PGMN) sites. Water quality sampling was also conducted at 16 sites, while baseflow measurements were completed at 173 sites.

Snow

Snow depth information is collected from 15 sites routinely throughout the winter months to aid in precipitation estimations and flood forecasting. In 2019, staff performed 180 snow depth surveys throughout the watershed.



38

stream sites which
sampled benthic
invertebrates



170

surface water quality
samples collected



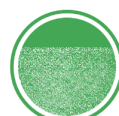
29

Provincial Groundwater
Monitoring Network sites



173

baseflow
measurement
sites



180

snow depth surveys
performed



15

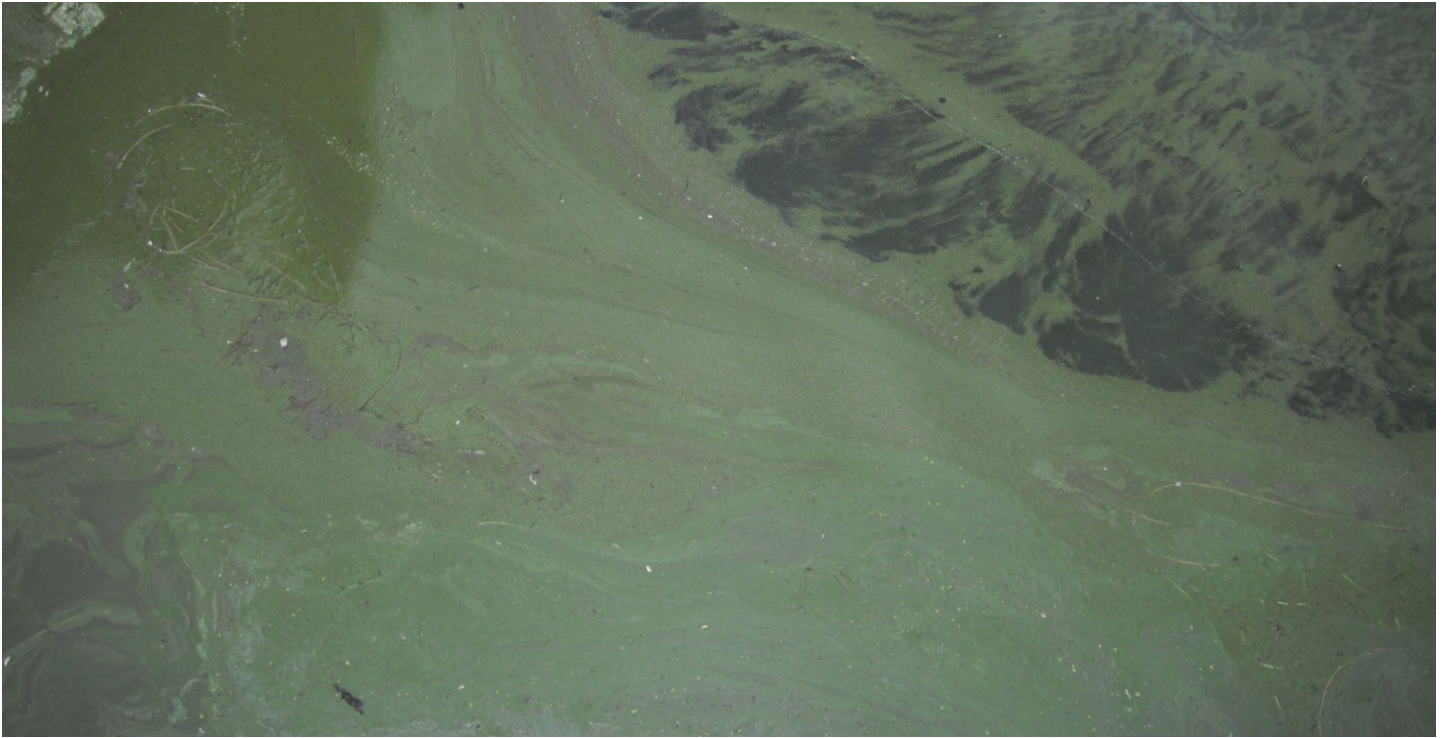
snow depth sites
throughout watershed

Bay of Quinte Blue-Green Algae Watch



Quinte Conservation has been working with the [Bay of Quinte Remedial Action Plan](https://www.bqrap.ca/) (link: <https://www.bqrap.ca/>) (BQRAP), the federal government, provincial government, local agencies, and municipalities in collecting water quality data from the Bay of Quinte to learn more about when, where and why blue-green algae (cyanobacteria) blooms occur. Water quality samples are collected by staff and sent to a laboratory to be tested for nutrients (i.e. phosphorus, ammonia, nitrate and total Kjeldahl nitrogen) and internally analyzed for microcystins. General water quality parameters, such as temperature, pH, conductivity, and dissolved oxygen are also recorded. Water samples are collected every other week from nine offshore sites in the Bay of Quinte.

The desired outcome of the program is that the data will contribute to improvement of water quality in the Bay of Quinte by enabling agencies to predict when harmful algae blooms will occur, and to help develop a proactive harmful algae blooms response and control program. The Bay of Quinte long-term monitoring program supported the goals of the Bay of Quinte Remedial Action Plan and is contributing to the process of delisting of the Bay of Quinte as a Great Lakes Area of Concern. Continued monitoring for 2020 is pending renewal.



What are blue-green algae?

Blue-green algae are also called cyanobacteria. They have some characteristics of algae and some of bacteria as they are considered photosynthesizing bacteria. Blue-green algae blooms typically look like pea soup or spilled paint with a bluish or greenish colour. In the right conditions, blue-green populations can rapidly grow into blooms.

Big Island Wetland Restoration



Mainland Prince Edward County and Big Island are connected by a causeway constructed many decades ago. As a result of changes in water flow through the channel upstream of the causeway, aquatic habitats were overwhelmed by growth of a dense cattail stands that pushed out other native vegetation and filled in connecting channels, which reduced access for fish and supported low species diversity.

With the vision of creating multiple ponds and interconnected channels, with diverse habitats for fish and other wildlife, Ontario Power Generation ([link: https://www.opg.com/?gclid=EAlalQobChMlvNCGg4uO6AIVTdbACh3brAckEAAAYASAAEgL2sfD_BwE](https://www.opg.com/?gclid=EAlalQobChMlvNCGg4uO6AIVTdbACh3brAckEAAAYASAAEgL2sfD_BwE)) (OPG) and Quinte Conservation embarked on the restoration of the Big Island Wetland in 2012. Over the past several years, OPG has provided funding to Quinte Conservation to help design, oversee construction of, and monitor the effectiveness of the Big Island area.

In 2018, Quinte Conservation staff at the direction of OPG, took a lead role in implementing a multi-year study of the Big Island Wetland. The study's objective is to assess changes to the wetland since creation and benefits of the restoration measures in improving fish habitat and productivity, water quality, and biodiversity.



The monitoring that occurred in 2019 to assess submerged aquatic plant and fish communities included the following:

- The first submerged aquatic plant surveys were performed in 2018 in order to create aquatic vegetation zones (open water, emergent, floating and submerged). In 2019, the aquatic vegetation zones were surveyed and compared to previous results to determine if they remained the same. There was some variation due to high water levels on Lake Ontario, including the Bay of Quinte.
- Fish communities were assessed using boat electrofishing and larval fish tow methods with the intention to monitor multiple life stages of fish. A total of 18 different fish species were recorded, with Yellow Perch being the most common. A species at risk, the Bridle Shiner (listed as endangered in 2008), was captured in both 2018 and 2019.
- A new "Gear Efficiency" study was started in collaboration with OPG, Ministry of Natural Resources and Forestry and University of Toronto to determine the capture efficiency (catch-ability) for boat electrofishing and larval fish tows. The field work for the study was extensive and involved creating a fish enclosure to perform routine sampling. The field work and data collection was successful in that the data can be applied to fish production estimates and can be used for future monitoring programs for both Quinte Conservation and other organizations.

Bay of Quinte Coastal Wetland Monitoring Program

Coastal wetlands provide important habitat for fish, wetland dependent birds, amphibians, and other wildlife species. Monitoring these systems provides results in valuable data collection usage for rehabilitation, management, conservation, and protection measures.



Coastal wetland monitoring

The Bay of Quinte Coastal Wetland Monitoring Program was designed to help with some Beneficial Use Impairments for the Bay of Quinte Remedial Action Plan (BQRAP) by monitoring amphibians, birds, benthic invertebrates, water quality, aquatic plants, fish, and wetland habitat. The same methods are used by other organizations at various locations across the Great Lakes, allowing for data comparisons among different regions. The data and information compiled through the program has contributed to the successful re-designation of these Beneficial Use Impairments. Maintaining the Bay of Quinte Coastal Wetland Monitoring Program provides valuable information for future management and protection of coastal wetlands. The program has been implemented since 2007 and continued monitoring for 2020 is pending renewal.

Aesthetics Monitoring (BQRAP)

In partnership with Lower Trent Conservation and BQRAP, Quinte Conservation assisted with assessing aesthetics for the Bay of Quinte. Evaluating aesthetics was performed from May to November, and includes the identification of unpleasant or unsafe odours being emitted from the water, as well as water colour, clarity, and debris. The sampling occurs at multiple locations along the Bay of Quinte watershed below Highway 401. Each sampling location includes visual and odour evaluations of water. The program took place from 2018 to 2019 and the data collected will be included in BQRAP's final assessment report to be completed in early 2020.



Source Water Protection



The Clean Water Act was enacted in 2006 to protect both existing and future sources of drinking water from overuse and contamination. This legislation focuses on preventing contamination by developing collaborative, locally-driven and science-based source protection plans in 19 Source Protection Areas and Regions across Ontario.

The Quinte Region Source Protection Plan came into effect on January 1, 2015. Implementing bodies became responsible for enacting 63 policies set out in the plans. Continuing to support municipalities and provincial ministries with the implementation of these policies, as well as reporting on their implementation progress, was an ongoing priority in 2019. Quinte Conservation combines these reports and works with the 21-member Source Protection Committee Members in order to address policy updates, and to ensure the Source Protection Plans remain current and viable.

Reporting

Source Protection Authorities must report annually on the progress of implementation using a high-level reporting template developed by the Ministry of Environment, Conservation and Parks (MECP). This information is collected from all implementing bodies and is presented to the Quinte Source Protection Committee, who is responsible for determining the extent of which the objectives set out in the plan are being achieved by the measures described in the annual progress report. Based on the information provided, the Committee, by consensus, selected "P: Progressing Well / On Target" as the overall progress score for the 2019 Annual Progress Report.

SWP Committee Update

In 2019, a comprehensive renewal of the Quinte Region Source Protection Committee was completed in compliance with Ontario Regulation 288/07 (which sets the requirements of the source protection committee, including term expiries). As none of the original member terms had previously expired, all terms expired on December 31, 2019. 8 members reapplied and were appointed to a 5 year-term. In addition, 8 new members joined the committee for a term of 5 years. Furthermore, the Chairmen of the committee, Max Christie, was reappointed to his position by MECP for a 3 year term.

Whytock Well Update

Due to water supply challenges with one of its existing municipal wells, the Village of Madoc required an additional water source. The solution included a new production well (approximately 350 metres west of the existing Whytock well), a new water treatment building, and the decommissioning of the old Whytock well. As part of this process, the Wellhead Protection Area for the Source Water Protection Program required an update due to the change in well location. Starting July 1, 2018, new rules under the Safe Drinking Water Act and Clean Water Act require that all Source Water Protection technical work, as well as report and source protection plan amendments, be completed and approved by the Ministry of Environment, Conservation and Parks' Source Protection Branch prior to the new system providing water to the residents in Madoc Village. Quinte Conservation staff submitted the amended reports in August 2019 and received approval from the Ministry on September 11, 2019.

Updated Work Plan

In 2018, a new work plan to guide the future direction of the local source protection plan was developed and submitted to the Province. The work plan identifies actions to address new technical rules, policy implementation challenges, and any identified data gaps. In 2019 Quinte Conservation received an Order from the Minister of the Environment, Conservation and Parks outlying which updates were mandatory and those which are highly encouraged. These updates will be addressed in the coming years and will culminate in the submission of an updated Source Protection Plan to the Province.

Clearance Notices

Risk management officials/inspectors continued to work with landowners to negotiate and inspect risk management plans. Additionally, staff issued 78 Clearance Notices, confirming for municipalities that no new significant threats would be created through the associated development applications.



VIDEO: Quinte Conservation Source Water Protection

Video: www.youtube.com/watch?v=Y9d0LqDyLLg



8

new committee
members



8

committee members
re-applied



78

clearance notices



Progress Score

on target

Stormwater

What is Stormwater?



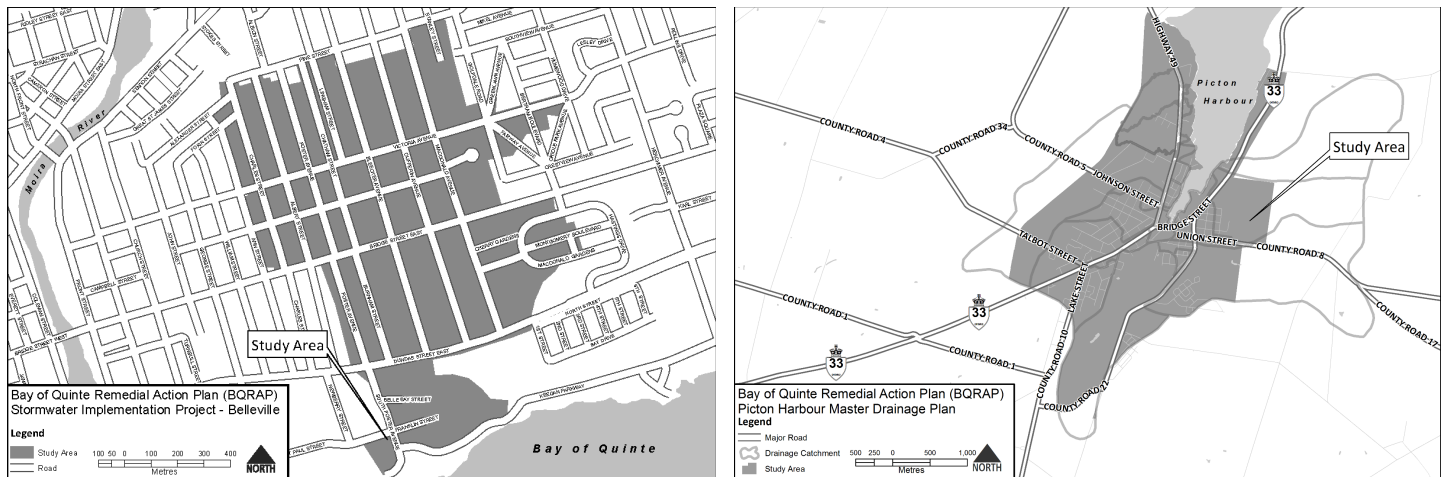
Urban stormwater treatment plays an important role in protecting the health of the Bay of Quinte. Rain and snowmelt pick up many contaminants while travelling over impervious surfaces like parking lots and roadways. These can include heavy metals, salt, oil and grit, pet waste, and pesticides as well as phosphorus, which the Bay of Quinte is particularly sensitive to as the limiting growth factor for excess algae. There are many older urban areas around the Bay that lack any treatment to remove these contaminants as designing treatment for stormwater quality only became a requirement starting in the 1980s.

The Stormwater Implementation Program

To tackle the issue of untreated stormwater, Quinte Conservation has partnered on stormwater assessment and design projects with municipalities having urban areas draining to the Bay . This program has had many successes over the last decade.

Over the last year, work was undertaken on the South Foster Avenue and Picton Harbour Master Drainage Plan projects. Cumulatively, these projects have assessed current needs and reviewed past planning for more than 1250 ha of urban lands draining to the Bay of Quinte.

While completing work on our current commitments to stormwater implementation, staff continually seek out new funding opportunities to support municipalities and stormwater treatment throughout the region.



South Foster Avenue and Picton Harbour Master Drainage Plan study areas

Investigating Phosphorus Management Strategies

Quinte Conservation also took on an experiential learning partnership this year with the faculty of Applied Sciences at Queen's University. Staff supervised a team of fourth-year engineering students in a research-design project that examined innovative phosphorus removal technologies for stormwater treatment.



Queens students on a field trip to a municipal stormwater management pond

Quinte Conservation also provides input to long-term phosphorus management strategies for the Bay of Quinte Remedial Action Plan area to protect the health of the Bay over the years to come.

New Learning

In addition to research and networking with water quality professionals, staff attended training and workshops on best practices for the design, construction, maintenance, and asset management of stormwater management facilities. This included completion of the International Green Infrastructure Certification Program and workshops hosted by the Federation of Canadian Municipalities, the Sustainable Technologies Evaluation Program, and other industry experts. The effort put into ongoing learning allows staff to bring back new ideas to improve local stormwater management, and to better understand current and future challenges faced by stakeholders.

Creating Local Resources

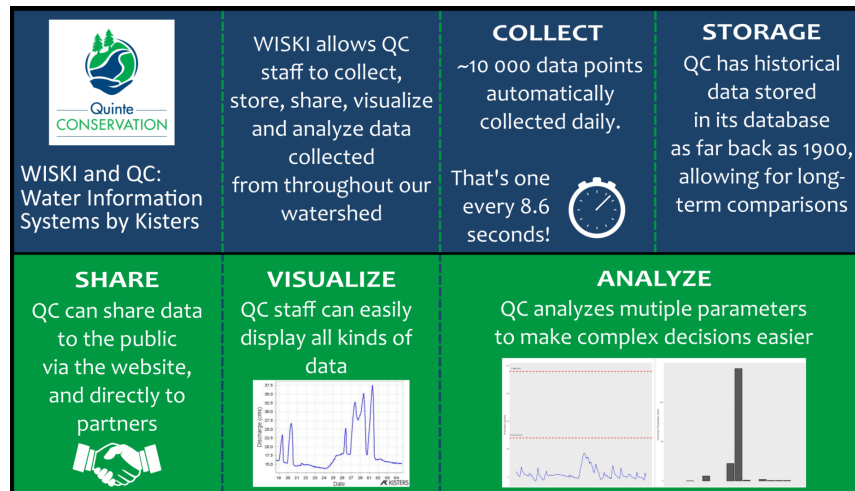
Staff have also been working on creating tools for local municipalities and practitioners over the last year including work on a maintenance manual template for stormwater facilities and an updated set of BQRAP stormwater design guidelines to replace the current 2006 document.



Follow [@QCStormwater](https://twitter.com/QCStormwater) on Twitter for future updates on this program.

WISKI Database

Water Information System by Kisters (WISKI) is a centralized database that allows Quinte Conservation to store, share, visualize and analyze over 3 million data points collected every year.



WISKI is relied on each day by staff to monitor specific environmental variables in near real-time. The types of information that are collected range from ground water levels to snow depth measurements and everything in between. This data is used to make informed decisions for the safety of the public and ecological integrity of the watershed.

The Authority is also part of the Eastern WISKI Hub, which is a cooperative group of 10 Eastern Conservation Authorities (CAs) who share resources relating to WISKI and its use. The Hub was created in order to maintain a consistent, common process for collecting, compiling and utilization of monitoring data, including hydrometric, meteorological, groundwater and water quality data.



Eastern WISKI Hub members in 2019

The majority of 2019 was spent creating and implementing standards for data, both collected historically and moving forward. One of the most important emerging trends is that data needs to be universally shared and easily understandable so that as data becomes more accessible, it is interpreted correctly. The 10 CAs that are found within the Hub all have slight variations on what data they collect and how they collect it, so data standards needed to be put in place. This will allow for more cohesiveness across Eastern Ontario and the ability for more sharing to occur between the CAs, ultimately allowing the public and natural environment to benefit. In addition, Quinte Conservation provides

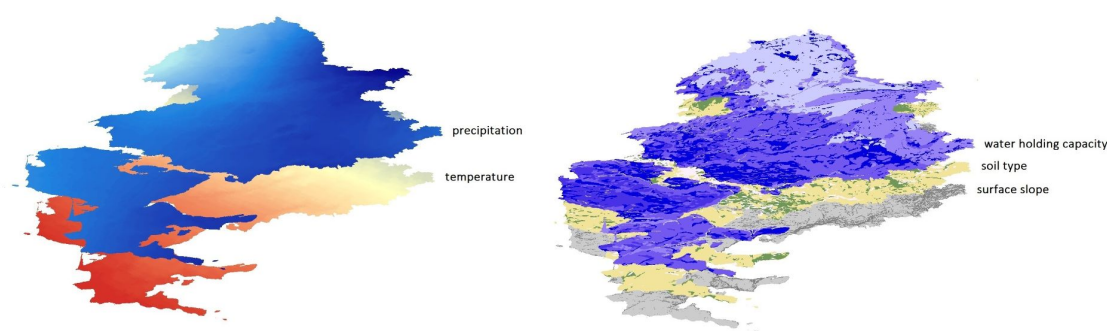
support services for the other Hub members, assisting with data upload, new user training and data migration for new members. This was exemplified when the Central Lake Ontario Conservation Authority (CLOCA) was added to the Hub in mid-2019.

Geographic Information Systems (GIS)

GIS at Quinte Conservation provide a solid foundation for the distribution of authoritative geospatial data sets within the Authority. Its applications are relied on each day to assist the public services offered through Quinte Conservation programs.

16 requests for geospatial data across a broad range of sectors were fulfilled in 2019, ranging from private consulting firms to educational institutions and provincial government ministries.

For the Federation of Canadian Municipalities funded Drought Management Project, GIS was used extensively in modelling our regional water budget so as to identify the areas most vulnerable to water shortages and climate change.



Watershed scale GIS layers used in the water budget model

New lands operations initiatives were informed by GIS-based analyses which evaluated properties on the basis of ecological value and commercial viability.

A digital survey was created with the ArcGIS Survey123 app which enables field staff to efficiently record the conditions and any operations performed at our various water control structures. Once collected, the data is automatically imported into WISKI for future reference and analysis.

Lands Management

Quinte Conservation's Sustainable Forests



Tree Thinning at Vanderwater

[Vanderwater Conservation Area](http://quinteconservation.ca/UserFiles/File/2018%20Vanderwater%20CA%20Brochure.pdf) (link: <http://quinteconservation.ca/UserFiles/File/2018%20Vanderwater%20CA%20Brochure.pdf>) is also a sustainably managed Red Pine plantation, and in the fall of 2019 had trees thinned and harvested as a part of good forest management. The property was purchased many years ago and planted with Red Pine as a way to rehabilitate abandoned agricultural land that was at risk of erosion.

Red Pine is a nurse crop that allows native species to establish in the shade below and once planted, these trees help to reforest marginal land, provide wildlife habitat, and improve air and water quality.

The goal for this plantation is to return the area to what it once was - a hardwood forest. Good forestry practices within the plantation over the years have already helped with regeneration of the area as Eastern White Pine, Red Oak, White Ash, and Hard Maple can be seen growing.

Quinte Conservation works with a professional forester who evaluates each of the trees and decides whether to cut or maintain them. Harvesting trees, in this case for lumber, is an important aspect of good forestry as it allows the other trees to grow bigger. The limbs and tops of harvested trees are left onsite because as they decay, they return nutrients to the soil and provide habitat for a wide variety of native species such as reptiles, small mammals, and fungi.

Vanderwater Conservation Area continues to be a demonstration site for environmentally sustainable forestry practices.



Forest Certification

Quinte Conservation's 30,000 acres of forested land became certified in 2019. Each year an average of 400 acres is allocated for harvest, which means that the Authority will be held accountable for maintaining the highest level for sustainable forest management practices, thus ensuring a healthy and diverse forest. These forested lands were originally used for low productivity agriculture and were purchased by the Conservation Authority, with help from federal and provincial governments, as a way to assist in reducing the demand on natural forests through the creation of tree plantations. It has taken 30 years for these plantations to yield harvestable trees and with continued best management practices in forestry, these properties will remain on the landscape for the long run.

Forests have a very important role in watershed protection. A healthy and diverse forest is crucial in protecting local biodiversity. In addition, trees sequester carbon, therefore slowing the impacts of Climate Change. An interesting thing about forests is that they act like sponges on the landscape as they intercept and slow rainfall and runoff, while recharging groundwater and helping to reduce the impacts of flooding.



Across the globe, consumers have long recognized the impacts of forest harvesting. Often portrayed in a very negative light, the industry created a standard in order to allow the consumer to recognize forests which were harvested in a sustainable manner and with a high regard for local interests. This was the birth of the two major global certification bodies – the [Forest Stewardship Council \(link: https://fsc.org/en\)](https://fsc.org/en) (FSC) and the [Sustainable Forestry Initiative \(link: https://www.sfi-program.org/\)](https://www.sfi-program.org/) (SFI). These organizations are independent, non-governmental and non-profit agencies which review the practices of forest managers and provide guidance of how to best achieve modern forest management.

The certification process ensures a chain of custody for businesses that verify their products were derived from a sustainable forest (i.e. not sourced from a clear cut in a tropical rain-forest). In turn, when the forest managers embrace the guidance provided, the products produced from these forests can be labelled with widely recognized labels that signify the product was harvested sustainably (for which consumers pay a premium). An excellent local example of forest to shelf product certification is the Cascades Container board Packaging mill in Trenton.



Generally, the certification fees paid by European and North American forest managers assist in subsidizing the modernization of forest practices in developing parts of the world, which often contain highly sensitive forest ecosystems. With this being a global program, Canada is a leader in providing certified wood products to international forest product consuming companies.

At present, the [Eastern Ontario Model Forest](https://www.eomf.on.ca/) (link: <https://www.eomf.on.ca/>) manages the Group Forest Certification Program through the Forest Stewardship Council (FSC) for community forests and smaller private landowners. This group certification currently involves 14 community forests (which includes both municipal and conservation authority owned forests), plus 115 private forest tracts; covering over 200,000 acres under certification. Other conservation authorities involved in the certification program include Long Point, South Nation, Saugeen Valley, and Grey-Suabie. The FSC group certificate has the advantage of group support, shared administrative costs, and peer coaching. As a voluntary program, the certification process meets its core value by conducting third party forest planning and operations audits, with the results posted for public review. In addition to lower group costs, certification is intended to raise the collective standard; thus, sharing of templates among the group is encouraged.



The main principles and criteria of becoming a certified forest are listed below:

- Compliance with laws
- Tenure and use rights
- Indigenous Peoples' rights
- Community relations and workers' rights
- Benefits from the forest
- Environmental impact
- Management Plan
- Monitoring and assessment
- High Conservation Value Forests (protecting biodiversity)
- Operating procedures
- Education and Training
- Forest management planning and operating procedures

In addition, the market share for certified forest products continues to increase annually, and certified forests have greater market options than non-certified forests. Most large retailers are moving towards 100% certified wood products.



For Quinte Conservation's commercial forest blocks, certification means that the Authority's Executive Board and the general public can be assured that the highest standard of forest management is being met.

Pictured: Lands Operations Coordinator Tim Trustham delivers a sustainable harvest walking tour at Vanderwater Conservation Area.

Outreach, Stewardship, & Communications

Quinte Conservation offers watershed outreach programs to 18 local municipalities and their community members as well as local schools, volunteer-based groups, lake associations, and service organizations (including those for youth).

Community Events

A handful of family-oriented community events were hosted in 2019 including an amphibian talk, a Family Day event, Maple Fest at the H.R. Frink Centre, and Wild About Wildlife. Wild About Wildlife is a series of free annual events that are held throughout different communities in the watershed. These popular events attracted 1,500 people in 2019. At a Wild About Wildlife event, attendees get to participate in a variety of watershed based learning activities that include:

- Flooding and drought management – where participants are encouraged to experiment using an interactive watershed model
- Live animal displays - that promote and teach wildlife conservation messages
- Water quality and health - by examining the benthic bugs that live in the region's waterways
- Good stewardship and sustainability - through the native wildflower and make-your-own paper pot activity.



Maple Fest; Wild About Wildlife in Wellington

Stewardship & Outreach

Quinte Conservation's landowner stewardship programs provide advice and expertise as well as funding to landowners to enhance their properties for protection from natural hazards, preservation of water quality, and habitat enhancement for wildlife. Landowner programs include tree planting, shoreline re-naturalization services and programs, livestock fencing grants, agricultural buffer plantings and habitat enhancement support.

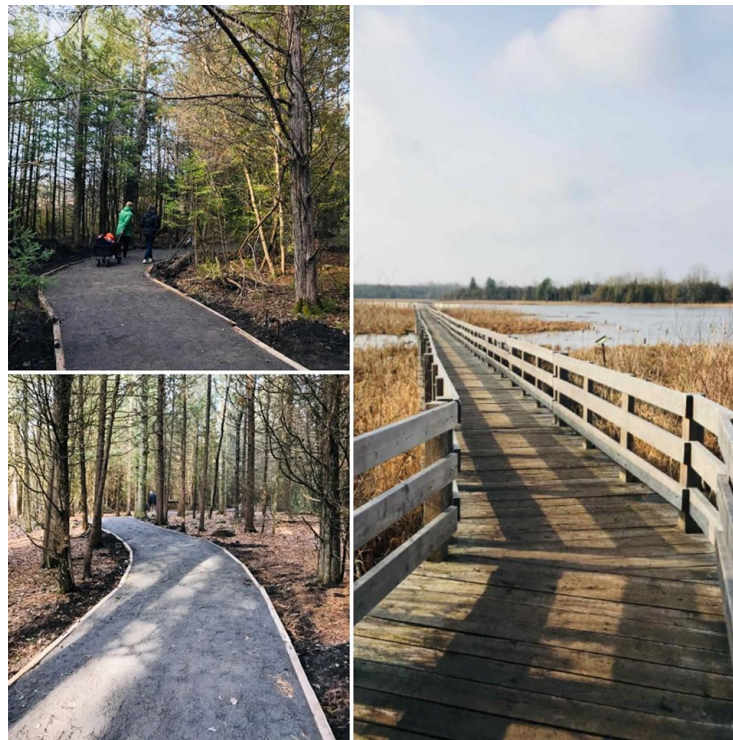
Through partnership with Watersheds Canada ([link: https://watersheds.ca/quinte-press-release/](https://watersheds.ca/quinte-press-release/)), the Quinte watershed saw 1560 metres of shoreline naturalized using 3966 native trees, shrubs, and wildflowers. An additional 6,500 native species will be planted in spring 2020.

With Watersheds Canada and the Quinte Field Naturalists, Quinte Conservation teamed up to naturalize the shoreline at Riverside Park in Belleville by planting flowering shrubs, wildflowers, and native grasses in an effort to help control erosion, slow and clean runoff, deter nuisance geese, and enhance the habitat for pollinators, birds and other wildlife. This project was generously funded the Ontario Trillium Foundation and the Quinte Field Naturalists.



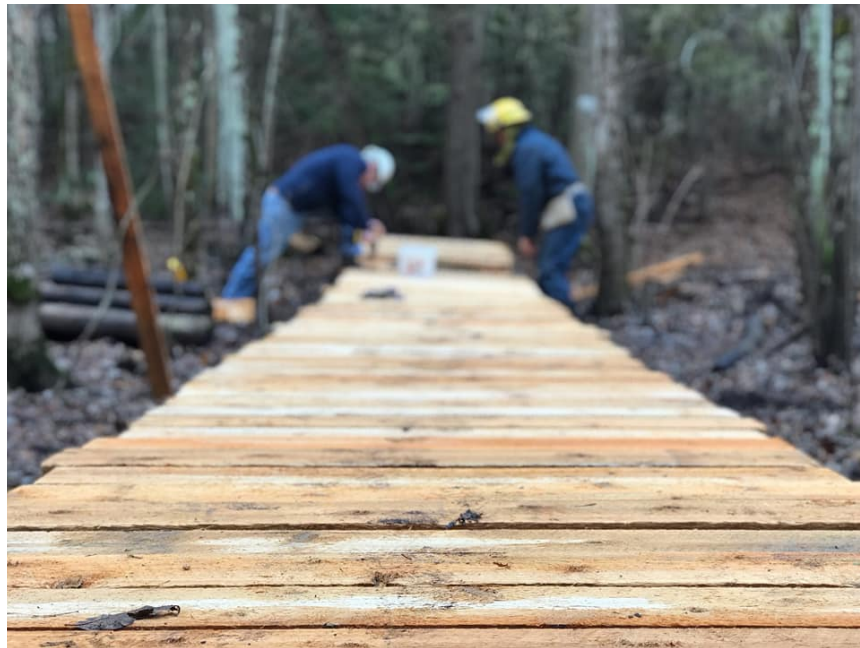
Shoreline re-naturalization planting,; newly planted wildflowers at Belleville's Riverside Park

The final phase for the Wetland Ecology Boardwalk at the H.R. Frink Conservation Area was completed in late fall of 2019. Improvements were made to the Pond Trail so that visitors of all ages and abilities would have access to the Wetland Ecology Boardwalk. This project was made possible thanks to a generous sponsorship from the John M. and Bernice Parrott Foundation and with support from fundraising initiatives, donations from businesses and community organizations, private donors, and paid parking contributions.



New and improved Wetland Ecology Boardwalk at the H.R. Frink Conservation Area

The Cedar Creek Trail at the H.R. Frink Conservation Area was able to remain open thanks to the volunteer trail stewards who helped to rebuild the boardwalk. Supplies for this project were possible because of paid parking revenues for the Frink Conservation Area and through the support of the volunteer trail stewards who provided the labour needed to replace the structure. Without that support, this trail faced decommissioning.



Rebuilt Cedar Creek Trail at the H.R. Frink Conservation Area

Birdhouse City saw some habitat enhancements with the planting of Ontario native shrubs and wildflowers in an effort to further naturalize the area. Mowed pathways were created to invite visitors to walk along trails among the birdhouses. Birdhouses that were in disrepair were removed and replaced with Bluebird boxes. A bat box was also installed. These efforts have improved the habitat for birds, pollinators, and other wildlife. Plantings and further naturalization techniques will continue in 2020. In addition, the [Adopt-A-Birdhouse](https://www.cognitoforms.com/QuinteConservation1/AdoptABirdHouseBirdHouseCity) (link: <https://www.cognitoforms.com/QuinteConservation1/AdoptABirdHouseBirdHouseCity>) campaign was launched and is seeking volunteers to assist in maintaining the birdhouses currently on site.



Birdhouse City at Macaulay Mountain Conservation Area

Benches and picnic tables at Macaulay Mountain Conservation Area had a facelift thanks to the area's volunteer trail stewards from Lehigh Hanson Cement in Picton who covered the cost of supplies and labour. These dedicated volunteers also assisted staff with naturalization efforts at Birdhouse city by helping to plant native shrubs and wildflowers.



Macaulay Mountain trail stewards; new picnic tables and benches

Workshops

Quinte Conservation started Walking Workshops in 2019 to engage and inform local stewards about projects they can do on their own properties.

- The first workshop was on terrestrial invasive species. Attendees received a presentation from Ontario's Invading Species Program where they learned species identification and removal techniques. The second part of the workshop took place outdoors at Potter's Creek Conservation Area where participants performed invasive species removal.



Invasive species workshop

- The second workshop in the series was on creating a pollinator meadow. Attendees received a presentation on how to enhance their backyard and garden for pollinators. Participants assisted in planting Ontario wildflowers and shrubs in the pollinator meadow on the south side of Potter's Creek Conservation Area. Enhancement projects like this would not be possible without the support and sponsorship from HEXO Corp.



Pollinator Meadow at Potter's Creek Conservation Area

Watershed Workshops were offered to schools for in-class and outdoor learning programs. The workshops reached

hundreds of students between grades 5 and 12. Students participated in a watershed based, hands-on workshop that included real-time water quality testing and benthic bug analysis, followed by discussions around stewardship actions for water and flood protection.



2019 Watershed Workshop participants



48
community outreach
events delivered



4,500
people reached by
community outreach
events



1,810
students reached



14,500
native tree and shrub
plantings



66
media releases



Follow @QCOutreach on Twitter
for future updates.

Stepping into nature with Quinte Conservation's Take a Hike campaign



A variety of events are held each year that encourage individuals to spend time in nature by connecting them with outdoor opportunities.

- Quinte Conservation partnered with Blue Bark and Co. to bring guided Forest Therapy walks to Sidney Conservation Area (in the winter) and the H.R. Frink Conservation Area (in the fall). Forest Therapy is a research-based framework that supports healing and wellness through immersion in forests.
- In March, Quinte Conservation partnered with Mindful Movements to bring forest yoga to Massassauga Point Conservation Area.
- Local naturalist Terry Sprague, led a guided hike at Massassauga Point Conservation Area that drew in a wide range of participants interested in learning about the unique cultural and natural history of the site (*pictured*).
- Quinte Conservation's Lands Coordinator, Tim Trustham, led a group of participants through Vanderwater Conservation Area for a plantation management hike that discussed Quinte's sustainable forest harvesting methods.





SLEEP UNDER THE STARS THIS SUMMER

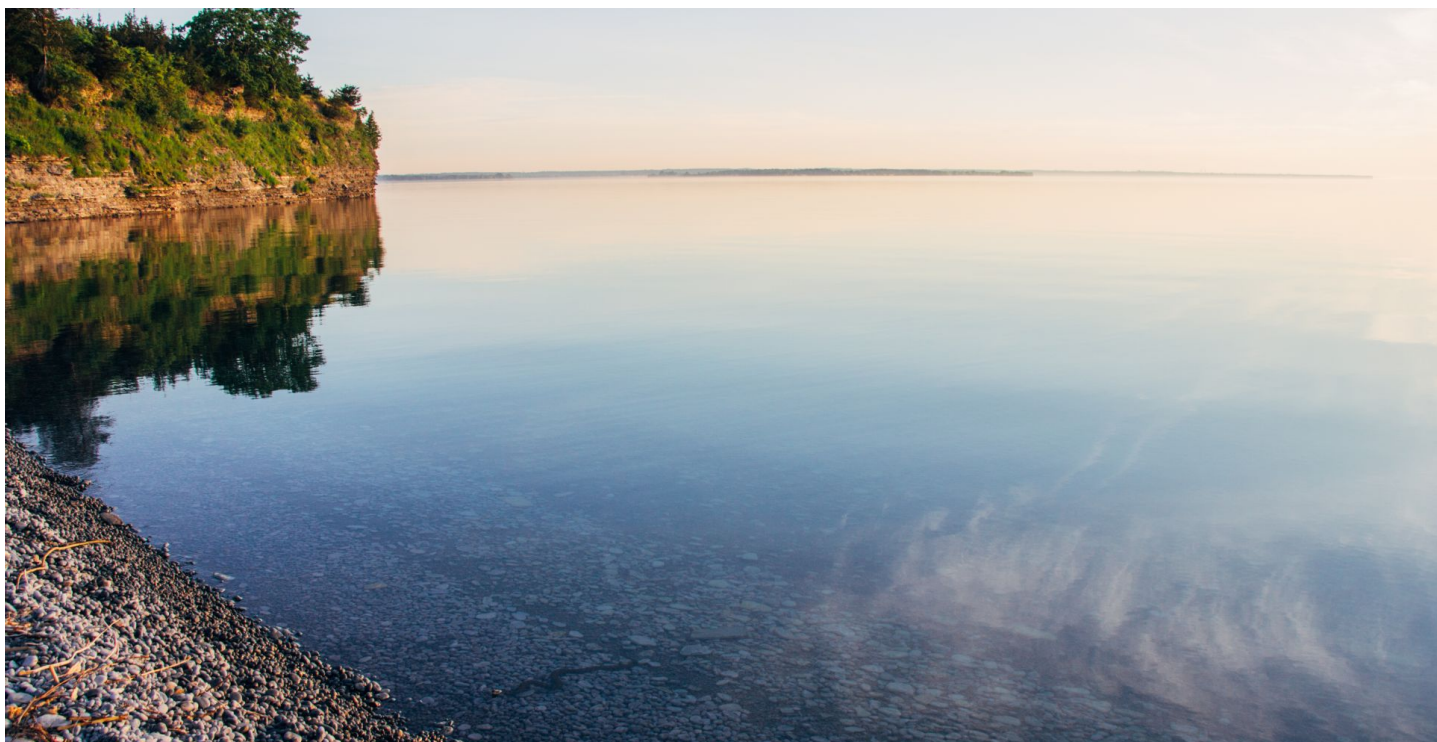
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