

BACK TO BASICS



2018 Environmental Protection Report

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Environmental
Commissioner
of Ontario



VOLUME 1

BACK TO BASICS

Respecting the Public's Voice on the Environment



The people of Ontario recognize the inherent value of the natural environment.

The people of Ontario have a right to a healthful environment.

The people of Ontario have as a common goal the protection, conservation and restoration of the natural environment for the benefit of present and future generations.

While the government has the primary responsibility for achieving this goal, the people should have means to ensure that it is achieved in an effective, timely, open and fair manner.

Preamble to Ontario's Environmental Bill of Rights, 1993

Select citations have been included to help readers understand where the information the ECO cites comes from and to assist them in investigating an issue further should they be interested. Citations may be provided for: quotes; statistics; data points; and obscure or controversial information. Endnotes for these facts are generally only included if the source is not otherwise made clear in the body of the text and if the information cannot be easily verified. Exhaustive references are not provided.

Ministries were provided the opportunity to provide comments on this report. Ministry comments are available on our website.

November 2018

The Honourable Ted Arnott
Speaker of the Legislative Assembly of Ontario
Room 180, Legislative Building
Legislative Assembly of Ontario
Queen's Park
Province of Ontario



Dear Speaker:

In accordance with Section 58 (1) of the Environmental Bill of Rights (EBR), I am honoured to present my 2018 Environmental Protection Report to the Legislative Assembly of Ontario. This year's report, *Back to Basics*, contains four volumes:

- Volume 1: Respecting the Public's Voice on the Environment
- Volume 2: Clean Water
- Volume 3: Wildlife and Wilderness
- Volume 4: Southern Ontario's Wetlands and Forests

This report shows that government efforts have been falling far short on basic protections for water, wildlife, woodlands and wetlands. Since the Walkerton water tragedy, municipal drinking water sources are safer, but governments have continued to allow pollution of the lakes and rivers where we swim and fish. Wetlands and woodlands are critically important for southern Ontario as habitat, and as buffers against pollution and flooding. And yet, they continue to be lost. Wildlife is at risk. Without increased vigilance, many species critical to Ontario's biodiversity could be wiped out. But as this report shows, small actions from the provincial government could have big, positive impacts.

The Ontario government has long depended on dedicated volunteers, organizations and communities across Ontario to help with important conservation work. The government should build on their efforts. Formalizing and enhancing provincial support could further empower those that have already made the invaluable contributions to the environment that we all share and benefit from. Even small investments in the environment could help remedy old problems, and better prepare Ontarians and the environment for the future.

The Environmental Bill of Rights gives Ontarians the right to participate in decision making that affects the environment. Improvements made to the Environmental Registry, while not complete, should make it easier for Ontarians to know about, understand, and comment on government proposals. The Ontario government should continue the trend seen through the 2017-2018 reporting year of increased compliance with its EBR responsibilities. While environmental protection is the primary responsibility of the government, the people of Ontario play a critical role. The history of citizen involvement in environmental protection shows that Ontarians take their role seriously, and everyone benefits when stewardship is shared and properly supported.

Sincerely,



Dianne Saxe
Environmental Commissioner of Ontario

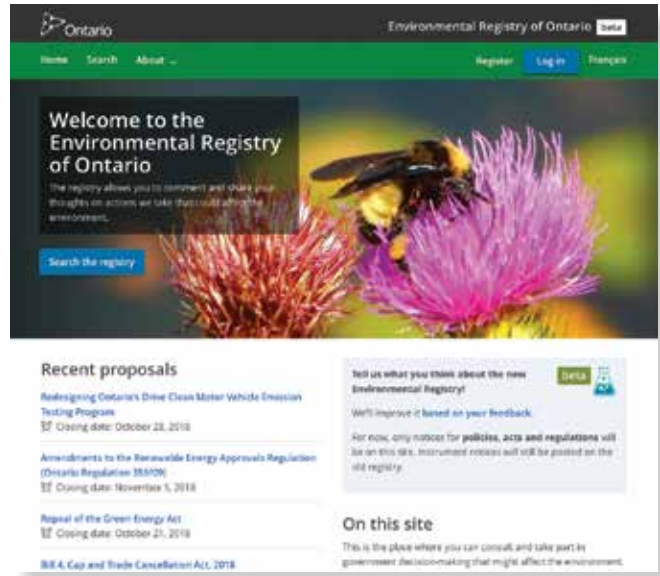
Executive Summary

Volume 1: Respecting the Public's Voice on the Environment

The Environmental Bill of Rights: A strong tool for people and the environment.

The Environmental Bill of Rights (EBR) is a unique law: it gives the people of Ontario a voice in protecting the environment. While the Ontario government has the primary responsibility for protecting, conserving and restoring the natural environment, the EBR helps the public participate in provincial decisions that significantly affect the environment. In this volume, we report on ministry compliance with EBR requirements, as well as the public's use of EBR tools, during the 2017/2018 fiscal year (April 1, 2017 – March 31, 2018).

Chapter 1 describes overall government compliance with, and the public's use of, the EBR. **Chapter 2** reports on the public's use of EBR applications and the ECO's overall assessment of how ministries handled those applications. The ECO highlights the story of two



Chapter 1 highlights a long-awaited success: progress on an updated Environmental Registry that better serves the public.

Ontarians who successfully used an EBR application to prompt the development of a new and much-needed agricultural soil health strategy.

Chapter 3 presents the ECO's EBR Report Cards for the 17 ministries that were subject to the EBR in 2017/2018. Congratulations to those ministries who better respected their key EBR obligations this year.

Prescribed Ministry	Quality of notices for policies, acts and regulations posted on the Environmental Registry	Quality of notices for instruments posted on the Environmental Registry	Promptness of posting decision notices on the Environmental Registry	Keeping notices on the Environmental Registry up to date	Handling of applications for review and investigation	Avoiding overdue applications for review	Considering Statements of Environmental Values (SEVs)	Co-operation with ECO requests	Overall trend since 2017
Ministries with a high EBR workload									
MECP	→	→	↗	→	→	→	→	→	↗
MNRF	→	↗	↘	↘	→	→	↗	↗	↗

- Quality of performance:
- Meets or exceeds expectations
 - Needs improvement
 - Unacceptable
 - ↗ Quality of performance has improved since 2016/2017
 - Quality of performance unchanged since 2016/2017
 - ↘ Quality of performance has declined since 2016/2017

EBR performance of the ministries with the highest EBR workload: the Ministry of the Environment, Conservation and Parks and the Ministry of Natural Resource and Forestry.

Volume 2: Clean Water

Chapter 1: Protecting Ontario's Drinking Water from Pollution

There were hundreds of significant threats to municipal drinking water. Because of Walkerton, they are now better controlled.

The contaminated drinking water tragedy in Walkerton, Ontario in May 2000 set in motion a new era in drinking water regulation in the province. After years of intensive work, local committees have developed 38 source protection plans under the Clean Water Act to help protect municipal drinking water sources.

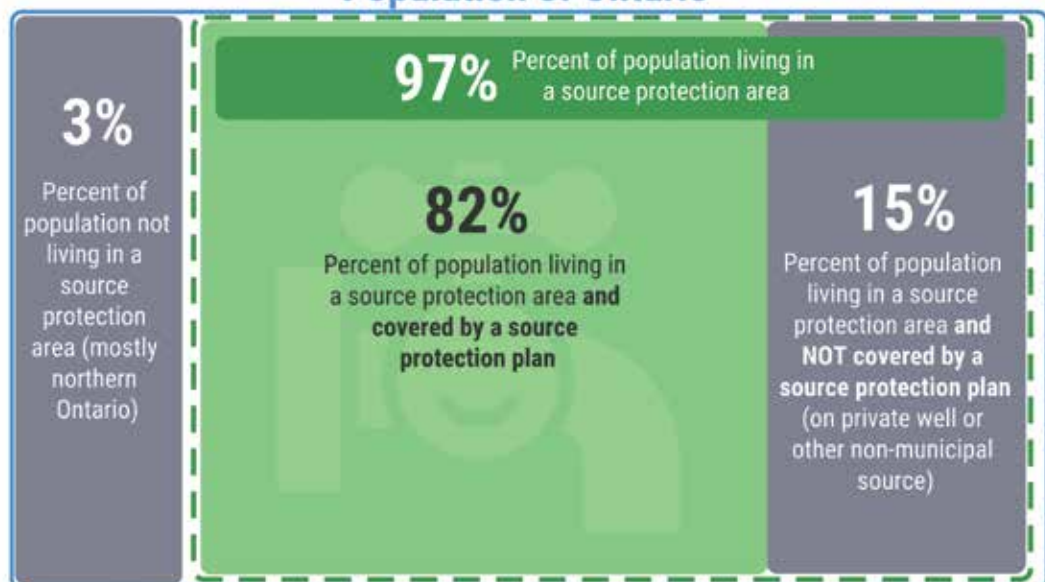
After all that effort, are sources of drinking water safer? For the 82% of Ontarians whose drinking water sources are protected by the Clean Water Act, the answer is yes, with much more work to do. Source protection committees have identified hundreds of significant pollution threats to municipal drinking water sources, and have done what they can to manage them.



Photo credit: Conservation Ontario

But committees have not been given the tools needed to properly regulate some important threats, such as above-ground outdoor fuel tanks, manure spreading and contaminated sites. Pollution threats are not static, and vigilance to protect drinking water sources will always be needed, yet uncertainty about funding leaves the future of this critical program up in the air. And the source protection framework does not protect most Ontario lakes, rivers and groundwater, including the drinking water sources of Ontarians with private wells, or in most northern and Indigenous reserve communities.

Population of Ontario



Source: Created by the ECO, based on data from the MECP.

The government should:

- use the knowledge and tools developed through the source protection program to protect other water resources from contamination, particularly drinking water sources for the other 18% of Ontarians
- allow source protection committees to regulate significant threats to groundwater from above-grade outdoor fuel storage tanks
- require the Technical Standards and Safety Authority to protect municipal drinking water when it regulates liquid fuels that are a significant threat
- ensure nutrient management plans for farms within vulnerable source water areas protect drinking water sources from manure threats
- ensure remediation or control of historical contamination that poses a significant threat to municipal drinking water sources, and
- commit adequate multi-year funding for the source protection program.

Chapter 2: Polluting Our Waters

Fresh water is precious. Government allows too much pollution to pour into it.

Ontario is lucky to have so many lakes and rivers, containing some of the most abundant fresh water in the world. Unwisely, we still pollute many of them. This pollution threatens many aquatic ecosystems, impairs Ontarians' ability to swim and fish, and harms economic activities that rely on clean water.



Phosphorus pollution contributes to algal blooms. Some algae can be toxic to fish, animals and people, such as the blue-green algal bloom off the southeast shore of Pelee Island, Ontario in 2011.

Photo credit: Tom Archer. Used with permission.

Provincial laws have reduced many types of water pollution over the last half-century. But deliberate gaps in these laws are allowing some big water pollution problems to persist or worsen. Raw municipal sewage, agricultural runoff, toxic industrial wastewater and road salt are four significant sources of pollutants that threaten Ontario waters, compounded by population growth and climate change.

In heavy rains, 44 Ontario municipalities still overflow their combined sewers and spill filthy, bacteria-laden sewage into lakes and rivers. Combined sewers are the primary source of raw sewage discharges, causing 766 overflows in the last year. Over 30 years after banning new combined sewers, the government has still not required municipalities to take all practicable steps to stop these overflows.

The government has not taken effective steps to stop agricultural runoff into fresh water, a major contributing cause of algae growth. Poorly monitored programs with too little funding and insufficient regulations have not worked.

The government allows industries to dump 58 toxic wastes directly into lakes and rivers, up to limits set 25 years ago to suit then-available technology. Promises to keep the limits up to date have never been kept.

And the government continues to allow too much road salt to poison lakes and rivers, even though some of it is wasted and could easily be reduced.

This pollution is neither inevitable nor necessary. Ontario should not keep tolerating the regulatory failures that allow so much pollution of our waters.

To reduce the pollutants pouring into Ontario's waters, the government should:

- require every municipality with combined sewers to do everything practicable to virtually eliminate combined sewer overflows within a reasonable time, including Pollution Prevention Control Plans, stormwater fees, and green infrastructure
- ensure dramatic reductions in phosphorus runoff from farms with clear targets, effective monitoring, and financial incentives
- set up-to-date limits on toxic industrial wastewater, i.e., require industries to use the best current technology to keep toxics out of Ontario waters and to virtually eliminate discharges of persistent toxic substances, and
- require municipalities, and encourage contractors, to minimize road salt pollution of Ontario waters.

Volume 3: Wildlife and Wilderness

Chapter 1: Better Science, Better Decisions: Monitoring Ontario's Species and Ecosystems

Ontario collects a lot of data, but we need to connect the dots.



Volunteers collect aquatic samples at an Ontario BioBlitz event.

Photo credit: Stacey Lee Kerr/Ontario BioBlitz/flickr, (CC-BY-NC-SA 2.0).

Biodiversity is crucial in supporting “ecosystem services,” such as air purification, pollination and disease suppression, many of which offer direct benefits to human health. Yet globally, we are losing species at a rate that is unprecedented in history – the world’s species are going extinct at 1,000 times the natural rate. Ontario’s species are under tremendous pressure from habitat destruction, invasive species, overexploitation, pollution, disease and parasites, and climate change.

To protect wildlife and wilderness, the first step is the right information. The Ontario government, in partnership with others, collects much information about nature. But raw data from uncoordinated programs can only get us so far.

The government needs to effectively collect, analyze and share data to identify problems and trends, and to know which actions will most effectively conserve wildlife and wilderness.

Ontario should also show more respect and support for the nature conservation work done by dedicated volunteers and non-profit organizations across Ontario, such as the Ontario Biodiversity Council. The government leans heavily on their work to justify cutting back its own, but has not reciprocated with the modest funding commitments that they need. Sustaining and enhancing these valuable collaborations is highly cost-effective.

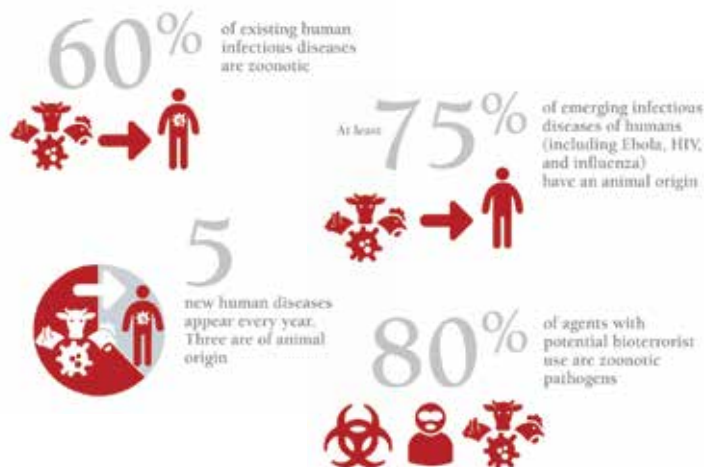
The Ministry of Natural Resources and Forestry should:

- commit to adequate long-term support for the Ontario Biodiversity Council and its reporting on the State of Ontario's Biodiversity.

Chapter 2: Keeping Nature Healthy: Managing Wildlife Disease in Ontario

Wildlife disease is a threat to biodiversity and people. Are we prepared?

Wildlife diseases can have devastating impacts on plants, animals, agriculture, our economy and our own health. Recent examples include declines in Ontario's bats and the spread of illnesses like Lyme disease.



Many infectious diseases originate in wildlife populations.

Source: World Organisation for Animal Health (www.oie.int). Used with permission.

The Ontario government has been doing a good job preventing, detecting and managing wildlife disease, but we can expect the task to get harder as Ontario's climate becomes warmer and wilder. The government should maintain, and when needed strengthen, wildlife disease surveillance, in co-operation with the Canadian Wildlife Health Co-operative. When it comes to the shared health of Ontarians and our wildlife, cutting corners would be penny wise and pound foolish.

The provincial government should:

- commit long-term funding to the Canadian Wildlife Health Co-operative.



A little brown bat suffering from white-nose syndrome.

Photo credit: Ryan von Linden/USFWS, (CC-BY 2.0).

Volume 4: Southern Ontario's Wetlands and Forests

Chapter 1: Protecting Southern Ontario's Wetlands

Wetlands provide critical habitat and flood control. Government is letting them be destroyed.

Southern Ontario has lost nearly three-quarters of its wetlands in the last two centuries, and wetland loss continues today. Wetlands provide vital wildlife habitat for many species and important ecological services for people, including resilience to floods and other effects of climate change. Despite years of promises, the government continues to allow the loss of the few wetlands we have left.

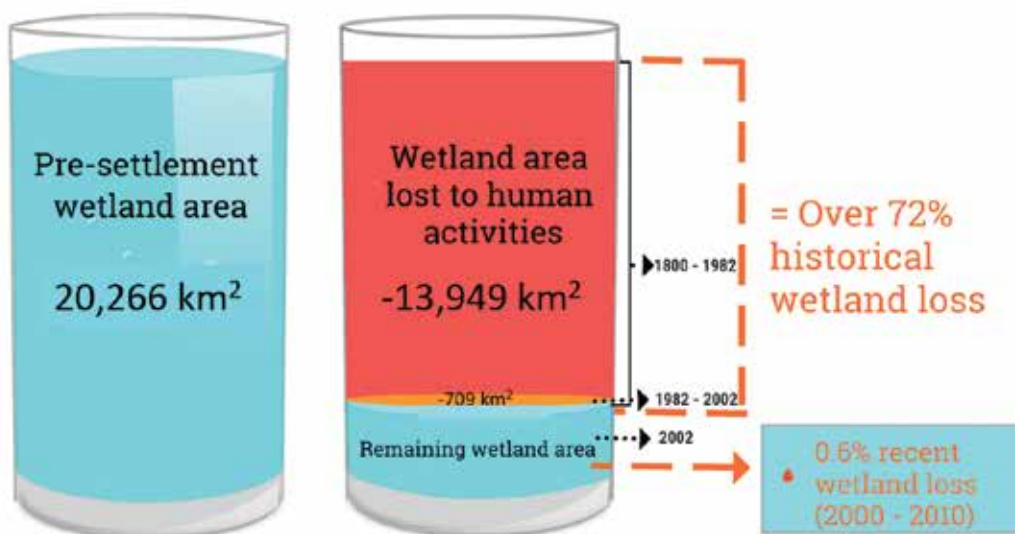
The 2017 Wetland Conservation Strategy proposed to halt wetland loss by 2025. This is a good step, but still allows seven more years of damage. The government has done little to turn this target into meaningful action.

Ontario's key failure is that wetlands generally receive no protection until the MNR has got around to officially identifying each one as "provincially significant." The evaluation process is slow, inefficient, and has a 260-year backlog, creating uncertainty for developers and constant wetland loss. Instead, all unevaluated wetlands should be protected (i.e., presumed significant) until proven otherwise.

Second, the province unwisely permits destruction of even "protected" wetlands for many agricultural, infrastructure and resource extraction activities.

Third, conservation authorities lack clear authority and resources to protect all wetlands.

Fourth, Ontario's plan to halt wetland loss relies too heavily on "offsetting" – allowing destruction of wetlands in exchange for building an offset (replacement) somewhere else, a risky approach that may not replicate key ecological functions.



Historical wetland loss since European settlement and recent wetland loss (from 2000 to 2010) as a proportion of southern Ontario's remaining wetlands.

Source: Created by the Environmental Commissioner of Ontario.



Marsh in Parry Sound.

Photo Credit: Suzanne Schroeter, (CC BY-SA 2.0).

The government should:

- protect all southern Ontario wetlands as significant until proven otherwise
- revise the Provincial Policy Statement to provide strong protection for the remaining wetlands
- give conservation authorities clear authority and resources to regulate all activities that interfere with all wetlands
- make all wetlands on agricultural land eligible for a rebate through the Conservation Land Tax Incentive Program, and
- only allow offsetting in upcoming rules where wetland loss is truly unavoidable and only if key ecological functions are successfully and permanently replaced.



Chapter 2: Southern Ontario's Disappearing Forest

People and wildlife need forests. If we don't share the costs of forests fairly, we'll lose them again.

Forests filter pollutants from our air, absorb and filter storm water, prevent erosion and mitigate drought. Southern Ontario woodlands also provide vital wildlife habitat for many species, including over half of our 690 species of conservation concern.

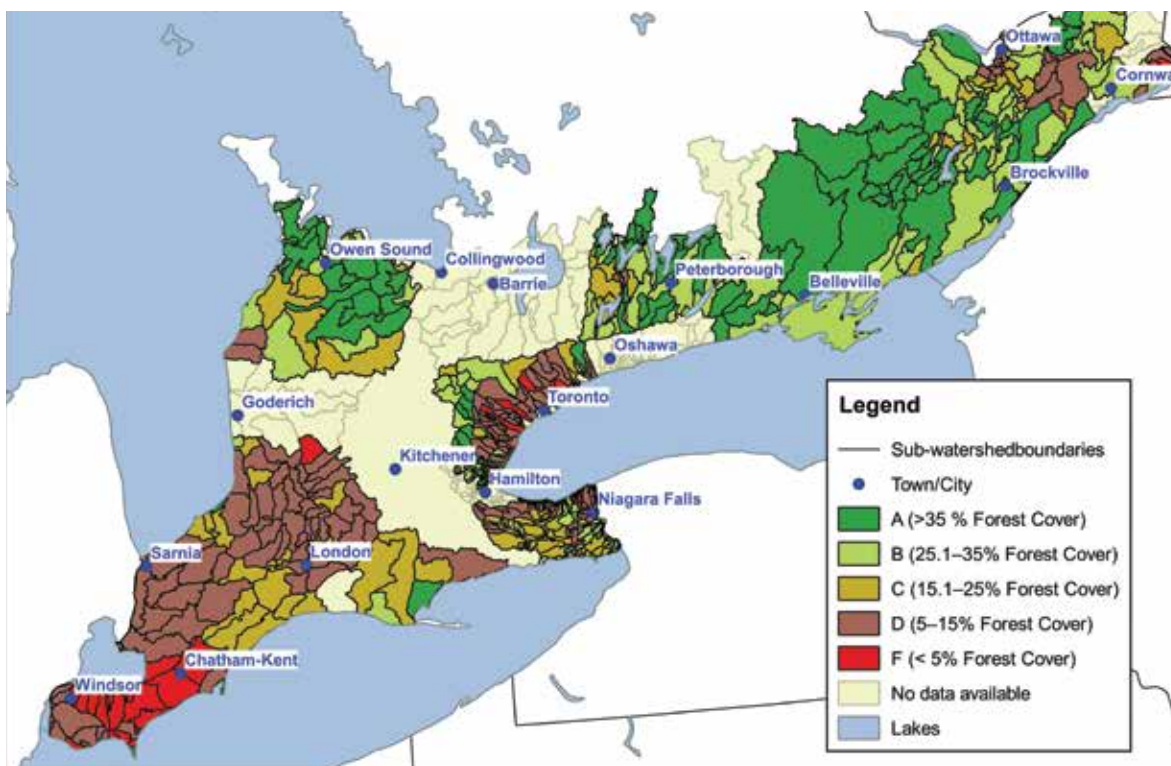
Today, many southern Ontario watersheds have less than the 30% forest cover required for marginally functional ecosystems. Some municipalities in southwestern Ontario have less than 10% forest cover, and one has as little as 3% left, but the government continues to allow the loss of what little we have left.

For private landowners, planting and preserving woodlands has become an increasingly heavy burden which they bear alone, even though everyone in their community benefits from their trees. With little support or incentive for landowners to plant and retain trees, we risk losing more forests in southern Ontario.

Municipalities also struggle to protect urban trees, just as they are needed more than ever because of population growth and climate change. Municipalities are often unable to keep up with long-term urban forest planning and maintenance due to the high, sudden and growing costs of storm damage, invasive insects, and disease.

In a southern Ontario hardwood forest, diverse stands of trees with different sizes and ages are optimal for timber quality, biodiversity and overall forest health.

Source: MNRF. Photo credit: Dan Bowes.



Percent forest cover in the watersheds of southern Ontario, 2018. Colour-coded by percent forest cover grade.

Source: Conservation Ontario data compiled and mapped by the ECO.

Ontario has made this mistake before. A century ago, government inaction allowed rampant deforestation. The devastation was so great that the province devoted decades to massive efforts to replant and support southern Ontario forests. In the last 30 years, these programs have been abandoned, culminating in this year's closure of the Ontario Tree Seed Plant without replacing its essential role in providing biologically and climactically appropriate seed.

To protect and regrow our forests, the province should:

- adequately support tree planting and forest stewardship on private land, to fairly share the financial burden and benefits
- guarantee funding for and public access to biologically and climactically appropriate seed, and
- establish an Ontario urban forest centre dedicated to protecting and enhancing urban forests.

The Environmental Commissioner of Ontario, also known as Ontario's "environmental watchdog," is an independent Officer of the Legislative Assembly responsible for reviewing and reporting annually on the government's compliance with the Environmental Bill of Rights (EBR) and the public's use of their EBR rights. The ECO also reports on government progress on environmental protection, climate change and energy conservation.



Respecting the Public's Voice on the Environment

The Environmental Bill of Rights (EBR) is a unique law that gives the people of Ontario a voice on the environment. While the provincial government has the primary responsibility for protecting, conserving and restoring the natural environment, the EBR gives Ontarians the tools they need to participate in provincial decisions that significantly affect the environment.

The Environmental Commissioner of Ontario (ECO), Ontario's "environmental watchdog," helps to hold the government accountable for those decisions. She is an independent Officer of the Legislative Assembly who reports annually on the government's compliance with the EBR and the public's use of their EBR rights. In this volume, the ECO reports on government EBR compliance and public use of EBR tools during the 2017/2018 fiscal year (April 1, 2017 – March 31, 2018).

Chapter 1 describes overall government compliance with, and the public's use of, the EBR. We highlight a long-awaited success: progress on an updated Environmental Registry that better serves the public. Lastly, we describe our education and outreach, and announce the recipient of the 2018 ECO Recognition Award.

Chapter 2 explains the EBR application for review and application for investigation processes, and reports on the public's use of EBR applications in 2017/2018. One highlight is an "EBR success" story: two Ontarians whose EBR application triggered a new and much-needed policy on agricultural soil health. This chapter also summarizes all EBR applications that ministries completed during the reporting year, and assesses how well the ministries handled those applications.

Chapter 3 presents the ECO's EBR Report Cards for each of the 17 ministries that were subject to the EBR in our 2017/2018 reporting year. These EBR Report Cards score each ministry's performance in each of eight key EBR requirements. Finally, we summarize the scores and recommend how ministries should carry out their EBR obligations to better respect the public's voice on the environment.

Chapter 1

The Environmental Bill of Rights





The Environmental Bill of Rights: A strong tool for people and the environment.

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1.1 The Environmental Bill of Rights

Ontario's Environmental Bill of Rights, 1993 (EBR) is an environmental law unlike any other in the world. The purposes of the EBR are to:

- protect, conserve and, where reasonable, restore the integrity of the environment,
- provide sustainability of the environment, and
- protect the right of Ontarians to a healthful environment.

To achieve these goals, the EBR requires the Ontario government to consider the environment in its decision making. Certain ministries, known as “prescribed ministries,” have specific responsibilities under the EBR.

During the ECO's 2017/2018 reporting year (April 1, 2017 – March 31, 2018), there were 17 prescribed ministries (see Prescribed ministries during the ECO's 2017/2018 reporting year). On June 29, 2018, after the end of the ECO's 2017/2018 reporting year, the Ontario government made a number of changes to EBR-prescribed ministries, changing ministry names and reducing the total number of prescribed ministries to 15. For purposes of this report, the ECO uses the new ministry names, unless reference to the previous ministry names is required for clarity.

Prescribed ministries during the ECO's 2017/2018 reporting year

Agriculture, Food, and Rural Affairs (OMAFRA)

Economic Development and Growth (MEDG)
(now called the Ministry of Economic Development, Job Creation and Trade, or MEDJCT)

Education (EDU)

Energy (ENG) (now part of the combined Ministry of Energy, Northern Development and Mines, or ENDM)

Environment and Climate Change (MOECC)
(now called the Ministry of the Environment, Conservation and Parks, or MECP)

Government and Consumer Services (MGCS)¹

Health and Long-Term Care (MOHLTC)

Housing (MHO) (now part of the combined Ministry of Municipal Affairs and Housing, or MMAH)

Indigenous Relations and Reconciliation (MIRR)
(now called the Ministry of Indigenous Affairs, or IAO)

Infrastructure (MOI)

Labour (MOL)

Municipal Affairs (MMA) (now part of the combined Ministry of Municipal Affairs and Housing, or MMAH)

Natural Resources and Forestry (MNRF)

Northern Development and Mines (MNDM)
(now part of the combined Ministry of Energy, Northern Development and Mines, or ENDM)

Tourism, Culture and Sport (MTCS)

Transportation (MTO)

Treasury Board Secretariat (TBS)

1. The Technical Standards and Safety Authority (TSSA) is an independent, not-for-profit administrative authority that is responsible for administering regulations under the Technical Standards and Safety Act, 2000 on behalf of the MGCS. For the most part, the TSSA is responsible for carrying out the EBR obligations of the MGCS.



While the government has the primary responsibility for protecting the natural environment, the EBR recognizes that the people of Ontario have the right to participate in environmentally significant decision making, as well as the right to hold the government accountable for those decisions. The EBR empowers Ontarians to participate in environmental decision making in a number of different ways.

The people of Ontario have the right to participate in environmentally significant decision making.

The EBR's "tool kit" is a collection of government obligations and public participatory rights that work together to help ensure that the purposes of the law are met. The EBR tool kit includes:

- the oversight role of the Environmental Commissioner of Ontario (see section 1.2)
- Ministry Statements of Environmental Values (see section 1.3)
- requirements for public notice and consultation on environmentally significant proposals for government policies, acts, regulations and "instruments" (permits, approvals and licences) through the Environmental Registry (see section 1.4)
- the right of Ontarians to seek leave to appeal (i.e., challenge) government decisions on certain instruments, the right to sue for harm to the environment or a public resource, and whistleblower protection (see section 1.5), and
- the right of Ontarians to submit an application to the government asking it to review an existing law, policy or regulation, or the need for a new one ("applications for review"), or to ask the government to investigate an alleged contravention of an environmental law ("applications for investigation") (see Chapter 2).

See the ECO's website (eco.on.ca) for an up-to-date list of ministries, laws and instruments that are subject to the EBR.

1.2 The Environmental Commissioner of Ontario

The Environmental Commissioner of Ontario (ECO) is an independent Officer of the Legislative Assembly. Often referred to as Ontario's "environmental watchdog," the ECO is responsible for reviewing and reporting on the government's compliance with the EBR, and how the public is using their EBR rights. To ensure that the EBR is upheld, the ECO monitors how prescribed ministries exercise their discretion and carry out their responsibilities under the law.

Each year, the ECO reports on whether ministries have complied with the EBR, and whether ministry decisions were consistent with the purposes of the law. One of the ways that we report on ministry compliance with the EBR is by issuing "EBR Report Cards" for each prescribed ministry (see Chapter 3). We also report on the public's use of EBR tools. Further, the ECO reports on the progress of the Ontario government in keeping the EBR up to date, which it must do by prescribing new ministries, laws and instruments that are environmentally significant.

The ECO is responsible for reviewing and reporting on the government's compliance with the EBR, and how the public is using their EBR rights.

The ECO also reviews and reports on a wide variety of environmental topics, often relating to recent Ontario government decisions or issues raised by members of the public. Additionally, since 2009, the ECO has reported annually on the progress of activities in Ontario to reduce emissions of greenhouse gases, and to reduce the use or make more efficient use of electricity, natural gas, propane, oil and transportation fuels.

The ECO reports to the Legislative Assembly of Ontario – not to the governing political party or to a ministry.

1.2.1 Education and outreach by the ECO in 2017/2018

People across Ontario face a wide range of environmental issues every day, and they often don't know where to turn for help. Our office receives questions about many environmental issues for various levels of government. For example, we receive queries about local concerns on issues such as a new subdivision or an impact to a neighbourhood creek, to broader concerns about our changing climate or how the boreal forest is being conserved.

Every year, our office receives about 1,400 inquiries by phone and e-mail. Common concerns include difficulties accessing information about environmental assessment processes, questions about using the Environmental Registry, and enquiries about what we have previously reported on a variety of topics.

We also help the public understand and navigate their environmental rights, so they can engage directly with provincial ministries on environmental decisions that matter to them. We always try to connect people with the information that they require. That includes redirecting some people to different branches of the Ontario government, and sometimes to municipalities or the federal government.

Our many reports are easily accessible on our website: eco.on.ca. People are using our online information more frequently – our website traffic grew by 40% compared to the previous year. Ontarians can also follow the ECO through our blog, Twitter, Facebook and LinkedIn accounts, as well as our YouTube channel. Stay tuned for more updates to the ECO's website in the coming year.

More than 2,300 users are now signed up for our Environmental Registry Alert service, available on eco.on.ca, to receive e-mail alerts when topics that interest them show up on the Environmental Registry. Until the Ministry of the Environment, Conservation and Parks (MECP) completes its ongoing overhaul of the Environmental Registry, our Environmental Registry Alert

service remains the most convenient way to track public comment opportunities offered by Ontario ministries on environmental matters. ECO staff will continue to offer support and assistance in this important project. More than 2,100 people also follow our @EBR_EnvRegistry account to be notified of what's on the Environmental Registry via Twitter.

Media coverage of our reports to the Ontario legislature has shown a steady upward trend over the past four years. The ECO was mentioned in over 1,600 media stories during our 2017/2018 reporting year. The Environmental Bill of Rights and Environmental Registry were mentioned in many more. In addition to our three annual reports, the ECO's October 2017 Special Report, *Beyond the Blue Box*, received significant attention, which continued into spring 2018.

Commissioner Saxe and other staff continue to connect with thousands of Ontarians through speaking engagements and webinars. The ECO hosted public webinars to provide overviews of our reports. In addition, we delivered webinars hosted by Sustainability CoLab, EcoSchools, Forests Ontario, and Faith and the Common Good. The Commissioner also has visited many places, ranging from Aamjiwnaang First Nation in Sarnia to the Invasive Species Research Centre in Sault Ste. Marie.

Bringing the latest climate science to the attention of Ontario's key public policy leaders was a top priority for the Environmental Commissioner this year. Throughout this reporting period, Commissioner Saxe continued to give presentations about climate change to dozens of audiences in Ontario's government, industry, and financial sectors.

Educating Ontarians about their rights under the EBR is an ongoing priority for our office. The Environmental Commissioner and her staff promote the EBR toolkit in their presentations to audiences across the province. In addition to more than 80 report-related presentations focused on topics ranging from endangered species to wastewater, the ECO delivered 35 presentations specifically focused on the EBR toolkit. Audiences



included students from elementary schools to colleges and universities; industry and government, such as events hosted by the Ontario Woodlot Association, City of London and City of Hamilton; and non-profit groups like the Oak Ridges Moraine Land Trust, Ontario Nature, Pickering Naturalists, and Waterloo Region Nature.

The ECO is responsible for reviewing and reporting on the government's compliance with the EBR, and how the public is using their EBR rights.

To celebrate World Environment Day in June 2018, we released our educational guide - The Environmental Bill of Rights: Your Environment, Your Rights - in 10 additional languages. Providing such educational services is important for the ECO, as more than a quarter of Ontario's population identifies a first language that is not English. On National Indigenous Peoples Day later that month, we released this guide to environmental rights in Cree, Oji-Cree and Ojibwe.

The ECO's Resource Centre, with an extensive collection of environmental documents, is also open to the public. Altogether, the ECO is proud of our growing success in reaching and serving Ontarians. The ECO is always on the lookout for new audiences to share information about the citizen rights toolkit available under the EBR, and to update Ontarians on current environmental issues. The ECO is happy to offer overview presentations about the EBR to audiences across Ontario, including lecture and classroom settings, service clubs, private sector groups, ratepayer groups and non-profits. For more information, contact us at commissioner@eco.on.ca.

1.3 Statements of Environmental Values

The EBR requires each prescribed ministry to develop and publish a Statement of Environmental Values (SEV). An SEV describes how the ministry will integrate environmental values with social, economic and scientific considerations when it makes environmentally significant decisions; ministries must consider their SEVs when making decisions that might significantly affect the environment. The ministry does not always have to conform to its stated values, but it must explain how it considered them when making a decision.

1.3.1 Keeping SEVs up to date

Prescribed ministries are not required to review or update their SEVs on any regular basis. However, some ministries do so to reflect an updated mandate or to include additional values.

For example, in the 2017/2018 reporting year the Ministry of Agriculture, Food and Rural Affairs (OMAFRA), the Ministry of Economic Development, Job Creation and Trade (MEDJCT) and the Ministry of Natural Resources and Forestry (MNRNF) all proposed changes to their SEVs to include, among other things, commitments related to climate change, the consideration of Indigenous peoples and a five year review of the SEV. Additional ministries have since proposed similar updates to their respective SEVs.

MNRNF staff proactively contacted the ECO in March 2018 to share the ministry's draft updated SEV, which includes additional changes such as a commitment to reviewing the SEV every five years, and a commitment to considering a new, detailed list of principles when developing policies, acts, regulations and instruments. The ECO applauds the MNRNF for its efforts to make its SEV more meaningful, and for its plans to build awareness of the SEV within the ministry through staff training and new implementation tools.

Prescribed ministries may also be required to update their SEVs or prepare new SEVs when they undergo significant changes, such as combining with another ministry or splitting into multiple ministries.

1.4 Public notice and consultation using the Environmental Registry

The Environmental Registry is the key EBR tool facilitating public engagement in government environmental decision making. The Environmental Registry is a website that provides the public with access to information about environmentally significant proposals put forward by the Ontario government, and allows the public to provide comments on those proposals. Once the government has made a decision whether to proceed with a proposal (or not), information about the government's decision is also published on the Environmental Registry.

Ministries must also use the Environmental Registry to give notice when they are relying on an exception under the EBR to excuse the ministry from following the usual public consultation requirements of the act. Occasionally, ministries also use the Environmental Registry to share environmentally significant information that they are not required to post, or that they are required to post under legislation other than the EBR.

The Environmental Registry also provides other information that may help the public exercise their EBR rights, including:

- notice of appeals and leave to appeal applications related to certain instruments
- background information about the EBR
- links to the full text of the EBR and its regulations
- links to prescribed ministries' Statements of Environmental Values
- in some cases, links to the full text of proposed and final policies, acts, regulations and instruments, and
- in some cases, links to other information relevant to a proposal.

The Ministry of the Environment, Conservation and Parks (MECP) hosts and maintains the Environmental Registry. Currently, the Environmental Registry can be accessed at ebr.gov.on.ca. The ministry also is in the process of creating a new, modernized Environmental Registry (see section 1.4.6).

The ECO monitors ministries' use of the Registry to ensure that prescribed ministries are fulfilling their responsibilities under the EBR and respecting the public's participation rights. In 2017/2018, ministries posted over 1,500 proposals and over 1,800 decisions on the Environmental Registry for policies, acts, regulations, licences, permits and other environmental approvals, and members of the public submitted thousands of comments. Ministries also posted 133 information notices and 2 exception notices. See Table 1 for a list of the most commented-on proposals for which the government posted decision notices on the Environmental Registry in 2017/2018. See Figure 1 and Figure 2, below, for a breakdown of new notices (i.e., proposals, information notices and exception notices) posted on the Environmental Registry, by ministry, in 2017/2018.



Table 1. Top 10 most commented-on government proposals decided and posted on the Environmental Registry in 2017/2018.

	Proposal	# of Comments Received
1	Bottled Water Technical Guidance Document	8,431
2	A regulation establishing a new water bottling charge	7,962
3	Canada-Ontario Action Plan for Lake Erie	2,227
4	Planning Ontario's Energy Future: A Discussion Guide to Start the Conversation	1,755
5	Amended Niagara Escarpment Plan, 2016 (part of the Co-ordinated Land Use Planning Review)	902
6	Algonquin Provincial Park Management Plan Amendment	783
7	A Wetland Conservation Strategy for Ontario 2016-2030	654
8	Cap and Trade Program Design Options	575
9	Ontario Cap and Trade Program: Offsets Credits Regulatory Proposal	549
10	Discussion Paper: Addressing Food and Organic Waste in Ontario (Resource Recovery and Circular Economy Act, 2016)	527

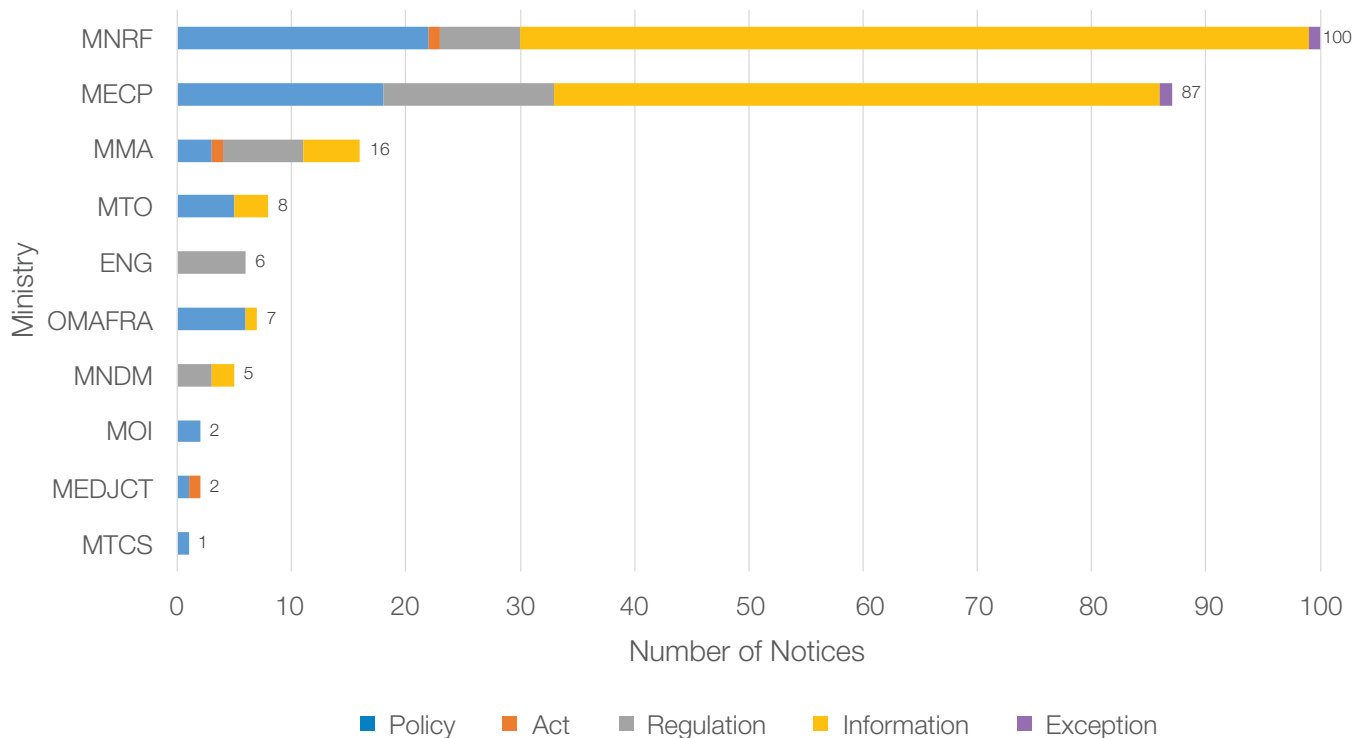


Figure 1. Total number of policy, act, and regulation proposals and information and exception notices posted on the Environmental Registry in 2017/2018, by ministry. Note that six prescribed ministries (EDU, MOHLTC, MHO, IAO, MOL, and TBS) did not post any notices in 2017/2018.

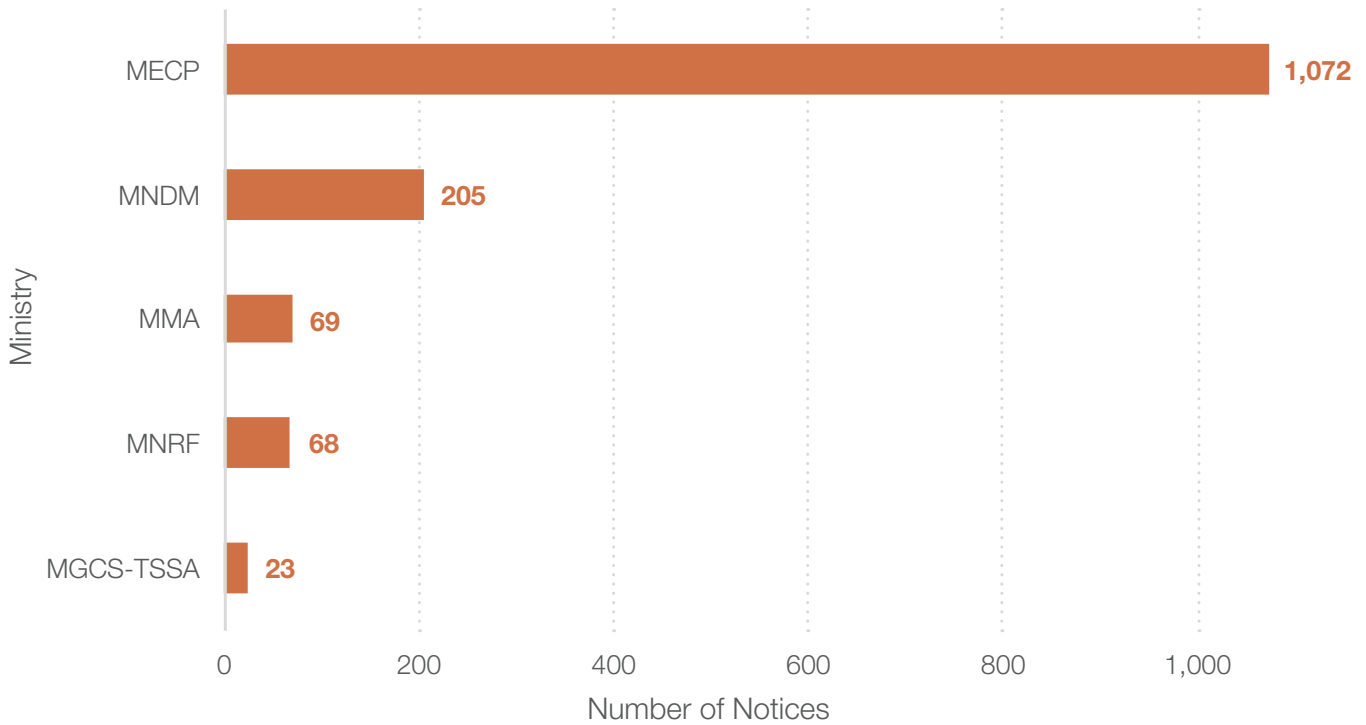


Figure 2. Total number of instrument proposal notices posted on the Environmental Registry in 2017/2018, by ministry.

1.4.1 Policies, acts and regulations

Prescribed ministries are required to give notice of and consult on environmentally significant proposals for policies, acts and regulations on the Environmental Registry. Ministries must provide at least 30 days for the public to comment on any proposed environmentally significant act or policy, as well as regulations made under prescribed acts; there are 40 acts prescribed (in whole or in part) under the EBR. The public can submit comments online, by mail or by e-mail. Ministries must consider the public's comments when making a decision on a proposal. Once a decision is made, ministries must give notice of the decision promptly on the Environmental Registry, explaining how the public's comments affected the final decision.

During the ECO's 2017/2018 reporting year, 11 prescribed ministries posted 99 proposal notices and 81 decision notices for policies, acts and regulations on the Environmental Registry (see Figure 3).

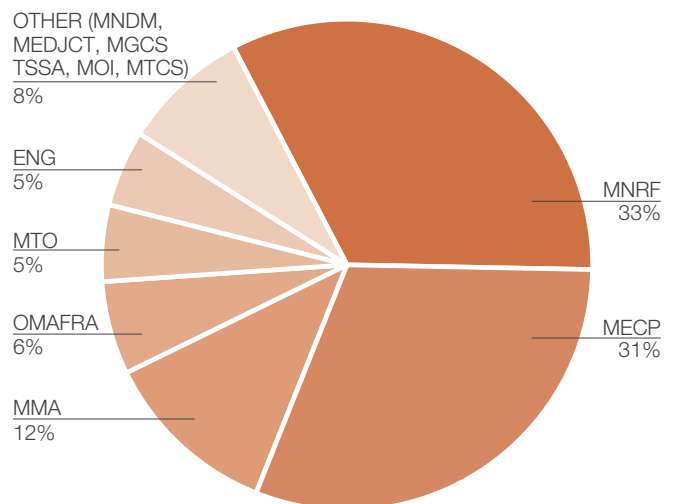


Figure 3. Percentage of all policy, act and regulation notices (proposals and decisions) posted on the Environmental Registry by prescribed ministry in the 2017/2018 reporting year. Note that EDU, MOHLTC, MHO, IAO, MOL, and TBS did not post any notices.



Ministry of the Environment, Conservation and Parks fails to consult the public on the repeal of Ontario's cap and trade program

In July 2018 (after the end of the ECO's 2017/2018 reporting year), the Ministry of the Environment, Conservation and Parks (MECP) made an environmentally significant decision to repeal the province's cap and trade program – designed to combat climate change – without consulting the public. Under the EBR, the ministry should have posted a proposal notice for the regulation on the Environmental Registry, consulted the public for a minimum of 30 days, and considered any public comments submitted before making a final decision.

Instead, the ministry inappropriately posted an exception notice (#013-3221) on the Environmental Registry to notify the public of the government's decision to file a regulation repealing the cap and trade program. The notice stated that “the Minister was of the opinion that the recent Ontario election was a process of public participation that was substantially equivalent to the process required under the EBR and that ... the government made a clear election platform commitment to end the cap and trade program.”

A proposal that has already undergone a process of public participation that is substantially equivalent to

The ECO strongly disagrees that an election is a process of public participation substantially equivalent to the process required by the EBR.

the process required by the EBR can be excepted from the EBR's consultation requirements. The ECO strongly disagrees that an election is a process of public participation substantially equivalent to the process required by the EBR. The public's right to know about and comment on environmentally significant government proposals, and to know the effects of their comments on final policy decisions, is wholly separate from the democratic mandate the public gives a party through an election.

This is the first time in the EBR's history that a ministry has used this rationale in deciding to post an exception notice instead of a proposal notice, and it should be the last. The public has much to contribute to good environmental policy, and consultation via the Environmental Registry has often resulted in better decision making and better results for Ontario.

1.4.2 Permits, licences and other approvals

During the ECO's 2017/2018 reporting year, five ministries (MGCS, MECP, MMA, MNRF and MNDM) were also prescribed for the purposes of giving notice and consulting on certain proposed “instruments” (e.g., permits, licences and other approvals) that are issued by those ministries. Currently, select instruments issued under 19 different acts are subject to the EBR.

These ministries must give notice on the Environmental Registry of any proposals and decisions related to those instruments, such as the decision to issue or revoke a prescribed permit.

This year, these ministries posted 1,437 proposal notices and 1,738 decision notices for instruments on the Environmental Registry (see Figure 4).

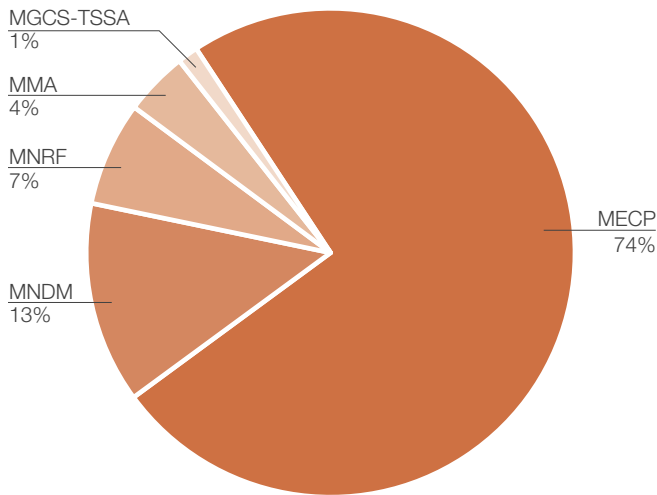


Figure 4. Percentage of all instrument notices (proposals and decisions) posted on the Environmental Registry by prescribed ministry in the 2017/2018 reporting year.

1.4.3 Information notices

Sometimes the government proposes or makes a decision that could affect the environment, but the EBR does not require the responsible ministry to post a proposal notice on the Environmental Registry. In such a case, the ministry may choose to inform the public by voluntarily posting an “information notice” on the Registry. For example, the MNRF voluntarily posts information notices to let the public know when it proposes to issue certain types of permits under the Endangered Species Act, 2007 that the EBR does not require to be posted.

Ministries also use information notices to fulfill requirements of other statutes to provide information to the public. These are some of the most common types of information notices posted on the Environmental Registry. Examples include amendments to renewable energy approvals (required under the Environmental Protection Act) and approved source protection plans (required under the Clean Water Act, 2006).

In the 2017/2018 reporting year, 6 ministries posted 133 information notices. The ECO assessed all information notices in the reporting year and judged them all as appropriate uses of the Environmental Registry. For example, in August 2017, the MNRF

made good use of an information notice (#013-1070) to notify the public that it had updated the Lakes and Rivers Improvement Act Administrative Guide. The ministry updated the Guide to reflect new legislation and ministry name changes and to provide policy clarification, but did not include any changes with environmentally significant impacts or consequences.

1.4.4 Exception notices

In certain situations, the EBR relieves prescribed ministries of their obligation to consult the public before making an environmentally significant decision. In such situations, ministries must instead post an “exception notice” to inform the public of the decision and explain why it did not first post a proposal notice and consult the public.

Ministries can post an exception notice instead of a proposal notice in two main circumstances. First, a ministry may post an exception notice when the ministry must make a decision quickly in order to deal with an emergency, and the delay in waiting for public comment would result in danger to public health or safety, harm or serious risk to the environment, or injury or damage to property. Second, a ministry can notify the public about an environmentally significant proposal using an exception notice when the proposal will be, or has already been, considered in another public participation process that is substantially equivalent to the process required under the EBR.

In the 2017/2018 reporting year, the MECP and the MNRF each posted one exception notice, and the ECO judged them both to be appropriate uses of the Environmental Registry.

However, as discussed in section 1.4.1 above, the MECP posted an exception notice in July 2018 (outside of the ECO’s 2017/2018 reporting year) for the repeal of Ontario’s cap and trade program. The ECO believes that the ministry’s use of an exception notice in that case was inappropriate, and an example of egregious non-compliance with the EBR that denied the public its right to participate in an important environmentally significant decision.



1.4.5 No chance to comment: ministry failures to post environmentally significant proposals

The ECO has a statutory duty to report to the Ontario legislature on how well ministries are fulfilling their obligations under the EBR to notify and consult the public on environmentally significant proposals using the Environmental Registry. The ECO's evaluation is largely contained within our EBR report cards (see Chapter 3), with the exception of determining if any prescribed ministries failed to properly post proposal notices for environmentally significant policies, regulations or acts to the Environmental Registry. When ministries fail to post environmentally significant proposals on the Environmental Registry, the public does not have a chance to comment on the proposal, or to be informed of the effect of their comments.

This year, the ECO identified three instances in which prescribed ministries failed to post environmentally significant proposals on the Environmental Registry (see Table 2) – a disappointment compared to last year, when there were no such cases of non-compliance that we found. The ECO reminds all prescribed ministries to post every environmentally significant proposal on the Environmental Registry for public consultation.

Table 2. Ministry non-compliance with the EBR by failing to post proposal notices on the Environmental Registry between April 1, 2017 and March 31, 2018.

Ministry of Agriculture, Food and Rural Affairs (OMAFRA)
Northern Livestock Pilot Action Plan
Ministry of Energy, Northern Development and Mines (ENDM)
Long Term Energy Plan
Ministry of Health and Long-term Care (MOHLTC)
Guidelines for implementing Modernized Ontario Public Health Standards regarding healthy environments and safe water

Guidelines for implementing Modernized Ontario Public Health Standards regarding healthy environments and safe water

The Ministry of Health and Long-Term Care publishes the Ontario Public Health Standards (OPHS), which contain goals, program outcomes and requirements for “Healthy Environments” and “Safe Water” that must be attained by boards of health. The Ministry of Health and Long-Term Care produces protocols and guidelines that provide direction to boards of health on meeting the OPHS requirements. The Updated Recreational Water Protocol (2018), Operational Approaches to Recreational Water Guideline (2018), Small Drinking Water Systems Risk Assessment Guideline (2018), and Healthy Environments and Climate Change Guideline (2018) all contain direction that the ECO believes has environmental impacts. For example, the Operational Approaches to Recreational Water Guideline has changed the way public health units monitor and report on E. coli in recreational waters to align with the national guideline – a change that sparked some concern from members of the public working to protect Great Lakes water quality who would have liked to comment on the proposed change.

The ECO considers all of these protocols and guidelines to be environmentally significant. We believe that the ministry should have posted a proposal for these documents on the Environmental Registry, so that members of the public who were concerned about the changes could have expressed their views to the ministry and been assured that the ministry would consider their comments before finalizing the documents.

The ECO met with MOHTLC staff to discuss the ministry's obligations under the EBR regarding the protocols and guidelines. Although staff indicated that the MOHLTC would post an information notice on the Environmental Registry containing all the updated protocols and guidelines when they were complete, the updated protocols and guidelines are now available on the ministry website but as of September 2018 no information notice has been posted.

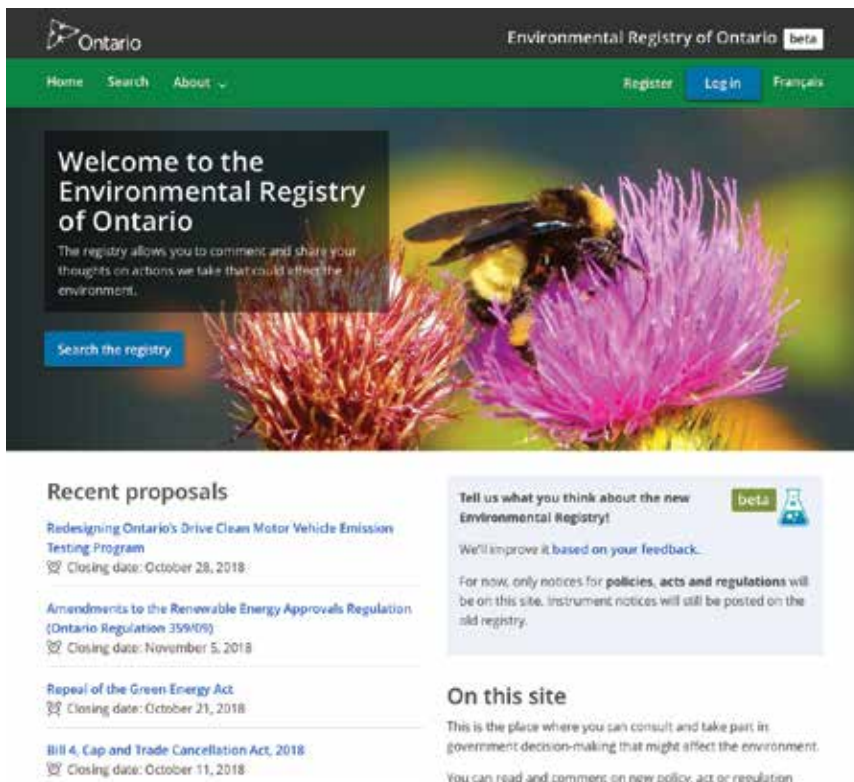
1.4.6 An EBR success story: A new Environmental Registry for Ontario

The Environmental Registry is one of the key innovations of the Environmental Bill of Rights. Originally launched as a bulletin board system, over the years it evolved into a complex website that Ontarians use to find out about and provide input into important environmental decisions. A working, easy to use registry is critical for people to be able to exercise their EBR right to participate in the Ontario government's environmental decision making.

In recent years, it became clear that the existing Environmental Registry platform, which has not been updated since 2007, has reached the end of its useful life. It is hard to read, difficult to search, and incompatible with mobile devices – among many other problems (see Part 1.2.1 of the ECO's 2015 Environmental Protection Report). The ECO has highlighted these deficiencies a number of times and urged the Ministry of the Environment, Conservation and Parks (MECP) to overhaul the Environmental Registry.

Beginning in 2016, following requests by the ECO, a new Environmental Registry for Ontario finally started to become a reality. The MECP started out by holding an "ideation session" that brought together ministry staff, ECO staff and members of the public to brainstorm ways the Environmental Registry could be improved. Then, in April 2017, the MOECC began to collaborate with the Ontario Digital Service. This team conducted extensive user research, which resulted in more than 50 hours of discussions with ministry staff, environmental law firms, advocacy groups, municipalities, business owners, concerned citizens, and the Environmental Commissioner.

Based on this research, the team produced prototypes for a new registry and brought in users for testing. These prototypes were refined and transformed into the new Environmental Registry of Ontario, which was publicly launched in beta in February 2018. The team formally solicited feedback from users for the first four months of the initial launch and continues to consult with users as new features are developed.



Source: ero.ontario.ca



As of September 2018, the beta version of the Environmental Registry only included recent notices for policies, acts and regulations, but ministries could also post new bulletins (known as information notices on the old Registry) and exception notices. The MECP anticipated that the new Registry would soon include all types of notices, including new instrument notices. Eventually, the full archive of notices on the Environmental Registry will also be carried over to the new site.

The mobile-friendly and highly accessible site includes a number of the features that users have been requesting for years, including vastly improved search capabilities. Notably, the new Registry has a built in notification function so that users can receive alerts when notices containing selected keywords are posted, when a proposal is updated or decided, and when their comments are moderated. The MOECC and Ontario Digital Service team also put an emphasis on making the new registry easier for users to understand, and provided extensive “plain language” training for ministry staff who are responsible for putting information on the Registry.

For now, both the new Environmental Registry of Ontario and the old Environmental Registry exist in parallel, to ensure that Ontarians can always access the critical information on the Registry while all of the needed features are added to the new site. Once all the required features are integrated and working well, the new Environmental Registry will fully replace the old site.

The ECO commends the MECP and the Ontario Digital Service for their outstanding work on the new Environmental Registry of Ontario.

The ECO commends the MECP and the Ontario Digital Service for their outstanding work on the new Environmental Registry of Ontario. By emphasizing the importance of the user experience, while still accommodating legal requirements and government needs, this team developed a cutting edge platform

that will make it easier for the public to access important environmental information and participate in environmental decision making. The ECO looks forward to watching the new Registry platform evolve and eventually replace the old site. In the meantime, we encourage you to explore the new site. It can be accessed at ero.ontario.ca.

1.5 Appeals, lawsuits and whistleblower protection

The EBR provides Ontarians with increased access to courts and tribunals for the purposes of environmental protection. It provides a special right for members of the public to seek leave to appeal (i.e., permission to challenge) certain ministry decisions regarding instruments. For example, a member of the public could use this EBR right to challenge a decision by the Ministry of the Environment, Conservation and Parks (MECP) to issue an approval for a waste disposal site in their community.

Ontario residents may also take court action to prevent harm to a public resource or to seek damages for environmental harm caused by a public nuisance. Finally, the EBR provides enhanced protection for employees who suffer reprisals from their employers for exercising their EBR rights or for complying with, or seeking the enforcement of, environmental rules.

1.5.1 Appeals of instruments

Instruments that are subject to EBR consultation can be appealed in several different ways. Many laws provide individuals and companies with a right to appeal government decisions that directly affect them, such as a decision to deny, amend or revoke an instrument that they applied for or that the government issued to them. In some cases, laws also give third parties (e.g., members of the public) a direct right to appeal ministry decisions about instruments – third parties can appeal decisions on some Planning Act instruments² and can appeal decisions on renewable energy approvals under the Environmental Protection Act. Finally, the EBR allows third parties to seek leave to appeal decisions

on many types of instruments that are subject to EBR consultation, including environmental compliance approvals (ECAs) for air, sewage and waste, and permits to take water.

Appeals of EBR-prescribed instruments are generally heard by the Environmental Review Tribunal, with the exception of Planning Act appeals, which are heard by the Local Planning Appeal Tribunal (formerly the Ontario Municipal Board).

When someone challenges an instrument that is subject to EBR consultation in any of the ways described above, the ECO notifies the public by posting an appeal notice on the Environmental Registry. We post another notice when the matter is concluded to inform the public of the outcome.

During the 2017/2018 reporting year, the ECO posted notices on the Environmental Registry for six new appeals and one application for leave to appeal. Instrument holders filed five of the appeals, while a third party filed one appeal challenging the amendment of a renewable energy approval. The third party application for leave to appeal challenged an environmental compliance approval for a waste facility; the Environmental Review Tribunal denied that application.

Over the course of this reporting year, the Environmental Review Tribunal and the Ontario Municipal Board issued decisions on 18 appeals and leave to appeal applications related to EBR-prescribed instruments, including decisions on 13 appeals that were filed in previous years. This year most appeals were granted or granted in part, or were resolved through a settlement agreement (see Figure 5).

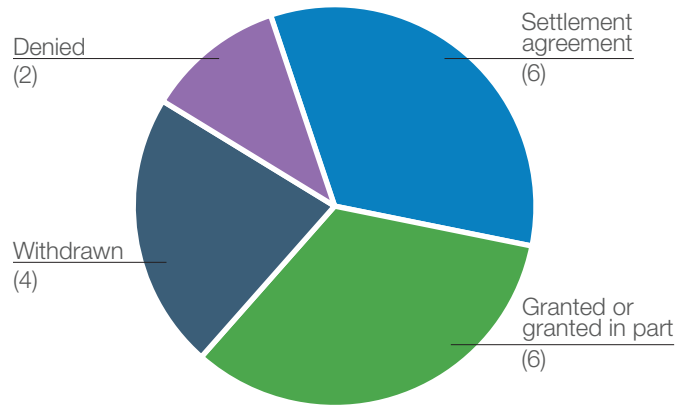


Figure 5. Outcome of appeals and leave to appeal applications decided in the 2017/2018 reporting year.

1.5.2 Lawsuits and whistleblower protection

The ECO is not aware of any new lawsuits brought under the EBR for public nuisance or harm to a public resource during the 2017/2018 reporting year. Similarly, the ECO is not aware of any employer reprisal (“whistleblower”) cases in this reporting year.

1.6 Keeping the EBR in sync

To be effective, the EBR needs to be kept up to date with new laws, new ministries, and the shuffling of government portfolios.

When ministries are “prescribed” under the EBR (i.e., made subject to the law by being listed in a regulation), they must comply with the EBR’s public notice and consultation requirements for environmentally significant policies, acts and regulations. They must also develop a Statement of Environmental Values and consider those values when making any environmentally significant decisions. Ministries can also be prescribed for applications for review, and environmentally significant acts administered by those ministries can be made subject to applications for investigation.

2. On April 3, 2018, amendments to the Planning Act came into force that eliminate the ability to appeal provincial decisions on official plans and official plan updates, including conformity exercises. In addition to no longer being appealable directly under the Planning Act, such decisions are also no longer appealable by third parties under the EBR.



Making certain permits, licences, and other approvals subject to the EBR is important because it then requires ministries to comply with the EBR's public notice and consultation requirements for those instruments. Generally, prescribed instruments are also subject to applications for review and investigation. In many cases, making instruments subject to EBR requirements also gives members of the public the right to seek leave to appeal decisions about those instruments.

The ECO encourages the Ministry of the Environment, Conservation and Parks (MECP) (the ministry responsible for administering the EBR and its regulations) to work with other ministries to regularly update the EBR regulations (O. Reg. 73/94 and O. Reg. 681/94) to ensure Ontario residents can continue to participate in all environmentally significant government decisions.

1.6.1 ECO request to subject additional ministries, agencies and laws to EBR public participation rights

This year, the ECO undertook a comprehensive review of environmentally significant ministries, agencies and acts that have yet to be prescribed under the EBR. We compiled a priority list of these and sent it to the then Premier of Ontario, requesting that the government bring these important laws and organizations under the EBR umbrella to enable the public to participate when environmentally significant changes are made to laws and regulations. Below, you can see a list of ministries, agencies and acts that the ECO recommended be made subject to the EBR. You can view our letter to the Premier, including the complete list and the rationale for our requests, on our website at eco.on.ca.

We received a non-committal response to our request from the then Premier, and acknowledgements of our request from some of the ministries who would need to work with the Ministry of the Environment, Conservation and Parks to prescribe themselves or acts or agencies under their jurisdiction, namely the Ministry of Finance, the Ministry of Transportation, the Ministry of Infrastructure, and the Ministry of Natural Resources

and Forestry. However, to date little progress has been made towards bringing these environmentally significant ministries, agencies and acts under the EBR umbrella.

Ministries and agencies recommended by the ECO for prescription under the Environmental Bill of Rights:

- Metrolinx
- Ministry of Finance
- Ontario Heritage Trust

Acts recommended by the ECO for prescription under the Environmental Bill of Rights:

- Drainage Act
- Weed Control Act
- Building Code Act, 1992
- Municipal Act, 2001
- City of Toronto Act, 2006
- Infrastructure for Jobs and Prosperity Act, 2015
- Electricity Act, 1998
- Energy Consumer Protection Act, 2010
- Ontario Energy Board Act, 1998 (currently only partially prescribed)
- Wilderness Areas Act
- Forestry Act
- Algonquin Forestry Authority Act
- Ontario Forest Tenure Modernization Act, 2011
- Forest Fires Prevention Act

1.7 The ECO Recognition Award: the Mushkegowuk Climate Summits

Each year, we ask prescribed ministries to submit exceptional programs and projects to be considered for the ECO's Recognition Award. This award is meant to recognize and praise public servants from a ministry prescribed under the EBR for their hard work in an initiative that is innovative, goes above and beyond legal mandates of the ministry, better Ontario's environment, and meets the requirements and purposes of the EBR. For a list of past recipients of the ECO's Recognition Award, see Table 3.

This award is meant to recognize and praise public servants for their hard work.

This year, the ECO received nominations for 13 projects and programs from four ministries. The ECO congratulates all the ministry staff who implemented these exceptional environmental projects.

After careful consideration, the ECO has decided to give the 2018 ECO Recognition Award to staff from the Ministry of the Environment, Conservation and Parks (MECP), the Ministry of Natural Resources and Forestry (MNRF) and the Ministry of Energy, Northern Development and Mines (ENDM) for their role in supporting the Mushkegowuk Climate Summits.

The concept for the Climate Summits was developed by the Mushkegowuk Tribal Council, informed by the vision of its member First Nations to understand and protect the James and Hudson Bay Lowlands. The ministries, along with Laurentian University, provided funding, advice, guidance and the participation of scientific experts at the summits. The multiple partners involved in this year's recipient project, as well as the lead role of Mushkegowuk Council and communities,

demonstrate the value of partnerships and the importance of collaboration in working together to further shared environmental goals in Ontario.

The Hudson Bay Lowlands cover about half of Ontario's Far North, and are a globally significant carbon store. The peatlands in this region are currently helping to cool the planet, but the carbon sink is increasingly vulnerable as temperatures warm. Climate change is already having impacts for people across Ontario, and these impacts are even more pronounced for northern Indigenous communities that rely on these ecosystems for their food, medicine, livelihoods and cultural practices. There is a growing need to better understand the role of the Hudson Bay Lowlands in the global climate system, as well as the impacts that climate change is expected to have on the vast carbon stores in this region.

The MECP, the MNRF and the ENDM are collaborating with the Omushkego people and the Mushkegowuk Council, to begin to fill knowledge gaps and develop more robust climate change strategies. The Mushkegowuk Council initiated this partnership to address shared concerns about climate change impacts and to promote the exchange of Traditional Knowledge and western scientific information.

The Mushkegowuk Council

The Mushkegowuk Council is the representative organization for seven First Nations in the Western James Bay and Hudson Bay region: Attawapiskat First Nation, Kashechewan First Nation, Fort Albany First Nation, and Moose Cree First Nation along the James Bay Coast; and Taykwa Tagamou First Nation, Missanabie Cree First Nation, and Chapleau Cree First Nation farther South in the Boreal Shield. The Mushkegowuk Council has also been working on this project with Weenusk First Nation, located on the Hudson Bay coast.



This partnership has resulted in several capacity building initiatives, and the Mushkegowuk Climate Summits – a gathering of nationally and internationally recognized scientists and researchers, Elders, youth, traditional knowledge keepers and community land use planners. The Climate Summits are the first of their kind in Canada in that they are led by First Nations. They offer a unique opportunity for public input and help to ensure that the concerns of the First Nations communities are actively considered.

The Council has taken initiative to build technical capacity at both regional and community levels, and the MECP has supported Mushkegowuk in hiring an Environmental Steward in each of the eight participating communities. These stewards are tasked with gathering traditional knowledge in their respective communities, sharing climate change information and monitoring environmental changes. They have also worked closely with the Living with Lakes Centre at Laurentian University to learn additional technical and research skills to apply within their stewardship roles. The Environmental Stewards have presented their findings at the most recent Climate Summit and are contributing to ongoing carbon monitoring and research programs in the Hudson Bay Lowlands.

The government's partnership with the Mushkegowuk Council and its contributions to the Mushkegowuk Climate Summits is part of broader reconciliation efforts to strengthen relationships with Indigenous people. In addition to their obligation to provide information and consultation opportunities on the Environmental Registry for the public-at-large, these ministries are exploring new strategies for meaningful engagement with First Nations communities on environmental issues that have a direct impact on their future.

One of the key outcomes of the Climate Summits is that they help lift communication barriers and give First Nations community members a voice to express concerns and ideas that might not otherwise be heard. The Climate Summits are one example of how information can be exchanged in a way that will allow

for sustained engagement with the communities who are most impacted. The ministries' partnership with the Mushkegowuk Council demonstrates a commitment to shared decision making, and will ultimately lead to further collaboration and more informed climate change adaptation and mitigation strategies for northern Ontario.



The Climate Summit was hosted by the Mushkegowuk council in Timmins, Ontario in December 2016 and January 2018.

Photo credit: Vern Cheechoo, Mushkegowuk Council, 2016.

Table 3. Past Recipients of the ECO's Recognition Award: OMAFRA, MECP, MMAH, MNRF, MTCS and MTO.

Year	Program or Project
2017	Pollinator Health Strategy and Action Plan (OMAFRA, MECP, MNRF)
2016	Mid-Canada Radar Site Clean-Up in Polar Bear Provincial Park (MNRF)
2015	No submission found to be acceptable
2014	Water Chestnut Management in Voyageur Provincial Park (MNRF)
2013	Wasaga Beach Provincial Park Piping Plover Program (MNRF)
2012	Algonquin Provincial Park's Waste Management System (MNRF)
2011	Bioretention Cells and Rubber Modified Asphalt at the QEW Ontario Street Carpool Lot, Beamsville (MTO)
2010	Green Power for the Summer Beaver Airport (MTO)
2009	Project Green (MECP)
2008	Zero Waste Events at the Metro Toronto Convention Centre (MTCS)
2007	No submission found to be acceptable
2006	Southern Ontario Land Resource Information System (MNRF)
2005	Conservation of Alfred Bog (MNRF, MECP, MMAH)
2004	Environmental Monitoring (MECP)
2003	Ontario's Living Legacy (MNRF)
2002	Oak Ridges Moraine Strategy (MMAH)
2001	Eastern Massasauga Rattlesnake Project for Highway 69 Reconstruction (MTO)
2000	Septic System Program (MMAH)

Chapter 2

EBR Applications for Review and Investigation



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2.1 Overview

Two of the unique features of the EBR are that it empowers the public to formally ask the government to consider changing existing environmental policies, acts or regulations, or to develop new ones (“application for review”), and to formally ask the government to investigate possible contraventions of environmental laws (“application for investigation”).

EBR applications are powerful tools; applications for review are a way for the public to influence government decision making, while applications for investigation can help ensure that the government upholds environmental laws. Strong EBR applications can result – and have resulted – in improved environmental protection.

Below, we explain how EBR applications for review and investigation work, and we report on both the public’s use of EBR applications and prescribed ministries’ handling of those applications, in accordance with the requirements of the EBR, in 2017/2018. We also provide a brief summary and evaluation of each application that ministries concluded in our reporting year (for the ECO’s assessment of individual ministries’ overall handling of EBR applications, as well as other categories of EBR compliance, see the EBR Report Cards for 2018 in Chapter 3).

2.2 Applications for review

The Environmental Bill of Rights (EBR) gives Ontario residents the right to ask certain ministries to review an existing policy, act, regulation or instrument (e.g., permit or approval) in order to protect the environment. Ontarians can also request a review when there is an absence of rules or direction. For example, the public could ask a ministry to consider whether it should create a new policy for tackling an environmental issue that is currently not addressed by government.

Over the years, applications for review have covered a wide variety of environmental topics, ranging from requests to review the operating permit of an individual company to requests to change entire laws that affect the whole province.

Members of the public are always welcome to contact the office of the Environmental Commissioner of Ontario (ECO) for information and assistance about preparing and submitting an application for review.

The ECO thanks all of the concerned Ontarians who cared enough to take the time to prepare and file these applications for review, and for demonstrating that environmental protection cannot be left to government alone.

2.2.1 The application for review process

The ministry’s role as the policy-maker: to undertake or deny the requested review

Members of the public submit an application for review to the ECO. The ECO then sends the application on to the ministry that is responsible for the issue. The ministry considers the application to determine if it’s in the public interest to undertake it. The EBR gives ministries the discretion to choose whether or not to undertake the review. However, the EBR provides guidance to ensure such decisions are made consistently and fairly. The ministry must weigh a number of factors in deciding to do the review or not, including:

- the potential for environmental harm if the ministry doesn’t do the review
- if government already looks at the issue periodically
- any relevant social, economic, scientific or other evidence
- the staffing and time required to do the review, and
- how recently the ministry decided or reviewed the matter in question, and how much the ministry consulted the public when it did so.

The EBR directs the ministry to deny a request for a review if it made or revised that particular policy, act, regulation or instrument in the last five years using

the Environmental Registry to consult the public. The exception to this “five-year rule” is if there is new evidence that wasn’t originally considered, as well as evidence that significant environmental harm will occur if the review is not done.

A ministry’s decision whether to undertake or deny a requested review can depend on the strength of the application. Applicants need to make a compelling case, supported by sound facts and arguments, for the government to take on the issue. The applicants should demonstrate that there is an environmental problem that needs to be fixed (e.g., there’s a gap in the current rules governing an activity causing environmental harm) and that the environmental problem is serious enough to require action. Governments cannot do all things, and applications for review are essentially asking a ministry to take on a new priority, amidst many other existing government priorities.

Governments cannot do all things, and applications for review are essentially asking a ministry to take on a new priority.

The ECO’s role as the watchdog: to assess the ministry’s response

It is the ECO’s job to encourage ministries to follow the EBR’s process and to evaluate how ministries respond to applications for review. We serve as a watchdog on this process. We do not conduct the actual review ourselves. Indeed, the ECO does not have the power to change provincial policies or laws: that is the job of the minister and ministry staff, who do have authority to create and change government policies. We also don’t get to tell the ministries which reviews to do; that is their decision.

The ECO does, however, evaluate how ministries respond. We look at every application that is concluded in our reporting year – where the ministry either denied or completed the review during the previous April 1 to March 31 – and assess the ministry’s response in two different ways.

First, we assess the ministry’s compliance with the EBR; we evaluate if the ministry met all of the legal EBR timelines and if the ministry’s decision to accept or deny the application was justifiable based on the criteria set out in the EBR (listed above). In this evaluation, concluding that a ministry’s decision was “justifiable” does not necessarily mean we agree with how the ministry chose to handle the matter or that we would have come to the same conclusion had we been the decision-maker; rather, it means the ministry used its discretion in an acceptable manner in accordance with the law.

Concluding that a ministry’s decision was “justifiable” does not necessarily mean we agree.

Second, we also look, more generally, at how effectively (or not) the ministry is addressing the environmental issues raised in the application. For example, in a case where a ministry denies a request to review a specific policy on the basis that it legitimately recently reviewed that policy, the ECO must conclude that the ministry’s decision was justifiable in accordance with the EBR. Nonetheless, the ECO may also agree that the applicants raised very important environmental concerns that the ministry should ideally address in some manner to better protect the environment. In addition to assessing each individual ministry response, we also look for patterns of issues over time and in ministry responses. Sometimes seemingly small issues raised by different people across Ontario can point to a larger problem that the government should tackle.

2.2.2 Report on applications for review in 2017/2018

In the ECO’s 2017/2018 reporting year (April 1, 2017 – March 31, 2018), 11 ministries were prescribed for purposes of receiving EBR applications for review:

- Ministry of Agriculture, Food and Rural Affairs (OMAFRA),
- Ministry of Education (EDU),



- Ministry of Energy (ENG) (now part of the combined Ministry of Energy, Northern Development and Mines, or ENDM),
- Ministry of the Environment and Climate Change (MOECC) (now called the Ministry of the Environment, Conservation and Parks, or MECP),
- Ministry of Government and Consumer Services (MGCS),
- Ministry of Health and Long-Term Care (MOHLTC),
- Ministry of Housing (MOH) (now part of the combined Ministry of Municipal Affairs and Housing, or MMAH),
- Ministry of Municipal Affairs (MMA) (now part of the combined Ministry of Municipal Affairs and Housing, or MMAH),
- Ministry of Natural Resources and Forestry (MNR),
- Ministry of Northern Development and Mines (MNDM) (now part of the combined Ministry of Energy, Northern Development and Mines, or ENDM), and
- Ministry of Transportation (MTO).

Specific laws (“acts”) must be prescribed under Ontario Regulation 73/94 in order for those acts and the regulations made under them to be subject to applications for review. Similarly, instruments (such as permits and licences) must be prescribed under Ontario Regulation 681/94 to be subject to applications for review.

In the 2017/2018 reporting year, members of the public submitted 27 applications for review – the most applications for review submitted in the last ten years (see Figure 1). At the end of the ECO’s reporting year, prescribed ministries had agreed to undertake six of those applications, while preliminary decisions on six were still pending. This year continues a promising trend of prescribed ministries agreeing to undertake more reviews; in the last five years, ministries have undertaken 37% of submitted applications for review – compared with just 15% in the preceding five-year period. This reflects part of a broader trend of improved government attention to the EBR since 2015 (for more information, see Chapter 3).

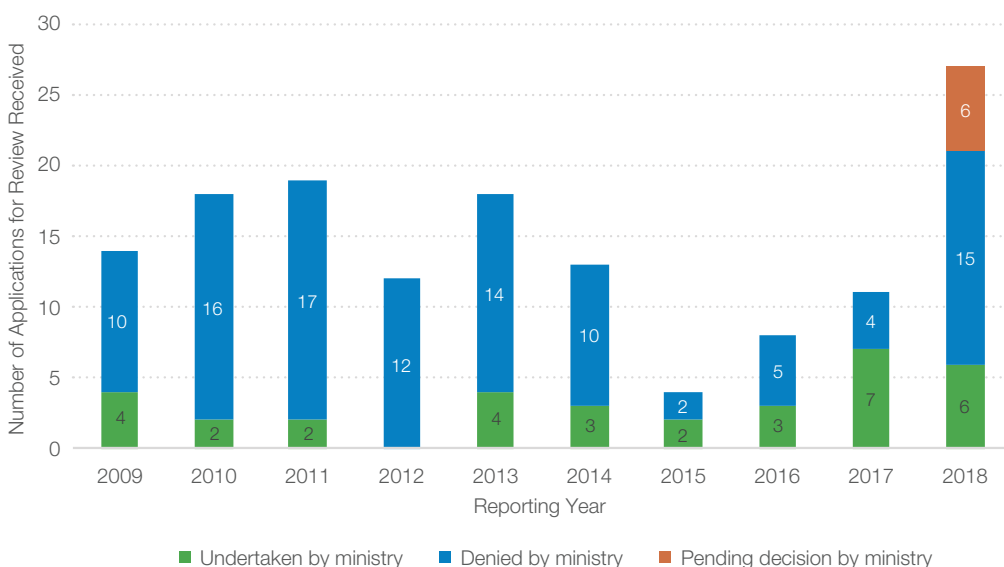


Figure 1. Status of applications for review submitted by reporting year.

Prescribed ministries concluded 18 applications for review in 2017/2018, including 3 applications that were submitted in previous years. We provide a summary

and evaluation of concluded reviews in section 2.2.3. For a list of applications that were ongoing at the end of our reporting year, and their status, see Table 1.

Table 1. Applications for review ongoing at the end of 2017/2018 (status as of March 31, 2018).

Topic	Reporting Year Submitted	Ministry	Decision
Review of the EBR (R2009016, R2010009, R2012003)	2009/2010	MECP	Undertaken
Waste disposal site approval (R2013002)	2013/2014	MECP	Undertaken
Soil management in agricultural operations (R2014002)	2014/2015	OMAFRA	Undertaken
Lake Simcoe Protection Plan (R2016004)	2016/2017	MECP	Undertaken
Water management to improve climate resiliency (R2016005)	2016/2017	MECP	Undertaken
Municipal class environmental assessment process (R2016008)	2016/2017	MECP	Undertaken
Waste disposal site environmental compliance approval (R2016010)	2016/2017	MECP	Undertaken
Monitoring pesticide use from golf courses (R2017004)	2017/2018	MECP	Undertaken
Shorter deadlines for annual pesticide reports from golf courses (R2017005)	2017/2018	MECP	Undertaken
Muskrat Lake Water Quality (R2017008, R2017009)	2017/2018	MECP	Undertaken
Waste disposal site approval (R2017015)	2017/2018	MECP	Undertaken
Aggregate approval (R2017019)	2017/2018	MNRF	Undertaken
Waste disposal site approval (R2017021)	2017/2018	MECP	Undertaken
Aggregate approval (R2017023)	2017/2018	MNRF	Pending
Septic systems (R2017025)	2017/2018	MMAH	Pending
Septic systems (R2017026)	2017/2018	MECP	Pending
Renewable energy approval (R2017028)	2017/2018	MECP	Pending
Habitat offsets for species at risk (R2017029)	2017/2018	MNRF	Pending
Habitat offsets for species at risk (R2017030)	2017/2018	MMAH	Pending













In addition to the applications for review identified above, this year the ECO received two applications for review related to the work of ministries that were not subject to EBR applications at the time of the requests. The first of these applications related to Ontario’s school curriculum and sustainable food systems (Ministry of Education), and the second related to the disclosure of climate-related financial risks (Ministry of Finance). Both of these non-prescribed applications were denied.

2.2.3 Summary and evaluation of applications for review concluded in 2017/2018

Below we provide a summary of all applications for review that were concluded during our 2017/2018 reporting year (see Table 2), as well as the ECO’s evaluation of each concluded application. We also post on our website all of the decisions by ministries on applications, so that the public can read in detail how the government dealt with an issue. We post these decisions each year when we release this report.

Topic	Ministry	Accepted/ Denied	ECO’s Review
Air pollution hotspots (R2008014)	MECP		Ministry took 8 years to complete review, but has now taken action to partially address the environmental issue raised by the applicants.
Environmental penalties for spills from provincially regulated oil pipelines (R2015004)	MECP		Ministry handled application well and has agreed in principle to the requested action by the applicants.
Disallowing the dumping of excess soil in an environmentally sensitive area (R2016009)	MECP		Ministry did not resolve specific concern raised by applicants, but is working on addressing this environmental issue more broadly.
Pesticide use on golf courses (R2017002, R2017003)	MECP		Ministry’s denial was not justifiable based on criteria in EBR, and environmental issue remains unaddressed.
Herbicide use in commercial forestry (R2017006, R2017007)	MNRF		Both ministries’ denial was not justifiable based on criteria in EBR, and environmental issue remains unaddressed.
	MECP		
Muskrat Lake’s water quality (R2017009)	MNRF		Ministry’s denial was justifiable as a more appropriate ministry (MECP) is doing the review.
Protecting woodlands from agricultural practices (R2017010, R2017011)	OMAFRA		Both ministries’ denial was not justifiable based on criteria in EBR, and environmental issue remains unaddressed.
	MMAH		
Placing a moratorium on compressed air energy storage (R2017012)	MNRF		Ministry’s denial was justifiable based on criteria in EBR, and issue is now addressed.

Topic	Ministry	Accepted/ Denied	ECO's Review
Managing plastic pollution (R2017013)	MECP		 Ministry's denial was justifiable based on criteria in EBR, but environmental issue remains unaddressed.
Sewage works approval for Bala Falls hydro facility (R2017014, R2017018)	MECP		 Ministry's denial was justifiable based on criteria in EBR, but ministry handled this process poorly.
Ending the spring bear hunt (R2017016)	MNRF		 Ministry's denial was justifiable based on criteria in EBR, but environmental issue remains unaddressed.
Request for a Minister's Zoning Order to rezone quarry lands (R2017020, R2017024)	MMAH		 Ministry's denial was justifiable based on criteria in EBR, but environmental issue remains unaddressed.
Revising the appeal provisions in the Planning Act (R2017022)	MMAH		 Ministry's denial was justifiable based on criteria in EBR, and other ministry (MNRF) agreed to review site-specific concerns.

Note: This year we also received two applications for review that were sent to non-prescribed ministries (ministries that are not subjected to the EBR requirements). What the ministries do with these reviews is voluntary. As such, the ECO does not assess their compliance with the EBR, but we do report on them in the summaries below.

Air Pollution Hotspots (R2008014)

What the public asked for

In early 2009, members of the public submitted an application asking the Ministry of the Environment, Conservation and Parks (MECP) to review the need for a new regulatory framework to address gaps in Ontario's air pollution laws related to cumulative effects of pollution, particularly air pollution "hot spots."

The applicants believe that air pollution hot spots in Ontario threaten the physical and psychological health of people living in those areas, and compromise their right to live in a healthful environment. The applicants pointed to the environmental health crisis in Aamjiwnaang First Nation, near Sarnia, as evidence of significant deficiencies in Ontario's air pollution regulatory framework.



Air pollution "hotspots" in Ontario include cities like Sarnia (pictured), Hamilton and Windsor.

Photo Credit: P199, (CC BY-SA 3.0).



What the government did: review undertaken

In May 2009, the MECP agreed to undertake the requested review. In November 2017 – over eight years after agreeing to undertake this review – the MECP delivered its decision. The ministry reported that since the application was submitted, it had been “actively working on initiatives and actions related to cumulative effects that are aimed at improving air quality in the province, including in the Sarnia area.” The ministry enumerated a long list of initiatives related to air quality, including:

- delineating air zones and starting to develop an air zone management framework to manage regional air quality across Ontario’s air zones and achieve the Canadian Ambient Air Quality Standards levels established for ozone, fine particulate matter, sulphur dioxide and nitrogen oxides
- establishing technical and site-specific standards for benzene under O. Reg. 419/05 (Air Pollution – Local Air Quality), and
- developing a Local Integrated Air Strategy and implementing a Sarnia-specific action plan targeting contaminants of concern.

The ministry also collaborated with an external working group on O. Reg. 419/05 on the proposal for cumulative effects. The ministry first developed multi-source air dispersion models that included both industrial and non-industrial sources. This information was reviewed and compared against available monitoring data. According to the ministry, this modelling enabled the ministry to determine the relative contribution of industrial and non-industrial sources for selected contaminants.

Most significantly, the ministry’s work on multi-source modelling enabled it to develop a new policy for considering cumulative effects in air approvals.

The ministry asserts that the new cumulative effects policy addresses many of the issues raised in the application for review. However, under the new policy, industry in the Sarnia/Corunna area (near the Aamjiwnaang First Nation) will not be required to implement any enhanced pollution controls. Based on the ministry’s multi-source modelling, Sarnia/Corunna only has areas identified as “Action Level 1,” so only periodic evaluation by the ministry is required to determine if the need for action has changed.

Promisingly, though, the ministry described the new policy as “a first-step and targeted policy to test the effectiveness of this new approach in Ontario.” The ministry committed to reviewing the policy within two years, including, among other things, further analysis of air quality data and other data sources to identify other contaminants and geographic areas that could be included in an expanded policy.

Cumulative Effects Assessment in Air Approvals

The MECP posted its proposal for a new cumulative effects assessment framework on the Environmental Registry in November 2017 for a 90-day public consultation period (Environmental Registry #013-1680). The ministry received 51 comments on the proposal.

The new policy, Cumulative Effects Assessment (CEA) in Air Approvals, which was finalized in April 2018 and took effect on October 1, 2018, sets out a framework for determining when additional pollution controls or other action may be required to address cumulative concentrations of contaminants in air.

The policy only applies to new or expanding facilities in some areas of Hamilton/Burlington and some areas of Sarnia/Corunna, where levels of benzene and benzo[a]pyrene in the air exceed Ontario's Ambient Air Quality Criteria (AAQCs), and where there are multiple sources of those contaminants. The policy applies to both benzene and benzo[a]pyrene in Hamilton/Burlington, and to benzene alone in Sarnia/Corunna.

Under the new policy, even if a facility meets the provincial air standard set out in O. Reg. 419/05, it may need to use enhanced pollution controls depending on the cumulative concentration in the air of multiple sources of benzene or benzo[a]pyrene, and the associated incremental cancer risk (determined in accordance with carcinogen-based AAQCs); see Table 3.

Table 3. Management actions associated with action levels for carcinogens.

Source: MECP, Cumulative Effects Assessment (CEA) in Air Approvals, published April 2018, Table 2-1.

Action Level of CEA Contaminants (Cumulative concentration/risk in air of multiple sources)	Management actions
Less than 1 in a million lifetime incremental combined cancer risk	Does not trigger further action
ACTION LEVEL 1 1 to 10 in a million lifetime incremental combined cancer risk	No further action for industry Triggers periodic evaluation (by ministry) to determine if the Action Level changes
ACTION LEVEL 2 Greater than 10 to 100 in a million lifetime incremental combined cancer risk	ECA Applications for new or expanding facilities: 1. may be required to include a technology benchmarking report with some exceptions 2. may be required to include best available pollution control methods
ACTION LEVEL 3 Greater than 100 in a million lifetime incremental combined cancer risk	ECA Applications for new or expanding facilities may be required to: 1. include a technology benchmarking report with some exceptions 2. include pollution control methods to achieve the lowest possible emission rates as compared to an existing pollution source of the same kind globally



What the ECO thinks: ●

The ECO is pleased that the ministry undertook this review on this very important environmental issue. However, as we have reported numerous times, the ministry's delay in completing its review was unreasonable and showed disrespect to those affected.

The ministry's delay in completing its review was unreasonable and showed disrespect to those affected.

Despite the lengthy delay, we are pleased that the MECP is finally taking steps to regulate air emissions in heavily burdened airsheds based on cumulative effects. But these steps are modest, and we are concerned that, based on current modelling, nothing will actually change in Sarnia or Aamjiwnaang First Nation under the ministry's new cumulative effects assessment policy. The ECO has long expressed concern about the health impacts of heavy industry on Aamjiwnaang First Nation, which suffers some of the worst air pollution in the country.

Nevertheless, it is encouraging that there is potential to expand the new policy to additional contaminants and geographic areas. Some of the MECP's other programs and initiatives, such as technical and site-specific standards for benzene, updated sulphur dioxide (SO₂) air standards, a sulphur action plan to reduce sulphur emissions from petroleum refineries, and better access to real-time and historical air quality data in the area, should also lead to improvements in air quality, including in Sarnia, which is the applicants' ultimate goal.

For more on this topic, see "Air Pollution in Aamjiwnaang" in the ECO's 2017 Environmental Protection Report (pages 121-142).

Environmental Penalties for Spills from Provincially Regulated Oil Pipelines (R2015004)

What the public asked for

Members of the public asked the Ministry of the Environment, Conservation and Parks (MECP) to review and improve existing laws to protect Ontarians and the environment from the adverse effects of hydrocarbon spills from provincially regulated pipelines. The applicants specifically requested that the ministry amend the regulations made under the Environmental Protection Act and the Ontario Water Resources Act to make oil spills from provincially regulated pipelines subject to environmental penalties, and to require spill prevention and contingency plans for pipelines. Environmental penalties are financial penalties imposed for certain environmental violations on an absolute liability basis, complementary to any other enforcement measures.

What the government did: review undertaken ✓

The MECP agreed to undertake the review in conjunction with its five-year review of the environmental penalties program. The MECP acknowledged that the use of environmental penalties has been successful in bringing companies into compliance quickly. In its report on the five-year review of the environmental penalties program, released in December 2017, the ministry recommended that "the ministry consider broadening the application of the environmental penalty regime to include provincially regulated oil transmission pipeline spills." The ministry noted that it will work with stakeholders in considering how to implement this recommendation.

What the ECO thinks: ●

The ECO believes that this review was warranted, and that the ministry handled the application well so far. Although the ministry has not yet taken any action to include spills from provincially regulated pipelines in the environmental penalties regime, these EBR applicants have successfully prompted the ministry to explore the issue, including consulting stakeholders. The MECP has agreed in principle with the requested action.

The ECO notes, however, that only a small subset of spills from pipelines in Ontario are considered to be “spills from provincially regulated pipelines” that may be subject to environmental penalties. First, only those oil pipelines that fall entirely within the provincial borders are provincially regulated; trans-boundary pipelines are federally regulated and generally outside provincial jurisdiction. Second, only those pipelines that meet the specifications of the Oil and Gas Pipeline Systems regulation (O. Reg. 210/01) made under the Technical Standards and Safety Act, 2000 are provincially regulated. Third, the MECP does not consider oil pipeline spills that are totally contained on-site to be provincially regulated spills; the Technical Standards and Safety Authority, which inspects and licences pipelines, takes lead responsibility for responding to on-site spills.

While the applicants suggested that oil spills from provincially regulated pipelines were relatively common (they claimed there were about 174 in Ontario from 2007 and 2014), the ministry’s response to the application suggests otherwise. According to the ministry’s analysis, there was only one reported spill between 2010 and 2016 that was actually from a provincially regulated oil transmission pipeline.

Other ministry action on pipelines

In April 2018, the MECP posted a decision on the Environmental Registry regarding a change to the Clean Water Act’s General Regulation (287/07) which added “the establishment and operation of a liquid hydrocarbon pipeline” as a prescribed drinking water threat. This means that, in addition to existing watershed-based source protection plans in Ontario that already address pipelines, all updated source protection plans will be required to address pipelines where they pose a significant risk to sources of drinking water. This extra regulatory measure will help to ensure that spills prevention and contingency plans are in place and that other precautionary measures are considered and employed.

For more information about source protection in Ontario, including drinking water threats from fuel, see Volume 2, Chapter 1 of this report.

Disallowing the Dumping of Excess Soil in an Environmentally Sensitive Area (R2016009)

What the public asked for

Members of the public submitted an application asking the Ministry of the Environment, Conservation and Parks (MECP) to review an environmental compliance approval for a facility that treats and transports excess soil. Previously, the approval included language that expressly prohibited the facility from depositing the excess soil in environmentally sensitive areas; these are areas of natural or ecological significance that are zoned in municipal official plans. The MECP later amended the approval to provide an exception to this prohibition by allowing the facility to deposit soil at sites that have a “fill permit,” even if that site is an environmentally sensitive area. This had the effect of largely nullifying the original prohibition.

The applicants were concerned about the risk of contamination from soil being dumped at a particular environmentally sensitive area on the Oak Ridges Moraine. They provided evidence of contamination at other sites that had received soil from the same processing facility. The applicants also asserted that the revised approval sets a precedent that creates unnecessary risks for other sensitive ecosystems in the province. They further argued that the amendment to the approval was an environmentally significant decision and, therefore, the ministry should have posted it on the Environmental Registry for public consultation. Because the decision was not posted on the Environmental Registry, members of the public were not properly consulted and were unable to exercise their right to appeal this decision.



The dirt on excess soil

Every year, development and infrastructure projects in southern Ontario create huge quantities of excess soil. In 2012, it was estimated that enough excess soil was dug up from project sites to fill the Rogers Centre between ten and sixteen times. Excess soil is often contaminated with metals, road salt or chemicals, and may also be contaminated with seeds from weeds or invasive species. These contaminants can persist even after the soil is treated in facilities that specialize in soil remediation. The soil is typically trucked off-site for disposal elsewhere, usually to rural land. Dumping excess soil can negatively impact local vegetation and hydrology at the receiving site, and also risks contaminating clean soil and nearby water bodies. This is especially so if the receiving site is environmentally significant or sensitive.

Dumping excess soil can negatively impact local vegetation and hydrology at the receiving site, and also risks contaminating clean soil and nearby water bodies.



“Excess soil” refers to soil that has been excavated for infrastructure projects and disposed of off-site. This soil can contain heavy metals and other contaminants.

Photo Credit: Anthony Neff, (CC BY-ND 2.0).

What the government did: review undertaken

The MECP undertook the review, but ultimately concluded that the conditions in the environmental compliance approval were sufficiently protective of the environment and human health and, therefore, the approval did not need to be revised. The ministry stated that the amendment had been made to recognize the fact that municipalities and conservation authorities have the legal authority to issue fill permits that allow receiving sites to accept processed soils (even sites that are environmentally sensitive areas). The ministry’s rationale for not posting the amendment on the Environmental Registry was that it did not impact the company’s operations.

What the ECO thinks: ●

The ECO believes that this review was warranted. While the ECO is pleased that the ministry undertook the review, the outcome of the review did not ultimately resolve the applicants’ concerns about the dumping of excess soil on an environmentally sensitive property. The ministry did, however, attempt to provide some level of assurance to the applicants that the ministry is working on improving the rules surrounding excess soil management across the province.

A central challenge in dealing with this issue is the complex regulatory framework and jurisdictional overlap in soil management. While the MECP regulates some aspects of soil management, including regulating contaminated soil that meets the definition of “waste,” the province delegates certain powers to municipalities, such as giving them authority to regulate receiving fill that is not “waste.” Under this legal framework, the MECP should not override the municipal power to regulate fill unless the soil has caused, or is likely to cause, an adverse effect. Over the last few years the MECP has been working on improving the regulatory framework to create clearer, more consistent and comprehensive rules for excess soil (see Environmental Registry #013-0299). In this case, however, the MECP confused matters by first establishing, and

then reversing, a blanket prohibition on depositing fill within environmentally sensitive areas; the ministry has delegated this decision-making authority to municipalities to regulate through their fill by-laws and fill permits.

In April 2018, the ministry began public consultation on its regulatory changes for the management of excess soil, including the specific rules around environmentally sensitive areas (see Environmental Registry #013-2774). As the MECP continues to develop elements of its regulatory framework for excess soil, the ECO urges the ministry to provide better direction for municipalities, including technical guidance that would protect environmentally sensitive areas from the impacts of fill, as well as ensuring the municipalities have the resources needed to properly enforce these rules. Currently, many rural municipalities are not adequately regulating fill, often because they don't have the capacity. In many parts of Ontario this problem is out of control.

It is good public policy to avoid putting fill – clean or compromised – in environmentally sensitive areas. Failing that, the province and municipalities should ensure high standards to avoid any negative impacts of fill on the natural features or their ecological functions within environmentally sensitive areas.

For more information on this topic, see the ECO's "EBR Application Prompts New Proposed Rules for Excess Soil Management" in our 2015/2016 Environmental Protection Report (pages 61-68).

Pesticide Use on Golf Courses (R2017002, R2017003)

What the public asked for

Two Ontarians submitted four related applications asking the Ministry of the Environment, Conservation and Parks (MECP) to review various aspects of cosmetic pesticide management on golf courses. The applicants requested that the ministry review the need for:

- a new regulation under the Pesticides Act to prohibit golf courses from using Class 9 pesticides that have no associated Provincial Water Quality Objective (PWQO)
- a new regulation under the Pesticides Act to prohibit golf courses from using Class 9 pesticides that cannot be tested to detect PWQO concentrations
- requirements for routine monitoring of Class 9 pesticides in runoff flowing from golf courses into lakes and rivers, and
- shorter reporting deadlines for golf courses to file reports about pesticide use.

The PWQOs set out the level of various organic and inorganic compounds in water that the MECP considers to be sufficiently protective of all forms of aquatic life. PWQOs provide guidance to the ministry in making water quality management decisions, such as determining acceptable levels of contaminants in wastewater discharge. Class 9 pesticides are the pesticides that are prohibited for cosmetic use.

In support of their applications, the applicants provided the Material Safety Data Sheets for four Class 9 pesticides, which indicate that these pesticides have a significant negative effect on aquatic life. The applicants also provided data specific to pesticide use at golf courses in the Collingwood-Blue Mountain area, including seven years of data on the amount and type of Class 9 pesticides used, and a chart of the top ten most-used Class 9 pesticides and whether they have an associated PWQO. The applicants alleged that there are no certified laboratories to test for two of the top ten most-used Class 9 pesticides. The applicants also noted that a federal investigation into potential contraventions of the Fisheries Act at area golf courses is ongoing.



Federal and provincial roles in regulating pesticides

Pesticides are regulated by both the federal and provincial governments. The federal Pest Management Regulatory Agency has the primary role of assessing the human health and environmental impacts of each pesticide, and registering pesticides under the Pest Control Products Act. The federal government also classifies all federally registered pesticides based on scientific criteria such as toxicity and environmental impacts. The MECP regulates the sale, use, storage, transportation and disposal of federally registered pesticides under the Pesticides Act and its regulation. The ministry has banned Class 9 pesticides for cosmetic use, except on golf courses and in other specified circumstances.

What the government did: two reviews denied

The ministry denied the two applications that requested a new regulation to prohibit golf courses from using certain Class 9 pesticides. The MECP asserted that neither the inability to test pesticides down to a PWQO nor the lack of a published PWQO were sufficient reasons to warrant a review. The ministry also indicated that if Class 9 pesticides become a priority, there is a process through the Canadian Council of Ministers of the Environment to develop a Canadian Water Quality Guideline. The ministry stated that it has no evidence that the current federal and provincial pesticide management systems do not provide sufficient protection to the environment from potential impacts from golf courses.

The ministry also noted that members of the public had an opportunity to participate in the amendments to the Pesticides Act and its regulation during consultation on the cosmetic pesticides ban in 2008, and all pesticide classification decisions are posted on the Environmental Registry.

The MECP did agree to review the need for: more routine monitoring of runoff from golf courses; and shorter reporting deadlines for golf courses to report on pesticide use. The ECO will report on these two related applications when they are concluded.

What the ECO thinks:

The ECO believes that the MECP's decision to deny the two applications was not justified based on the criteria set out in the EBR. The applicants raised reasonable concerns about the environmental impacts of pesticide use on golf courses. The ministry's decision in 2008 to ban certain pesticides from cosmetic use was a precautionary measure to protect Ontario families – particularly children – and the environment from the unnecessary risks of pesticides. It has now been a decade since the ministry banned the use of Class 9 pesticides for cosmetic uses, and the ECO is not persuaded by the ministry's rationale that the public interest does not warrant consideration of an expansion of the ban, on a precautionary basis, to also protect aquatic life from use of those pesticides on golf courses.

It is encouraging, however, that the MECP decided to undertake the other two applications regarding routine monitoring and reporting deadlines for pesticide application on golf courses. The latter two reviews may provide information about pesticide use and runoff from golf courses that should enable the ministry to determine if further action, as suggested by the applicants, is needed. The ECO hopes that the review of these applications will result in increased awareness about the environmental impacts of cosmetic pesticides, and where appropriate, improvements to existing regulations.

The applicants raised reasonable concerns about the environmental impacts of pesticide use on golf courses.

For more information on this topic, see the ECO's "The Pesticide Ban" in our 2008/2009 Environmental Protection Report (pages 68-73). The ECO will report on the other two related applications when the ministry completes those reviews.

Herbicide Use in Commercial Forestry (R2017006, R2017007)

What the public asked for

In May 2017, two members of the public submitted an application requesting a review of the aerial spraying of a herbicide containing glyphosate as part of forestry operations in Ontario. The applicants asserted that small animals die after eating vegetation contaminated with glyphosate, and expressed concern about the potential broader effects on Ontario's wildlife resulting from disruptions to the food chain. The applicants noted that Quebec does not allow the use of glyphosate in forestry, and that some international jurisdictions have banned glyphosate use.

The applicants also stated that the Ministry of Natural Resources and Forestry (MNR) has failed to monitor the impact of forest management on wildlife through the Provincial Wildlife Population Monitoring Program, as required by law. The applicants referred to a past ECO report to the Ontario legislature on this issue to support their argument. According to the applicants, this failure has prevented the MNR from detecting the negative impacts of glyphosate on Ontario's wildlife.

What the government did: reviews denied

The ECO forwarded this application to the MNR and the Ministry of the Environment, Conservation and Parks (MECP). Both declined to undertake the review. The MNR and the MECP explained that pesticides are regulated federally by the Pest Management Regulatory Agency (PMRA) and provincially by the MECP under the Pesticides Act. The ministries noted that in April 2017, the federal PMRA re-assessed glyphosate and concluded that it does not pose an unacceptable risk to human health or the environment. The MNR also asserted that herbicide use is consistent with sustainable forest management.

What the ECO thinks:

The ECO believes that both of the ministries' decisions to deny these applications were not justifiable based on the criteria set out in the EBR. The MNR's response did not adequately address the applicants' concerns about the failure of the Provincial Wildlife Population Monitoring Program to assess the impact of forestry-related glyphosate use on Ontario's wildlife. The MNR has a legal obligation to conduct an assessment of the impacts of forestry on wildlife; it has been ignoring this requirement for almost 25 years. The MECP has the role as regulator under the Environmental Assessment Act to ensure the MNR meets its responsibilities with regard to commercial forestry in Ontario. The MECP's denial of this application continues its long-standing pattern of turning a blind eye to MNR's obligations to monitor and report on the environmental impacts of commercial forestry.

A number of Indigenous communities have contacted the ECO over the last several years to express their frustration about the impact of forestry-related glyphosate use on Ontario's wildlife. The ministries owed the applicants a more thorough response beyond a pat reference to the federal government's general assessment of glyphosate. A recent U.S. court case, in which the jury concluded that glyphosate-based weedkillers caused a groundskeeper's terminal cancer,



The MNRF has a legal obligation to conduct an assessment of the impacts of forestry on wildlife; it has been ignoring this requirement for almost 25 years.

highlights the need for more careful scrutiny of the risks the use of glyphosate poses to both humans and wildlife.

For more information, see Volume 3, Chapter 1 of this report, “Good Science, Better Decisions: Monitoring Ontario’s Species and Ecosystems.”

Muskrat Lake’s Water Quality (R2017009)

What the public asked for

Members of the public submitted an application asking the Ministry of the Environment, Conservation and Parks (MECP) and the Ministry of Natural Resources and Forestry (MNRF) to review the need for a new law and plan to address water quality issues in Muskrat Lake, near Cobden. The applicants stated that Muskrat Lake has the poorest water quality in Renfrew County, with agriculture contributing significantly to water quality issues. Total phosphorus levels in the lake have been measured at levels that exceed the Provincial Water Quality Objective.

The applicants noted that algal blooms form in Muskrat Lake every summer from mid-July to mid-September. They expressed concern that since the lake provides drinking water to the Town of Cobden, the algal toxins pose a serious health threat. Algal blooms also inhibit recreational activity in the lake such as swimming, snorkelling, diving and fishing. The applicants stated that the lake’s water quality has impacted tourism and property values in the area. The applicants provided extensive evidence to support their request, including scientific studies and water quality data.

What the government did: one review denied ❌

The MNRF declined to undertake the application on the basis that the applicants’ concerns about Muskrat Lake water quality fall under the MECP’s jurisdiction. The MECP agreed to undertake the application, and anticipates that the review will be completed by the end of 2018.

What the ECO thinks: ●

The ECO believes that the MNRF’s decision to deny this application was justifiable based on the criteria set out in the EBR, given that the MECP is undertaking the review. The ECO will report on the final outcome of this application once the MECP concludes its review. For more information, see the ECO’s “Algae Everywhere” in our 2017 Environmental Protection Report (pages 148-165).

Protecting Woodlands from Agricultural Practices (R2017010, R2017011)

What the public asked for

Members of the public submitted an application asking the Ministry of Agriculture, Food and Rural Affairs (OMAFRA) and the Ministry of Municipal Affairs and Housing (MMAH) to review the need for a new act or regulation to prevent the cutting and burning of woodlots for agricultural uses in municipalities with less than 30% tree cover. The applicants note that Environment and Climate Change Canada recommends a minimum 30% threshold of tree coverage for sustaining some measure of ecosystem health. The applicants point to their municipality within the South Nation watershed as an example, which they say has a 28.1% tree cover and is losing trees at a high rate due to an increase in soybean farming.

The applicants assert that the loss of tree cover is contributing to increased soil erosion due to wind and run-off, harming local water quality. They also state that the loss of tree cover drives the loss of biodiversity. The applicants state that their municipality does little

to regulate the impact of agriculture on woodlots, including having an ineffective outdoor burning by-law and no tree cutting by-law at all. The applicants also note that the OMAFRA's best management practices for woodlots are only voluntary and are not being applied.

What the government did: reviews denied ❌

Both ministries denied the application, citing a number of existing provincial laws, policies and programs that generally relate to woodlot conservation, including: the MMAH's Municipal Act and Provincial Policy Statement (PPS), which regulate land use planning; the OMAFRA's agriculture best management practices; the Ministry of Natural Resources and Forestry's Natural Heritage Reference Manual; and government grant and incentive programs including the Conservation Land Tax Incentive Program and the Managed Forest Tax Incentive Program. The MMAH also specifically noted recent amendments to the Municipal Act that will require municipalities to develop policies next year to protect and enhance tree canopy and natural vegetation.

What the ECO thinks: ●


The ECO believes that both of the ministries' decisions to deny these applications was not justifiable based on the criteria set out in the EBR. Although there are indeed, as noted by both ministries, a number of laws, policies and programs intended to protect natural heritage features such as woodlots, the very point of this application is that they are ineffective, as evidenced by the continuing loss of tree cover in some regions of the province due in part to agriculture (see Chapter 2 in Volume 4 of the ECO's 2018 Environmental Protection Report). The ministries did not adequately respond to this issue. Most of the policies cited do not protect natural heritage features from agriculture or normal farm practices; for example, the planning system includes explicit exemptions for it. While the new requirement in the Municipal Act for municipalities to develop tree canopy policies is a positive move, it does not address the problems raised in this application.

The denial of this EBR application by the Ministry of Municipal Affairs and Housing is the latest in its long-standing pattern of denying all applications it receives.

The denial of this EBR application by the Ministry of Municipal Affairs and Housing is the latest in its long-standing pattern of denying all applications it receives. In the 25 years since the EBR has been in force, this ministry has denied all 31 applications it has received. The majority of the EBR applications that the public has submitted to the MMAH have related to the Provincial Policy Statement (PPS) made under the Planning Act, usually identifying serious deficiencies with regard to natural heritage protection. This pattern of denials suggests that the MMAH has little interest in improving the natural heritage protections in our land use planning system.

At the end of the day, it is ultimately the OMAFRA that decides if or how agricultural impacts are regulated (or not), even within other ministries or by municipalities. This fact is re-enforced in its law, the Farming and Food Protection Act, 1998 which directs that “[n]o municipal by-law applies to restrict a normal farm practice carried on as part of an agricultural operation.” The concerns raised by these applicants are not unique to this situation. Indeed, agricultural activities remain a key driver in the loss of southern Ontario's woodlands and wetlands to this very day. The OMAFRA should take a broader perspective on its responsibilities beyond defending the status quo.

For more information on this topic, see the ECO's “Provincial Disinterest in Tackling Environmental Issues: The Provincial Policy Statement, 2014” in our 2013/2014 Environmental Protection Report (pages 139-146).



Placing a Moratorium on Compressed Air Energy Storage (R2017012)

What the public asked for

In June 2017, members of the public submitted an application for review requesting that the Ministry of Natural Resources and Forestry (MNR) enact a moratorium on compressed air energy storage (CAES) projects involving wells and salt caverns in Ontario until a regulatory framework was in place. Such CAES projects use a well or salt cavern to store compressed air and then release the compressed air when needed to spin a turbine to generate electricity; these projects are intended to supply electricity during periods of peak demand. The applicants were concerned that Ontario did not yet have a regulatory framework, despite a salt cavern CAES demonstration project being developed near the City of Goderich.

The applicants noted that only two other salt cavern CAES projects exist in the world, leading them to conclude that there is not a sufficient body of evidence to prove their safety. The applicants argued that there are a number of potential negative environmental impacts of the project, including: polluted drinking water; odour and air quality issues; the loss of species at risk and their habitat on the site; and adverse effects from noise and vibration.

What the government did: review denied

The MNR denied this application in September 2017, stating that it was already in the process of developing a regulatory approach for wells and salt cavern CAES projects under the Oil, Gas and Salt Resources Act. In October 2017, the MNR subsequently proposed these regulatory amendments to establish requirements for CAES projects on the Environmental Registry for public comment (Environmental Registry #013-1613). Finalized in April 2018, the amended regulation establishes application requirements (including requirements for public notification and technical information and studies to support the application), as well as new operating standards for CAES projects. The regulation exempts the Goderich CAES project from the application requirements, but the project is subject to the new operating standards.

In denying this application, the ministry noted that it had been working closely with the proponent of the Goderich CAES project to ensure that it was meeting relevant standards for activities already regulated under the Oil, Gas and Salt Resources Act, such as design, installation, operation, abandonment and safety of wells and works. In addition, while developing the regulatory amendments, the ministry stated that the company had been working with the MNR to demonstrate that its activities can be carried out in a safe and responsible manner, similar to the technical information that will now be required in a CAES application.

The ministry also noted that some matters raised in the application (such as above-ground construction and odour, noise and vibration impacts) fall within the mandate of other agencies, including the local municipality, the Ministry of the Environment Conservation and Parks, and the Technical Standards and Safety Authority. Finally, the MNR referred to the potential importance of CAES projects to the province, and stated that a moratorium could be a barrier to innovation, investment and research in this sector.

What the ECO thinks:

The ECO believes that the MNR's decision to deny this application was justifiable based on the criteria set out in the EBR, given that the ministry was already working on a regulatory framework, which it proposed within the month and finalized six months later. As such, a moratorium would have been of limited value. The ministry kept the applicants informed about the opportunity to participate in the consultation on the regulatory framework.

Nonetheless, the ECO believes that the applicants made good use of the application for review tool, raising valid concerns that the government was permitting a project to move forward despite the lack of a regulatory framework (at the time) for compressed energy storage, especially given that it is a relatively new technology. It is likely that this application helped ensure that this gap was remedied as quickly as possible, and that the applicants were kept apprised of the process.

Managing Plastic Pollution (R2017013)

What the public asked for

In August 2017, members of the public submitted an application asking the Ministry of the Environment, Conservation and Parks (MECP) to review the need to pass regulations under the Waste-Free Ontario Act, 2016 prohibiting single-use plastic items, and designate plastic as a hazardous substance. The applicants were particularly concerned with the long-term impacts of plastic waste on aquatic ecosystems, and highlighted the Great Lakes' beaches as an example of plastic's pervasiveness in the environment. Their requests were intended to curb the use of plastic in the first place (rather than focus on recycling plastic), which they argued is the only effective means of addressing plastic pollution.

What the government did: review denied

The MECP denied this application, stating that it recently developed an overall strategy to address waste in the province, including plastic waste. The ministry stated that both the Waste-Free Ontario Act, 2016 and the supporting Strategy for a Waste-Free Ontario, which were passed in 2016 and 2017 respectively, will support the vision of a circular economy and allow for the implementation of a variety of actions and commitments to meet the province's goals of zero waste. The Waste-Free Ontario Act and the strategy were recently subject to extensive public consultation, some of which is ongoing, and the ministry therefore concluded that the requested review is not warranted at this time. The ministry also asserted that designating plastic as hazardous waste would be inconsistent with Ontario's tough approach to designating and managing such wastes.



Plastic accounts for approximately 80% of the litter on the Great Lakes shoreline.

Photo credit: (CCO).

What the ECO thinks:

The ECO believes the MECP's decision to deny this application was justifiable based on the criteria set out in the EBR. The ministry very recently completed a comprehensive review and consultation on the province's strategy to reduce and manage wastes, which includes plastic waste. The ECO also agrees with the ministry that plastic does not meet the characteristics for hazardous waste, and designating it as such would dilute Ontario's rigorous system for managing hazardous wastes.

The ECO agrees with the applicants that plastic pollution is a serious problem that must be dealt with. The MECP should have provided a more detailed response to the applicants' very specific request, namely how the ministry plans to address waste from single-use plastic items. The ministry provided a good overview of what it is doing to combat provincial waste issues in general, but did not explain how the particular issue of single-use plastics was considered during

The MECP should have provided a more detailed response to how the ministry plans to address waste from single-use plastic items.



the development of and consultation on Ontario’s new waste strategy and legislation. Furthermore, the ministry did not even address the possibility raised by the applicants that certain specific, non-essential single-use items could be banned, while other plastic products could potentially be produced from alternative, biologically-sourced non-plastic materials. The ECO urges the ministry, as it rolls out its various measures under the Strategy for a Waste-Free Ontario, to include actions to aggressively address plastic pollution, such as those suggested by the applicants.

For more information on this topic, see the ECO’s 2017 Special Report: Beyond the Blue Box.

Sewage Works Approval for Bala Falls Hydro Facility (R2017014, R2017018)

What the public asked for

Members of the public requested that the Ministry of the Environment, Conservation and Parks (MECP) review an environmental compliance approval issued to Swift River Energy Ltd. in October 2017 for a sewage works to serve its planned hydro facility at Bala Falls on the Moon River. The applicants requested that the approval be amended to include conditions that would prevent contamination of the river by hazardous materials, namely: poly-chlorinated biphenyls (PCBs), oils and greases they suspected were present near the grounds of the historical hydroelectric generating facility; and of an insecticidal wood treatment from shipping containers which the applicant believed were to be used as settling tanks.

Specifically, the applicants requested changes to the approval to: prohibit the use of shipping containers as settling tanks; require additional assessment of the soils at the construction site to ensure no hazardous materials are present; and prohibit the company from pumping water from the construction site directly to the Moon River.

What the government did: reviews denied ❌

The applicants submitted two separate applications requesting the same review – they submitted the first before the approval was issued, and the second a few days after the approval was issued. The ministry denied the first application on the grounds that there was no issued approval for the ministry to review. The ministry denied the second application on the grounds that the Environmental Bill of Rights directs a ministry to deny a request for review of an approval issued within the last five years, as long as there was sufficient opportunity for public participation in the decision to issue the approval, and there was no new evidence of potential environmental harm that the ministry had not already examined.

What the ECO thinks: ●

The ECO believes the MECP’s decision to deny this application was justifiable based on the criteria set out in the EBR. The public had a chance to comment on the draft approval through the Environmental Registry, and there was no additional evidence of potential environmental harm that was not taken into account by the ministry during its decision-making process. However, the ministry’s response to the first application, advising the applicants of the right to submit a second application for review once the ministry had issued the final approval, was confusing and misleading, given the “five-year rule” in the Environmental Bill of Rights.

For more information on the topic of hydro-power approvals, see the ECO’s section on “Waterpower” in our 2018 Energy Conservation Progress Report, Volume One (pages 156-158).

Ending the Spring Bear Hunt (R2017016)

What the public asked for

Members of the public submitted an application asking the Ministry of Natural Resources and Forestry (MNR) to end Ontario’s spring bear hunt pilot project. The applicants asserted that: the spring bear hunt fails to decrease human-bear conflicts; the hunt is

unsustainable; and the MNRF does not collect enough information to fully understand the impact of the hunt. The applicants also noted that the spring bear hunt pilot is not aligned with the recommendations made by the Nuisance Bear Review Committee, such as only allowing the hunting of male bears and requiring hunters to submit samples. In addition, the applicants asserted that the decision to reinstate the spring bear hunt did not involve adequate public consultation.



Ontario's moratorium on the controversial spring bear hunt was lifted in 2014.

Photo Credit: Mike McIntosh. Used with permission.

What the government did: review denied 

The MNRF denied the application on the basis that the decision to reinstate the spring bear hunt was made within the last five years, the ministry conducted significant public consultation on that decision, and it considered its Statement of Environmental Values. The ministry determined that the application did not provide any new information that was not available when the decisions to establish and extend the spring bear hunt pilot were made. As such, the ministry concluded that the public interest does not warrant the review.

The ECO has ongoing concerns about the ministry's management of black bears, including its rationales for the re-opened spring bear hunt.

What the ECO thinks: 

The ECO believes the MNRF's decision to deny this application was justifiable based on the criteria set out in the EBR, based on the EBR's "five-year rule." However, the ECO has ongoing concerns about the ministry's management of black bears, including its rationales for the re-opened spring bear hunt. Many of the concerns raised by the applicants were also articulated by the ECO in our 2014/2015 Environmental Protection Report. The ECO again urges the MNRF to listen to informed experts, review relevant research and implement human-bear conflict solutions that are supported by evidence, science and experience in making any future decisions on a continued spring bear hunt.

For more information on this topic, see the ECO's "The Return of the Spring Bear Hunt" in our 2014-2015 Environmental Protection Report (pages 134-139) and "Managing Black Bears: Thinking Beyond the Harvest?" in our 2009-2010 Environmental Protection Report (pages 65-69).

Request for a Minister's Zoning Order to Rezone Quarry Lands (R2017020, R2017024)

What the public asked for

In November 2017 and January 2018, two sets of applicants each submitted an application requesting that the Ministry of Municipal Affairs and Housing (MMAH) review the need for a Ministerial Zoning Order (MZO) under the Planning Act to either permanently or temporarily rezone parts of the Meridian Brick Ltd. quarry lands in Burlington. The applicants requested that the MZO either permanently rezone the area yet



to be extracted, or create a temporary moratorium on aggregate extraction to allow appropriate evaluation of the environmental features and functions of this area.

This site has been actively quarried for almost a century, and was issued a licence in 1972 under the original Pits and Quarries Control Act. In recent years, Meridian Brick Ltd. has proposed to begin extraction of what is referred to as the East Cell Quarry Lands, which has various natural heritage features on it. For example, the applicants assert that there are significant woodlands and multiple species at risk on site.

The applicants argued that since the East Cell Quarry Lands benefit from a “grandfathered” licence that would not arguably be approved today, and given that there has been no aggregate activity to date in the East Cell of the licensed property, it should be considered as a new quarry. The applicants submitted that, accordingly – if aggregate operations on this land were treated as a totally new quarry (rather than as an expansion of an existing approved quarry) – it would be subject to current provisions in the Greenbelt Plan that do not permit new aggregate operations in core natural heritage features, including the habitat of endangered or threatened species and significant woodlands.

The applicants also reference as precedent past MZOs issued by the ministry, such as one issued to prevent a new quarry in Flamborough; however, unlike this case, the MZOs cited by the applicants addressed proposed new operations that had not yet been approved.

Both sets of applicants also submitted separate applications asking the Ministry of Natural Resources and Forestry (MNRF) to review the company’s licence for this site under the Aggregate Resources Act; the MNRF has agreed to undertake one of those reviews.

What the government did: reviews denied

The MMAH denied these applications for review. The ministry noted that the property in question is already designated and zoned for extractive uses in the City of Burlington’s Official Plan and zoning by-law, the company already holds a licence under the Aggregate

Resources Act, and no Planning Act approvals are required for extraction on the site. As a result, the ministry stated that a MZO would not have the effect of creating a moratorium because the use would be recognized as legal non-conforming and the existing use could continue. The ministry also stated that the company has retained environmental consultants to address concerns regarding threatened or endangered species that may be on the lands, and the company has the responsibility to meet any requirements under the Endangered Species Act before site preparation can begin.

What the ECO thinks:

The ECO believes the MMAH’s decision to deny this application was justifiable based on the criteria set out in the EBR, including the ministry’s consideration of the relevant social, economic and legal factors. As the MMAH noted, the company is operating under a valid Aggregate Resources Act licence for this site and the municipality zoned this area for extractive uses. This site meets the definition of an expanded aggregate operation, not a new operation, under the Greenbelt Plan. Revoking the rights of a company operating in accordance with its valid licence on properly zoned land would be an extraordinary measure. The site is required to operate in accordance with an up-to-date site plan and is being assessed for the presence of species at risk, which properly falls under the mandate of the MNRF. Even for sites licensed decades ago, compliance is still required as applicable with modern-day laws like the Endangered Species Act and the Environmental Protection Act. The ECO will assess the outcome of the MNRF’s review of this matter once it is completed.

It is, however, extremely unfortunate that expansion of this aggregate operation may well cause the loss of important natural features; this is the result of a much broader problem with our land use planning system. This case also highlights the problem that once a site is licensed under the Aggregate Resources Act, it has permission to operate on the site until all the aggregate is extracted, which may be decades or more.

This application underscores the divisive conflicts that occur in land use planning, particularly around new or expanded aggregate operations. The ECO has repeatedly recommended that the Ontario government fix its land use planning system, so that the conservation of natural heritage features and functions is not an afterthought. The prioritization of aggregate extraction above other land uses is one reason why we continue to lose biodiversity in the province of Ontario, including species at risk and their habitat.

The prioritization of aggregate extraction above other land uses is one reason why we continue to lose biodiversity in the province of Ontario, including species at risk and their habitat.

For more information on this topic, see the ECO's "Preserving Natural Areas, or Extracting Aggregates Wherever They Lie?" in our 2006/2007 Environmental Protection Report (pages 44-49). See also "Lightening the Environmental Footprint of Aggregates in Ontario" and "Getting Approvals Wrong: The MNRF's Risk-Based Approach to Protecting Species at Risk" in our 2017 Environmental Protection Report (pages 168-183 and 216-251 respectively).

Revising the Appeal Provisions in the Planning Act (R2017022)

What the public asked for

Two members of the public submitted an application asking the Ministry of Municipal Affairs and Housing (MMAH) to review provisions in the Planning Act that allow developers to appeal to the Ontario Municipal Board (now the Local Planning Appeal Tribunal) regarding non-decisions on official plans, zoning by-law amendments, and plans of subdivision; developers may appeal if the approval authority fails to make a

decision within a specified time (which at the time of the application was 180 days).

The applicants argued that these Planning Act provisions allow decisions on development approvals to be made at Ontario Municipal Board (OMB) hearings without allowing input from members of the public, especially with regard to potential environmental impacts.

In support of this argument, the applicants provided a detailed account of the ongoing approval process for a development proposal on Loughborough Lake in South Frontenac, north of Kingston. The proposed development site is located adjacent to a designated provincially significant wetland, which is home to several species at risk, and in a designated area of natural and scientific interest. The developer submitted the required plan of subdivision and zoning by-law amendment to the Township of South Frontenac for approval. When 180 days had passed without a response from the Township, the developer appealed to the OMB to rule on their proposed development instead. The applicants applied to the OMB for party status at the hearing, but were denied. The applicants asserted that local residents and environmental experts were shut out of the Township's decision-making process regarding the development. The OMB allowed the development subject to the developer receiving an Endangered Species Act permit from the Ministry of Natural Resources and Forestry (MNRF) to address adverse effects on Blanding's turtle and gray ratsnake (see Environmental Registry #013-1130).

What the government did: review denied

The MMAH denied this application for review on the basis that it had recently reviewed and amended the Planning Act to give municipalities greater control in planning decisions, including extending decision-making timelines for municipalities on official plans and zoning by-laws by 30 days, as well as limiting the right to appeal decisions that adhere to official plans, provincial plans, and the Provincial Policy Statement. The ministry also stated that these recent changes to

the Planning Act should help to avoid land use planning appeals, particularly for complex planning matters – not only by allowing municipalities more time to make decisions, but by providing legal and planning help to the public, and replacing the OMB with the Local Planning Appeal Tribunal. Given its very recent overhaul of the planning and appeal process, the ministry concluded that the public interest did not warrant another review of the appeal provisions as requested by the applicants.

What the ECO thinks: ●

The ECO believes the MMAH’s decision to deny this application was justifiable based on the criteria set out in the EBR, based on the EBR’s “five-year rule.” The ministry very recently reviewed the matter. The ministry’s response was detailed and explained the various changes to the Planning Act that could address the applicants’ concerns about developers bypassing the normal municipal decision-making process through OMB appeals, at the expense of the public’s participation.

Only time will tell if the various Planning Act amendments will indeed result in fewer developments that conflict with the protection of natural heritage and/or that cause harm to species at risk. With respect to the condominium development on Loughborough Lake that is the source of the applicants’ specific concerns, the MNRF is now chiefly responsible for determining if that project will move forward as planned, pending its issuance (or not) of a permit under the Endangered Species Act.

Separate from this application for review, the applicants also filed an application for investigation alleging that development activities may have already contravened the Endangered Species Act. The MNRF has undertaken this investigation and the ECO will report on it once it is completed.

Sustainable Food in Schools (R2017001 – Non-Prescribed Review)

What the public asked for

In April 2017, two members of the public submitted an application asking the Ministry of Education to improve Ontario’s school curriculum with regard to sustainable food systems and the nutrition guidelines used in schools. The applicants also requested that a new position be created within the ministry to oversee policy on food and food systems in schools, and work with the Ministry of Agriculture, Food, and Rural Affairs.



There is currently no province-wide system that supports sustainable food programming in Ontario public schools.

Photo Credit: (CCO).

What the government did: review denied ❌

The Ministry of Education was not prescribed for applications for review when it received this application; it nonetheless agreed to consider the request and provide a response to the applicants. The ministry ultimately decided not to undertake the review, stating that the application did not provide evidence of potential environmental harm, and that there are already periodic reviews of the matters raised by the applicants. The ministry did, however, commit to following up with a written response to the applicants’ suggestions related to food sustainability and other policies relevant to Ontario’s schools.

Disclosure of Climate-Related Financial Risks (R2017017, R2017027 – Non-Prescribed Review)

What the public asked for

In November 2017, two members of the public submitted an application asking the Ministry of the Environment, Conservation and Parks (MECP) to create a new policy or regulation that would require corporations that are regulated by the Ontario Securities Commission to disclose their climate-related risks. The applicants argued that clear direction was needed for corporations to outline what information should be publicly disclosed, as well as the scenarios to stress-test a company's business model against a low-carbon future.

What the government did: review denied

The MECP stated that it was not the appropriate ministry to do the review and returned the application with the ECO's consent, on the understanding that the ECO would forward the application to the Ministry of Finance. The Ontario Securities Commission is regulated under the Securities Act, which is the responsibility of the Ministry of Finance. The MECP stated that it would welcome the opportunity to work with that ministry and provide any technical support that may be required.

The ECO then sent this application to the Ministry of Finance, for it to consider whether to undertake the review. It is not a prescribed ministry and, therefore, has no obligations to follow the EBR's application for review process. In March 2018, the Ministry of Finance informed the applicants that the Ontario Securities Commission, along with the other members of the Canadian Securities Administrators, was currently reviewing the disclosure of financial risks associated with climate change. The Ministry of Finance advised the applicants that the outcome of the Canadian Securities Administrators' assessment will inform whether regulatory changes are needed. As a result, the Ministry of Finance stated that it does not plan to undertake a separate review.

In April 2018, the Canadian Securities Administrators released the Report on Climate Change-Related Disclosure Project. Following the release of the report, the then-Ontario Premier declared her support for the project and committed to continue working with the financial community, Ontario regulators, and the international Task Force on Climate-related Financial Disclosure to increase transparency in Ontario through climate-related disclosures for publicly traded companies, asset owners and asset managers. The Canadian Securities Administrators is now developing new guidance and educational initiatives to help publicly-traded companies consider the business risks, opportunities and potential financial impacts of climate change.

An EBR success story: Application for review prompts development of a new strategy for soil health

Soil provides a myriad of environmental and economic benefits. In a single handful of healthy soil, millions of organisms are actively improving soil fertility and structure, both of which are essential for productive agriculture. Healthy soils contribute to improved water quality, erosion reduction, disease suppression and climate change mitigation and adaptation.

Unfortunately, Ontario's agricultural soils have become degraded due to intensive management practices such as frequent tillage and leaving fields bare between crop rotations. Excessive synthetic inputs have depleted soil food webs and caused a variety of negative impacts on the surrounding environment. An estimated 82% of farms in Ontario are now emitting carbon to the atmosphere instead of sequestering it in soil. Not only does the loss of soil carbon jeopardize agricultural yields, it increases our greenhouse gas emissions. With soil health deteriorating, erosion is also a growing concern. An estimated 68% of farmland is in an unsustainable erosion risk category.

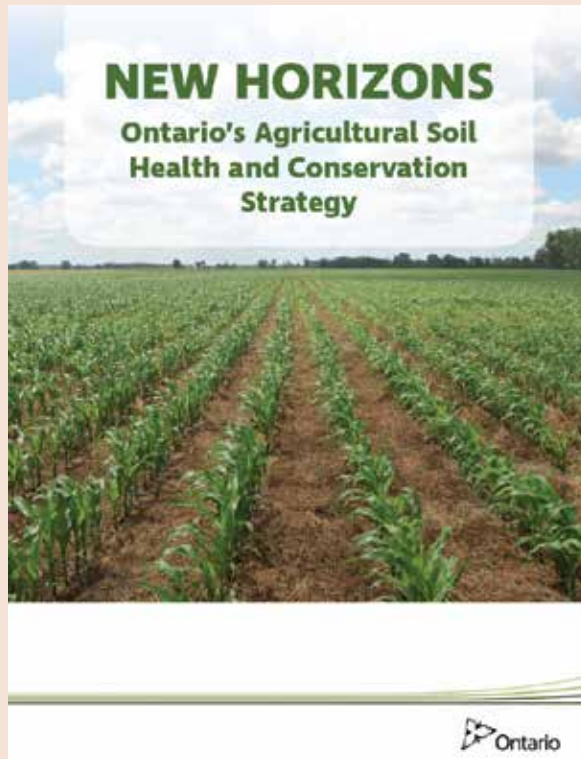


In 2015, two members of the public used the Environmental Bill of Rights to ask the government to develop a new law to encourage farmers to transition to a health-focused approach to soil management. The applicants were concerned that without adequate incentives, farmers would continue to rely on practices that compromise soil health and the surrounding environment.

The ECO shared the applicants' concerns. In 2016, the ECO published a report, *Putting Soil Health First, A Climate-Smart Idea for Ontario*, encouraging the province to build a wide-scale soil health focus in Ontario agriculture.

The Ministry of Agriculture, Food and Rural Affairs (OMAFRA) agreed with the EBR applicants that a review of the need for soil health policy and incentives was warranted. Through the use of the tools provided under the EBR, the applicants triggered the development of a new Agricultural Soil Health and Conservation Strategy. The OMAFRA conducted extensive public consultation in the development of the strategy, including Environmental Registry postings for a discussion document and draft strategy which together received 271 comments (Environmental Registry #012-8468 and #013-1373). Shortly after the application was submitted, OMAFRA formed a collaborative working group to guide the development of the strategy. Both of the applicants were members of the working group, providing invaluable input throughout the process.

The strategy creates a framework to promote soil health through direct changes to management practices as well as by improving data accessibility, monitoring and soil knowledge. Several soil health



principles are highlighted, including; building soil organic matter, diversifying crops, minimizing soil disturbance and sustaining soil fertility by keeping live roots in soil and cover crops over soil. In response to the applicants and other stakeholders, the OMAFRA has also included specific actions outlining the need to reward practices that build soil health by providing financial incentives.

While the strategy has not gone as far as some (including the ECO) had hoped, and there is still considerable work to be done to achieve the objectives laid out in the strategy and begin to restore Ontario's agricultural soils, the OMAFRA has taken a critical first step in this process. The EBR gave the applicants a voice to raise their concerns, key partnerships were formed, and ultimately, a new strategy dedicated to improving soil health has been created.

2.3 Applications for investigation

The Environmental Bill of Rights (EBR) gives Ontario residents the right to request an investigation if they believe that someone has broken an environmental law. Sometimes, the public makes this request when it believes that the government is not doing enough (or anything) about the problem. The public can request an investigation of an alleged contravention of one of 19 different prescribed laws, or of a regulation or prescribed instrument (e.g., permit or other type of approval) under those laws. Most of the public's requests for investigation are made under the Environmental Protection Act.

An application for investigation can trigger government action.

An application for investigation can trigger government action. Ministry staff will frequently visit the site of the alleged contravention and act on the issues raised in the application, whether or not the ministry agrees to conduct a full investigation. Applications for investigation also ensure a level of transparency and accountability that might otherwise not occur; for example, a ministry will inform the applicants what enforcement actions, if any, are being taken to address the alleged contravention.

Members of the public are always welcome to contact the office of the Environmental Commissioner of Ontario (ECO) for information and assistance about submitting an application for investigation.

For urgent matters

For urgent matters, the public can alert the government at any time about concerns of an environmental law being broken by contacting a ministry directly. The Ministry of the Environment Conservation and Park's Spills Action Centre can be reached at 1-800-268-6060 and the Ministry of Natural Resources and Forestry's TIPS line can be reached at 1-877-947-7667.

2.3.1 The application for investigation process

The ministry's role as the investigator: to undertake or deny the requested investigation

The public submits an application for investigation to the ECO. We then send it on to the appropriate ministry with the authority to address the issue. The ministry then considers the application to determine if it's in the public interest to undertake it.

The EBR requires the ministry to investigate a contravention alleged in an application "to the extent that the ministry considers necessary." In other words, the EBR gives ministries the power to decide if an investigation is warranted or not. However, the EBR provides some guidance to ensure such decisions are made consistently and fairly. A ministry is not required to conduct an investigation if the allegations are frivolous or vexatious, not serious enough to warrant an investigation, or the alleged contravention is not likely to cause harm to the environment. A ministry also isn't required to duplicate an ongoing or completed investigation.



The applicants need to provide some evidence for a ministry to pursue an investigation. Applications for investigation are a serious matter, which is why affidavits are required. Investigations can result in a ministry issuing orders, financial penalties or even jail time, depending on the circumstances.

The ECO's role as the watchdog: to assess the ministry's response

It is the ECO's job to encourage ministries to follow the EBR's process and to evaluate how ministries respond to applications for investigation. We serve as a watchdog on this process. We do not investigate if any laws have been broken: that is the job of the ministry and their enforcement staff that have those legal powers. We also cannot compel a ministry to undertake an investigation.

We do not investigate if any laws have been broken: that is the job of the ministry.

The ECO does, however, evaluate how ministries respond. We look at every application for investigation that is concluded in our reporting year – where the ministry either denied or completed the investigation during the previous April 1 to March 31 – and assess the ministry's response in two different ways.

First, we assess the ministry's compliance with the EBR; we evaluate if the ministry met all of the legal EBR timelines and if the ministry's decision to accept or deny the application was justifiable based on the criteria set out in the EBR. We also assess the adequacy of the ministry's investigation when it is undertaken.

We evaluate if the ministry met all of the legal EBR timelines and if the ministry's decision to accept or deny the application was justifiable based on the criteria set out in the EBR. We also assess the adequacy of the ministry's investigation when it is undertaken.

In particular, we look at how seriously the ministry took action relative to the seriousness of the alleged environmental harm. We also look at how thoughtfully the ministry responded to the applicants' concerns. This may include reassuring the applicants that the ministry is aware of what's occurring and that appropriate measures are already in place. In some cases, this may include ensuring that another more appropriate body is responding to the applicants' concerns. For example, where the environmental impacts may be considered a local nuisance (such as noise complaints from a neighbour) or other impacts regulated through a municipal by-law (such as depositing soil for site alteration), a ministry may defer to the local municipality to enforce its by-law rather than undertake the investigation. However, when the problem is significant and squarely the responsibility of the ministry, we expect the ministry to outline what remedies and enforcement actions it will undertake.

We also look at the broader context of how effectively (or not) the ministry has handled the issue, which could include the historical circumstances.

Unfortunately, sometimes it is a case of conflicting reports: the applicants assert there is a contravention that is causing harm to the environment, while the ministry asserts that there is no problem. As the ECO has neither the mandate nor the resources to investigate the matter ourselves, we cannot verify which statement is more accurate. In these cases, the best the ECO can do is assess how justifiable the ministry's decision was based on the facts that are before us.

Second, we also look at the broader context of how effectively (or not) the ministry has handled the issue, which could include the historical circumstances that led up to the applicants requesting the investigation. For example, in some cases, the ECO may conclude that the ministry responded to the application well, yet we may find that the ministry previously failed to give the matter the attention it deserved, which is what triggered the need for the application in the first place. In addition to assessing each individual ministry decision on an application, we also look for patterns of issues over time. Sometimes seemingly small issues raised by different people point to a larger problem that the government should tackle.

Sometimes seemingly small issues raised by different people point to a larger problem that the government should tackle.

2.3.2 Report on applications for investigation in 2017/2018

In 2017/2018, applications for investigation could be filed for alleged contraventions of specific acts, regulations and instruments administered by the following six ministries:

- The Ministry of Government and Consumer Services
- The Ministry of Energy (ENG) (now part of the combined Ministry of Energy, Northern Development and Mines, or ENDM)
- The Ministry of the Environment and Climate Change (MOECC) (now called the Ministry of the Environment, Conservation and Parks, or MECP)
- The Ministry of Municipal Affairs (MMA) (now part of the combined Ministry of Municipal Affairs and Housing, or MMAH)
- The Ministry of Natural Resources and Forestry (MNRF), and
- The Ministry of Northern Development and Mines (MNDM) (now part of the combined Ministry of Energy, Northern Development and Mines, or ENDM).

In our 2017/2018 reporting year, members of the public submitted 10 applications for investigation. At the end of our reporting year (March 31, 2018), prescribed ministries had undertaken four of those applications, while decisions on four others were still pending (see Figure 2). As with applications for review, this year continues a promising trend of prescribed ministries agreeing to undertake more investigations; in the last five years, ministries have undertaken about 41% of requested investigations – compared with 24% in the preceding five-year period.

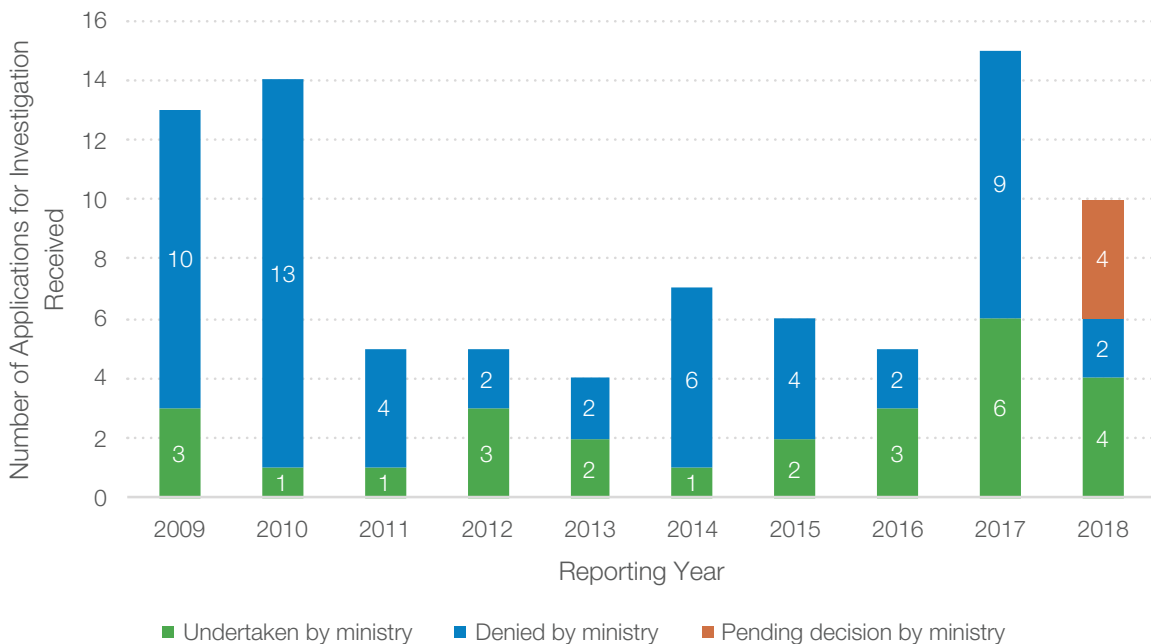


Figure 2. Status of applications for investigation by reporting year.

Prescribed ministries concluded eight applications for investigation, including four applications that were submitted in earlier reporting years. We provide a summary and evaluation of concluded investigations

in Chapter 2.3.3. For a list of applications that were ongoing at the end of our reporting year, and their status, see Table 4.













Table 4. Applications for investigation ongoing at the end of 2017/2018 (status as of March 31, 2018).

Topic	Reporting Year Submitted	Ministry	Decision	Status
Odours from a cosmetics factory (I2017003)	2017/2018	MECP	Undertaken	Ongoing
Habitat destruction (I2017006)	2017/2018	MNRF	Undertaken	Ongoing
Permit to take water and approval contraventions (I2017007)	2017/2018	MECP	Pending	Ongoing
Contraventions of approval by an asphalt plant (I2017008)	2017/2018	MECP	Pending	Ongoing
Wetland drainage (I2017009)	2017/2018	MECP	Pending	Ongoing
Wetland drainage (I2017010)	2017/2018	MNRF	Pending	Ongoing

2.3.3 Summary and evaluation of applications for investigation concluded in 2017/2018

Below we provide a summary of all applications for investigation that were concluded during our 2017/2018 reporting year (see Table 5), followed by the ECO's evaluation of each concluded application. We also post on our website all of the decisions by ministries on applications, so that the public can read in detail how the government dealt with an issue; we post these decisions each year when we release this report.

Table 5. Concluded applications for investigation in the ECO's 2017/2018 reporting year.

Topic	Ministry	Accepted /Denied	ECO's Review
Noise from a quarry (I2015001)	MECP		 Ministry handled investigation well and has taken action.
Meltwater runoff from a ski-hill (I2016013)	MECP		 Ministry's denial was justifiable under the EBR, although it did not articulate the reasons for denial well.
End-of-life vehicle facility (I2016014)	MECP		 Ministry handled investigation well and has taken action.
Dust from a cement plant (I2016015)	MECP		 Ministry handled investigation adequately and is now taking action, but past failures contributed to longstanding compliance issues.
City of Timmins' sewage discharge to Porcupine Lake (I2017001)	MECP		 Ministry undertook the investigation, but has taken insufficient action to address the problem.
Flooding from a condominium development (I2017002)	MECP		 Ministry's denial was justifiable under the EBR, and the ministry has taken action.
Flaring at a petro-chemical plant (I2017004)	MECP		 Ministry handled investigation adequately and is now taking action, but past failures contributed to longstanding environmental issue.
Vapour emissions from a gas station (I2017005)	MECP		 Ministry's denial was justifiable under the EBR, and the ministry has taken action.



Noise from a Quarry (I2015001)

What the public asked for

Two residents of Ontario submitted an application for investigation in September 2015 alleging that rock breaking operations and the use of heavy construction equipment in a nearby quarry were generating excessive noise. They asserted that the noise was negatively impacting their enjoyment of their property in violation of section 14 of the Environmental Protection Act, which prohibits discharging a contaminant into the environment that may cause an adverse effect. The applicants had previously raised their concerns with both the Ministry of Natural Resources and Forestry (MNR) (which regulates aggregate operations) and the Ministry of the Environment, Conservation and Parks (MECP) (which administers the Environmental Protection Act), as well as the local Renfrew County District Health Unit. The applicants stated the company operating the quarry was told to install a berm, but had not done so at the time that the applicants filed their application.

What the government did: investigation undertaken

The ECO forwarded the application to the MECP, which agreed that an investigation was warranted. The ministry stated that it had been receiving public complaints about the quarry since June 2015, and had conducted site inspections and surveys of the operations in response. However, rock-breaking activities at the quarry were concluded in fall 2015 and have not resumed to date, preventing the ministry from completing the investigation. The MECP kept the applicants and the ECO informed of the status of the investigation throughout 2015, 2016 and 2017.

In the fall of 2017 the ministry informed the applicants that rock-breaking had still not resumed and, therefore, they were not able to investigate the noise produced by the operation. The applicants agreed with the ministry that closing the investigation until the quarry began

operating again was an acceptable course of action. The MECP sent a letter to the applicants and the ECO in October 2017 stating it had officially closed the investigation until further notice.

What the ECO thinks:

The ECO believes that the MECP handled the investigation well. The ministry appears to have taken the applicants' allegations seriously, and attempted to investigate the operators of the quarry. The MECP kept the ECO and applicants informed as they waited for rock-breaking to resume. Its decision to close the investigation is reasonable given that there has been no rock-breaking activity at the quarry since fall 2015.

Meltwater Runoff from a Ski-hill (I2016013)

What the public asked for

In January 2017, two residents of Mulmur Township in Dufferin County submitted an application requesting that the Ministry of the Environment, Conservation and Parks (MECP) investigate runoff of meltwater from man-made snow at a ski club. The applicants allege that this runoff causes an adverse effect in contravention of section 14 of the Environmental Protection Act, both by causing harm to the Pine River and by flooding part of the applicants' farm property making it unusable for farm operations. In support of their allegations, the applicants submitted pictures of flooding on the farm property, the Pine River with swollen banks, and overflowing drainage ditches and culverts.

The ski club has been operating under a permit to take water issued by the MECP that allows it to take water from the Pine River to make snow. One of the applicants appealed this permit to the Environmental Review Tribunal in 1999, citing the same concerns – flooding on his farm property and harm to the Pine River – among other issues. The Tribunal denied the appeal in 2000. The MECP has since renewed the permit twice, in 2004 and 2009.

**What the government did:
investigation denied** ❌

The MECP denied this application on the grounds that it did not believe the meltwater runoff was likely to cause harm to the environment. The ministry stated that it was not provided with information that adequately supported the allegation that the runoff was causing a contravention of the Environmental Protection Act.

The ministry conducted an inspection in January 2017 as a result of the application for investigation, and found that the ski club was operating in compliance with its permit to take water. The MECP referred to past site visits conducted by the Ministry of Natural Resources and Forestry, the Nottawasaga Valley Conservation Authority, and the Federal Department of Fisheries and Oceans that found no evidence of adverse environmental effects on the Pine River. The MECP also stated that testimony by the Nottawasaga Valley Conservation Authority during the permit to take water appeal hearing in 2000 indicated that the seasonally flooded portion of the neighbouring farm property is expected to accumulate water during the spring melt because of its location in a low-lying floodplain.

The ministry stated that the applicants' concerns about flooding were most appropriately addressed through the Drainage Act; damages or losses to farm land as a result of drainage or flooding issues "are not covered under the terms and conditions of permits to take water issued by the ministry." The ministry referred the applicants to the Ontario Ministry of Agriculture, Food and Rural Affairs and their local municipality for complaints related to drainage and flooding.

What the ECO thinks: ●

The ECO believes that the MECP's decision to deny this investigation was justifiable, based on the criteria set out in the EBR. The MECP's determination that there are no adverse effects on the Pine River as a result of meltwater runoff is reasonable given that both the ministry and other authorities had already investigated its effects in response to previous complaints and had found no negative impacts.

The ministry did not, however, expressly address the applicants' contention that the meltwater is a contaminant that is causing an adverse effect on their farm property in the form of flooding, contrary to section 14 of the Environmental Protection Act. Instead, the ministry stated that the issue is outside its mandate. The ECO believes that investigating whether the discharge of a contaminant (such as meltwater) is causing an adverse effect (such as flooding of a property) can indeed fall within the mandate of the MECP, whose role it is to enforce the Environmental Protection Act. Unfortunately, the MECP failed to explain whether flooding experienced by the applicant is caused or exacerbated by the ski club's meltwater and if it is an adverse effect.

The MECP should clearly communicate how it defines "adverse effect" as used in section 14 of the act, and its rationale for that interpretation.

Because of the very broad language of section 14 of the Environmental Protection Act, the ECO appreciates the need and practicality for the MECP to place confines around its interpretation of this provision. But rather than asserting that certain applications of this provision are outside of its mandate, the MECP should clearly communicate how it defines "adverse effect" as used in section 14 of the act, and its rationale for that interpretation. It is important for the public – people and businesses that may be either causing adverse effects or on the receiving end of those effects – to understand where the line starts and stops. Ensuring certainty and clarity of the law is one of the most fundamental tenets of the rule of law in a civil society.

End-of-life Vehicle Facility (I2016014)

What the public asked for

Members of the public were concerned about improper management of waste at an end-of-life vehicle site in Alexandria, near Ottawa. The applicants alleged that the company owners and operators were improperly disposing of solid waste (including tires and scrap metal) and vehicle fluid, resulting in groundwater contamination. The applicants alleged that this contravened section 14 of the Environmental Protection Act, which prohibits anyone from discharging a contaminant into the environment that may cause an adverse effect.



End-of-life vehicle facilities can release hazardous substances into the environment such as heavy metals, petroleum hydrocarbons, and acid from batteries.

Photo Credit: IFCAR, (Public Domain).

What the government did: investigation undertaken

The Ministry of the Environment, Conservation and Parks (MECP) undertook the investigation, and ministry staff conducted three site inspections and interviewed the company owner. The ministry stated that its preliminary inspection of the site (which had already been planned prior to this application) confirmed that the concerns raised by the applicants had merit. Subsequent ministry inspections included a

comprehensive assessment of all elements of typical end-of-life vehicle operations: solid and liquid waste management, stormwater management, removal of ozone-depleting substances, preventative measures and administrative requirements.

Ministry staff found that the company had not been storing and disposing of its liquid vehicle waste according to legal requirements; however, the impacts were localized and could be mitigated with better management practices. Tests of well water samples from the site met provincial drinking-water standards, indicating no significant impairment to groundwater. Ministry staff found no evidence of buried tires or derelict vehicles on the site. The ministry concluded that although there was a need to improve the environmental protection measures and remediate some areas of the site, the company is not contravening section 14 of the Environmental Protection Act.

The ministry also identified several areas of operational and administrative non-compliance not described by the applicants – such as failing to comply with some conditions of the company’s stormwater management approval – and required the company to resolve these issues. Most importantly, the ministry required the company to register its facility as an end-of-life vehicle site on the government’s Environmental Activity and Sector Registry (EASR). A new regulation passed in 2016 requires all end-of-life vehicle facilities in Ontario to register online and to comply with the various operating standards set out in the regulation, which are designed to minimize environmental impacts and improve oversight of this sector.

What the ECO thinks

The ECO believes that the MECP handled this investigation well. This application is a good example of how members of the public can effectively use the tools under the Environmental Bill of Rights. The ECO commends the ministry for agreeing to do the investigation, taking action to address the applicants’ concerns and for working with the company to ensure environmental protection measures are improved.

This application is a good example of how members of the public can effectively use the tools under the Environmental Bill of Rights.

For more information on this topic, please see the ECO's "Getting Approvals Right: the MECP's Risk-Based Approach" in our 2017 Environmental Protection Report (pages 70-96).

Dust from a Cement Plant (I2016015)

What the public asked for

In February 2017, two members of the public submitted an application for investigation alleging that a cement production plant in Picton, Ontario, owned and operated by Essroc/Lehigh, has been discharging cement dust into the atmosphere for over a decade. The applicants alleged that this contravened section 14 of the Environmental Protection Act, which prohibits discharging a contaminant into the environment that may cause an adverse effect. The applicants stated that the cement dust has negatively affected their health, quality of life and enjoyment of their property. They provided copies of the facility's weekly air quality reports, showing there have been 1,560 opacity exceedances over a period of 286 days between 2012 and 2016. The applicants further asserted that the Ministry of the Environment, Conservation and Parks (MECP) has inadequately enforced the Environmental Protection Act as evidenced by the continued off-site effects.

This facility was previously the subject of another EBR application for investigation, which the ministry undertook in 2011. Following the first EBR investigation, the MECP issued two separate provincial officer's orders, in 2012 and 2015. The ministry also fined the proponent a total of \$550,000, with charges laid on two separate occasions in 2015 for discharging particulate or dust into the environment, failing to comply with noise guidelines, and failing to report exceedances.

What the government did: investigation undertaken

The MECP undertook this latest application and concluded that its enforcement actions to date have been effective in decreasing the site's opacity exceedances and fugitive emissions. Through this investigation, the ministry found that the proponent has taken various actions and measures that have decreased the number of opacity exceedances. These actions include implementing a best management practices plan in 2009 to manage fugitive emissions (i.e., air emissions from non-point sources) and, in 2016, installing hardware and software designed to reduce opacity events. The ministry also noted that the number of complaints related to both dust and fugitive emissions has declined over time, and that ministry staff have observed improvements in the management of fugitive emissions during regular site visits. Further, in 2017, the ministry amended the facility's air approval authorizing the company to modify some of its equipment, as well as recommended that the facility improve its equipment maintenance, which together should further reduce opacity exceedances.

Going forward, the ministry committed that any public complaints to the MECP related to adverse impacts from fugitive dust emissions will continue to result in a field response by a provincial officer. The MECP stated that staff would review the situation, collect samples, and refer the incident to the ministry's Environmental Enforcement and Compliance Office ("enforcement office") for investigation, when appropriate. The ministry also committed that all opacity exceedances reported to the ministry by Essroc/Lehigh will similarly be reviewed by a provincial officer to determine if a referral to the ministry's enforcement office is warranted. To ensure timely handling of potential violations, the ministry promised that all opacity exceedances will be bundled and sent to the enforcement office approximately six months from the date of the first exceedance. Lastly, the MECP stated that it will conduct a formal air inspection of the facility, and staff will continue to conduct regular site visits approximately once per month.

What the ECO thinks: ●

The ECO believes that the MECP handled the investigation adequately. Since the 2011 EBR investigation of this facility, the ministry has at long last taken some real action to increase its compliance and enforcement efforts, following the previous decade of weak, slow enforcement. The response to this recent investigation signals a continuance of reasonable compliance measures.

The public has abundant reason to be frustrated about this facility and the ministry's enforcement actions over the years.

Nonetheless, the public has abundant reason to be frustrated about this facility and the ministry's enforcement actions over the years. Despite some clear improvements in the facility's operations, local residents continue to live with cement dust that has affected their air quality and covered their property for more than 15 years. Hopefully, the ongoing measures will further reduce the emissions to the point that they cease entirely. But should non-compliance continue, the ECO strongly urges the ministry to escalate its enforcement actions. Even though a facility may play an important economic role, it should not be allowed to do so at the expense of local residents and the environment.

For more information on this topic, please see the ECO's "MOE Failure to Stop Pollution" in our 2011-2012 Environmental Protection Report (pages 132-135).

City of Timmins' Sewage Discharge to Porcupine Lake (I2017001)

What the public asked for

In May 2017, members of the public alleged that the City of Timmins is allowing the discharge of raw sewage into Porcupine Lake, and that the City has failed to meet deadlines to upgrade its sewage system set out in a provincial officer's order issued by the Ministry of the Environment, Conservation and Parks (MECP) in 2012. The applicants state that the deteriorating state of the City's sewage system is causing sewage to bypass treatment and discharge directly into the lake. Further, the applicants alleged that sewage from several newer homes in the area is piped directly to the stormwater system that discharges to Porcupine Lake, rather than to the sanitary sewers that pipe sewage to the treatment plant. According to the applicants, the alleged discharges are harming the natural environment, interfering with recreational use of Porcupine Lake, affecting the use and enjoyment of their property, and presenting potential human health risks.



Porcupine Lake in Timmins, Ontario.

Photo Credit: Paul LaRocque, (CC BY 3.0).

**What the government did:
investigation undertaken** ✓

The MECP agreed to undertake the investigation. The ministry investigated the applicants' concerns regarding homes having sanitary sewage lines connected to the stormwater system. In 2010 the City of Timmins had previously identified 10 homes that were improperly connected to the stormwater system. As a result of this application, the ministry made enquiries of the city, which then inspected additional homes in the area in the summer of 2017. Consequently, the city identified one more residential sewage line that was improperly connected and committed to correcting that connection. The ministry asked the city to continue to test residences in the neighbourhood.

With respect to the ongoing sewage bypasses, the ministry explained that it is already taking action to address the City of Timmins' deteriorating sewage system, including issuing provincial officer's orders going back to 2012 that required sewage system upgrades. As part of this investigation, the ministry confirmed that the city was contravening provincial legislation and had failed to meet the ministry-ordered deadlines for the sewage system upgrades. However, the ministry found that the city's reasons for failing to meet the deadlines were acceptable, and worked with the city to set new deadlines to complete the system upgrades. The MECP was also satisfied with the city's Public Notification Protocol for sewage bypasses, and stated that it will continue to review the city's annual water quality monitoring reports.

In October 2017, the ministry completed the EBR investigation and assured the applicants that it will continue to monitor the city's compliance with the order to upgrade the sewage system; the ministry stated that it will take further action as necessary. However, in the spring of 2018, the applicants complained to the MECP that the city had missed the ministry's revised deadline of February 28, 2018, to conclude Phase I of its sewage treatment plant upgrades. The applicants urged the MECP to enforce its orders and escalate enforcement action, as promised by the ministry in its response to this investigation. The ministry responded that the city

had made progress in completing Phase 1 upgrades to the collection system, but the project had been delayed as a result of ground settlement issues that caused a major sewer pipe to break shortly after it was installed. The MECP stated that it will continue to require the City of Timmins to complete Phase 1 of the upgrades as soon as practically possible and closely monitor the progress of the completion of the Phase 2 upgrades.

Sewage bypasses are a serious environmental matter.

What the ECO thinks: ●

The ECO is pleased that the MECP undertook this investigation. Sewage bypasses are a serious environmental matter. The ministry's investigation confirmed that the applicants are correct and that the city is breaking the law. Its deteriorating sewage system causes sewage to bypass treatment and discharge directly into Porcupine Lake. The city did not meet the deadlines in the 2012 provincial officer's orders that required sewage system upgrades. Unfortunately, the ministry took no enforcement action, accepted the city's excuses for its non-compliance, and extended the deadlines for system upgrades.

For more on the issue of sewage bypasses, see Chapter 2 in Volume 2 of the ECO's 2018 Environmental Protection Report.

Flooding from a Condominium Development (I2017002)

What the public asked for

Members of the public requested an investigation of several alleged impacts from a condominium development in North Bay. The applicants alleged that the developer graded and raised the level of the property, which disrupted the natural water flow on the development site, and that the developer had failed to install proper drainage. The applicants allege that this



resulted in regular flooding of neighbouring properties, in contravention of section 14 of the Environmental Protection Act.

The applicants also alleged that the developer had brought in fill contaminated with weeds, causing the weeds to spread to adjacent properties. In addition, the applicants alleged that the developers illegally dumped waste on a neighbouring property, including cement, rocks, roots and stumps, contrary to section 40 of the Environmental Protection Act. According to the applicants, the developer is responsible for the destruction of private property, including cutting trees and failing to install silt fencing.

What the government did: investigation denied

The Ministry of the Environment, Conservation and Parks (MECP) decided not to conduct an investigation. The ministry stated that the alleged matters of flooding and weed infestation do not fall under the MECP's mandate, but rather rest with the local municipality. Municipalities have the authority to control site alteration under the Planning Act and to control weed infestations under the Weed Control Act. The ministry noted that the City of North Bay has indicated that it is actively working to resolve the drainage issues. Similarly, the MECP stated that the allegation of destruction of property does not fall under the ministry's mandate, but instead should be addressed by local enforcement officials.

The ministry confirmed that the debris that was allegedly dumped is subject to the requirements for "waste" under the Environmental Protection Act and Ontario Regulation 347. However, the MECP determined that the disposal is not likely to cause harm to the environment due to the type of materials that were found on the property (i.e., roots, stumps, rocks and concrete) and the length of time that had passed since the incident occurred. The ministry also stated that the dumping could not be substantiated by ministry staff during a site visit.

What the ECO thinks:

The ECO believes that the MECP's decision to deny this investigation was justifiable, given that the ministry was unable to substantiate the allegations related to waste, and that the local municipality is best positioned to address the majority of the issues raised by the applicants. The MECP appears to have thoroughly evaluated the allegations made by the applicants, in particular by proactively contacting the City of North Bay to ascertain its intended approach to these matters and conducting a preliminary site inspection to assess the claims of illegal waste dumping. Nonetheless, the ECO encourages the MECP to clarify its position on the application of section 14 of the Environmental Protection Act to issues such as the ones raised in this request for investigation.

Flaring at a Petro-Chemical Plant (I2017004)

What the public asked for

Two residents of Ontario submitted an application for investigation in October 2017 asking that the Ministry of the Environment, Conservation and Parks (MECP) conduct an investigation into flaring events at the Imperial Oil Limited plant in Sarnia, which occurred between February 23 and March 5, 2017. The applicants stated that the flaring (burning off of excess gases) caused significant noise and vibration, and released contaminants into the air that resulted in foul odours and caused some residents of the nearby Aamjiwnaang community to experience difficulty breathing, headaches and nausea. The applicants also stated that the community had difficulty obtaining information from the MECP and Imperial Oil during and after the event, and that the ministry failed to reach out to residents to determine whether they were experiencing any adverse effects during the flaring.

The applicants alleged that the flaring incidents violated both section 14 of the Environmental Protection Act, which prohibits discharges of contaminants that cause an adverse effect, and O. Reg. 419/05 (Air Pollution – Local Air Quality). The applicants alleged the MECP

had not sufficiently investigated the duration, extent and severity of contaminant release as a result of the flaring. The applicants also suspected that the air quality monitoring from the MECP's permanent monitoring station in Aamjiwnaang First Nation, and the monitoring conducted by Imperial Oil and a contracted company, were inadequate to determine whether air quality standards had been exceeded. The applicants stated that upon a close review of the monitoring results, there were indications that the flaring may have caused elevated pollutant levels downwind of the plant.

The applicants pointed out flaws in the ministry's response to the major flaring event at the Imperial Oil plant, including poor communication with the local community and inadequate air quality monitoring. Imperial Oil informed the Spills Action Centre of the flaring at 6:34 p.m., but no response was initiated by the ministry until almost an hour later; the ministry then let another hour pass before notifying the Aamjiwnaang First Nation. This was a lengthy delay, especially given the effects of flaring the community has experienced for years.

The applicants stated that the flaring incident appears to be the tenth "malfunction-related flaring event" that has occurred at the Imperial Oil plant since 2014.



Petrochemical plants use flaring to consume waste gases by combusting them in an open flame.

Photo Credit: Richard Webb, (CC BY-SA 2.0).

What the government did: investigation undertaken

The MECP accepted the application and, as a result of additional information and evidence submitted by the applicants, referred the flaring event to its Environmental Enforcement and Compliance Office for investigation. The ministry stated that prior to receiving this application, it had been unaware of the extent of the adverse effects community members had reported experiencing.

The MECP stated that enforcement and compliance staff have met with community members and nearby industrial companies to gather information about the flaring event. The MECP is also requesting additional information from Imperial Oil on facility operation, use of equipment, and facility systems data. Based on the findings, the office will determine if charges are warranted. This investigation is ongoing at the time of writing; through this investigation, the ministry will determine if further action is appropriate, such as laying charges and prosecuting the company.

The ministry also described a number of its completed or ongoing actions taken to respond to the applicants' concerns, including:

- review air emission modelling data from Imperial Oil Limited for sulphur dioxide emissions during the flaring event
- review a report from Imperial Oil assessing the root cause of the flaring event and recommended preventative actions (Imperial Oil completed these actions in February 2018)
- commit to conduct more proactive outreach to the community following significant emission events to gather information, improve awareness of the ministry's role, and encourage reporting to the Spills Action Centre and the ministry's TIPS hotline
- provide hand-held air monitoring equipment to MECP staff that can monitor for volatile organic compounds, benzene, hydrogen sulphide and sulphur dioxide to be used when responding to future incidents



- meet with the Sarnia-Lambton Environmental Association to discuss ways to use community notification systems more effectively to share information about industry operating conditions
- launch a new website (www.cleanairsarniaandarea.com) that provides real-time air quality data
- work to improve procedures and expectations for monitoring programs following industrial incidents to ensure data includes parameters relevant to the incident, and
- continue to implement the Sarnia Air Action Plan to achieve the long-term goals of: implementing technology at refineries to reduce emissions of ground-level concentrations of contaminants; minimizing fugitive emissions; reducing the frequency, severity and duration of flaring events; enhancing information sharing and collaboration with the local community; and reducing emissions of priority contaminants.

What the ECO thinks: ●

The ECO believes that the MECP handled this investigation adequately. It appears that the MECP had not properly investigated the incident when it occurred. However, when it received this application, the MECP took the applicants' concerns seriously and appears to be working to address them.

The ECO recommended that the MECP work with Aamjiwnaang to improve transparency and trust between the ministry and the community.

The ministry's actions following this EBR investigation align with the MECP's broader efforts to: reduce air emissions of contaminants from Sarnia area industries; improve communication and outreach to local communities; update air quality standards for priority contaminants (e.g., sulphur dioxide); and understand

and minimize the cumulative effects of emissions from many industrial facilities in a small geographic area (another application for review completed by the MECP in 2017 asked the government to review the need for a new regulatory framework to address air pollution "hot spots" – see R2008014).

The ECO and others have been urging the MECP to better address this situation for many years. A high-profile Toronto Star/Global TV investigation and an application for review submitted to the ECO in fall 2017 have increased public pressure on the ministry to ensure adverse effects are minimized. In our 2017 Environmental Protection Report, the ECO reported on air pollution in the Aamjiwnaang community and made several recommendations, including that the MECP ensure community members have access to real time air monitoring information, and that the MECP work with Aamjiwnaang to improve transparency and trust between the ministry and the community. As a good start, the Ontario government worked with Aamjiwnaang, industry and the public, as the Clean Air Sarnia and Area (CASA) community advisory panel, to launch a real time air quality monitoring website in February 2018.

The ECO hopes that this investigation and the other related efforts mark a turning point on this issue. Only time will tell how much, or whether, the MECP and industry will improve emissions, monitoring, communications and reporting to improve the health and quality of life of residents located in Chemical Valley – one of the most polluted areas of the province. For more information on this topic, please see the ECO's "Environmental Injustice: Pollution and Indigenous Communities" in our 2017 Environmental Protection Report (pages 98-147).

Vapour Emissions from a Gas Station (I2017005)

What the public asked for

Two Ontario residents submitted an application in November 2017 requesting an investigation of a Shell Canada gas station in east Toronto. The applicants

alleged that the gas station contravened section 14 of the Environmental Protection Act, which prohibits the discharge of a contaminant into the environment that may cause an adverse effect. One of the applicants has been experiencing significant respiratory problems that they believe are caused by the release of gasoline vapour during refueling of the gas station's underground storage tanks by tanker trucks.

The applicants also suspect that the station's vapour recovery system is not always functioning adequately. They contend that Shell Canada is therefore violating Ontario Regulation 455/94 (Recovery of Gasoline Vapour in Bulk Transfers), which requires service stations to have a vapour control system that is operating properly more than 95% of the time.

Prior to submitting their application, the applicants filed multiple complaints with the Ministry of the Environment, Conservation and Parks (MECP) of noxious gasoline vapours on their property. The history of their grievances goes back to 2014, when vapour venting pipes were relocated closer to the applicants' residential property during the station's redesign and expansion. Shell Canada has implemented several mitigation measures since 2014, including installing a fence, requiring additional measures by fuel delivery truck drivers to reduce the release of fuel vapours, and installing surveillance to ensure the vapour recovery system is used during refueling.

In spring 2017, in response to continued complaints from the applicants, Shell tested its vapour recovery system during refuelling. One of the applicants and a forensic engineer retained by the applicants attended the tests. The applicants state that during the test inadequate vapour control was observed while the premium fuel tank was being filled. Shell subsequently relocated the vent pipes further from the applicants' property. Nonetheless, the applicants continued to experience gasoline vapours on their property. In subsequent letters exchanged between the applicants' legal counsel and the MECP, the ministry stated it had no outstanding concerns with the Shell station and had closed its file. The applicants subsequently filed this application for investigation.

What the government did: investigation denied

The MECP denied this application for investigation, citing Shell Canada's mitigation measures to-date, and stating that ministry staff confirmed during a site visit in December 2017 that the vapour recovery system was in use and operational. The ministry also noted that the Technical Standards and Safety Authority (TSSA), who are the lead on fuel handling and storage protocol, had not expressed any concerns with the gas station's operation. The MECP stated that it was satisfied by the work carried out by Shell Canada and has closed its file on the matter.

What the ECO thinks:

This is a case of conflicting reports: the MECP asserts that the Shell station is operating in compliance with O. Reg. 455/94, but the applicants assert that vapours still reach their property; the MECP asserts the vapour control system is operational, but the applicants assert they are still experiencing adverse effects. The ECO does not have the mandate or resources to conduct our own investigations and, therefore, cannot verify which set of statements is more accurate. The ECO does, however, try to assess the general handling of applications by the ministry.

The ECO believes that the MECP's decision to deny this investigation was justifiable, based on the criteria set out in the EBR. While the applicants' request for investigation was warranted given that they feel that they are experiencing ongoing adverse effects, based on the facts before us, including the ministry's actions to date, the ECO believes that the ministry's denial of the application is justifiable. The ministry and Shell Canada appear to have taken the applicants' concerns seriously throughout the history of this issue, taking various steps from 2014 to 2017 to try to resolve the issue, and the ministry has determined that there is currently no contravention of any environmental laws.

Chapter 3

Reviewing EBR performance: EBR Report Cards 2017/2018



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3.1 Overview

One of the ECO's core functions is to review and report annually to the Legislative Assembly on how prescribed government ministries are complying with the requirements of the Environmental Bill of Rights. This is a significant responsibility; if ministries do not properly carry out their EBR obligations, Ontarians are denied their rights to participate in environmental decision making.

In 2016, the ECO started issuing annual report cards that evaluate how well each of the prescribed ministries have executed their EBR responsibilities in a number of categories. The EBR Report Cards help the ECO to identify areas of EBR performance in which ministries are succeeding, and areas that require improvement. The report cards were designed to encourage ministries to improve how they execute their EBR duties and, consequently, make it easier for the public to exercise their rights.

Since we started issuing EBR Report Cards, the ECO has witnessed an increased level of engagement by several ministries in satisfying their EBR responsibilities. This year, staff from many of the prescribed ministries demonstrated a strong commitment to ensuring their ministries comply with the EBR. ECO staff were contacted frequently by prescribed ministries' EBR Co-ordinators (staff assigned to facilitate the implementation of the EBR within their ministry) seeking guidance or proactively informing the ECO of their ministries' EBR activities. Part of the ECO's function is to provide guidance to ministries on how to comply with the EBR, and open lines of communication between

Since we started issuing EBR Report Cards, the ECO has witnessed an increased level of engagement by several ministries in satisfying their EBR responsibilities.

prescribed ministries and our office should help to better serve members of the public seeking to exercise their EBR rights.

Even more significantly, since the ECO started to issue EBR Report Cards, ministry performance of EBR responsibilities has improved measurably in some key categories, improving the public's ability to understand and participate in government decision making on important environmental matters, and exercise their other EBR rights. However, there is still much room for improvement.

EBR Report Card basics

Reporting period

The EBR report cards cover ministry performance of EBR responsibilities only during the ECO's reporting year, from April 1, 2017 to March 31, 2018.

Categories of evaluation

1. Quality of policy, act and regulation notices posted on the Environmental Registry
2. Quality of instrument notices posted on the Environmental Registry
3. Promptness of posting decision notices on the Environmental Registry
4. Keeping notices on the Environmental Registry up to date
5. Handling of applications for review and investigation
6. Avoiding overdue applications for review
7. Considering Statements of Environmental Values
8. Co-operation with ECO requests

How we evaluate ministry performance

We use a set of detailed criteria to evaluate ministry performance in each applicable category (not all ministries are prescribed for all responsibilities under the EBR). Our evaluation criteria are based not only on the EBR's strict legal requirements, but also on what the ECO believes are best practices required for a ministry to fulfil its obligations in light of the EBR's purposes.

The results of our evaluations are presented graphically, using coloured circles to represent a ministry's performance in a particular category:

- **green** means that a ministry met or exceeded the ECO's expectations and its legal obligations,
- **yellow** means that a ministry's performance needs improvement, and
- **red** means that the ministry's performance is unacceptable – the ministry has failed to comply with its legal obligations and/or is frustrating the environmental rights granted to the public by the EBR.

The results are accompanied by trend lines (↗↘↔), wherever applicable, to indicate whether a ministry's performance in a given category has improved, declined or remained unchanged since the previous reporting year.

The ECO provides written comments in each EBR Report Card, pointing out ministries' strengths and weaknesses and any special considerations or context. Each prescribed ministry had an opportunity to review their EBR Report Card and respond with a written comment.

EBR workload

Prescribed ministries have widely varying levels of EBR responsibilities, or "EBR workloads." Some ministries, such as the MECP and the MNRF, are prescribed for all aspects of the EBR and exercise their EBR functions daily. Other ministries, such as the EDU and the MOL, have fewer EBR responsibilities and rarely need to take action to fulfil those duties.

The ECO takes EBR workload into account when evaluating ministry performance wherever possible; for example, when evaluating how well a ministry keeps proposal notices on the Environmental Registry up to date, we consider the percentage of the ministry's open proposals that are outdated, rather than the raw number of outdated proposals.

3.2 Summary of results for 2017/2018

The ECO is pleased to report that, on balance, ministries improved their EBR performance again this year. Of the eight prescribed ministries with high or medium “EBR workloads,” (i.e., amount and frequency of work that a ministry must undertake to satisfy its

EBR obligations), six of those ministries (MECP, MNRF, OMAFRA, MGCS-TSSA, MMA, and MTO) saw an overall improvement (see Table 1).

Disappointingly, there were seven cases in which an individual ministry’s performance in an EBR Report Card category was unacceptable in 2018; however, this still marks an improvement over 11 cases in 2017 and 21 in 2016.

Table 1. Summary of EBR Report Card results, 2017/2018.

Prescribed Ministry	Quality of notices for policies, acts and regulations posted on the Environmental Registry	Quality of notices for instruments posted on the Environmental Registry	Promptness of posting decision notices on the Environmental Registry	Keeping notices on the Environmental Registry up to date	Handling of applications for review and investigation	Avoiding overdue applications for review	Considering Statements of Environmental Values (SEVs)	Co-operation with ECO requests	Overall trend since 2017
Ministries with a high EBR workload									
MECP	→	→	↗	→	→	→	→	→	↗
MNRF	→	↗	↘	↘	→	→	↗	↗	↗
Ministries with a medium EBR workload									
OMAFRA	→		↘	↗	●	↗	→	→	↗
MGCS-TSSA	→	↗	↗	↗	N/A	N/A	→	→	↗
MMAH	MMA	↗	↗	↗	↗	→	→	→	↗
	MHO	N/A		N/A	N/A	N/A	N/A	→	→
ENDM	ENG	→		↗	→	N/A	N/A	↘	↘
	MNDM	↗	↗	↘	→	N/A	N/A	→	↘
MTO	→		↗	→	N/A	N/A	→	→	↗
Ministries with a low EBR workload									
MEDJCT	→		●	N/A			N/A	→	→
EDU	N/A		N/A	N/A	N/A	N/A	N/A	→	→
MOHLTC	N/A		N/A	N/A	N/A	N/A	N/A	→	→
IAO	N/A		N/A	N/A			N/A	→	→
MOI	→		N/A	→			N/A	→	→
MOL	N/A		N/A	N/A			N/A	→	→
MTCS	→		N/A	→			N/A	→	→
TBS	N/A		N/A	N/A			N/A	→	→

Quality of performance:

- Meets or exceeds expectations
- ↗ Needs improvement
- Unacceptable

- Not prescribed for this category of EBR performance
- N/A Not applicable (the ministry did not carry out any responsibilities under this category in 2017/2018)

- ↗ Quality of performance has improved since 2016/2017
- Quality of performance unchanged since 2016/2017
- ↘ Quality of performance has declined since 2016/2017
- No result in 2016/2017

Ministries improved their EBR performance again this year.

In 2017, the ECO identified four key categories in which the ministries should significantly improve their performance.

Ministry performance in two of those categories generally met the legal requirements of the EBR and the ECO's expectations this year. The remaining two categories showed overall improvement since last year, but the improvements were modest, and ministry performance still does not meet the ECO's expectations in those categories.

The ECO is pleased to report that, overall, ministry performance in keeping Registry notices up to date is now meeting the ECO's expectations.

Keeping notices on the Environmental Registry up to date:

The ECO is pleased to report that, overall, ministry performance in keeping Registry notices up to date is now meeting the ECO's expectations. The number of outdated proposals has decreased from over 1,900 in 2015 to 111 at the end of the 2017/2018 reporting year. This year, three ministries (OMAFRA, MGCS-TSSA and MMA) remedied their remaining outdated proposals, while four others (ENG, MNDM, MTO and MOI) continued to keep all of their open proposals on the Environmental Registry up to date. Only two ministries had any outdated proposals at the end of the reporting year (the MECP had 37 and the MNRF had 74), and both ministries have been working to address the problem.

Avoiding overdue applications for review:

The MECP completed one of its overdue applications this year, and the OMAFRA completed its remaining overdue application shortly after the reporting year ended. The problematic practice of taking unreasonably long to complete EBR reviews is on its way to being resolved, with the number of overdue applications for review going down from seven in 2016 – dating as far back as 2009 – to two in 2018, out of 19 ongoing applications.

The problematic practice of taking unreasonably long to complete EBR reviews is on its way to being resolved.

Quality of notices for instruments posted on the Environmental Registry:

This category saw only modest progress this year. Some ministries have started to make improvements consistent with the ECO's suggestions in 2017, such as providing background information about instrument types, avoiding technical language and jargon, and including links to instruments and key supporting information. The MNRF has started to implement promised new templates for its Aggregate Resources Act instrument notices, which are an improvement over notices in past years. Disappointingly, however, the MNRF's notices still lack information about site-specific environmental impacts, and fail to include links to proposed or final instruments, both of which the ECO believes are necessary to consult the public effectively. Overall, instrument notices still need to improve.

Promptness of posting decision notices on the Environmental Registry:

The ECO is encouraged that five ministries gave the public notice of environmentally significant decisions more promptly this year. However, only two ministries (ENG and MTO) posted notices promptly at least 80% of the time, and overall performance in that category remains unacceptable to the ECO.



Going forward:

1. The MECP and the MNRF should remedy all remaining outdated proposals, and all other ministries should continue to keep proposal notices up to date to ensure that the public can rely on the Environmental Registry for timely information about the government's environmental proposals. Further, ministries should provide more helpful information for the public in proposal updates, including the status of the proposal, an explanation of any delay or action underway, and anticipated timing for making a decision.
2. The MECP should complete its two remaining overdue applications for review, and all ministries that undertake reviews should complete reviews within a reasonable time, as required by the EBR. When responding to applications for review, all ministries should strive to better address all valid environmental issues raised by the applicants.
3. Ministries that post instrument notices should continue to improve the quality of those notices by providing more information about the instrument type, explaining site-specific environmental impacts of proposed instruments, avoiding jargon and overly technical language, including links to approval documents and supporting information, and providing or improving geographic descriptors. The new Environmental Registry, once it includes instrument notices, may help (see Chapter 1, section 1.4.6).
4. All ministries should give the public prompt notice of decisions on the Environmental Registry – ideally, within two weeks of the decision being made. Ministries should clearly indicate in every decision notice the date that the decision was made.

You can find more details about ministry performance in each of the EBR report card categories in section 3.3, below. Prescribed ministries' individual EBR Report Cards for 2017/2018 are found in section 3.4. Individual ministry comments on their EBR Report Cards can be viewed online at eco.on.ca.

3.3 Results by category

Below is a summary of EBR performance, by category, in 2017/2018. Note that the tables showing results for each category only include results for ministries that (a) are subject to that category of EBR performance, and (b) carried out EBR responsibilities in that category during the reporting year (i.e., between April 1, 2017 and March 31, 2018).

Category #1: Quality of policy, act and regulation notices posted on the Environmental Registry

Notices posted on the Environmental Registry should enable members of the public to understand and meaningfully comment on a proposal, or understand a decision. The ECO evaluated all proposal and decision notices posted in 2017/2018 for policies, acts and regulations to determine whether:

- they are clearly written
- they describe, in sufficient detail, what is being proposed and why (including providing links to key and supporting documents),
- they explain the potential environmental impacts
- ministries gave enough time to the public to comment on proposals, and
- In decision notices, ministries described the effects, if any, of public comments on the ministry's decision.

Quality of notices for policies, acts and regulations	
MECP	
MNRF	
OMAFRA	
MGCS-TSSA	
MMA	
ENG	
MNDM	
MTO	
MEDJCT	
MOI	
MTCS	

Again this year, the ECO found that the quality of most ministries' policy, act and regulation notices generally met the ECO's expectations. In most cases, ministries provided detailed, well-written explanations of these proposals and decisions, usually explaining how the policy, act or regulation was anticipated to affect the environment, and including links to the draft and final policies, acts and regulations, as well as other supporting information. However, notices posted by the MNDM fell somewhat short, frequently lacking clear explanations

The quality of most ministries' policy, act and regulation notices generally met the ECO's expectations.

of what was being proposed or decided, and failing to include information about environmental impacts.

Further, the ECO encourages all ministries to consider providing more than the minimum 30-day comment period required under the EBR for the public to provide feedback on proposed policies, acts and regulations, given the complexity and public interest in many of these important proposals. Some ministries, such as the MECP and the MNRF, regularly provide 45 days for the public to comment on such proposals.

Category #2: Quality of instrument notices posted on the Environmental Registry

Like policy, act and regulation notices, proposal and decision notices for instruments (licences, permits and other approvals) should enable members of the public to understand and meaningfully comment on a proposal, or understand a decision. Further, many instruments have accompanying third-party appeal rights under the EBR, and a poor quality decision notice could affect the public's ability to exercise those rights.

Five ministries are prescribed for posting instrument notices (MECP, MNRF, MGCS-TSSA, MMA and MNDM). The ECO evaluated a random selection of up to 25 instrument proposal notices and 25 instrument

decision notices posted in 2017/2018 by each of the 5 ministries to determine whether the notices:

- are clearly written
- describe, in sufficient detail, what is being proposed and why (including providing links to the proposed instrument and other supporting documents)
- describe the geographic area that will be affected by the instrument
- describe anticipated environmental impacts
- in proposal notices, provided enough time for the public to comment, and
- in decision notices, describe the effects, if any, of public comments on the ministry's decision.

This year, of the five ministries prescribed for posting instrument notices, two ministries (MECP and MGCS-TSSA) generally met the ECO's expectations in this category – up from just one ministry (MECP) in 2017. The remaining three ministries continue to require improvement.

Quality of notices for instruments	
MECP	
MNRF	
MGCS-TSSA	
MMA	
MNDM	

The ECO saw modest progress in some instrument notices this year, in line with our suggestions in 2017.

Despite these unimpressive results overall, the ECO saw modest progress in some instrument notices this year, in line with our suggestions in 2017. These improvements should make instrument notices more informative for the public, and enable the public to more easily exercise their EBR rights to comment on



proposals and seek leave to appeal certain instrument decisions. For example:

- the MECP, the MNRF and the MNDM started to provide more background information about certain approval types,
- the MECP and MGCS-TSSA started to include more links to approval documents, with the MECP providing links to draft instruments in proposal notices, and the MGCS-TSSA providing links to final approval documents in decision notices, and
- the MNRF and the MNDM included better descriptions of the geographic location of proposed instruments under the Aggregate Resources Act and the Mining Act, respectively. Further, in some notices the MECP included Google map links to identify proposed instrument locations.

Unfortunately, the MNRF's proposal notices for Aggregate Resources Act instruments are still falling short. The ECO is encouraged that the MNRF had started to roll out new templates in some of its notices in response to the ECO's past criticisms. The new templates provide more background information about the Aggregate Resources Act licence process and better geographic descriptors of instrument locations. However, the ECO is extremely disappointed with the MNRF's continued failure to include any information in its instrument proposals about site-specific environmental impacts of proposed aggregate licences and permits, or to include links to approval documents. We strongly believe that these are critical components of a good instrument notice, and that the ministry's failure to provide that information deprives the public of its opportunity to make informed comments.

The ECO is extremely disappointed with the MNRF's continued failure to include any information in its instrument proposals about site-specific environmental impacts of proposed aggregate licences and permits, or to include links to approval documents.

Category #3: Promptness of posting decision notices on the Environmental Registry

The EBR requires ministries to post decision notices on the Environmental Registry "as soon as reasonably possible" after making a decision. When they fail to do so, they deprive the public of its right to prompt notice of the decision. When the decision is about an instrument that is subject to leave to appeal, failure to post a decision notice promptly can thwart the public's right to challenge the ministry's decision about the instrument.

The ECO believes that ministries should usually be able to post decision notices on the Environmental Registry within two weeks of making a decision. We give partial credit to ministries that post decisions between two and four weeks after making a decision.

Overall performance in the promptness category continued to be unacceptable.

Despite improvements by five ministries in this category (MECP, ENG, MGCS-TSSA, MMA and MTO), overall performance in the promptness category continued to be unacceptable in 2017/2018. Only two ministries (ENG and MTO) met the ECO's expectations.

In some cases, ministries simply did not post decision notices promptly after decisions were made, sometimes taking many months to tell the public about important decisions. For example, the MNRF took over a year to post decision notices about amendments to the Niagara Escarpment Plan, and the MEDG took over four months to inform the public about the passage of the Cutting Unnecessary Red Tape Act, 2017, which included amendments to the Pesticides Act. Such delays deprive the public of the right to know about ministry decisions within a reasonable timeframe.

Promptness of posting decision notices	
MECP	
MNRF	
OMAFRA	
MGCS-TSSA	
MMA	
ENG	
MNDM	
MTO	
MEDJCT	

Finally, in some cases ministries do not clearly indicate in decision notices the date that a decision was made, making it impossible for the ECO to evaluate how promptly the decision notice was posted; in those cases, we treated the decision notices as though they were not posted promptly. Unknown decision dates are primarily a problem with policies and instruments; the ECO is usually able to independently determine the decision date for acts and regulations. For example, this year the ECO could only determine the decision dates for MNDM instruments in 20% of cases. While the MNDM generally posted decision notices promptly in those cases, we could not evaluate the remaining 80% of notices for promptness, leaving the MNDM with an “unacceptable” performance result in this category.

Ministries have made some progress on this front; this year the ECO was able to determine the decision date for 81% of the decision notices that we reviewed, up from 66% last year. The MNRF stood out as doing a particularly good job in this regard, providing decision dates in 98% of the ministry’s notices that we reviewed. The ECO again encourages other ministries to clearly indicate in decision notices the date that

a decision was made, to be more transparent and informative for the public.

Category #4: Keeping notices on the Environmental Registry up to date

For the Environmental Registry to be a reliable source of up-to-date information for the public, prescribed ministries must give notices of decisions promptly, and keep notices for prolonged proposals updated so that the public can easily determine the status of those proposals.

Since 2015, the ECO has raised serious concerns about the number of proposal

notices on the Environmental Registry that we consider to be “outdated” (i.e., proposals that were posted more than two years previously, without any updates or a decision). We urged ministries to fix this problem by posting decision notices for old proposals that have been decided or abandoned, and by posting status updates for long-standing proposals that continue to be “open,” i.e., under consideration by the ministry.

Keeping notices up to date	
MECP	
MNRF	
OMAFRA	
MGCS-TSSA	
MMA	
ENG	
MNDM	
MTO	
MOI	
MTCS	

Ministries have made great strides in bringing the number of outdated notices on the Environmental Registry down from over 1,900 in 2015 to just 111.

Ministries have made great strides in fixing this problem, bringing the number of outdated notices on the Environmental Registry down from over 1,900 in 2015 to just 111 at the end of this reporting year (see Table 2).



Table 2. Outdated proposals on the Environmental Registry, by year.

Year	Number of outdated proposals
2015	1,914
2016	839
2017	136
2018	111

The ECO is pleased to report that most ministries are now doing a good job of keeping their proposal notices up to date on the Registry. This year, three ministries (OMAFRA, MGCS-TSSA and MMA) remedied all of their remaining outdated proposals, while four others (ENG, MNDM, MTO and MOI) continued to keep all of their open proposals on the Environmental Registry up to date.

The MECP and the MNRF, which post the majority of all proposals on the Environmental Registry, are responsible for the 111 outdated proposals that remained on the Environmental Registry at the end of the reporting year (see Figure 1). The MECP’s results in this category remain positive because only 4% of its open proposals are outdated; by contrast, the MNRF’s performance in this category is unacceptable to the ECO because 31% of its open proposals are outdated. Promisingly, both ministries have proactively contacted the ECO about working to remedy those outdated notices. The ECO urges the MECP and the MNRF to remedy all remaining outdated proposals, and encourages all other ministries to continue to keep proposal notices up to date to ensure that the public can rely on the Environmental Registry for timely information about the government’s environmental proposals.

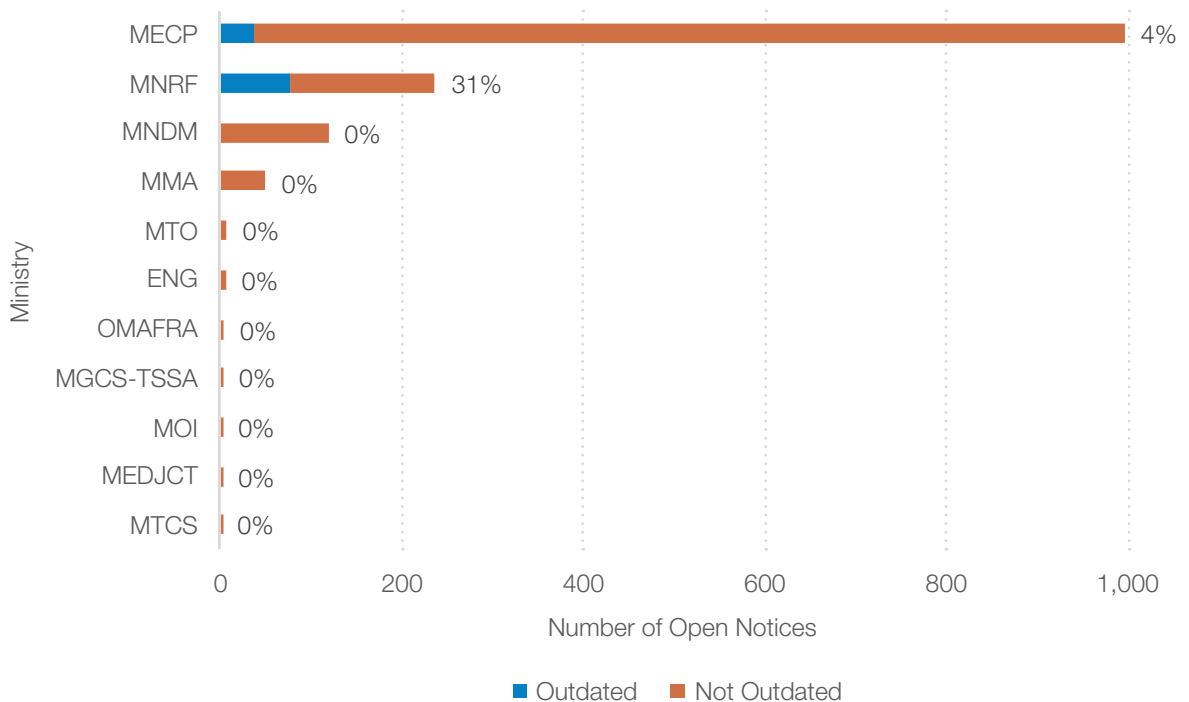


Figure 1. Status of all open proposal notices on the Environmental Registry as of April 1, 2018. Proposal notices that were initially posted more than two years ago, or have not been updated within the last two years, are considered to be outdated. Percentages indicate the number of outdated proposal notices relative to all open proposal notices for which the ministry is responsible.

Providing informative updates

To keep the Environmental Registry up to date, ministries must vigilantly update any proposals that remain open as they near the two-year mark. Since 2015, the ECO has accepted updates that simply indicate that a ministry is continuing to consider a proposal; this was enough to inform members of the public that the proposal had not, in fact, been decided or abandoned, and enabled ministries to more quickly update notices and improve the quality and reliability of the Environmental Registry overall.

However, in some cases such bare updates have left members of the public dissatisfied and wondering what was actually going on with a proposal. Going forward, the ECO urges prescribed ministries to provide more information in proposal updates. As a best practice, ministries could:





- describe the status of the proposal
- if the proposal is on hold or delayed, explain why
- if the ministry is actively working on the proposal, briefly describe the nature of that work, and
- provide an estimated timeline for making a decision.

The above information would help members of the public – particularly those who took the time to comment on the proposal when the ministry initially posted it – to better understand the status of the proposal and what to expect going forward. The ECO urges ministries, as a best practice, to provide more helpful information for the public in proposal updates, including the status of the proposal, an explanation of any delay or action underway, and anticipated timing for making a decision.

Category #5: Handling of applications for review and investigation

The ECO evaluates how well prescribed ministries have handled applications for review and investigation submitted by members of the public. We conduct this evaluation

once the application is “concluded” (i.e., once the ministry has either denied the application at the preliminary stage or completed the undertaken review or investigation, and given notice to the applicants of the final outcome).

Handling of applications	
MECP	
MNRF	
OMAFRA	
MMA	

In our evaluations, the ECO considers criteria such as whether a ministry:

- met all of the timelines set out in the EBR,
- followed EBR criteria in deciding not to undertake a requested review or investigation,
- addressed all valid environmental issues raised by the applicants, and
- wrote a clear and sufficiently detailed decision.

For purposes of the EBR Report Cards, the ECO evaluates each ministry’s handling of applications overall, to provide a single result (represented by a coloured circle) for each ministry. For more information about the EBR applications process and a more detailed evaluation of individual applications that ministries concluded in 2017/2018, see Chapter 2.

This year, four ministries concluded applications for review and investigation. Overall ministry performance was relatively consistent with 2016/2017, and there is still room for improvement. Two ministries (MECP and MNRF) generally met the ECO’s expectations; however, both of those ministries failed to meet at least one



statutory deadline, and showed room for improvement in other key criteria for individual applications. The OMAFRA concluded just one application for review in 2017/2018 relating to rules about tree cutting for agricultural land, but did a poor job of handling that application in accordance with EBR requirements. The MMA denied all four applications it received this year, and for some of those, it did not do a good job acknowledging and addressing the valid environmental issues raised by the applicants.

Going forward, the ECO urges ministries to better address all valid environmental issues raised by applicants when responding to applications for review.

Category #6: Avoiding overdue applications for review

When a ministry agrees to undertake a review in response to EBR applications submitted by the public, the EBR requires the ministry to complete that review “within a reasonable time.”

Avoiding overdue applications	
MECP	
MNRF	
OMAFRA	
MMA	

In 2016, the ECO identified a systemic problem with ministries – particularly the MECP – taking an unreasonably long time to complete reviews. That year, the ECO identified seven applications – dating as far back as 2009 – that we considered to be overdue.

At the end of the 2016/2017 reporting year, four overdue applications remained (three by the MECP and one by the OMAFRA), and the ECO was hopeful that the ministries would conclude those reviews soon after. This year, just one of those reviews was concluded by the end of 2017/2018: the MECP’s review regarding air pollution hotspots. However, the OMAFRA concluded its one overdue review shortly after the 2017/2018 reporting year ended.

The practice of taking unreasonably long to complete EBR reviews is on its way to being resolved, with the number of overdue applications for review going down from seven in 2016 – dating as far back as 2009 – to two in 2018, out of 19 ongoing applications.

The ECO urges the MECP to complete its final two overdue applications for review.

However, the ECO urges the MECP to complete its final two overdue applications for review (review of the EBR, submitted in 2010; and review of a waste disposal site, submitted in 2013), and encourages all ministries that undertake reviews to complete them within a reasonable time, as required by the EBR.

Category #7: Considering Statements of Environmental Values

The ECO must report annually on whether prescribed ministries have complied with the EBR requirement to consider their SEVs when making decisions that affect the environment. To fulfill this duty, the ECO asks ministries for proof that they have considered their SEV – in the form of an “SEV consideration document” – for all decisions on policies, acts and regulations posted on the Environmental Registry, as well as select decisions about permits and other approvals. We give ministries four weeks from the date of our request to provide their SEV consideration documents. Results in this category reflect both ministry compliance with the requirement to consider their SEVs, as well as whether ministries promptly provided proof of their SEV consideration to the ECO.

Considering Statements of Environmental Values	
MECP	
MNRF	
OMAFRA	
MGCS-TSSA	
MMA	
ENG	
MNDM	
MTO	

Ministries generally comply with the requirement to consider their SEVs, and readily provide prompt proof to the ECO that they have done so. This year, the ECO requested proof of SEV consideration from eight ministries, and six of those ministries easily met the ECO's expectations overall (see Figure 2).

Five ministries provided proof of SEV consideration within four weeks in response to every request (MMA, OMAFRA, MTO, MNDM, and MGCS-TSSA). Of the remaining three ministries, when they did provide proof of SEV consideration, the MNRF provided it within four weeks in 95% of cases, followed closely by the MECP in 82% of cases, while the ENG only responded promptly 40% of the time.

Unfortunately, the MNRF still needs improvement, as it continues to take the position that documenting SEV consideration is not required for certain types of permits issued under the Endangered Species Act, 2007. This year, the ministry also failed to document SEV consideration for aggregate approval site plan amendments under the Aggregate Resources Act, including amendments that increased the tonnage of aggregate that could be removed, and increased the depth of extraction from above the water table to below the water table. The ECO disagrees with the MNRF's position that documenting SEV consideration is not required for these instruments. The EBR requires the ministry to consider its SEV when making decisions about all environmentally significant permits and approvals.

The ENG also fell below the acceptable standard in this category. Of the ECO's six requests for proof of SEV consideration this year, the ministry failed to provide proof altogether in response to one request, and took an unacceptably long time – almost three months – to respond to three others. Going forward, the ECO urges the ENG to consider its SEV, and document that consideration, concurrently with decision making so that the ministry can provide proof of SEV consideration promptly when requested by the ECO.

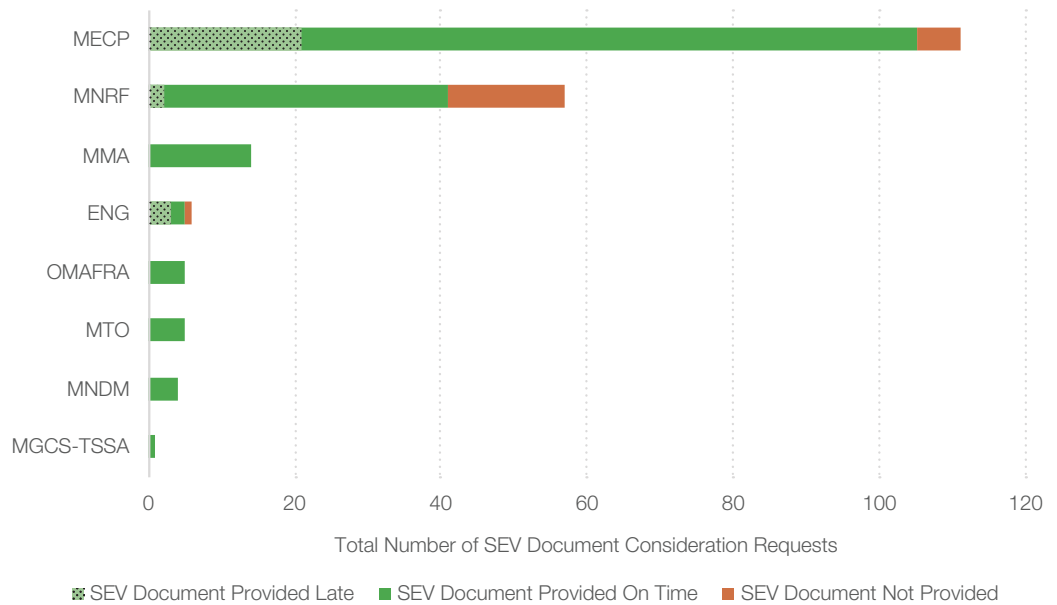


Figure 2. Ministry responses to requests made by the ECO for proof of consideration of Statement of Environmental Values, by prescribed ministry, in 2017/2018.

Category #8: Ministry co-operation with ECO requests

The ECO must report annually on whether prescribed ministries have co-operated with requests for information by the Commissioner.

Ministry co-operation is vitally important to the ECO's ability to effectively carry out our mandate; without it, we could not review environmentally significant decisions in an efficient and timely manner. Each of the prescribed ministries, as well as the Technical Standards and Safety Authority (TSSA), designate at least one staff person as their "EBR co-ordinator." Each EBR co-ordinator is responsible for facilitating the implementation of the EBR within their ministry. Most interactions between the ECO and the ministries occur via these co-ordinators; however, on occasion we also contact ministry staff responsible for program delivery directly, with specific, detailed information requests.

The Commissioner herself also routinely engages with deputy ministers. These interactions include requests for briefings on specific issues, data, internal documents and explanations of ministry positions or interpretations.

Ministry co-operation	
MECP	→
MNR	↗
OMAFRA	→
MGCS-TSSA	→
MMA	→
MHO	→
ENG	↘
MNDM	→
MTO	→
MEDJCT	→
EDU	→
MOHLTC	→
IAO	→
MOI	→
MOL	→
MTCS	→
TBS	→

In 2017/2018, prescribed ministries were generally very co-operative. Ministry staff responded to numerous requests for information, and briefed the ECO on a range of topics, such as climate change adaptation, wastewater pollution, biodiversity monitoring and wetlands. When asked – and in some cases proactively – ministries provided ECO staff with documents and other information. Ministries also provided answers to questions on several specific topics from ECO staff.

For example, this year, the ECO's climate change team wrote to each prescribed ministry and asked them to explain how the ministries were incorporating climate change considerations into their decision making. Every ministry responded to our request.

Ministry staff responded to numerous requests for information, and briefed the ECO on a range of topics.

However, lateness was a particular problem this year; ECO staff had to follow up with several ministries to obtain requested information beyond the deadline given, and to arrange for requested briefings. The ENG stood out this year as being particularly tardy and less co-operative than other ministries. The ECO's energy team requested a large amount of information and factual review from the ENG, and ultimately received it – but not without ECO staff and the Commissioner having to repeatedly follow up. The ENG's lengthy delays affected ECO staff's ability to deliver our reports on schedule.

On a good note, the MNR – which the ECO singled out last year for its lack of co-operation – met the ECO's expectations this year, providing prompt and thorough responses to our requests.

The ECO strongly encourages all ministries to respond promptly to our requests for information, and to reach out proactively to ECO staff if they need clarification or additional time to respond.

3.4 Individual ministry EBR Report Cards 2017/2018

The ECO's EBR Report Cards set out below evaluate EBR performance by ministries that were subject to EBR requirements (i.e., prescribed under O. Reg. 73/94) during the ECO's 2017/2018 reporting year (April 1, 2017 – March 31, 2018). The EBR report cards do not cover ministry performance after the end of the 2017/2018 reporting year.

Readers should note that on June 29, 2018 (after the end of the ECO's 2017/2018 reporting year), the Ontario government made the following changes to EBR-prescribed ministries:

- the Ministry of Economic Development and Growth became the Ministry of Economic Development, Job Creation and Trade (MEDJCT)
- the Ministry of Municipal Affairs and the Ministry of Housing joined to become the new Ministry of Municipal Affairs and Housing (MMAH)
- the Ministry of Energy and the Ministry of Northern Development and Mines joined to become the new Ministry of Energy, Northern Development and Mines (ENDM)
- the Ministry of the Environment and Climate Change became the Ministry of the Environment, Conservation and Parks (MECP), and
- the Ministry of Indigenous Relations and Reconciliation became the Ministry of Indigenous Affairs (IAO)

This section includes an EBR Report Card for each of the 17 individual ministries that were prescribed during the ECO's reporting year, using the ministry's new name where applicable. In the two cases in which ministries have been combined (i.e., ENDM and MMAH), two report cards are issued to each of the new combined ministries to reflect the individual EBR performances of the previously separate constituent ministries.

Individual ministry comments on their EBR Report Cards can be viewed online at eco.on.ca.

EBR Report Card legend

Quality of performance:

- Meets or exceeds expectations
- Needs improvement
- Unacceptable
- Not prescribed for this category of EBR performance

N/A Not applicable (the ministry did not carry out any responsibilities under this category in 2017/2018)








- Quality of performance has improved since 2016/2017
- ➔ Quality of performance unchanged since 2016/2017
- Quality of performance has declined since 2016/2017
- No result in 2016/2017

EBR Report Card 2017/2018

The Environmental Commissioner of Ontario's evaluation of ministry compliance with the Environmental Bill of Rights during the reporting period from April 1, 2017 to March 31, 2018

Ministry of Agriculture, Food and Rural Affairs (OMAFRA)

ECO Comment: The OMAFRA continued to carry out some of its EBR obligations extremely well this year. The ministry posts high quality notices on the Environmental Registry, and, whenever asked by the ECO, promptly provides proof that it has considered its Statement of Environmental Values when making environmentally significant decisions. Ministry staff continue to be proactive in seeking the ECO's guidance on EBR matters and are communicative and helpful when responding to ECO requests. The ECO particularly appreciated the OMAFRA's efforts in providing informative briefings on wetlands, forests and runoff. Unfortunately, again this year the ministry took an unacceptably long time to post one decision notice, and, because the ministry failed to indicate the decision date in other decision notices, the ECO could not determine how promptly the OMAFRA notified the public of those decisions. The OMAFRA can resolve this deficiency by clearly stating the decision date in decision notices and by posting decision notices on the Environmental Registry promptly after it makes decisions. The ECO was disappointed in the OMAFRA's handling of the one review that it completed during the ECO's 2017/2018 reporting year, and that the ministry did not complete a review that the ECO identified as overdue last year (although it did complete that review in April 2018). On a positive note, the OMAFRA's new practice of posting information notices on the Environmental Registry to provide updates on the status of its EBR reviews should serve the public well.







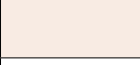
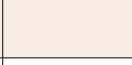

Category	Result	Trend	ECO Comments
Quality of notices for policies, acts and regulations posted on the Environmental Registry		→	The OMAFRA continued to post very high quality notices for policies, acts and regulations in 2017/2018.
Quality of notices for instruments posted on the Environmental Registry			The OMAFRA is not required to post instrument notices on the Environmental Registry.
Promptness of posting decision notices on the Environmental Registry		→	The OMAFRA posted five decision notices this year. The ministry took an unacceptably long time to give notice to the public of one policy decision, and in three other cases the ECO was unable to determine the date the decision was made. The ECO encourages the OMAFRA to specifically state in decision notices when its decisions were made in order to ensure transparency and accountability to the public.
Keeping notices on the Environmental Registry up to date		↗	This year, the OMAFRA remedied its remaining outdated notices on the Environmental Registry. All of its notices open at the end of the 2017/2018 reporting year were up to date.
Handling of applications for review and investigation		N/A	The OMAFRA received and denied one application for review in 2017/2018, and did a poor job of handling that application. The ECO urges the ministry to comply with EBR requirements and address all valid environmental issues raised by applicants when making decisions on applications for review. The OMAFRA is not prescribed for applications for investigation under the EBR.
Avoiding overdue applications for review		→	At the end of the reporting year, the OMAFRA had still not concluded a review that the ECO identified as overdue in 2016/2017. However, the ministry completed that review shortly after the end of the reporting year. The ECO is pleased that the OMAFRA is following the MECP's practice of posting information notices on the Environmental Registry to provide updates to the public on the status of applications for review.
Considering Statements of Environmental Values (SEVs)		→	Again this year, the OMAFRA responded promptly to all of the ECO's requests for SEV consideration documentation.
Co-operation with ECO requests		→	The OMAFRA continued to be responsive to the ECO's requests for information, responding to requests from the ECO's climate and environmental protection teams. The ministry also provided some very well co-ordinated and informative briefings to ECO staff on wetlands, woodlands and runoff.

EBR Report Card 2017/2018

The Environmental Commissioner of Ontario's evaluation of ministry compliance with the Environmental Bill of Rights during the reporting period from April 1, 2017 to March 31, 2018

Ministry of Economic Development, Job Creation and Trade (MEDJCT)

ECO Comment: This year, the MEDJCT posted good quality notices on the Environmental Registry to consult the public on a proposed act and a proposed policy. However, the ministry took an unreasonably long time to give notice to the public about its decisions on those proposals; the ECO encourages the MEDJCT to post decision notices more promptly in 2018/2019.

Category	Result	Trend	ECO Comments
Quality of notices for policies, acts and regulations posted on the Environmental Registry		→	The MEDJCT posted four notices on the Environmental Registry in 2017/2018, and all of the notices were detailed and easy to understand. However, the ECO encourages the MEDJCT to consider allowing more than 30 days, whenever possible, for the public to comment on proposals for acts.
Quality of notices for instruments posted on the Environmental Registry			The MEDJCT is not required to post instrument notices on the Environmental Registry.
Promptness of posting decision notices on the Environmental Registry		N/A	The MEDJCT posted just two decision notices on the Environmental Registry this year. Unfortunately, the ministry took 40 days to give notice to the public of a policy decision to update its Statement of Environmental Values, and 129 days to give notice of an important act that was passed in the legislature. The ECO urges the MEDJCT to give public notice of its decisions far more promptly.
Keeping notices on the Environmental Registry up to date	N/A	N/A	The MEDJCT did not have any open proposals on the Environmental Registry at the end of 2017/2018.
Handling of applications for review and investigation			The MEDJCT is not prescribed for applications for review, and no acts or instruments administered by the MEDJCT are prescribed for applications for investigation under the EBR.
Avoiding overdue applications for review			The MEDJCT is not prescribed for applications for review under the EBR.
Considering Statements of Environmental Values (SEVs)	N/A	N/A	The ECO did not request proof of SEV consideration from the MEDJCT in 2017/2018.
Co-operation with ECO requests		→	The ECO had limited contact with the MEDJCT in 2017/2018, but the ministry did respond to a request from the ECO's climate change team to explain how the ministry incorporates climate change considerations into its decision making.





EBR Report Card 2017/2018

The Environmental Commissioner of Ontario's evaluation of ministry compliance with the Environmental Bill of Rights during the reporting period from April 1, 2017 to March 31, 2018

Ministry of Education (EDU)

ECO Comment: The EDU has a low EBR workload. There was little material with which the ECO could evaluate the EDU's execution of its EBR responsibilities in 2017/2018, as the ministry did not post any notices on the Environmental Registry. However, the ECO commends the EDU for voluntarily considering an EBR application for review – before the ministry was legally required to do so – asking it to improve Ontario's school curriculum with regard to sustainable food systems and the nutrition guidelines used in schools. The EDU also co-operated by providing information requested by the ECO's climate change team, but the ECO urges the EDU to respond to our requests for information more promptly in 2018/2019.

Category	Result	Trend	ECO Comments
Quality of notices for policies, acts and regulations posted on the Environmental Registry	N/A	N/A	The EDU did not post any policy, act or regulation notices in 2017/2018.
Quality of notices for instruments posted on the Environmental Registry			The EDU is not required to post instrument notices on the Environmental Registry.
Promptness of posting decision notices on the Environmental Registry	N/A	N/A	The EDU did not post any decision notices in 2017/2018.
Keeping notices on the Environmental Registry up to date	N/A	N/A	The EDU did not have any open proposals on the Environmental Registry at the end of 2017/2018.
Handling of applications for review and investigation	N/A	N/A	The EDU became prescribed for receiving applications for review in September 2017. The ministry did not conclude any applications for review under the EBR in 2017/2018 after it was prescribed.
Avoiding overdue applications for review	N/A	N/A	The EDU did not have any open applications for review under the EBR at the end of 2017/2018.
Considering Statements of Environmental Values (SEVs)	N/A	N/A	The ECO did not request proof of SEV consideration from the EDU in 2017/2018.
Co-operation with ECO requests			The ECO had limited contact with the EDU in 2017/2018, but the ministry did respond to a request from the ECO's climate change team to explain how the ministry incorporates climate change considerations into its decision making. The ministry's response to that request was tardy; the ECO encourages the EDU to respond promptly to the ECO's information requests in 2018/2019.

EBR Report Card 2017/2018

The Environmental Commissioner of Ontario's evaluation of ministry compliance with the Environmental Bill of Rights during the reporting period from April 1, 2017 to March 31, 2018






Ministry of Energy, Northern Development and Mines (ENDM)

On June 29, 2018 (after the end of the ECO's 2017/2018 reporting year), the Ministry of Energy (ENG) was combined with the Ministry of Northern Development and Mines (MNDM) to become the new Ministry of Energy, Northern Development and Mines (ENDM).

However, the ECO has prepared separate EBR Report Cards to reflect the EBR performance of each of the individual ministries (ENG and MNDM) during the ECO's 2017/2018 reporting year.

Ministry of Energy (ENG)

ECO Comment: The ENG generally carried out its EBR responsibilities well this year, posting high quality notices on the Environmental Registry and keeping its proposals up to date. The ministry made a significant improvement in giving the public prompt notice of the ministry's environmentally significant decisions on the Environmental Registry. Unfortunately, the ENG was less prompt in responding to the ECO's requests for proof that it had considered its Statement of Environmental Values (SEVs) when making decisions. The ECO urges the ministry to consider its SEV whenever making a decision that may significantly affect the environment, and to provide documentation of that consideration promptly when the ECO requests it. The ECO also encourages the ENG to respond more promptly to the ECO's information requests, and to be more proactive in communicating with the ECO about information requests or if the ministry needs guidance on EBR and Environmental Registry matters.

Category	Result	Trend	ECO Comments
Quality of notices for policies, acts and regulations posted on the Environmental Registry		→	The ENG continued to post high quality notices, ensuring that notices were thorough and used plain language; the ministry improved these notices this year by avoiding the use of undefined acronyms. The ECO encourages the ENG to include links to relevant documents and supporting information wherever possible, to assist the public.
Quality of notices for instruments posted on the Environmental Registry			The ENG is not required to post instrument notices on the Environmental Registry.
Promptness of posting decision notices on the Environmental Registry		↗	The ENG showed great improvement this year in giving prompt notice of its decisions to the public.
Keeping notices on the Environmental Registry up to date		→	In 2017/2018, the ENG did not allow any of its proposal notices on the Environmental Registry to become outdated.
Handling of applications for review and investigation	N/A	N/A	The ENG did not conclude any applications for review under the EBR in 2017/2018.
Avoiding overdue applications for review	N/A	N/A	The ENG did not have any open applications for review under the EBR at the end of 2017/2018.
Considering Statements of Environmental Values (SEVs)		↘	The ENG showed a decline in performance in this category. The ministry provided SEV consideration documentation in response to 5 out of 6 requests from the ECO, but it took 11 weeks to respond in 3 of those cases. The ECO urges the ENG to provide proof promptly (and in any case no longer than 4 weeks) when asked by the ECO to demonstrate that it has considered its SEV when making a decision that affects the environment.
Co-operation with ECO requests		↘	The ECO's energy conservation and climate change teams requested a large volume of information from the ENG this year. The ENG ultimately provided all of the requested information, but not without ECO staff having to repeatedly follow up with the ministry. The ENG's lengthy delays in providing information affected ECO staff's ability to deliver our reports. The ECO appreciates the work required for the ENG to respond to our requests, but urges the ENG to make greater efforts in 2018/2019 to respond to our requests more promptly.



Ministry of Northern Development and Mines (MNDM)

ECO Comment: The MNDM made little improvement this year in carrying out its EBR obligations. The ministry's notices on the Environmental Registry continue to lack clarity and information about environmental impacts in many cases. However, the ECO was pleased that the MNDM started to include hyperlinks to the CLAIMaps website to locate specific exploration licence locations, which is an improvement that will help the public better navigate MNDM instrument notices. In many cases, the ECO was unable to determine how promptly the MNDM notified the public of its decisions, leading the ECO to rate the ministry's performance in that category as unacceptable. The ECO urges the MNDM to resolve this deficiency by clearly stating the decision date in decision notices, providing links to approval documents, and posting decision notices on the Environmental Registry promptly after the ministry makes decisions. The MNDM continued to keep its proposal notices on the Environmental Registry up to date and to respond promptly to the ECO's requests for proof that it considered its SEV when making decisions; the ECO hopes the MNDM will continue these good practices and make further progress in the remaining categories in 2018/2019.









Category	Result	Trend	ECO Comments
Quality of notices for policies, acts and regulations posted on the Environmental Registry		→	The MNDM made little improvement this year in the quality of its notices for policies, acts and regulations. The ministry's notices frequently lack information about environmental impacts, and do a poor job of explaining clearly what is being proposed or decided. One exception was the ministry's decision notice for the Mining Act modernization process, which was very well done.
Quality of notices for instruments posted on the Environmental Registry		→	The MNDM made some further modest improvements to instrument notices this year by, in some cases, hyperlinking the URL for the CLAIMaps website to locate specific exploration licence locations. The ministry also started to include stock text about environmental impacts of some proposed early exploration permits. However, many of the ministry's instrument notices still do not explain potential environmental impacts, lack sufficient detail, and consistently fail to include links to the draft or final instruments themselves.
Promptness of posting decision notices on the Environmental Registry		↘	In most cases it is impossible to determine how promptly the ministry has given notice of its decisions to the public. MNDM does not indicate the decision date in its decision notices, as recommended by the ECO, or include links to final instruments, which would indicate the issued (decision) date. In the approximately 25% of cases in which the ECO could determine the date that a decision was made, the ministry was reasonably prompt. The ECO encourages the MNDM to specifically state in decision notices when its decisions were made, and to post decision notices promptly, in order to ensure transparency and accountability to the public.
Keeping notices on the Environmental Registry up to date		→	The MNDM continued to keep all of its notices on the Environmental Registry up to date in 2017/2018.
Handling of applications for review and investigation	N/A	N/A	The MNDM did not conclude any applications for review or investigation under the EBR in 2017/2018.
Avoiding overdue applications for review	N/A	N/A	The MNDM did not have any open applications for review under the EBR at the end of 2017/2018.
Considering Statements of Environmental Values (SEVs)		→	The MNDM responded promptly to all of the ECO's requests for SEV consideration documentation in 2017/2018.
Co-operation with ECO requests		→	The MNDM co-operated with the ECO's requests for information in 2017/2018, including responding promptly to a request from the ECO's climate change team to explain how the ministry incorporates climate change considerations into its decision making. MNDM staff were communicative with ECO staff about EBR performance, and occasionally reached out for guidance on EBR matters.

EBR Report Card 2017/2018

The Environmental Commissioner of Ontario's evaluation of ministry compliance with the Environmental Bill of Rights during the reporting period from April 1, 2017 to March 31, 2018

Ministry of the Environment, Conservation and Parks (MECP)

ECO Comment: The MECP maintained its high quality of performance of its EBR obligations this year. The ministry continues to post high quality notices on the Environmental Registry; a significant feat given that the ministry posted approximately 2,000 notices this year alone. The ministry gave the public notice of its environmentally significant decisions more promptly this year in many cases; however, in over 30% of cases the ministry took more than 4 weeks to post decision notices. The ministry finally completed its long-overdue review of the need for a framework to assess cumulative effects in air pollution hot spots such as Aamjiwnaang First Nation; however, the ECO is disappointed that the ministry did not complete two additional overdue reviews, leaving EBR applicants waiting years for the ministry's final decision. The ECO urges the MECP to prioritize completing those reviews, and to complete all reviews within a reasonable time, as required by the EBR, going forward. Finally, MECP staff continue to be consistently helpful and responsive to the ECO's many requests for information and briefings, and are highly engaged in ensuring that the MECP meets its EBR obligations.

Category	Result	Trend	ECO Comments
Quality of notices for policies, acts and regulations posted on the Environmental Registry		→	The MECP continues to post consistently high quality notices for policies, acts and regulations on the Environmental Registry.
Quality of notices for instruments posted on the Environmental Registry		→	The MECP continues to post generally high quality instrument notices on the Environmental Registry; however, the ECO urges the ministry to ensure that it explains the environmental impacts of proposed instruments in every case. The MECP made some improvements to instrument notices this year by incorporating basic information about some types of approvals into notices for those approval types, such as environmental compliance approvals for air emissions and permits to take water. In some cases, the ministry also provided links to draft instruments, and used Google map links to identify proposed instrument locations, both of which make the notices more informative for the public.
Promptness of posting decision notices on the Environmental Registry		↗	The MECP posted decision notices more promptly this year. However, the ministry still posted over 30% of its decision notices more than four weeks after making the decision.
Keeping notices on the Environmental Registry up to date		→	The MECP continues to have some outdated proposals on the Environmental Registry, but they represent a very small percentage of the ministry's total number of open proposals. The ECO urges the MECP to remedy all remaining outdated proposals by posting decisions or updates, and to keep all notices up to date going forward.
Handling of applications for review and investigation		→	The MECP concluded 16 applications this year (8 reviews and 8 investigations). The ministry continues to generally handle applications in compliance with EBR requirements, but the ECO disagreed with the ministry's decision not to undertake a review in two cases, based on EBR criteria. We also urge the MECP to address the valid environmental issues raised in all applications for review.
Avoiding overdue applications for review		→	The MECP completed one long-overdue application for review this year. Of the ministry's 13 ongoing applications for review at the end of the ECO's reporting year, 2 remain overdue – including a review of the EBR that the ministry agreed to undertake in early 2011.
Considering Statements of Environmental Values (SEVs)		→	For the most part, the MECP responds promptly to the ECO's requests for proof that it has considered its SEV when making environmentally significant decisions. However, the MECP has continued its long-standing position that it need not consider its SEV for Category 1 permits to take water. The ECO disagrees with the ministry and requires proof that the ministry has considered its SEV when making decisions about all types of instruments prescribed under the EBR.
Co-operation with ECO requests		→	The ECO's environmental protection, climate change and energy teams made several requests for information and briefings from the MECP this year, and the MECP was generally co-operative. The ministry provided requested information and high quality briefings on a number of topics, including climate change adaptation, regulation of industrial waste water, and sewage bypasses/combined sewer overflows. However, the ministry was slow to respond to some requests and to arrange for briefings. The ECO urges the MECP to provide requested information more promptly.

EBR Report Card 2017/2018

The Environmental Commissioner of Ontario's evaluation of ministry compliance with the Environmental Bill of Rights during the reporting period from April 1, 2017 to March 31, 2018

Ministry of Government and Consumer Services – Technical Standards and Safety Authority (MGCS-TSSA)

ECO Comment: The MGCS is a prescribed ministry, responsible for administration of the Technical Standards and Safety Act, 2000. The Technical Standards and Safety Authority (TSSA) is an independent, not-for-profit administrative authority that is responsible for administering regulations under the Technical Standards and Safety Act on behalf of the MGCS. For the most part, the TSSA discharges the EBR obligations of the MGCS. This year, the TSSA made significant improvements. In particular, the TSSA posted more clearly-written instrument notices that included links to final approval documents. The TSSA posted decision notices on the Environmental Registry more promptly and remedied its remaining outdated notices, so that all open TSSA proposals on the Environmental Registry at the end of the ECO's reporting year were up to date. The ECO commends TSSA staff for being proactive in contacting the ECO for guidance on complying with the EBR and for keeping the ECO apprised of the TSSA's progress.


Category	Result	Trend	ECO Comments
Quality of notices for policies, acts and regulations posted on the Environmental Registry	●	→	The TSSA posted three notices in this category in 2017/2018. The notices were generally clearly written and included detailed information, including links to appropriate supporting material.
Quality of notices for instruments posted on the Environmental Registry	●	↗	The quality of the TSSA's instrument decision notices has noticeably improved this year, clearly explaining what decision was made. The TSSA can continue to improve the quality of instrument notices by avoiding the use of jargon, undefined acronyms and overly technical terms. The ECO is very pleased that, in late 2017, the TSSA started to post links to approved instruments (i.e., variance letters) in its decision notices, which should help the public better understand what has been decided and make it easier for the public to exercise EBR leave to appeal rights. The ECO urges the TSSA to ensure that links in its notices are functional at the time of posting.
Promptness of posting decision notices on the Environmental Registry	●	↗	The TSSA generally posted decision notices promptly this year; however, the ministry posted late decision notices for some long-outdated notices. The ECO encourages the TSSA to clearly indicate the date that the decision was made in every decision notice.
Keeping notices on the Environmental Registry up to date	●	↗	This year, the TSSA posted decision notices for its few remaining outdated proposal notices. The ECO encourages the TSSA to keep all proposals on the Environmental Registry up to date going forward.
Handling of applications for review and investigation	N/A	N/A	The MGCS-TSSA did not conclude any applications for review or investigation under the EBR in 2017/2018.
Avoiding overdue applications for review	N/A	N/A	The MGCS-TSSA did not have any open applications for review under the EBR at the end of 2017/2018.
Considering Statements of Environmental Values (SEVs)	●	→	The ECO made one request for proof of SEV consideration by the TSSA, and the TSSA responded by providing an SEV consideration document promptly.
Co-operation with ECO requests	●	→	The TSSA's EBR co-ordinator continued to contact ECO staff relatively regularly for guidance on EBR matters and to provide us with information about the TSSA's use. This year, the MGCS also responded to a request from the ECO's climate change team to explain how the ministry incorporates climate change considerations into its decision making.

EBR Report Card 2017/2018

The Environmental Commissioner of Ontario's evaluation of ministry compliance with the Environmental Bill of Rights during the reporting period from April 1, 2017 to March 31, 2018

Ministry of Health and Long-Term Care (MOHLTC)

ECO Comment: The MOHLTC has a relatively low EBR workload. There was little material with which the ECO could evaluate the MOHLTC's execution of its EBR responsibilities in 2017/2018, as the ministry did not post any notices on the Environmental Registry. The ECO encourages the MOHLTC to ensure that it considers its EBR responsibilities whenever the ministry's work could have a significant effect on the environment, and to respond promptly to any requests for information from the ECO.

Category	Result	Trend	ECO Comments
Quality of notices for policies, acts and regulations posted on the Environmental Registry	N/A	N/A	The MOHLTC did not post any policy, act or regulation notices in 2017/2018.
Quality of notices for instruments posted on the Environmental Registry			The MOHLTC is not required to post instrument notices on the Environmental Registry.
Promptness of posting decision notices on the Environmental Registry	N/A	N/A	The MOHLTC did not post any decision notices in 2017/2018.
Keeping notices on the Environmental Registry up to date	N/A	N/A	The MOHLTC did not have any open proposals on the Environmental Registry at the end of 2017/2018.
Handling of applications for review and investigation	N/A	N/A	The MOHLTC did not conclude any applications for review under the EBR in 2017/2018. No acts or instruments administered by the MOHLTC are prescribed for applications for investigation under the EBR.
Avoiding overdue applications for review	N/A	N/A	The MOHLTC did not have any open applications for review under the EBR at the end of 2017/2018.
Considering Statements of Environmental Values (SEVs)	N/A	N/A	The ECO did not request proof of SEV consideration from the MOHLTC in 2017/2018.
Co-operation with ECO requests		→	The ECO's environmental protection and climate change teams made requests of the MOHLTC in 2017/2018. The ministry was co-operative in responding to these requests, but was tardy in its response to a request from the ECO's climate change team to explain how the ministry incorporates climate change considerations into its decision making. The ECO encourages the MOHLTC to respond promptly to the ECO's information requests in 2018/2019.



EBR Report Card 2017/2018

The Environmental Commissioner of Ontario's evaluation of ministry compliance with the Environmental Bill of Rights during the reporting period from April 1, 2017 to March 31, 2018



Ministry of Municipal Affairs and Housing (MMAH)

On June 29, 2018 (after the end of the ECO's 2017/2018 reporting year), the Ministry of Housing (MHO) was combined with the Ministry of Municipal Affairs (MMA) to become the new Ministry of Municipal Affairs and Housing (MMAH).

However, the ECO has prepared separate EBR Report Cards to reflect the EBR performance of each of the individual ministries (MHO and MMA) during the ECO's 2017/2018 reporting year.









Ministry of Housing (MHO)

ECO Comment: The MHO has a relatively low EBR workload. There was little material with which the ECO could evaluate the MHO's execution of its EBR responsibilities in 2017/2018, as the ministry has never posted anything or otherwise engaged in any EBR activity separate from the MMA. The ECO encourages the MHO to ensure that it considers its EBR responsibilities whenever the ministry's work could have a significant effect on the environment, and to respond promptly to any requests for information from the ECO.

Category	Result	Trend	ECO Comments
Quality of notices for policies, acts and regulations posted on the Environmental Registry	N/A	N/A	The MHO did not post any policy, act or regulation notices in 2017/2018.
Quality of notices for instruments posted on the Environmental Registry			The MHO is not required to post instrument notices on the Environmental Registry.
Promptness of posting decision notices on the Environmental Registry	N/A	N/A	The MHO did not post any decision notices in 2017/2018.
Keeping notices on the Environmental Registry up to date	N/A	N/A	The MHO did not have any open proposals on the Environmental Registry at the end of 2017/2018.
Handling of applications for review and investigation	N/A	N/A	The MHO did not conclude any applications for review under the EBR in 2017/2018. No acts or instruments administered by the MHO are prescribed for applications for investigation under the EBR.
Avoiding overdue applications for review	N/A	N/A	The MHO did not have any open applications for review under the EBR at the end of 2017/2018.
Considering Statements of Environmental Values (SEVs)	N/A	N/A	The ECO did not request proof of SEV consideration from the MHO in 2017/2018.
Co-operation with ECO requests			The ECO had limited contact with the MHO in 2017/2018, but the ministry did respond to a request from the ECO's climate change team to explain how the ministry would incorporate climate change considerations into its decision making.

Ministry of Municipal Affairs (MMA)

ECO Comment: The MMA made some improvements this year, in particular in giving more prompt notice to the public of its environmentally significant decisions. The ministry also remedied all of its remaining outdated notices, so that all open MMA proposals on the Environmental Registry at the end of the ECO's reporting year were up to date. Unfortunately, the MMA's instrument notices continued to lack information about potential environmental implications, and often failed to include links to approval documents. The ministry should also do a better job of acknowledging and addressing valid environmental issues raised in applications for review submitted by the public. The ECO was pleased that MMA staff were proactive in contacting our office for guidance on complying with the EBR.

Category	Result	Trend	ECO Comments
Quality of notices for policies, acts and regulations posted on the Environmental Registry		→	This year, the MMA did an excellent job using the Environmental Registry to inform the public of its proposals and decisions that may affect the environment. The MMA's notices were detailed, clearly written and included links. The MMA should remember to explain the environmental impacts of each of its proposals, and to avoid using overly technical language.
Quality of notices for instruments posted on the Environmental Registry		→	Again this year, the MMA's instrument notices leave room for improvement. The ministry should ensure that instrument notices include a clear explanation of the potential environmental impacts of proposals and the geographic location affected by a proposal. The MMA should also include links to approval documents and supporting information where appropriate.
Promptness of posting decision notices on the Environmental Registry		↗	The MMA made a significant improvement in this category in 2017/2018. The ministry is also now clearly indicating the decision date in instrument decision notices, which better informs the public.
Keeping notices on the Environmental Registry up to date		↗	This year, the MMA posted decision notices for its few remaining outdated proposal notices. The ECO encourages the MMA to keep all proposals on the Environmental Registry up to date going forward.
Handling of applications for review and investigation		→	The MMA received four applications for review in 2017/2018, denying all of them. While the MMA met the EBR's formal requirements in most cases, the ministry should do a better job of addressing the valid environmental issues raised by the applicants.
Avoiding overdue applications for review		→	At the end of the ECO's 2017/2018 reporting year, the MMA had three open applications for review, none of which were overdue. However, the ECO notes that the MMA has never agreed to undertake a review, making it much easier for the ministry to avoid taking too long to complete a review.
Considering Statements of Environmental Values (SEVs)		→	The ECO requested SEV consideration documents for 14 decisions, and the MMA responded promptly in every case.
Co-operation with ECO requests		→	The MMA co-operated with the ECO's requests for information in 2017/2018, including responding promptly to a request from the ECO's climate change team to explain how the ministry incorporates climate change considerations into its decision making.




EBR Report Card 2017/2018

The Environmental Commissioner of Ontario's evaluation of ministry compliance with the Environmental Bill of Rights during the reporting period from April 1, 2017 to March 31, 2018

Ministry of Indigenous Affairs (IAO)

ECO Comment: The IAO has a relatively low EBR workload. There was little material with which the ECO could evaluate the IAO's execution of its EBR responsibilities in 2017/2018, as the ministry did not post any notices on the Environmental Registry. The ECO encourages the IAO to ensure that it considers its EBR responsibilities whenever the ministry's work could have a significant effect on the environment, and to respond promptly to any requests for information from the ECO.





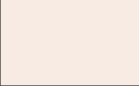
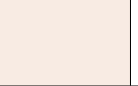



Category	Result	Trend	ECO Comments
Quality of notices for policies, acts and regulations posted on the Environmental Registry	N/A	N/A	The IAO did not post any policy, act or regulation notices in 2017/2018.
Quality of notices for instruments posted on the Environmental Registry			The IAO is not required to post instrument notices on the Environmental Registry.
Promptness of posting decision notices on the Environmental Registry	N/A	N/A	The IAO did not post any decision notices in 2017/2018.
Keeping notices on the Environmental Registry up to date	N/A	N/A	The IAO did not have any open proposals on the Environmental Registry at the end of 2017/2018.
Handling of applications for review and investigation			The IAO is not prescribed for applications for review, and no acts or instruments administered by the IAO are prescribed for applications for investigation under the EBR.
Avoiding overdue applications for review			The IAO is not prescribed for applications for review under the EBR.
Considering Statements of Environmental Values (SEVs)	N/A	N/A	The ECO did not request proof of SEV consideration from the IAO in 2017/2018.
Co-operation with ECO requests		→	The ECO had limited contact with the IAO in 2017/2018, but the ministry did respond to a request from the ECO's climate change team to explain how the ministry would incorporate climate change considerations into its decision making.

EBR Report Card 2017/2018

The Environmental Commissioner of Ontario's evaluation of ministry compliance with the Environmental Bill of Rights during the reporting period from April 1, 2017 to March 31, 2018

Ministry of Infrastructure (MOI)

ECO Comment: The MOI has a relatively low EBR workload; however, this year, the MOI's small number of notices on the Environmental Registry were of good quality and were up to date. The ECO encourages the MOI to continue to ensure that it considers its EBR responsibilities whenever the ministry's work could have a significant effect on the environment, and to respond promptly to any requests for information from the ECO.

Category	Result	Trend	ECO Comments
Quality of notices for policies, acts and regulations posted on the Environmental Registry		→	The MOI posted two notices on the Environmental Registry this year, and both notices were of good quality. However, the ministry should take care to identify proposals as the proper type – i.e., ensure that it posts proposed regulations as regulation proposal notices, not policy proposals.
Quality of notices for instruments posted on the Environmental Registry			The MOI is not required to post instrument notices on the Environmental Registry.
Promptness of posting decision notices on the Environmental Registry	N/A	N/A	The MOI did not post any decision notices in 2017/2018.
Keeping notices on the Environmental Registry up to date		→	All of the MOI's proposal notices on the Registry at the end of the ECO's reporting year were up to date.
Handling of applications for review and investigation			The MOI is not prescribed for applications for review, and no acts or instruments administered by the MOI are prescribed for applications for investigation under the EBR.
Avoiding overdue applications for review			The MOI is not prescribed for applications for review under the EBR.
Considering Statements of Environmental Values (SEVs)	N/A	N/A	The ECO did not request proof of SEV consideration from the MOI in 2017/2018.
Co-operation with ECO requests		→	The MOI responded to the ECO's requests for information in 2017/2018, including a request from the ECO's climate change team to explain how the ministry would incorporate climate change considerations into its decision making. The ministry also proactively sought the ECO's advice on important government policies.




EBR Report Card 2017/2018

The Environmental Commissioner of Ontario's evaluation of ministry compliance with the Environmental Bill of Rights during the reporting period from April 1, 2017 to March 31, 2018

Ministry of Labour (MOL)

ECO Comment: The MOL has a relatively low EBR workload. There was little material with which the ECO could evaluate the MOL's execution of its EBR responsibilities in 2017/2018, as the ministry did not post any notices on the Environmental Registry. The ECO encourages the MOL to ensure that it considers its EBR responsibilities whenever the ministry's work could have a significant effect on the environment, and to respond promptly to any requests for information from the ECO.









Category	Result	Trend	ECO Comments
Quality of notices for policies, acts and regulations posted on the Environmental Registry	N/A	N/A	The MOL did not post any policy, act or regulation notices in 2017/2018.
Quality of notices for instruments posted on the Environmental Registry			The MOL is not required to post instrument notices on the Environmental Registry.
Promptness of posting decision notices on the Environmental Registry	N/A	N/A	The MOL did not post any decision notices in 2017/2018.
Keeping notices on the Environmental Registry up to date	N/A	N/A	The MOL did not have any open proposals on the Environmental Registry at the end of 2017/2018.
Handling of applications for review and investigation			The MOL is not prescribed for applications for review under the EBR. No acts or instruments administered by the MOL are prescribed for applications for investigation under the EBR.
Avoiding overdue applications for review			The MOL is not prescribed for applications for review under the EBR.
Considering Statements of Environmental Values (SEVs)	N/A	N/A	The ECO did not request proof of SEV consideration from the MOL in 2017/2018.
Co-operation with ECO requests		→	The ECO had limited contact with the MOL in 2017/2018, but the ministry did respond to a request from the ECO's climate change team to explain how the ministry incorporates climate change considerations into its decision making. The ministry's response to that request was tardy; the ECO encourages the MOL to respond promptly to the ECO's information requests in 2018/2019.

EBR Report Card 2017/2018

The Environmental Commissioner of Ontario's evaluation of ministry compliance with the Environmental Bill of Rights during the reporting period from April 1, 2017 to March 31, 2018

Ministry of Natural Resources and Forestry (MNR)

ECO Comment: The MNR's performance of its EBR obligations remained largely unchanged this year. The ministry continues to post very high quality notices for policies, acts and regulations, but its instrument notices still have significant room for improvement – in particular notices for licences and permits issued under the Aggregate Resources Act. The MNR also continues to take an unreasonably long time to give notice to the public when it has made an environmentally significant decision, and is responsible for the majority of outdated proposal notices on the Environmental Registry. The ECO remains disappointed with the MNR's refusal to provide proof that it has considered its SEV for certain types of approvals. However, the ECO was pleased that the MNR responded more helpfully and promptly to the ECO's requests for information and briefings this year; the MNR's co-operation is a critical part of our ability to carry out our reporting functions under the EBR.

Category	Result	Trend	ECO Comments
Quality of notices for policies, acts and regulations posted on the Environmental Registry		→	The MNR consistently posts very high quality notices for policies, acts and regulations. However, the ECO again reminds the ministry to complete the "purpose" section of proposal notices to explain the purpose of the proposed policy, act or regulation – not the purpose of the notice.
Quality of notices for instruments posted on the Environmental Registry		→	The MNR made little improvement in the quality of its instrument notices this year. In particular, while the ministry made some minor improvements to its proposal notices for licences and permits for aggregate pits and quarries – including improving background information and the description of instrument locations – the ministry continued to do a poor job of explaining the environmental impacts. The MNR also failed to provide links to proposed or final approval documents. These ongoing deficiencies in the MNR's instrument notices make it more difficult for the public to participate in decision making about these activities that can significantly affect the environment.
Promptness of posting decision notices on the Environmental Registry		→	The MNR continued to take an unacceptably long time to give notice to the public after making decisions for all types of proposals, often taking months to do so. However, the ministry's poor result in this category is due in part to the ministry's strong efforts this year to post decisions for old, abandoned proposals. The MNR is doing an excellent job of clearly stating in decision notices the date that the ministry made the decision, which is more transparent for the public.
Keeping notices on the Environmental Registry up to date		→	The MNR made a marginal improvement in reducing its number of outdated notices on the Environmental Registry. The majority of the ministry's outdated proposals are notices that were updated over two years ago, but are still undecided and now require further updates to keep the public informed. MNR staff informed the ECO that the ministry placed a priority this year on assisting with the creation of the new Environmental Registry, and fell behind in keeping proposal notices up to date. The ECO urges the MNR to remedy all remaining outdated proposals by posting decisions or updates, and to keep all notices up to date going forward.
Handling of applications for review and investigation		→	The MNR received four applications for review this year, denying them all. For the most part, the ministry handled the applications in compliance with the EBR requirements. The ECO urges the MNR to do a better job of addressing the valid environmental issues raised by applicants in every case.
Avoiding overdue applications for review		→	None of the MNR's three open applications at the end of the year were overdue.
Considering Statements of Environmental Values (SEVs)		→	The MNR continues to refuse to provide proof to the ECO that it has considered its SEV when making decisions about some types of instruments. In particular, the MNR continues to maintain that documenting SEV consideration is not required for overall benefit permits issued under the Endangered Species Act, 2007; this year the MNR also took the position that documenting SEV consideration was not necessary for aggregate approval site plan amendments, including amendments that increased tonnage and increased depth of extraction from above the water table to below the water table. The ECO disagrees with the MNR's position and requires proof that the ministry has considered its SEV when making decisions about all types of instruments prescribed under the EBR.
Co-operation with ECO requests		↗	The MNR met the ECO's expectations for EBR co-operation this year, providing prompt and thorough responses to requests for information from the ECO's environmental protection, climate change and energy teams. At the ECO's request, ministry staff also provided helpful briefings on topics including biodiversity monitoring and wildlife health.



EBR Report Card 2017/2018

The Environmental Commissioner of Ontario's evaluation of ministry compliance with the Environmental Bill of Rights during the reporting period from April 1, 2017 to March 31, 2018

Ministry of Tourism, Culture and Sport (MTCS)

ECO Comment: The MTCS has a relatively low EBR workload; however, this year, the MTCS's single notice on the Environmental Registry was of very good quality and was up to date. The ECO encourages the MTCS to continue to ensure that it considers its EBR responsibilities whenever the ministry's work could have a significant effect on the environment, and to respond promptly to any requests for information from the ECO.


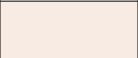
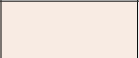




Category	Result	Trend	ECO Comments
Quality of notices for policies, acts and regulations posted on the Environmental Registry		→	The MTCS posted just one proposal notice on the Environmental Registry in 2017/2018. That notice was well written, easy to understand and included a link to the proposed policy document.
Quality of notices for instruments posted on the Environmental Registry			The MTCS is not required to post instrument notices on the Environmental Registry.
Promptness of posting decision notices on the Environmental Registry	N/A	N/A	The MTCS did not post any decision notices in 2017/2018.
Keeping notices on the Environmental Registry up to date		→	The MTCS only had one open proposal on the Environmental Registry at the end of the reporting year, and that notice was up to date.
Handling of applications for review and investigation			The MTCS is not prescribed for applications for review under the EBR. No acts or instruments administered by the MTCS are prescribed for applications for investigation under the EBR.
Avoiding overdue applications for review			The MTCS is not prescribed for applications for review under the EBR.
Considering Statements of Environmental Values (SEVs)	N/A	N/A	The ECO did not request proof of SEV consideration from the MTCS in 2017/2018.
Co-operation with ECO requests		→	The ECO had limited contact with the MTCS in 2017/2018, but the ministry did respond to a request from the ECO's climate change team to explain how the ministry incorporates climate change considerations into its decision making.

EBR Report Card 2017/2018

The Environmental Commissioner of Ontario's evaluation of ministry compliance with the Environmental Bill of Rights during the reporting period from April 1, 2017 to March 31, 2018

Ministry of Transportation (MTO)

ECO Comment: Among the prescribed ministries with high or medium EBR workloads, the MTO is the only ministry to meet or exceed the ECO's expectations in every applicable category. The MTO continued to post high quality notices on the Environmental Registry, and to keep all of its proposals up to date. This year, the MTO also made significant improvement in giving timely notice to the public of its environmentally significant decisions, consistently posting decision notices promptly on the Environmental Registry. MTO staff co-operated with the ECO's requests for information, and were also proactive in reaching out to the ECO to discuss EBR and Environmental Registry matters.

Category	Result	Trend	ECO Comments
Quality of notices for policies, acts and regulations posted on the Environmental Registry		→	Again this year, the MTO posted high quality notices for policies, acts and regulations on the Environmental Registry. The ECO notes that the ministry only provided the EBR-mandated minimum of 30 days public consultation for some policy proposals, including the Green Commercial Vehicle Program and CycleON. The ECO encourages the MTO to consider providing at least 45 days for policy, act and regulation proposals, as is the standard practice of some other prescribed ministries.
Quality of notices for instruments posted on the Environmental Registry			The MTO is not required to post instrument notices on the Environmental Registry.
Promptness of posting decision notices on the Environmental Registry		↗	The MTO improved its performance in this category considerably this year. The ministry was consistently prompt in posting its decision notices on the Environmental Registry.
Keeping notices on the Environmental Registry up to date		→	The MTO continued to keep all of its notices on the Environmental Registry up to date in 2017/2018.
Handling of applications for review and investigation	N/A	N/A	The MTO did not conclude any applications for review under the EBR in 2017/2018. No acts or instruments administered by the MTO are prescribed for applications for investigation under the EBR.
Avoiding overdue applications for review	N/A	N/A	The MTO did not have any open applications for review under the EBR at the end of 2017/2018.
Considering Statements of Environmental Values (SEVs)		→	Again this year, the MTO responded promptly to all of the ECO's requests for proof that it considered its SEV when making decisions.
Co-operation with ECO requests		→	The MTO responded helpfully and promptly to the ECO's requests for information in 2017/2018, including a request from the ECO's climate change team to explain how the ministry would incorporate climate change considerations into its decision making.




EBR Report Card 2017/2018

The Environmental Commissioner of Ontario's evaluation of ministry compliance with the Environmental Bill of Rights during the reporting period from April 1, 2017 to March 31, 2018

Treasury Board Secretariat (TBS)

ECO Comment: The TBS has a relatively low EBR workload. There was little material with which the ECO could evaluate the TBS's execution of its EBR responsibilities in 2017/2018, as it did not post any notices on the Environmental Registry. The ECO was pleased that TBS staff reached out to ECO staff for guidance on EBR compliance matters. The ECO encourages the TBS to ensure that it considers its EBR responsibilities whenever the TBS' work could have a significant effect on the environment. In particular, the ECO urges the TBS to respond fully and promptly to requests for information from the ECO in the future.

Category	Result	Trend	ECO Comments
Quality of notices for policies, acts and regulations posted on the Environmental Registry	N/A	N/A	The TBS did not post any policy, act or regulation notices in 2017/2018.
Quality of notices for instruments posted on the Environmental Registry			The TBS is not required to post instrument notices on the Environmental Registry.
Promptness of posting decision notices on the Environmental Registry	N/A	N/A	The TBS did not post any decision notices in 2017/2018.
Keeping notices on the Environmental Registry up to date	N/A	N/A	The TBS did not have any open proposals on the Environmental Registry at the end of 2017/2018.
Handling of applications for review and investigation			The TBS is not prescribed for applications for review under the EBR. No acts or instruments administered by the TBS are prescribed for applications for investigation under the EBR.
Avoiding overdue applications for review			The TBS is not prescribed for applications for review under the EBR.
Considering Statements of Environmental Values (SEVs)	N/A	N/A	The ECO did not request proof of SEV consideration from the TBS in 2017/2018.
Co-operation with ECO requests		→	The TBS responded to several requests by the ECO's climate change team for information and a briefing. However, the TBS was slow in responding to some requests, necessitating follow up by ECO staff. The TBS only became subject to the EBR relatively recently, and the ECO understands that this may have contributed to some responses to requests being delayed (e.g., due to co-ordination of information from various program areas and the TBS; internal approvals process). However, going forward the ECO strongly encourages the TBS to respond promptly and helpfully to the ECO's information requests.



Environmental
Commissioner
of Ontario



1075 Bay Street, Suite 605, Toronto, Ontario M5S 2B1
Tel: 416-325-3377 Fax: 416-325-3370 1-800-701-6454
www.eco.on.ca

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VOLUME 2

BACK TO BASICS

Clean Water



Purposes of the Environmental Bill of Rights include:

1. The prevention, reduction and elimination of the use, generation and release of pollutants that are an unreasonable threat to the integrity of the environment.
2. The protection and conservation of biological, ecological and genetic diversity.
3. The protection and conservation of natural resources, including plant life, animal life and ecological systems.
4. The encouragement of the wise management of our natural resources, including plant life, animal life and ecological systems.
5. The identification, protection and conservation of ecologically sensitive areas or processes.

Select citations have been included to help readers understand where the information the ECO cites comes from and to assist them in investigating an issue further should they be interested. Citations may be provided for: quotes; statistics; data points; and obscure or controversial information. Endnotes for these facts are generally only included if the source is not otherwise made clear in the body of the text and if the information cannot be easily verified. Exhaustive references are not provided.

Ministries were provided the opportunity to provide comments on this report. Ministry comments are available on our website.

Clean Water

Water is the most important element to all life. Seventy-one percent of the earth is covered in water, but clean fresh water is uncommon and precious. In Ontario, we are lucky to have an abundance of freshwater, but we still pollute much of it. This can have potentially catastrophic impacts for human health and well-being, as well as for the countless other species that depend on our lakes and rivers.

This volume discusses two key aspects of water pollution in Ontario.

In Chapter 1 of this volume, the ECO examines the effectiveness of the Clean Water Act in protecting sources of municipal drinking water from pollution that threatens human health. The Clean Water Act was adopted after the Walkerton tragedy in 2000 drove home the vulnerability of Ontario's drinking water. This law has done much to safeguard the drinking water sources of most Ontarians. Source protection committees have successfully identified hundreds of significant pollution threats to municipal drinking water sources, and have done what they can to manage them. However, the drinking water sources of almost one-fifth of Ontarians are not protected under the Clean Water Act, most of Ontario's lakes and rivers are not protected, and not all threats have been adequately addressed. Further, uncertainty about funding leaves the future of this critical program up in the air.

Chapter 2 shows how gaps in provincial laws still allow serious pollution to pour into lakes and rivers, closing beaches, harming fish, and harming economic activities that rely on clean water. Four of these major pollutants are raw municipal sewage, agricultural runoff, industrial wastewater, and road salt – none of which the province adequately controls.



Whiskey Harbour on the Bruce Peninsula, Lake Huron.

Photo credit: Shane Zurbrigg (CC BY-NC-ND 2.0)

Chapter 1

Protecting Ontario's Drinking Water from Pollution



Abstract

The contaminated drinking water tragedy in Walkerton, Ontario in May 2000 set in motion a new era in drinking water regulation in the province. The Ontario government enacted several laws aimed to protect drinking water at each stage from “source to tap.” In 2006, the final piece – the Clean Water Act – established a process for protecting sources of drinking water (the lakes, rivers and aquifers from which we draw drinking water) on a watershed-by-watershed basis.

In November 2015, after eight years of intensive planning work by local source protection committees, the last of the 38 source protection plans was approved.¹ These plans are now being implemented across much of the province to protect municipal drinking water sources.

Given the enormous amount of time, effort and resources that have gone into this process, the ECO examined how source protection committees applied the new law and what’s been achieved so far. The ECO looked at a selection of over 500 source protection policies, and held discussions with key stakeholders. The ECO’s review examined three questions:

- **Did the watershed planning approach work?** As intended, the local-led source protection process resulted in individually tailored source protection plans that respond to the specific geography and local circumstances of each watershed. The source protection committees proved to be committed and capable arbiters, creating policies that thoughtfully weighed the financial consequences of complying with more onerous policies without sacrificing the ultimate goal of drinking water safety. The process also resulted in a wealth of valuable watershed information that both supported source protection work and facilitates other work of conservation authorities to protect watersheds across the province (see section 1.3).
- **Is the Clean Water Act improving the safety of most Ontarians’ drinking water?** The source protection program is resulting in thousands of on-the-ground actions to reduce drinking water threats. For example, ministries are updating pollution permits to incorporate source protection provisions, municipalities are amending their official plans to designate restricted areas for source protection, and local risk management officials and inspectors are actively enforcing source protection policies to reduce threats to drinking water. It is still early days of implementation, but these actions should over time reduce the risk of spills and unsafe discharges to municipal drinking water sources, which supply water for about 80% of Ontarians (see section 1.4).
- **What’s missing?**
 - **Not all drinking water sources are protected.** Almost one-fifth of Ontario’s population is excluded from the province’s drinking water source protections. The drinking water systems of most northern Ontario and First Nation reserve communities are not protected by the source protection framework. Similarly, non-municipal sources of drinking water, such as private wells, are not protected, even within source protection areas (see section 1.5.2).
 - **Some threats to drinking water are not adequately addressed.** The province’s source protection rules fail to give source protection committees the tools needed to properly address all threats, including some threats posed by fuel tanks and manure spreading (see section 1.5.3). The province does not deal effectively, within the Clean Water Act or otherwise, with threats posed by old contaminated sites (see section 1.5.4).
 - **Uncertainty about future funding and capacity.** The various bodies responsible for implementing source protection – including the conservation authorities, municipalities, source protection committees, and the Ministry of the Environment, Conservation and Parks – require secure ongoing funding and resources to ensure they have the capacity to keep doing source protection work. Uncertainty about future funding leaves the success of the source protection program up in the air (see section 1.5.5).

Ontario has invested significant effort to protect the province’s water resources that are municipal sources of drinking water. Contaminated drinking water can cause sickness or, in the worst case, death. But protecting municipal drinking water sources, which are a small portion of Ontario’s water resources, is not all that matters. As we discuss in Chapter 2 of this volume, Ontario must protect all of our water resources from pollution, to preserve our lakes and rivers as places that Ontarians can safely go swimming, boating and fishing, and so that Ontario can continue to sustain an abundant and healthy diversity of aquatic plants and animals. Ontario has made great strides in safeguarding the sources of drinking water of most Ontarians, but there is still much work to be done.

There were hundreds of significant threats to municipal drinking water. Because of Walkerton, they are now better controlled.

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1.1. Introduction: Walkerton crisis ushered in new era of drinking water protections

Every day, we turn on the faucets in our kitchens and bathrooms countless times, to fill a glass, brush our teeth, replenish the coffee pot or wash a dish. Without even thinking about it, most Ontarians expect that the water coming out of our taps will be safe.

We should not take safe abundant water for granted. Many things can threaten the safety of our drinking water. Raw sewage, leaking oil tanks, road salt, manure from farm fields, and many other substances can wash into our lakes, rivers, streams and aquifers, potentially contaminating our water with chemicals or pathogens.

Without adequate laws, policies and investments, contaminated water sources can have devastating effects. The events in Walkerton, Ontario in 2000 (see The Walkerton Crisis) woke Ontario up to this reality.

The Walkerton Crisis

In May 2000, following several days of heavy rains, cow manure from a farm in Walkerton, Ontario washed into a vulnerable groundwater well, contaminating the town's water supply with *E. coli* bacteria. The operators of the water treatment plant – who lacked sufficient training and expertise, and who had knowingly engaged in improper treatment and monitoring for years – did not have adequate chlorination and failed to promptly detect the bacteria. When the operators did discover the contamination, they concealed the problem, even after residents started to fall ill.

The Walkerton Commission, which examined the crisis, found fault in many parts of the system. The Ministry of the Environment, whose inspection program was slashed by provincial budget cuts, had failed to catch the operators' illegal conduct. The province had also ended government lab testing and reporting, which would have caught the problem earlier and ensured that public health officials knew about it.

As a result of these many failures, seven people died and over 2,300 fell ill, with many in Walkerton still suffering from the effects today. The Walkerton crisis remains a symbol of the immense consequences of poorly designed budget cuts that ignore environmental risks.

1.1.1 Improving water treatment and testing

Following the Walkerton crisis, the government called a public inquiry to review the tragedy and recommend ways to make Ontario's drinking water safer. In response, Ontario passed several new laws and regulations to better protect our drinking water. The Safe Drinking Water Act, 2002, created stringent requirements to ensure that municipal water treatment plants are better equipped to detect and treat contaminants before the water is piped to our homes. Tests from municipal drinking water systems, which serve over 80% of all Ontarians (see *Drinking water protections for all?*), show that these systems meet the province's strict drinking water quality standards 99.8% of the time.

1.1.2 Stopping pollution at the water source

The Safe Drinking Water Act provides very good protection, but it is not fail-safe. No operating system is infallible and a major contamination incident can potentially overwhelm a drinking water system. Given the possible dire consequences of consuming unsafe water, the Walkerton inquiry recognized that drinking water requires a multi-barrier approach to protection. A crucial first line of defence is to protect the source of the drinking water – the lake, river or aquifer from which we draw the water – from becoming contaminated in the first place. In 2006, the Ontario government introduced the Clean Water Act, 2006, to require protection of the sources of municipal residential drinking water across much of the province (called “source protection,” see section 1.2 for how it works). This law created the first barrier in the province's multi-barrier “source to tap” drinking water safety net.

Drinking water requires a multi-barrier approach to protection.

This first barrier is crucial, as it is far easier and less expensive to stop pollution from entering water

sources in the first place than it is to try to remove those contaminants later. In some cases, it is not even technically possible to do so. In other cases, it is possible, but the contamination makes the water treatment process more difficult, expensive and energy-intensive.² Source protection measures that keep chemicals, sediments or nutrients out of the water can improve drinking water safety as well as provide economic benefits by reducing water treatment costs.³

Moreover, within the designated vulnerable zones covered by source protection rules (see section 1.2.1), pollution reduction measures can also greatly benefit the plants and animals that live in, or rely on, those lakes or rivers for survival. Source protection can also improve water-based recreational activities in those same areas by creating cleaner water for fishing and swimming. However, for the majority of Ontario's lakes, rivers and shorelines that fall outside of the Clean Water Act's protected vulnerable zones, we must rely on the other pollution-control laws and policies to fulfill this role – see Chapter 2.

Drinking water protections for all?

The Safe Drinking Water Act provides rules for ensuring the safety of residential drinking water from municipal and some non-municipal water treatment systems (such as the water supply for a trailer park or small complex of homes). There are no comparable rules to protect the drinking water from private wells.

Similarly, the Clean Water Act provides rules to protect the sources of most municipal drinking water, but generally excludes other drinking water sources (with a few exceptions). The source protection framework has not been applied to most of northern Ontario, most First Nation communities, or to private wells or other non-municipal drinking water sources. These gaps leave some Ontarians vulnerable to unsafe drinking water – see section 1.5.1 for further discussion.

The Clean Water Act is built around the core feature of local watershed-based planning.

1.2 How Ontario's source protection process works

The Clean Water Act is built around the core feature of local watershed-based planning. In brief, local committees develop plans to protect the sources of municipal drinking water within their watershed from threats.

Source protection planning happens at the watershed scale,⁴ instead of by town or city, because water flows across political boundaries. The Clean Water Act divides most of Ontario (the more populated parts) into source protection areas or regions, generally corresponding to the watershed boundaries (see Figure 1).



Figure 1. Ontario's source protection areas and regions. There are 38 source protection areas, some of which are grouped into larger source protection regions for source protection planning purposes.

Source: Ministry of the Environment, Conservation and Parks, Source Protection Programs Branch, base map provided by Microsoft Bing, graphic compiled by the ECO.

For each source protection area or region, a designated source protection authority – typically the local conservation authority⁵ – leads the planning work. The lead source protection authority establishes a multi-stakeholder source protection committee (with members from the municipal, agricultural, industrial, commercial, environmental and health sectors, the general public, and First Nation communities where they reside within the area) to help carry out the source protection planning work.

1.2.1 Identifying the vulnerable areas for drinking water protection

As a first step,⁶ each local source protection committee prepares a science-based assessment report for their watershed, which:

- characterizes the quality and quantity of the water in the watershed
- identifies the vulnerable areas that require special protection, such as areas surrounding a municipal well or drinking water intake pipe in a lake or river (see Figure 2)
- identifies all potential drinking water threats within the vulnerable areas, and
- classifies each identified threat as significant, moderate or low.



Figure 2. Vulnerable areas that require special protection from drinking water threats. Generally, the areas closest to a wellhead or surface water intake are considered most vulnerable.

Source: Created by the ECO.

Source protection only applies to the areas designated as “vulnerable” to threats, including zones around municipal intake pipes, wellheads and highly vulnerable aquifers. Therefore, while much of the land mass in southern Ontario is covered by source protection areas

(Figure 1), the actual area that receives protection from pollutants under the Clean Water Act is relatively small (Figure 3).⁷ For everywhere outside of these zones, we rely on the other laws and policies to protect Ontario’s lakes and rivers from pollution (see Chapter 2).

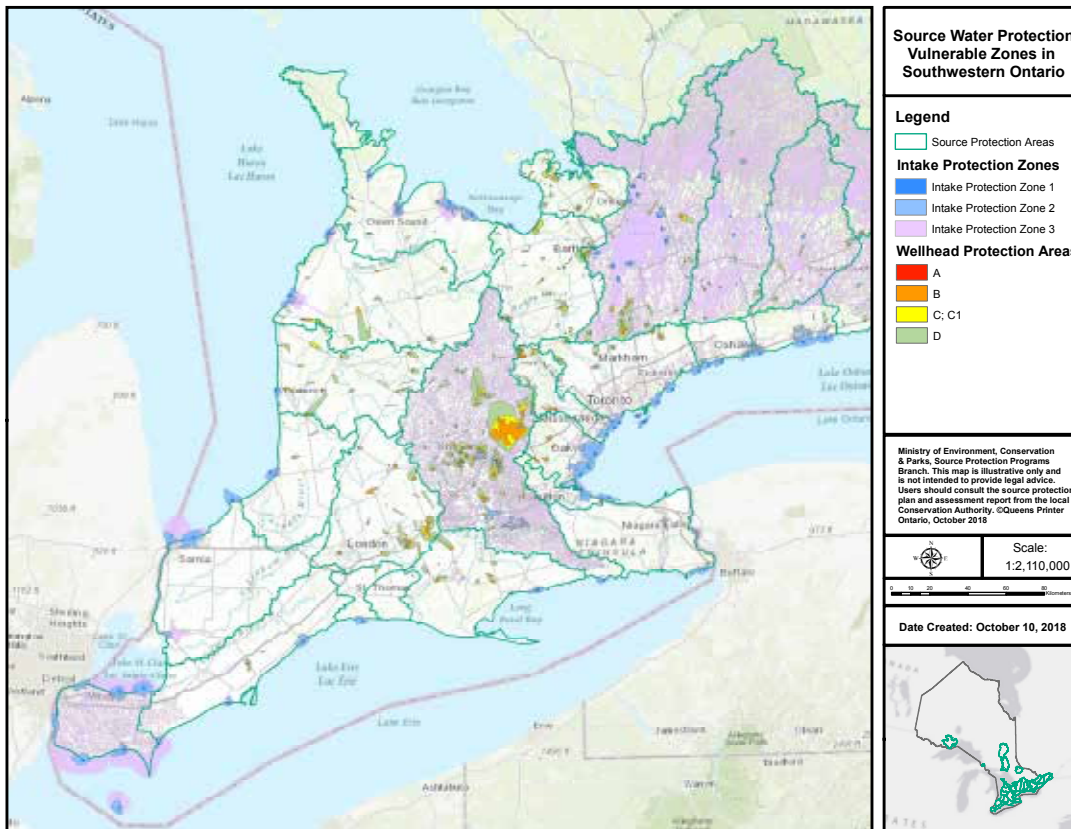


Figure 3. Vulnerable zones in which significant drinking water threats can be identified make up a relatively small portion of the source protection areas. The wellhead protection areas and intake protection zones represent vulnerable zones that require protection from identified significant drinking water threats. The pink areas that cover much of the map (intake protection zone 3) represent areas that receive little protection because contaminants in these areas are less likely to reach municipal water intakes.

Source: Ministry of the Environment, Conservation and Parks.

1.2.2 Identifying drinking water threats

Each source protection committee must identify the threats to their municipal drinking water sources. The regulation under the Clean Water Act lists the specific activities – such as discharging sewage, spreading fertilizer or storing road salt – that committees may deem to be a “drinking water threat” (see Table 1 for

full list). Not all forms of these prescribed activities are considered threats. The Ministry of the Environment, Conservation and Parks’ (MECP) companion Technical Rules and Tables of Drinking Water Threats set out detailed constraints on the particular circumstances in which a prescribed activity can be identified as a drinking water threat.

Table 1. Prescribed threats to drinking water. There are 20 prescribed threats to water quality, and two threats that relate to water quantity. This report focuses on pollution to water, and therefore only focuses on threats to water quality.

Prescribed Drinking Water Threats	Examples
Waste	
Establishing, operating or maintaining a waste disposal site.	Disposing waste in landfill; storing PCBs, waste oil and other hazardous wastes.
Sewage and Septic Systems	
Establishing, operating or maintaining a system that collects, stores, transmits, treats or disposes of sewage.	Building or operating a septic system, stormwater treatment pond, sewage treatment plant or sewer system; discharging effluent from an industrial facility.
Agriculture	
Applying agricultural source material to land.	Storing animal manure or farm wash water; spreading these materials on farm land.
Storing agricultural source material.	
Managing agricultural source material.	
Applying non-agricultural source material to land.	Spreading sewage biosolids, pulp and paper biosolids, or waste materials from food processing on land.
Handling and storing non-agricultural source material.	
Using land for livestock grazing or pasture land, for an outdoor confinement area, or a yard for farm animals.	Managing manure on fields from livestock grazing or from confinement areas outside barns.

Fertilizer/Pesticides (on agricultural or non-agricultural lands)	
Applying commercial fertilizer to land.	Spreading synthetic or natural fertilizers containing nitrogen, phosphorus or potassium for crop growth.
Handling and storing commercial fertilizer.	
Applying pesticide to land.	Spreading chemicals to control weeds (herbicides) or fungi (fungicides), such as on a golf course.
Handling and storing pesticide.	
Road Salt and Snow Storage	
Applying road salt.	Spreading salt on roads and parking lots; storing salt in outdoor containment areas.
Handling and storing road salt.	
Storing snow.	Storing piles of plowed snow that is contaminated with road salt and automobile fuel.
Fuel Oil	
Handling and storing fuel.	Handling or storing fuel at oil refineries, gas stations, marinas, farms or industrial sites with onsite fuel supplies; storing heating oil in below-grade tanks for homes or businesses.
Establishing and operating a liquid hydrocarbon pipeline ⁸ (prescribed as of July 1, 2018).	Operating a local or transboundary pipeline that carries oil or liquid gasoline.
Contaminants from Commercial and Industrial Processes	
Handling and storing a dense non-aqueous phase liquid.	Handling and storing dry-cleaning chemicals, paint and spot removers, rug cleaning fluids and varnishes.
Handling and storing an organic solvent.	Handling and storing paints, varnishes, lacquers, adhesives, glues, degreasing or cleaning agents, substances used to produce dyes, polymers, plastics, textiles and printing inks.
Managing the chemical run-off from the de-icing of aircraft.	Using ethylene glycol to de-ice aircrafts at airports.
Threats to Water Quantity (*not reviewed in this report)	
Taking water from a water body or aquifer without returning it to the source.	Taking water for water bottling, beverage manufacturing, food preparation, etc.
Engaging in an activity that reduces the recharge of an aquifer.	Increasing impervious cover of the ground, e.g., constructing a paved parking lot.

Source: Adapted from the Quinte Conservation Authority.

Once the committees have identified all potential threats, they must determine which of those threats have the potential to pose a significant risk (known as “significant drinking water threats”). Source protection plans must include policies to address all significant drinking water threats. Source protection committees must also determine which of the identified threats are moderate or low threats. Threat level is based on the “hazard rating” of the activity (the threat posed by the chemicals and/or pathogens) and the “vulnerability score” of the location where the activity occurs.

Source protection plans must include policies to address all significant drinking water threats.

Source protection committees may also identify other activities that are not on the list of prescribed threats (or that do not meet the accompanying criteria) as a significant threat, but only if the MECP has confirmed the activity has a sufficiently high hazard rating. Indeed, several committees received permission from the ministry to identify oil pipelines as a local drinking water threat, despite pipelines not being on the initial list of prescribed threats (see section 1.5.1 for discussion of pipelines).

What about threats from historical contamination?

The primary intent of the Clean Water Act is to prevent drinking water problems arising from existing and future activities. The law does recognize that historical contamination may also pose a threat: the law defines “drinking water threats” to include not only an existing or future “activity,” but also a historical “condition” that presents a current or future risk to a drinking water source. However, the Clean Water Act provides only limited tools to deal with historical contamination. See section 1.5.4 for a discussion of the challenges of addressing historical conditions.

1.2.3 Developing source protection policies

Based on the information in the assessment report, each committee then develops a source protection plan. The plan must include a set of policies to address all identified significant drinking water threats, and may include policies to address other threats.

To address significant threats, committees can use an array of policy tools (see Table 2) ranging from strong regulatory tools (such as prohibiting or restricting activities in certain areas) to softer policy tools (such as education, outreach and best management practices). For moderate or low drinking water threats, committees may also create policies, but were not allowed to use the more powerful regulatory tools (collectively referred to as “Part IV tools”) to control them.

Only those policies that relate to significant threats can be legally binding. For example, a source protection committee can require a provincial ministry to amend an approval, such as an approval for a sewage treatment system, to address a significant drinking water threat, but for lesser threats, the committee may only ask the ministry to “have regard to” that policy.



Photo credit: LeoPatrizi, (iStock standard licence).

Table 2. Overview of source protection policy tools.

Policy Tool	Applicability	Policy's Legal Effect	Implementing Body
Part IV tools – may only be used to address significant threats			
<p>Prohibitions</p> <p>The most powerful tool available. Committees can outright prohibit certain activities in designated vulnerable areas.</p>	May apply to existing or future activities.	Legally binding (no prohibited activities may continue or start).	Local risk management inspectors are responsible for ensuring compliance with this policy.
<p>Risk Management Plans</p> <p>Committees can require risk management officials to negotiate a risk management plan (a legally enforceable negotiated agreement) with a business or property owner, that would require the person to reduce the threat posed by an activity (e.g., require better storage containment). For more information, see section 1.4.2.</p>	May apply to existing or future activities.	Legally binding (activities may not continue or start without an approved risk management plan).	Local risk management officials approve plans; risk management inspectors ensure compliance.
<p>Land Use Restrictions</p> <p>Committees can restrict municipal authorities from approving certain Planning Act applications or issuing building permits for activities that would be a significant threat, unless safeguards are in place.</p>	May only apply to future activities in vulnerable areas.	Legally binding (municipal authorities must follow policy).	Municipal planning approval authorities.
Other policy tools – may be used to address any threats (significant, moderate or low)			
<p>Prescribed Instruments</p> <p>Committees can require provincial ministries to review certain instruments (e.g., approvals or permits) and, as necessary, amend the instruments to manage threats. They can also require ministries to revoke or refuse to issue instruments for prohibited activities.</p>	May apply to existing and future activities, as well as historical conditions.	Legally binding for significant threats only (ministry need only “have regard to” the policy for other threats).	Provincial ministries (Environment, Conservation and Parks; Natural Resources and Forestry; and Agriculture, Food and Rural Affairs).
<p>Land Use Planning (Official Plan and Zoning By-Law Conformity)</p> <p>Committees can require municipalities to amend their official plans and zoning by-laws to reflect prohibitions against the establishment of certain threat activities or restrictions in designated vulnerable areas.</p>	May apply to existing or future activities.	Legally binding for significant threats only (municipality must amend its official plan and zoning by-laws to conform with policies for significant threats).	Municipalities.
<p>Other “soft” policies (e.g., education, incentives, promoting best management practices, etc.)</p>	May apply to existing or future activities, and in some cases to historical conditions.	Legally binding on some (but not all) bodies, only for significant threats.	Various implementing bodies.

1.2.4 Implementing source protection policies

Each policy within a source protection plan assigns an implementing body – such as a local conservation authority, municipality or provincial ministry – that is responsible for implementing that policy (see Table 2 above). Each policy also sets out implementation

deadlines by which the responsible body must complete the assigned tasks (see Table 3). As a general rule, most policies apply immediately for new activities, and provide two to three years for bodies to apply the policies to existing activities. Some policies, however, need longer implementation timelines, such as those that require amendments to municipal official plans or zoning by-laws.

Table 3. Sample implementation deadlines from some source protection policies (although actual dates vary).

Policy Tool	Timeline For New Activities	Deadline For Existing Activities
Prohibitions	Apply immediately.	2-3 years.
Risk management plans	Required immediately.	3-5 years.
Land use restrictions	Apply immediately.	n/a
Prescribed instruments	Ministries must ensure new instruments conform with source protection plan.	Ministries have 2-5 years to ensure all pre-existing instruments conform with source protection plan.
Land use planning	Day-to-day land use planning decisions apply immediately when plan takes effect. Official Plan conformity must occur by the earlier of: a) end of the next 5-year official plan review, or b) 5 years. Some committees provided the same deadline for zoning by-law conformity, others provided an extra 2-3 years after the official plan amendments to amend the by-laws.	
Other policies (education, incentives, etc.)	Education and outreach policies and incentive activities must have at least begun within 2-3 years.	

1.3 Review of select source protection policies: what the ECO found

Ontario's Clean Water Act came into force in July 2007, kicking off almost a decade of intensive planning work across much of Ontario. By December 2015, after eight years of hard work, the source protection committees had completed, with ministry approval, all 38 source protection plans, containing over 12,500 source protection policies.⁹ These policies are now being implemented to protect those limited areas across the

province that are classified as municipal drinking water vulnerable source areas (see section 1.4).

The ECO looked at a selection of source protection policies (see What the ECO reviewed), and held discussions with key stakeholders, to examine how source protection committees applied the drinking water protection tools given to them under the Clean Water Act. This section looks at three categories of drinking water threats – manure storage and spreading, waste sites, and fuel handling and storage – and the policy tools that the various committees used to address these threats.

The local planning process proved to be a generally effective approach to managing drinking water risks, while addressing local needs and circumstances. Where we found shortcomings in how the source protection policies addressed drinking water threats, the

problem lay not in the source protection committees' implementation, but with the limitations of the province's source protection rules themselves (see sections 1.5.3 and 1.5.4 for a discussion of what's missing).

What the ECO reviewed

The source protection process resulted in 38 source protection plans, containing over 12,500 source protection policies. With so many policies, the ECO could not look at every source protection policy in detail, not even within a limited number of source protection plans.

Therefore, the ECO selected three representative drinking water threats to review: manure and other agricultural source materials, waste disposal sites, and fuel. These threats were chosen to represent a variety of issues that affect different types of properties (agricultural, industrial, residential) and that require different types of management strategies. The ECO then selected eight representative source protection plans in a range of geographic areas (see Figure 4), comprising both urban and rural watersheds, and reviewed all policies in those eight plans that addressed the selected threats.

Altogether, the ECO reviewed over 500 policies in detail. The ECO also reviewed the explanatory documents that accompany each source protection plan, which provided valuable insight into each committee's rationales for the approaches selected to manage threats based on their particular circumstances and geographic conditions.

Finally, the ECO interviewed a number of people active in the source protection regime during 2016 and 2017, including representatives from conservation authorities, municipalities, the Ministry of the Environment, Conservation and Parks, and the Ministry of Agriculture, Food and Rural Affairs. These interviews assisted the ECO in identifying issues and understanding the perspectives and rationales behind certain approaches taken to source protection planning and implementation.

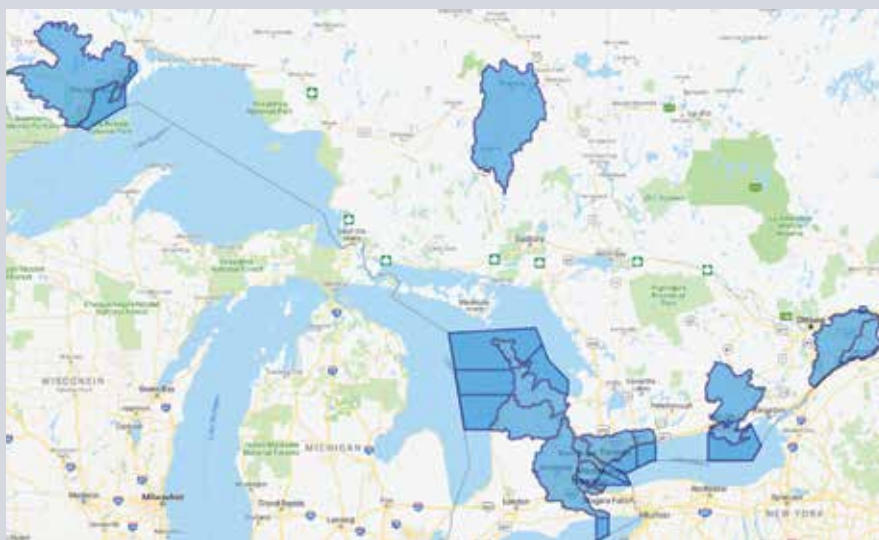


Figure 4. The eight source protection plan areas reviewed by the ECO. These are: 1) Lakehead Region; 2) Mattagami Region; 3) Grand River; 4) Saugeen Valley, Grey Sauble, Northern Bruce Peninsula; 5) Credit Valley, Toronto and Region and Central Lake Ontario (CTC); 6) Halton Region and Hamilton Region; 7) Quinte Region; and 8) Raisin-South Nation.

Source: Ministry of the Environment, Conservation and Parks, Source Protection Programs Branch, base map provided by Microsoft Bing, graphic compiled by the ECO.

1.3.1 Source protection committees created balanced policies to protect drinking water

A central feature of the Clean Water Act is its focus on local, watershed-based planning. A local-led approach can be resource intensive and time consuming, and also runs the risk of creating uneven protections, especially if there is potential for undue pressure from local influences. The ECO's review of select plans, however, found that source protection committees applied the local planning approach effectively to develop thoughtful, individualized plans to protect the drinking water within their watershed.

The committees proved to be committed and capable arbiters of the wide variety of issues at play.

The ECO was impressed with how the committees – and in particular the conservation authorities in their leadership role as source protection authorities – executed their responsibilities. The committees proved to be committed and capable arbiters of the wide variety of issues at play when deciding on which policy approach to apply. In particular, the committees demonstrated careful weighing of the financial consequences of imposing various requirements, without sacrificing the ultimate goal of drinking water safety.

As expected, the plans resulted in some variation in the policies being used across the province, as each committee took its own tailored approach to managing threats based on the local environmental and social circumstances of each area. In some cases, the localized approach allowed committees to “think outside the box” and create unique policies that addressed threats without being overly restrictive or cumbersome. This nimble approach would not have been possible if source protection planning occurred only at the provincial level.

As a general rule, committees sought to use the least intrusive policy tool that could achieve the goal of source protection. For example, committees made use of existing tools to manage drinking water threats (such as adding a new condition into an already-issued permit) wherever possible, rather than create a whole new tool that could potentially duplicate efforts, create conflicts or add unnecessary burdens. Committees also prioritized policies that would allow current activities to continue, by regulating rather than outright prohibiting an activity, wherever possible – for example, by requiring better storage containment of a chemical and more inspection activity (see the detailed discussions of how committees addressed select threats in sections 1.3.2, 1.3.3 and 1.3.4 below).

Another feature of the local source protection planning approach was that it enabled committees to go further than a province-wide standard might have reached. While committees were only required to develop policies to address “significant” threats to drinking water, many source protection committees opted to go beyond the minimum requirements to include policies to address lesser, but still relevant, threats as well.

Further, the watershed-based committee approach helped to get local “buy-in” to the new source protection requirements. Based on the ECO staff discussions with various stakeholders, there seemed to be a generally high level of satisfaction with the process and the outcomes.

Source protection committees were able to collect a wealth of valuable information about our water resources.

Lastly, the ECO's review revealed a remarkable level of detail in the assessment reports and source protection plans. The conservation authorities, in their role as source protection authorities, and the source committees did an enormous amount of work assessing their watersheds and identifying threats. Because of the Clean Water Act process, and the associated funding provided to source protection authorities and committees to support those efforts, source protection committees were able to collect a wealth of valuable information about our water resources. This knowledge – including water maps, water budgets, and information about water quality and quantity trends, stresses and risks – provided immense value both within and outside the source protection program. Conservation authorities have used the information gained through the source protection process as they fulfil their other duties to protect water resources, beyond just drinking water sources.

1.3.2 How committees addressed drinking water threats from manure

Farmers apply nutrient-rich materials, such as fertilizers and manure, to their fields to help crops grow. Such materials can greatly improve soil quality, but they can also pose a serious threat to drinking water if they are not properly managed, as nutrients and bacteria can run into and degrade nearby or underground water. Nutrients in manure and other fertilizers can contribute to algae blooms, which can pose a serious threat to drinking water, as well as harm water bodies in other serious ways (see Chapter 2). Bacteria in manure can cause illness or even death if bacteria-contaminated water is consumed. Indeed, farm manure was the source of the contamination that led to the Walkerton tragedy (see section 1.1). For this reason, the ECO chose the storage and application (i.e., spreading) of manure and other “agricultural source materials”¹⁰ as the first category of drinking water threats we examined.



Manure spreading

Photo credit: Peter Vahlersvik, (iStock standard licence).

Policy tools used to address manure threats

To address significant threats to drinking water from manure and other agricultural materials, most of the source protection committees relied on the province's existing nutrient management framework as the foundation for its policies (see Regulation of manure under the Nutrient Management Act).

The Nutrient Management Act regulates the storage and use of manure, but only on some farms.

Regulation of manure under the Nutrient Management Act

The Nutrient Management Act, 2002, regulates the storage and use of manure in Ontario, but only on some farms. This law requires large or expanding livestock farms to develop a nutrient management strategy for storing and transferring manure to other farms, and requires the larger livestock farms to also develop a nutrient management plan to manage the spreading of manure on land.¹¹ Nutrient management strategies and plans must be developed by a certified nutrient management planner. The strategies must be submitted, and in most cases approved, by the Ministry of Agriculture, Food and Rural Affairs (OMAFRA), whereas plans are neither submitted nor approved. The law also sets out some standard

rules, such as restrictions on the spreading of manure on snow-covered or frozen land, for those farms that are subject to nutrient management plans.

Only 6,513 farms out of 19,409 livestock operations in Ontario are required to prepare and follow a nutrient management strategy.¹² Of those 6,513 farms, 1,303 large operations must also prepare and follow a nutrient management plan (see Figure 5).¹³ Since smaller farms (such as the farm that was the source of contamination in Walkerton¹⁴) are not captured, these rules only catch about 34% of Ontario's livestock operations, 6% of the farms that spread manure, and 44% of Ontario's total manure by volume.¹⁵ In other words, the Nutrient Management Act does not protect Ontario's water from most of Ontario's manure.

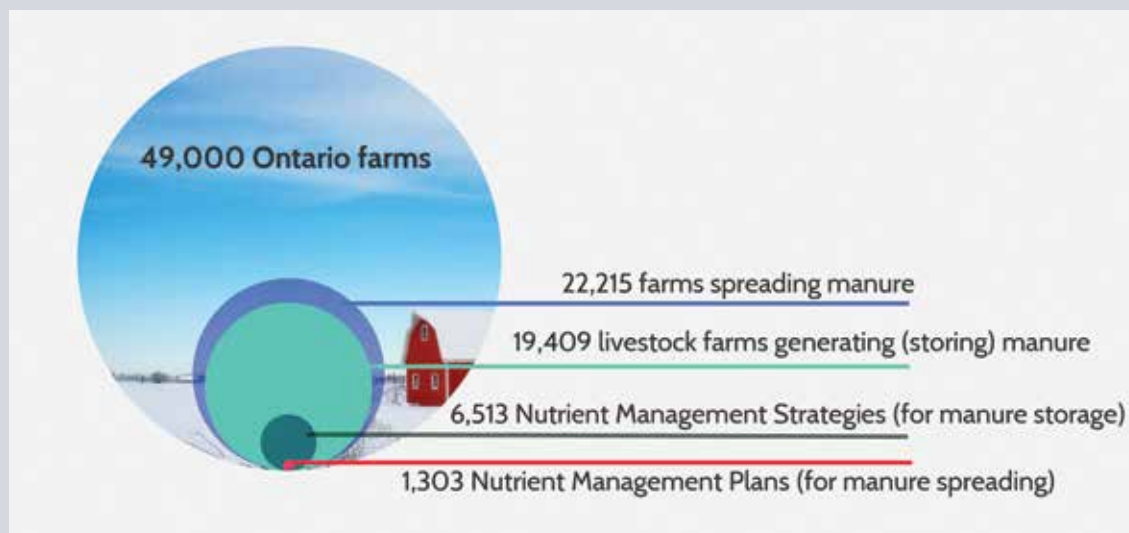


Figure 5. Proportion of farms regulated for manure management (storage and spreading) under the Nutrient Management Act.

Source: Created by the ECO, based on data from Statistics Canada and the OMAFRA.

Most source protection committees took a two-part approach: for farms in vulnerable areas that are already required to have a nutrient management strategy and/or nutrient management plan, many directed the OMAFRA to review these strategies and add conditions as necessary to address the drinking water threats; for farms in vulnerable areas that are not required to have a nutrient management strategy/plan, they directed those farms to prepare and implement a risk management plan that mirrors a nutrient management strategy/plan.

A few source protection committees went further and required all farms that spread agricultural source materials in vulnerable areas to prepare a risk management plan, even if they already have a nutrient management strategy and/or plan in place. However, the Clean Water Act rules provides that where a farm is subject to a nutrient management strategy or plan, rather than developing a risk management plan, the farm may obtain a “statement of conformity” (stating that the plan complies with the source protection policies) from a certified nutrient management planner instead. The responsibility to ensure nutrient management plans comply with source protection policies falls entirely on the farmer and the certified planner retained by the farmer. Neither the OMAFRA nor the risk management officials can require that conditions be added to a nutrient management plan.

Some committees set out specific provisions that must be included in a risk management plan. As one example, the Credit Valley, Toronto and Region and Central Lake Ontario (CTC) Source Protection Committee set out requirements for soil testing to ensure that no more agricultural source materials than necessary is applied, and set limited application periods to reduce the amount of runoff.

The source protection committees expressed confidence that the nutrient/risk management plan approach would effectively and efficiently manage threats from manure application, while making good use of a tool that is already familiar to the farming community, is easy to implement, and would not duplicate existing requirements.

Nonetheless, most committees also included some prohibitions against manure spreading in certain areas as an additional safeguard. For the most part, these prohibitions only apply to areas near wellheads where manure spreading is already prohibited under the Nutrient Management Act, or to very small additional areas. Source protection committees sought to apply prohibitions narrowly to avoid impacting existing farming operations.

Policies should reduce manure threats to municipal drinking water, but monitoring for effectiveness is key

The approach taken by the source protection committees to manage the threats posed by manure spreading is consistent with the government’s general approach to regulating agriculture: to minimally intrude on farming practices and minimize any regulatory burden. The source protection committees imposed some additional, but not overly onerous, requirements on manure spreading – with some committees pushing the boundaries further than others – that should reduce the risk of manure contamination to municipal drinking water sources.

The expansion of nutrient management requirements to more farms, whether through more nutrient management plans or through similar-functioning risk management plans, is a positive step. The ECO has long expressed disappointment about the limited coverage of the nutrient management framework, so capturing more farms, especially farms in higher-risk areas that may affect drinking water, is welcome progress.

The expansion of nutrient management requirements to more farms, especially in higher-risk areas that may affect drinking water, is welcome progress.

The committees’ rationale for relying on expansion of the existing nutrient management approach is

understandable; however, this rationale assumes that the existing nutrient management approach is working well. This is not necessarily a safe assumption. Both the ECO and Ontario's Auditor General have raised concerns in the past about weak inspection and enforcement of the nutrient management framework. These concerns remain. In 2016/2017, the MECP conducted 174 nutrient management inspections and found a mere 38% of the inspected farms were fully compliant with their strategies and plans.¹⁶ The ECO has also noted that there is no available data to show whether, or to what extent, this regulatory framework, which has been in place for over 15 years, is in fact working effectively to reduce runoff of manure and other agricultural materials.

Additionally, the rules under the Clean Water Act prevent risk management officials from implementing source protection measures on farms subject to the Nutrient Management Act, raising further concerns about the reliance on the existing nutrient management framework to address source protection. While risk management officials and inspectors are not allowed to implement and enforce source protection measures on these farms, neither are the OMAFRA or the MECP, who are ostensibly responsible, ensuring it is done. The ECO urges the ministry to address this gap as part of its process of continual improvement (see section 1.5.3).

Still, some of the benefits of the source protection program is increased inspection and enforcement of some farms by the local risk management inspectors, and increased effectiveness monitoring and reporting by the source protection committees (see section 1.4.5) in the limited areas that the source protection policies cover. In a few areas, the MECP or municipalities are monitoring and sampling some water sources for manure contamination. Ideally, such monitoring data should help identify if manure contaminant levels are decreasing, and in turn, help source protection committees determine if indeed this nutrient management approach is effective or if, conversely, these policies need to be revised. However, funding and support for more monitoring is needed (see section 1.5.5).

Assessments by the source protection committees, based on monitoring data, can hopefully provide insight into not only the effectiveness of the nutrient management framework for source protection, but also more generally the effectiveness of nutrient management rules to reduce farm runoff to other water bodies outside of vulnerable source protection zones, particularly in regions with algae problems (see Chapter 2).

1.3.3 How committees addressed drinking water threats from waste

The second category of drinking water threats the ECO looked at was waste disposal sites. This category includes ten sub-categories of activities, such as landfilling waste, storing and handling hazardous wastes, and applying untreated sewage waste to land. All of these activities can potentially contaminate water sources with chemicals or pathogens. For example, decomposing waste in a landfill can produce a liquid called "leachate" that, in the absence of a well-functioning leachate collection system, can contaminate the surrounding groundwater with metals, chlorides, chemicals and other toxic chemicals from the waste. Storage of chemical wastes similarly carries serious risks, as a leak in the storage drum or accidental spill of a storage container could result in dangerous chemicals, such as PCBs, pouring into the environment.

Policy tools used to address waste threats

Most waste activities are already regulated by the MECP, typically through an environmental compliance approval that imposes terms and conditions on the waste operations. The source protection plans reviewed by the ECO all took advantage of this existing approval process, as an efficient tool to manage drinking water threats from waste. Where there were waste sites currently operating in vulnerable areas, the committees required the MECP to review and, if necessary, amend the approval for these waste sites to include terms and conditions that would address any significant threats to the drinking water.

When it came to potential future waste sites, nearly every committee choose to go further. Almost all of the plans reviewed directed the MECP to refuse to issue an approval for the future establishment of a waste disposal site that would be a significant threat. Only one committee, the Mattagami Source Protection Committee, chose instead to direct the MECP to include conditions in any approval of a future waste site to ensure the site never becomes a significant threat. As an extra measure, four of the plans reviewed included land use policies that require municipalities to amend their official plans and zoning by-laws to prohibit future waste disposal sites within vulnerable areas where they could be a significant drinking water threat.

To manage the remaining waste threats that are not subject to environmental compliance approvals (such as short-term storage of some industrial wastes), the source protection committees employed a much greater variety of approaches. Several of the committees chose to require existing owners of these wastes to implement risk management plans, and to prohibit any such future waste sites from occurring within vulnerable areas. Many of the committees also included complementary restricted land use policies, which serve as a flag to municipal planning departments to screen for requirements for risk management plans or prohibitions before processing Building Code or planning applications in designated areas. Other committees relied on outreach efforts to address some waste threats, such as educating the public and businesses about proper storage and disposal of small quantities of hazardous waste.



Photo credit: annavaczi, (iStock standard licence).

Policy tools used to address historical contamination from waste sites

In addition to the threats posed by current waste activities, historical waste sites can also pose a threat. In particular, old landfills that predate modern engineering requirements (such as impermeable liners) can remain a problem for decades long after closure, continuing to leak contaminants into the soil and groundwater.

There are numerous old, closed landfills dotting the province. However, of the plans reviewed, only one plan – the Quinte Source Protection Plan – identified a significant threat posed from historical waste sites. Quinte’s assessment report identified that contamination from two closed landfill sites, one in Picton and one in Belleville, could present a risk to drinking water intakes. The policy tools available to address past contamination are limited (see section 1.5.4). Using the few available tools, the Quinte plan directed the municipalities to monitor water samples and if necessary take remedial action, and asked the MECP to issue appropriate instruments (e.g., Director’s Orders) that should include requirements for monitoring and remedial actions.

Waste policies reflect a reasonable balancing of the varying risk levels and cost factors

The approaches taken by the committees to address waste threats appear reasonable. The committees’ general reliance on the existing MECP approval process to manage threats from most waste sites is appropriate, given that this established process is well-suited to regulating contaminants from present and future waste operations.

The broader variety of policies used to address the remaining waste operations (i.e., those not subject to MECP-approvals) reflects the committees’ differing

circumstances. This variability included a wide range in actual risks from these particular waste threats in each committee's respective watershed. For example, the Grand River Source Protection Committee identified 159 waste disposal activities as potential significant threats to its municipal water sources. The Halton-Hamilton committee, on the other hand, stated that there are no existing waste activities that posed a significant threat to their municipal water sources (but still included policies to ensure that future waste activities do not become significant threats).

The variability also included a range in the committees' cost-benefit analyses of applying different management approaches. For example, Haldimand County (within the Grand River) choose to implement an education and outreach program on the proper handling, storage and disposal of wastes, rather than using stronger tools, such as requiring risk management plans. Haldimand County explained that its rationale for taking this approach was based on a concern about the financial burden of implementing risk management plans, for both the county and the affected property owners, particularly relative to the level of risk to their drinking water sources.

The CTC Source Protection Committee similarly relied on education and outreach to manage threats from waste storage, describing the volume of such waste threats as typically small (e.g., a few litres of residues left in storage drums, and battery and paint piles at recycling depots). The committee concluded that this approach "is an appropriate balance between protecting the municipal source of drinking water and avoiding the workload burden on the Risk Management Official and costs to landowners that would result from requiring a Risk Management Plan."¹⁷ However, the committee also noted that it did not have a full understanding of what was included in this threat subcategory, and that once the full extent of the threat subcategory became clearer, the committee may reconsider this policy approach in future plan updates.

Overall, the committees' choices of policy tools appear to reflect a fair balancing of factors to ensure that reasonable measures are in place to protect their drinking water from contamination from waste. However, whether the policies are adequately addressing waste threats will be determined over time through the

monitoring of waste management practices (i.e., if inspectors are seeing proper waste storage practices), through the provincial spills reports (i.e., if overall numbers of spills from waste threats in vulnerable areas are decreasing), and in the sampling results of any source water areas that are currently contaminated by waste threats (i.e., if the levels of relevant contaminants are decreasing). This information will emerge as source protection implementation continues (see section 1.4).

1.3.4 How committees addressed drinking water threats from fuel

The third category of drinking water threats the ECO looked at was the storage and handling of fuel. This category covers most – but not all – places where liquid fuels (such as oil or propane) are produced, sold or stored. It includes petrochemical refineries, gas stations, farms or industrial facilities that have on-site fuel supplies, as well as small below-grade or partially below-grade tanks, such as those used to store heating oil for homes and small businesses (including tanks buried underground as well as tanks stored in basements). At the time that the committees were preparing the source protection plans, the Clean Water Act's list of prescribed drinking water threats and the accompanying tables of circumstances for identifying threats specifically excluded fuel pipelines as well as smaller above-grade fuel tanks, such as outdoor tanks used to store home heating oil (see sections 1.5.1 and 1.5.3 for a discussion of the subsequent revisions to pipelines and above-grade fuel tanks, respectively).

Fuel handling and storage is a drinking water threat because fuel, which is toxic, may spill during transfer from one vessel to another or may leak from a faulty storage tank, and contaminate nearby water sources. Fuel spills and leaks are unfortunately quite common, presenting a real risk to drinking water, as well as having

Fuel spills and leaks are unfortunately quite common, presenting a real risk to drinking water.

other environmental and economic consequences. Oil contamination can persist in the soil and groundwater for decades, can migrate long distances through surface water, and can be costly to clean up (see, for example, Home heating oil spills in the Kawartha Lakes).

Home heating oil spills in the Kawartha Lakes

The City of Kawartha Lakes, known best for its 250 beautiful lakes and rivers, is also known for a significant and costly fuel spill that occurred in 2008. A homeowner noticed oil pooling on his basement floor shortly after the oil tanks for his furnace had been filled with 700 litres of heating oil. The oil made its way to a crack in the basement wall and into the soil under the house. Several hundred litres of oil seeped into the soil, onto neighbouring property owned by the city, into drainage culverts and the stormwater sewer system, and ultimately into Sturgeon Lake. The oil damaged 300 metres of shoreline, resulting in a temporary drinking water advisory for those residents.

The homeowner made an insurance claim, but his insurance funds ran out long before remediation was complete. The Ministry of the Environment (controversially) ordered the city to clean up and contain the contamination, at great expense to the city.¹⁸ The remediation – including removing the oil from the shores of Sturgeon Lake, removing over 70 tonnes of contaminated soil from under the house, and demolishing the house in the process – took over a year and cost municipal taxpayers almost \$2 million.¹⁹

In May 2018, almost a decade later, yet another fuel spill of home heating oil occurred in the City of Kawartha Lakes, this time in Balsam Lake. The spill prompted a drinking water advisory for residents in the southern part of the lake, impacting about 100 properties, that lasted over a week while the oil was cleaned up.²⁰



Example of a poorly maintained home heating oil tank in basement.

Photo credit: nycshooter, (iStock standard licence).

Policy tools used to address fuel threats

All source protection plans reviewed by the ECO addressed the threat posed by industrial and commercial fuel storage and handling in a similar way. The committees generally required existing facilities that store over 2,500 litres of fuel on site to have a risk management plan. To prevent future fuel threats from arising, most committees used a combination of prohibitions (e.g., prohibiting future gas stations or bulk storage facilities over 2,500 litres in designated areas) and requiring facilities to develop a risk management plan.

Most committees supplemented the prohibitions and risk management plans with additional policies, which varied from plan to plan. For example, many committees included complementary restricted land use policies, which serve as a flag to municipal planning departments to screen for source protection restrictions before processing Building Code or planning applications in designated restricted areas. A few committees required municipalities to amend their official plans and zoning by-laws to limit future threats, such as imposing size restrictions on new fuel tanks, or requiring new facilities to follow defined best management practices.

When it came to the smaller fuel oil tanks used by residences and small businesses (below-grade or

partially below-grade tanks, typically under 1,250 litres), the source protection committees diverged in their approaches.

Several plans reviewed by the ECO required some homeowners in designated areas to complete a risk management plan for their home fuel tanks. For example, the Quinte Source Protection Committee explained that, while it had initially intended to use only an education and outreach program to manage the risks from residential fuel tanks, based on input from experts in the committee's fuel working group, it decided ultimately to require risk management plans for existing fuel tanks and to prohibit future tanks in the most vulnerable areas to reduce drinking water threats. Most of these plans also included policies directing municipalities, conservation authorities or others to develop education and outreach programs to minimize fuel threats.

Conversely, some other plans excluded small tanks (under 2,500 litres) from the requirement for a risk management plan, and relied exclusively on education and outreach programs to manage these threats. The CTC Source Protection Committee, which used this approach, explained that requiring the risk management official to "negotiate Risk Management Plans at potentially hundreds of single family homes and small businesses would be a large administrative burden and divert resources away from developing Risk Management Plans for other threat activities..."²¹

Generally, all of the education and outreach policies focus on educating homeowners, businesses and others about the risks associated with fuel tanks, and explaining what they should do in the event of a fuel leak or spill. For example, the Halton-Hamilton Source Protection Plan directs that businesses and homeowners be given instructions on proper spill response measures, including when and how to contact the MECP's Spills Action Centre (the provincial body that provides emergency response services in the event of a fuel leak or spill), as well as stickers with emergency phone numbers to be placed on or near fuel tanks and pipes for quick contact if there is a spill or leak.

A number of the committees included additional, mostly non-binding, policies to address fuel-related emergencies more generally. For example, Quinte requested that the MECP's Spills Action Centre update spill response procedures and emergency response plans in designated areas, and that municipalities update emergency response plans, spill contingency plans and spill prevention plans in designated areas. Halton-Hamilton, among many others such policies, requested that the MECP instruct facility owners to update emergency preparedness and contingency plans to include the location of municipal intakes and other details.

Committees took reasonable approach to address fuel threats, but revealed gaps in the rules

While there was some variability in how committees managed fuel threats, particularly from smaller tanks, the ECO believes that all committees took a reasonable approach addressing these threats using the powers and tools available to them. The implementation of risk management plans, along with better educating fuel tank owners about good maintenance practices and appropriate responses to leaks or spills, should reduce both the risk of oil spills and the impact of spills on the environment when they do occur. As source protection implementation continues (see section 1.4), the ongoing monitoring of fuel threats and sampling of contaminants in source water should help source protection committees determine if these measures are working effectively to reduce fuel spills and their impacts on water resources.

Several gaps in the source protection rules prevented the committees from being able to efficiently or fully address all threats from fuel.

However, several gaps in the source protection rules prevented the committees from being able to efficiently or fully address all threats from fuel. Specifically, a number of committees identified the following three major gaps:

- The list of prescribed drinking water threats did not include fuel pipelines. A few committees did include pipelines in source protection policies through an alternate process of identifying local threats that required the MECP's permission; however, the omission of pipelines on the list of prescribed threats made it more difficult for committees to identify them as a significant threat, and also made it more likely that other committees overlooked them as potential threats.
- Under the rules that set out circumstances for prescribed drinking water threats, committees could not identify smaller above-grade fuel tanks as potential significant threats, and as such, could not develop legally binding policies to effectively address these threats, even though spills from such tanks are comparatively common and can create substantial contamination.
- None of the licences or approvals issued by the Technical Standards and Safety Authority (TSSA), which is the primary regulator of fuel handling in Ontario, are subject to the Clean Water Act. Therefore, committees could not require the TSSA to review licenses or include conditions to reduce the risk of fuel spills to source water, or more generally compel the TSSA to implement source protection policies. Several committees expressed concern about their inability to rely on the primary regulator and technical expert for fuel handling to address fuel risks.

These three shortcomings in addressing fuel threats in the source protection plans lie not with any failing of the source protection committees, but rather with the provincial rules. When these concerns were flagged, the MECP did subsequently revise some of the rules and regulations regarding fuel threats. The ministry's revisions partially address the identified shortcomings (see section 1.5.1), but substantial gaps remain. The ECO urges the ministry to fully address these gaps as part of its process of continual improvement (see section 1.5.3).



Example of a fuel spill in water.

Photo credit: Phototreat, (iStock standard licence).

1.4 Source protection on the ground: what's been done so far?

The eight-year process of developing assessment reports and source protection plans was just the beginning. The next step is implementing all of these source protection policies. Over the last few years, provincial ministries, conservation authorities, municipalities, businesses, farmers and homeowners have been busy executing the thousands of individual actions included in the 38 source protection plans to protect municipal drinking water sources across much of the province.

Implementation timelines vary based on when each source protection plan came into effect, and based on the specific policy, but generally, most source protection areas are at least half-way through the timelines for initial plan implementation.²² And so far, implementation of source protection policies is on track and progressing well.

The source protection process is resulting in a lot of on-the-ground action that should over time reduce the risk of spills and discharges to our municipal drinking water sources (see How to measure if the Clean Water Act is protecting drinking water). This section highlights a small sampling of the many source protection actions

Implementation of source protection policies is on track and progressing well.

that have been taken over the last few years to reduce the risk of spills, accidents and chronic leaking of contaminants into municipal source water.

It is still early days, generally too soon to observe the effects of these actions, but some early indicators are positive. As implementation continues, the committees' monitoring and annual progress reports (see section 1.4.5), as well as other provincial program monitoring, such as spills reports from the MECP's Spills Action Centre, should more fully reveal the level of effectiveness of the source protection process.

How to measure if the Clean Water Act is protecting drinking water

The Clean Water Act is intended to prevent current and future threats to drinking water. If source protection measures are working, they should be preventing both the chronic leaking of contaminants into drinking water sources and the catastrophic accidental spills of contaminants into drinking water sources, as well as improving spill response measures if contaminants do get into water sources.

Demonstrating the effectiveness of source protection to prevent drinking water problems can be difficult: if no accident occurs, we can never prove that the source protection measures worked to prevent a spill that might otherwise have happened. However, source protection, if it is working, should result in some observable improvements, such as a reduction

of contaminants that are discharging into a raw municipal water supply or an overall reduction in the number of serious spills in or near water. For some chronic issues, it could take decades to achieve reductions of the contaminants in the drinking water sources.²³

Nonetheless, a few committees have already reported decreases in some contaminants at their municipal drinking water supplies. For example, the Cataraqi Source Protection Area's 2018 progress report stated that testing of the raw water supply at five municipal wells or intakes that had identified contamination issues in 2011, showed a decrease in contaminants of concern at three of those water sources, with two maintaining similar trends (see Table 4).

Table 4. Contaminants of concern at municipal wells or intakes with identified contamination issues in the Cataraqi area, in 2011 and 2017.

Location	Contaminants of Concern (2011)	Contaminants of Concern (2017)
Brockville	<i>E. coli</i>	<i>E. coli</i>
Fairfield (Amherstview)	Total coliform	None
Bath	Organic nitrogen and <i>E. coli</i>	Total coliform and <i>E. coli</i>
Cana (well supply)	Sodium, chloride, total coliform, and <i>E. coli</i>	None
Miller Manor (well supply)	Sodium, chloride, nitrate, <i>E. coli</i> , and total coliform	None

Source: Cataraqi Source Protection Area, Policy Implementation Progress Report 2015-2017 (May 1, 2018).

1.4.1 Incorporating source protection into provincial approvals

Most source protection plans required provincial ministries to ensure that certain prescribed instruments (e.g., environmental approvals or licenses) include source protection provisions. For example, many plans required the MECP to review its approvals for any waste disposal site that is or may become a significant threat, and to amend the terms and conditions of these approvals as needed to ensure that the site ceases to be or never becomes a significant threat.

To comply with these policies, the various ministries responsible for these instruments have developed practices to ensure that all new approvals comply with applicable source protection policies. The ministries have also been reviewing and, as appropriate, amending existing instruments to ensure they too conform with source protection policies.

For example, the MECP published new Standard Operating Policies in 2015, which set out how the ministry would fulfill its duties to implement source protection policies. Specifically, the MECP's Standard Operating Policies established screening procedures for new applications for prescribed instruments and guidelines for ministry staff to ensure new instruments meet all relevant source protection policies. The MECP also created instrument-specific guidance for reviewing existing instruments to ensure they conform with source protection policies.

As of April 2018, the MECP has amended 18 instruments to include new requirements or restrictions, reducing the threat that these activities pose to drinking water supplies.

The MECP is required to review and, as needed, amend all relevant prescribed instruments within three years of the governing source protection plans' effective

dates. The ministry states that it is on track to meet that deadline,²⁴ which runs until July 2019. By April 2018, the ministry had screened 528 prescribed instruments, with an estimated 600 more to screen, to determine if they pose a significant threat to drinking water sources.²⁵ Of the 528 instruments screened, the ministry determined that 149 of those regulate activities that pose a significant threat to municipal drinking water sources; the ministry is currently reviewing these 149 approvals to determine what amendments, if any, are needed. As of April 2018, the MECP has amended 18 instruments to include new requirements or restrictions, reducing the threat that these activities pose to drinking water supplies.²⁶

Several committees also directed the OMAFRA to review instruments under its jurisdiction – namely, nutrient management strategies and “non-agricultural source material plans” (required for the spreading of non-farm materials like biosolids) – and, as needed, to add conditions to those instruments to protect drinking water sources. In April 2018, the OMAFRA reported to the ECO that the ministry had completed a detailed review of all existing nutrient management strategies and non-agricultural source material plans identified by source protection committees and found that very few needed revision.²⁷ In all, the ministry determined that only ten might not conform with local source protection policies, and thus, based on further review, may need new conditions (such as requiring the farmer to relocate its temporary field storage of manure).²⁸ The small number of amendments is because few nutrient storage areas were identified in vulnerable areas, and the existing nutrient management strategies should have, if they were developed properly, already included basic provisions to avoid contamination of drinking water sources.

While the source protection process did not trigger the OMAFRA to amend many pre-existing instruments, it does expand nutrient management coverage to more farm properties that were previously unregulated (see section 1.3.2). The OMAFRA initiated a process in 2015 for ensuring that any new nutrient management strategies submitted to the ministry conform to the requirements of applicable source protection policies. Just as importantly – as most nutrient management

plans are not subject to ministry review and approval – the OMAFRA included source protection principles into its nutrient management certification training program for farmers and consultants who develop nutrient management plans and strategies. The training is intended to ensure that drinking water protection measures are included in the plans and strategies of all applicable farm operations. Some certified nutrient management planners have indicated, however, that due to the volume of new information, more training and support is needed (see section 1.5.3).

1.4.2 Local risk management officials and inspectors implementing the regulatory tools

All municipalities within source protection areas are required to appoint “risk management officials” and “risk management inspectors” to implement and enforce the prohibitions and restrictions (the “Part IV” regulatory tools) on local activities as set out in the source protection policies. Some municipalities chose to add the risk management official and inspector responsibilities to existing positions within their workforce, while others created new, dedicated positions for these roles, and others delegated this responsibility to the local conservation authority.

Every risk management official and inspector is required to take a four-day training course developed and delivered by the MECP. The MECP reported in 2016 that the ministry had trained the initial cohort of over 250 risk management officials and inspectors, preparing them for their responsibilities.²⁹ In addition to this general training, the OMAFRA provided a special training session for risk management officials working on farms, and continues to share ongoing information with them on nutrient management issues.³⁰

According to the source protection annual progress reports submitted so far, local risk management officials have established over 500 risk management plans, which set out measures to reduce the risk of contamination to municipal drinking water sources. These risk management plans are one of the key

Local risk management officials have established over 500 risk management plans, which set out measures to reduce the risk of contamination to municipal drinking water sources.

tools of the Clean Water Act to manage activities that pose a threat to drinking. They are legally enforceable agreements, negotiated between the local officials and the landowners, that impose new requirements on property owners, often for activities that were previously unregulated or loosely regulated for environmental purposes. There are hundreds of varieties of requirements that risk management officials may impose depending on the circumstances.³¹ For example, the plans may require a business or property owner to:

- install a new wastewater collection system, more secure storage containment for hazardous waste, a new impervious (e.g., concrete) base for the storage area, and/or a secondary containment or barrier for the storage area
- relocate the storage of materials (e.g., manure, fertilizer, chemicals, road salt, etc.) further away from vulnerable source water, and/or cover previously open-air piles of materials so that rain will not wash contaminants into the water sources



Photo credit: SHSPhotography, (iStock standard licence).

- obtain annual inspection and maintenance of fuel tanks by a certified technician, including regular leak tests
- monitor inventory of chemicals, including daily volumes, so that leaks are detected immediately
- reduce maximum allowable volumes of waste stored at any given time, so that if a leak does occur, the volume of contaminants discharged is minimized, and/or
- develop a spill contingency and response plan.

Local risk management inspectors conduct inspections through site visits to ensure compliance with the source protection policies dealing with prohibitions and risk management plans. Risk management inspectors have so far conducted over 1,000 inspections of properties located within source protection vulnerable areas. In the ten source protection progress reports that included compliance data, inspectors reported achieving a remarkable average compliance rate of 99% with the source protection policies (i.e., prohibitions and risk management plans that have been implemented so far).

Inspectors reported achieving a remarkable average compliance rate of 99% with the source protection policies.

1.4.3 Municipal amendments to official plans and zoning by-laws

As a complimentary tool to reinforce other source protection policies, municipalities are required to amend their official plans and zoning by-laws to reflect prohibitions or restrictions on activities (such as prohibiting a new dry cleaner or restricting the handling of chemicals or road salt) in designated vulnerable areas. Incorporating these designations into official plans and zoning by-laws provides another layer of legally enforceable protection for municipal drinking

water sources. In addition, municipalities must ensure their day-to-day planning decisions conform with these source protection prohibitions and restrictions prior to official plans or zoning being updated.

Although most municipalities were given longer timelines (generally five years) to amend their official plans and zoning by-laws to ensure conformity with source protection plans, many have already completed this process ahead of the deadlines. According to the source protection annual progress reports submitted in 2018, about 70% of the required municipalities have already amended or are in the process of amending their official plans to conform to the applicable source protection plan.

1.4.4 Education and outreach

Most source protection committees developed a general education and outreach policy, as well as some threat-specific education and outreach policies. These policies directed ministries, conservation authorities, municipal governments and/or other agencies to develop drinking water education materials and share certain information with property owners. The specific instructions vary from one plan to another, but they generally included:

- advising property owners in vulnerable areas that they are in a vulnerable source water protection area and that there may be policies affecting activities on their property
- educating the public about the importance of clean water and threats to source water, and
- sharing best management practices to help property owners reduce threats to drinking water.

As directed by these policies, and in some cases going beyond the policies, provincial ministries, conservation authorities, municipalities and others have been developing and disseminating numerous drinking water education and outreach materials over the past few years.

For example, Conservation Ontario, along with individual conservation authorities, has developed education and outreach materials to support source protection for over a decade, including factsheets, videos, guides and social media posts. They have developed numerous products, including materials targeted to individual audiences (e.g., residential property owners, businesses, aggregate industry and realtors) to address specific drinking water threats.

In 2014, when source protection implementation was just getting underway, the MECP launched an online catalogue of source protection education and outreach resources to help municipalities and others carry out education work. The catalogue included basic information about a range of topics (such as road salt, hazardous liquids and fuels), along with lists of available resources, and a ministry contact person who could provide more information.

The MECP also created the online Source Water Protection Information Atlas, a publicly accessible source protection map that allows individuals to locate vulnerable areas in the province (e.g., wellhead protection zones and intake protection zones), and to undertake customized searches to find out if there are restrictions on activities on a specific property. The MECP has also been using social media effectively to reach and educate new audiences about source protection – its hashtag #SourceWaterON has been displayed over a million times on social media.

Other ministries have also delivered education and outreach programs. For example, the OMAFRA provided educational materials to risk management officials to support source protection on farms. The Ministry of Transportation has aided with outreach by posting source protection zone signs along highways (see Signage for drinking water protection zones).

Signage for drinking water protection zones

Several source protection committees developed education and outreach policies that asked the Ministry of Transportation and municipalities to erect road signs identifying source protection zones along highways and roads.



Photo credit: Conservation Ontario.

Even though these policies were not legally binding, the Ministry of Transportation agreed to install road signs in source protection areas as requested. As of April 2018, the Ministry of Transportation had installed 127 signs on provincial roads. Municipalities have installed a further 900 signs on local municipal roads.

Such signage can help ensure that emergency responders dealing with spilled contaminants (such as fuel) are made immediately aware that they are in a municipal drinking water source area and should take special measures to contain and clean up the spill as quickly as possible. The signs can also make travelers aware of source protection areas and possibly encourage them to learn more about source protection.

1.4.5 Monitoring, reporting and assessing plan implementation

Source protection committees and other implementing bodies have also been busy over the past few years with monitoring and reporting work. The Clean Water Act includes several requirements to ensure the ongoing monitoring of individual source protection actions as well as the ongoing evaluation of the overall source protection program.

Monitoring

The Clean Water Act requires every source protection plan to include policies to monitor activities and conditions that are significant threats to drinking water. These monitoring policies are legally binding, meaning that a public body assigned responsibility in the plan (e.g., municipality, ministry, local board or conservation authority) must monitor the threat activities as required by the policies. Source protection plans may include additional monitoring policies for moderate and low threats, but those are not legally binding.

Monitoring policies can require assigned bodies to conduct monitoring and sampling related to specific threats, including sampling for particular contaminants in the source water – but these policies are typically tied to the availability of resources to conduct such monitoring (see section 1.5.5). Where monitoring programs are occurring, they are contributing valuable additional information to the province's existing water monitoring networks. For example, the City of Sudbury has increased sampling of sodium levels in Ramsey Lake to monitor threats from road salt to the municipal source water.³² This added information will help determine over time if the source protection actions are reducing salt concentrations in the raw water supplies.

The implementing bodies are required to submit the monitoring information, as well as detailed information about the actions they have taken during the year to implement a significant threat policy, to the source

protection authority (i.e., the lead conservation authority) each year. This monitoring information enables the source protection authority to assess the status of implementation of the significant threat policies, as well as evaluate their effectiveness over time. The source protection authorities then share summaries of all of this information with the MECP and the public through annual progress reports.

Monitoring information enables the source protection authority to assess the status of implementation of the significant threat policies, as well as evaluate their effectiveness over time.

Annual reporting

The Clean Water Act requires each source protection authority to produce an annual progress report that describes the measures taken by the various bodies to implement the source protection policies, the results of all monitoring programs, the extent to which the objectives set out in the source protection plan are being achieved, and an explanation of any failures to implement actions by the deadline.

The detailed annual reports, which must be made publicly available, provide accountability and help ensure that the policies are being implemented as required. Annual progress reports are an important means of assessing whether source protection plans are achieving what they were intended to achieve. The MECP also uses the annual progress reports from each source protection authority to evaluate the overall implementation and efficacy of the source protection program.

The first annual progress report for each source protection plan covers the first two years after the plan became effective, and is due May 1 of the third year, and then each year thereafter. By May 1, 2018, all but

three source protection authorities had published their first annual progress report (and three had published their second or third annual report).

All but three of the source protection authorities reported that overall implementation in their area or region was “progressing well,” meaning that most policies in the plan were or are being implemented on schedule; the remaining few described their progress as “satisfactory,” but even they reported that about 75% of their policies had been or were being implementing on schedule.

The source protection authorities that reported delays in implementation were due primarily to challenges in implementing the risk management plans. Because of the individualized work and negotiations required, the development of risk management plans has generally been the most challenging and slowest source protection measure to implement. As the Mississippi-Rideau Source Protection Authority noted: “The risk management program is new, and managing activities in this way requires trust and relationship building between staff and affected landowners. There must be consideration for the type and extent of risk management measures asked, as well as their feasibility for individuals to complete.”³³ Nonetheless, as noted above, progress is being made on this front, with over 500 risk management plans already in place.

Plan review

The Clean Water Act also requires all assessment reports and source protection plans to be periodically reviewed, on a timeframe established by the MECP. The MECP required each source protection committee to begin its first review within roughly three years of their plan coming into effect. This means that the majority of committees are required to provide a work plan for reviewing their source protection plan shortly, by November 30, 2018.

Plan reviews should help ensure that committees identify and address any problems or gaps in the current plans quickly, provided the MECP has the capacity to review and approve plan amendments swiftly.

These plan reviews should help ensure that committees identify and address any problems or gaps in the current plans quickly, provided that the committees have the funding to do the required work to update the plans and that the MECP has the capacity to review and approve plan amendments swiftly (see section 1.5.5).



Photo credit: FunkinsDesigns, (iStock standard licence).

1.5 Continual improvement: what's still needed?

While source protection plans are all complete and implementation is well underway, work on the source protection program is not over. The initial round of source protection planning revealed some gaps and limitations in the source protection rules. Fortunately, the MECP committed to continuous improvement of the source protection framework to fix flaws and address emerging issues.³⁴ The MECP also committed to integrate source protection into other provincial programs and initiatives as appropriate.

Over the past decade, the MECP has been making good on its commitments, introducing several rounds of revisions to strengthen the source protection framework (see section 1.5.1). The ministry's efforts so far and its commitment to continually improve the source protection program should enable source protection to evolve over time, to reflect both advances in scientific knowledge as well as changes to watershed needs and circumstances.

The MECP has been identifying and addressing flaws and emerging issues, but gaps remain.

The ECO is encouraged that the MECP has been identifying and addressing flaws and emerging issues, but gaps remain. Some key measures or improvements are still needed to ensure the protection of Ontario's drinking water sources:

- Better protecting water sources across the province, including the source water of First Nation communities, northern communities, and individuals relying on private water supplies (section 1.5.2)
- Ensuring source protection committees have the tools they need to address all drinking water threats, including all threats from fuel and manure (section 1.5.3) and threats posed by old contaminated sites (section 1.5.4), and
- Ensuring secure, ongoing capacity and funding for source protection going forward (section 1.5.5).

1.5.1 Improvements to the source protection framework so far

Since the MECP's Technical Rules first came into effect in November 2008, the ministry has amended them three times – in 2009, 2013 and 2017 – to address issues identified by committees during the preparation of the assessment reports and source protection plans.³⁵

For example, the 2017 revisions to the rules addressed major concerns flagged by committees in the Great Lakes regions regarding the challenge of identifying vulnerable areas and threats in large water bodies. The initial Technical Rules assumed that the drinking water intake pipes in the Great Lakes were long and deep enough to not be vulnerable to threats, such as fuel spills; many committees did not agree.³⁶ The 2017 amendments now provide source protection committees greater flexibility to recognize that drinking water intakes in large water bodies, such as the Great Lakes, can be vulnerable to contamination in the near shore environment. The 2017 revisions also changed the rules relating to threats from above-grade fuel tanks (see section 1.5.3).

In 2018, as part of a broader review of the source protection program, the MECP addressed another major concern flagged by several committees, by amending the regulation under the Clean Water Act to include fuel pipelines as a prescribed drinking water threat (see Adding fuel pipelines to the list of prescribed drinking water threats).

The MECP has also developed internal guidance for ministry staff to identify emerging issues in source protection. The document includes procedures for ministry staff when they become aware of new science or emerging significant threats to drinking water.³⁷ This internal guidance should help ministry staff track and flag issues that may need to be incorporated into future source protection planning.

Adding fuel pipelines to the list of prescribed drinking water threats

Major spills from fuel pipelines are infrequent, but when they occur, they can cause serious environmental impacts. Given the high volume of fuel travelling through a pipeline, even a small leak can quickly cause significant damage and risk to drinking water sources.

For example, in March 2010, a buried petroleum pipeline running through Oakville, Ontario, leaked an estimated 90,000 litres of liquid gasoline before the leak was discovered. The fuel migrated through the soil, eventually reaching Bronte Creek, over 300 metres away. Trans Northern Pipelines, the pipeline operator, spent several years and over \$23 million cleaning up the massive spill, removing 11,000 tonnes of contaminated soil and treating fuel-contaminated surface and ground water.³⁸ The spill fortunately occurred far enough away from the municipal drinking water intake (located downstream at the mouth of Lake Ontario), but the spill demonstrated the very real risk of contamination from fuel pipelines to drinking water.

Despite the risk of spills from the many thousands of kilometers of fuel pipelines that cross the province, pipelines were not initially included in the Clean Water Act's list of prescribed drinking water threat activities. The MECP's Technical Rules, however, allow committees to use an alternate method to identify an activity that does not fall within a prescribed threat activity as a local threat, but only with permission from the MECP.³⁹ In this manner, six source protection committees identified fuel pipelines as local significant threats to their municipal source water.

The number of source protection committees that identified fuel pipelines as a local drinking water threat suggested that pipelines belong on the list of prescribed threats. The initial omission of pipelines from the list meant that committees may well have

overlooked potential drinking water threats from pipelines. Accordingly, in April 2018, as part of the ministry's commitment to continuous improvement, the MECP amended the Clean Water Act regulation by adding "the establishment and operation of a liquid hydrocarbon pipeline" as a prescribed drinking water threat.⁴⁰ This threat category includes both provincially regulated pipelines (those are entirely within Ontario borders) as well as federally regulated (transboundary) pipelines.⁴¹

The number of source protection committees that identified fuel pipelines as a local drinking water threat suggested that pipelines belong on the list of prescribed threats.

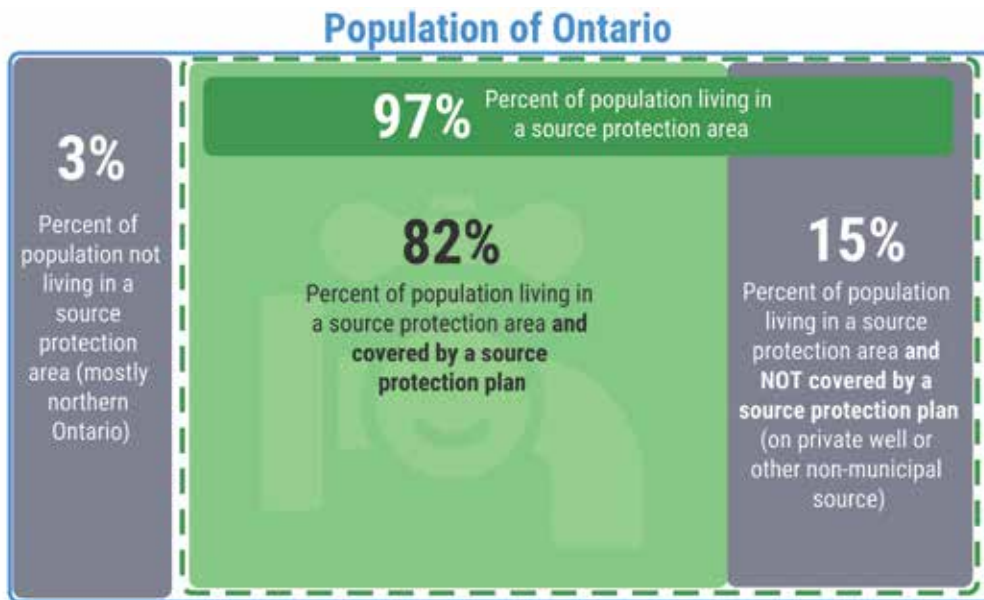
With this amendment, all committees are now required to consider whether any pipelines in their source protection area pose a significant drinking water threat, and if so, to include policies in their updated source protection plans to address such threats. As with other threats, committees may only impose legally binding requirements on certain public bodies, such as municipalities, conservation authorities and the MECP.

Future policies to address pipeline risks will likely be similar to those included in the six source protection plans that previously identified pipelines as a threat. Those source protection plans included policies requiring mapping of pipelines near water sources, emergency planning and spills prevention, and integrity testing. However, these policies will not be adopted until committees next review and revise their assessment reports and source protection plans and develop new policies, a process that will take a few years.

1.5.2 Protecting the source water of First Nation communities, northern communities, and private water supplies

The purpose of the Clean Water Act is “to protect existing and future sources of drinking water.” The law has resulted in source protection policies to protect most Ontarians’ drinking water supplies, but it does not protect the drinking water sources of all Ontarians.

Over 3% of Ontario’s population, mostly northern and First Nation reserve communities, reside outside of a source protection area and are therefore not protected by source protection plans.⁴² Another 15% of Ontario’s population live within a source protection area but rely on a private well or other non-municipal drinking water supply; their water is also excluded from source protection plans.⁴³ All told, almost 18% of Ontario’s total population – representing well over 2 million people – are not protected by the province’s source water protections (see Figure 6).



Source: Created by the ECO, based on data provided by the MECP.

First Nation communities

First Nation reserve lands do not fall under provincial jurisdiction, so First Nation communities may only be included in source protection plans if the reserve community is located within or adjacent to a source protection area and if they opt into the source protection plan process. Of the 133 First Nation communities in Ontario, only 27 are located where they could opt in.⁴⁴ Three of these First Nation communities

opted to include their drinking water systems in source protection plans: Chippewas of Kettle and Stony Point First Nation; Six Nations Grand River Supply System at Ohsweken (Grand River intake); and Mnjikaning First Nation 32 Indian Reserve (Chippewas of Rama First Nation).⁴⁵ Another six First Nation communities, while not opting to be officially included in the source protection process, have been participating in the development and implementation of various source protection plans.⁴⁶ In addition, some First Nation

communities have developed their own version of source protection plans, outside the Clean Water Act process.⁴⁷

As the ECO reported in our 2017 Environmental Protection Report, thousands of First Nation people across Ontario continue to live without household access to safe drinking water.⁴⁸ The federal government, which is responsible for water infrastructure in First Nation reserve communities, has been leading efforts to improve access to clean water. Since the ECO reported last fall, the number of First Nation communities subject to a long-term drinking water advisory has fallen from 36 to 26.⁴⁹ This is good progress, but the problem remains far from solved.

The persistence of drinking water advisories in Ontario's First Nation communities remains a blight on the province.

While the federal government holds primary responsibility, the persistence of drinking water advisories in Ontario's First Nation communities remains a blight on the province as well. The Ontario government can, and should, do what is within its power to support access to safe drinking water for First Nation communities. As the ECO noted last year, one such mechanism is through the source protection framework. The MECP should look for ways to work with the First Nation communities that participated in the source protection program to develop guidance materials and sample policies that could be used by other First Nation communities to address common drinking water risks. The MECP should also acknowledge and support the implementation of all source protection plans created by First Nation communities, whether they were created under the Clean Water Act or through their own process. (For more information on drinking water issues in First Nation reserve communities, see Chapter 3 of the ECO's 2017 Environmental Protection Report, *Good Choices, Bad Choices*.)

Northern Ontario communities and non-municipal drinking water users in southern Ontario

While nearly all of southern Ontario is covered by source protection areas, most northern Ontario communities are not. The Clean Water Act only requires source protection plans for areas governed by a conservation authority (local watershed protection agencies), and much of northern Ontario is not under the jurisdiction of any conservation authority. The Minister may establish source protection areas in any part of the province. Indeed, the Minister did establish two additional source protection areas – the Northern Bruce Peninsula and Severn Sound – which were each incorporated into larger source protection regions.⁵⁰ Other northern communities, comprising collectively more than 400,000 people,⁵¹ remain outside of any source protection area.

In southern Ontario, over 1.7 million people rely on private (i.e., non-municipal) wells or intakes for their drinking water supply.⁵² These non-municipal drinking water supplies are also excluded from the source protection program, even though they are located within a source protection area (although some private wells located within vulnerable areas receive some protections from the measures directed at the threats to the nearby municipal water supplies). The law does allow a municipal council to elect to include a cluster of six or more private wells or intakes into the source protection process,⁵³ but this has not been done.⁵⁴ It appears that the MECP and municipalities choose to focus resources, at least initially, on the larger municipal systems that serve the majority of the population.

The MECP had originally suggested that private water supplies “would be considered in subsequent phases.”⁵⁵ However, the MECP confirmed to the ECO in 2015 that the ministry was unlikely to include private water supplies in future source protection planning.⁵⁶

The ECO agrees that the Clean Water Act's existing source protection planning process may not necessarily be the ideal mechanism to protect all types of drinking water sources, given the time and resources involved.

In northern Ontario, the Clean Water Act process would be more difficult because of the sheer size of the watersheds, as well as the absence of local conservation bodies to lead the process. In southern Ontario, mapping and addressing the threats of each individual private well would be a major undertaking. Nonetheless, the province has some responsibility to protect sources of drinking water for all Ontarians – including northern and First Nation communities and those on private water supplies – from contamination.

The province has some responsibility to protect sources of drinking water for all Ontarians – including northern and First Nation communities and those on private water supplies – from contamination.

In many ways, people on private water supplies need protection of their water supply even more than those that receive municipal drinking water. Without the benefit of the Safe Drinking Water Act's requirements for testing and treatment (see section 1.1), source protection is the main line of defence for private water supplies. Private wells are just as, if not more, susceptible to many of the drinking water threats,⁵⁷ such as sewage, manure, road salt (see section 2.5 in Chapter 2) and algae blooms (see section 2.3 in Chapter 2).

The source protection process is providing a new wealth of knowledge and data about sources of water pollution, water quality issues, and ideally, as we go forward, the effectiveness of various policy tools. Based on this emerging data and information, the province

should apply effective policy tools to protect other water resources. For example, the ministry should examine the effectiveness of the septic re-inspection programs and, if appropriate, apply these measures more broadly across the province (see Using septic inspections to protect water sources).

To better protect drinking water sources for all Ontarians, **the ECO recommends that the Ministry of the Environment, Conservation and Parks use the knowledge and tools developed through the source protection program to protect other water resources from contamination, particularly drinking water sources not protected by the Clean Water Act.**



Poorly maintained water supply well.

Photo credit: Ministry of the Environment, Conservation and Parks.

Using septic inspections to protect water sources

There are over a million septic systems in use in Ontario. When any one of these septic tanks fails, it can release raw human sewage, which can carry dangerous pathogens and nutrients that contribute to algae blooms in the surrounding water.

Regular inspection and proper maintenance of septic systems, can reduce the risk of sewage leaks

The U.S. Environmental Protection Agency estimated that 10-20% of septic systems will typically fail, with higher rates for older systems.⁵⁸ Regular inspection and proper maintenance of septic systems, however, can reduce the risk of sewage leaks. Septic inspection programs can help identify faulty or leaking systems, which can then be repaired before they pollute nearby surface and groundwater.

Since 2012, municipalities in some parts of the province must establish a septic inspection program (for re-inspection every five years). Specifically, under the Ontario Building Code, municipalities must establish an inspection program for septic systems that are either identified in assessment reports as significant drinking water threats, or are within 100 metres of a lake or stream in the Lake Simcoe watershed.

As a result of the Lake Simcoe requirement, between 2012 and 2015, municipalities, health units and conservation authorities inspected about 3,700 septic systems along the Lake Simcoe shoreline.⁵⁹ In the three years leading up to the inspections, government funding programs assisted many hundreds of property owners within that watershed

to upgrade, repair or replace faulty or malfunctioning septic systems.⁶⁰ The South Georgian Bay Lake Simcoe Region, which includes the Lake Simcoe watershed, reported in its 2017 annual progress report that recent inspections found that 98% of septic systems were now functioning properly or required only minor maintenance, such as a tank pump-out⁶¹ – likely due to the prior efforts and upgrades.

It is reasonable to expect that these mandatory septic inspection programs, accompanied by education and outreach, encourage property owners to repair or replace old or faulty systems. Source protection committees, following several years of education, outreach and mandatory septic inspections, have reported very high compliance rates, generally in the range of 88-100% (not counting minor deficiencies). These high compliance rates are much higher than rates found in jurisdictions without mandatory inspection programs.⁶²

In the rest of Ontario (outside of those source protection vulnerable zones and the Lake Simcoe watershed where re-inspections are mandated), septic systems can be used for many decades without ever being inspected.⁶³ The ECO and others have long urged the province to expand septic system inspection and maintenance programs to other parts of the province.

Now that parts of Ontario have experience running septic inspection (and education) programs, and have proven their value, there is no longer any legitimate excuse for ignoring septic system failures in the rest of Ontario. Mandatory septic inspection programs should be expanded to all areas that are a source of drinking water not covered by source protection plans and/or that are experiencing, or are at risk of experiencing, nutrient-related algae problems (see Chapter 2 for a discussion of algae issues).

1.5.3 Stronger tools to address important fuel and manure threats

As discussed in sections 1.3.2 and 1.3.4, the ECO's review of select source protection plans identified serious gaps in the province's source protection rules, by failing to give source protection committees the tools needed to fully address all significant threats from fuel and manure. The MECP has addressed parts of this gap (see discussion of fuel pipelines in section 1.5.1), but further improvements are still needed.

Exclusion of above-grade fuel tanks under 2,500 litres

As explained in section 1.2.2, activities will only be considered a significant threat if they meet specific parameters set out in the Tables of Drinking Water Threats, and certain policy tools may only be used to manage significant threats. Under the Clean Water Act's technical rules, outdoor above-grade fuel storage tanks with a capacity between 250 and 2,500 litres could not be identified as a significant threat. This category of tanks includes residential home heating oil tanks, as well as the tanks that serve many small businesses including farms.⁶⁴

Outdoor above-grade fuel storage tanks with a capacity between 250 and 2,500 litres could not be identified as a significant threat.

Fuel spills are the most common type of spills to the environment. As noted in section 1.3.4, a fuel spill can pose a very serious risk to drinking water. Yet, because outdoor, above-grade residential tanks could not be classified as a significant threat, source protection committees could only manage these threats using soft tools such as education and outreach programs.



Example of outdoor above-grade fuel storage tank.

Photo credit: nycshooter, (iStock standard licence).

Several source protection committees expressed concern about this exclusion, because outdoor, above-grade tanks pose as high, if not higher, a risk, of failure as below-grade residential tanks. They are exposed to the elements, may be in locations where leaks are not quickly detected, and can have a more direct pathway to contaminate soil and water. It is inconsistent to manage below-grade tanks with the full suite of regulatory tools (such as risk management plans), but not outdoor, above-grade tanks of the same size containing the same dangerous pollutant. The Quinte Source Protection Committee emphasized that existing regulations affecting these smaller, mostly residential oil tanks were insufficient to address the threat, in part because many homeowners were not aware of maintenance requirements and did not know what to do in an emergency.

In March 2017, the MECP partially addressed this issue by revising the criteria in the Technical Rules to allow source protection committees to identify smaller outdoor, above-grade tanks as significant threats

The MECP partially addressed this issue by allow source protection committees to identify smaller outdoor, above-grade tanks as significant threats to surface water.

to surface water. However, until these changes are incorporated into the revised source protection plans (a process likely to take a few years), the issue will remain unaddressed under current source protection policies. Furthermore, these changes do not address the threat above-grade outdoor tanks can pose to groundwater, continuing to leave many sources of municipal drinking water vulnerable to this threat. The MECP has committed to review the threat circumstances for fuel storage as part of a second phase of proposed rule amendments and as part of a broader review of the source protection program.⁶⁵ The ECO urges the ministry to act on this promise quickly.

The ECO recommends that the Ministry of the Environment, Conservation and Parks amend the Technical Rules to include threats to groundwater from above-grade outdoor fuel storage tanks as significant threats as soon as possible.

The role of the TSSA in addressing fuel threats

The Technical Standards and Safety Authority (TSSA) – an arms-length administrative authority under the jurisdiction of the Ministry of Government and Consumer Services (MGCS) – is the primary regulator for fuel safety in Ontario. The TSSA, under the authority of the Technical Standards and Safety Act, 2000, licenses facilities for handling and storing fuel, registers fuel contractors, and certifies tradespersons who install and service equipment. The TSSA also provides education and outreach programming on fuel safety, and is the lead agency in the case of fuel spills occurring at sites under its jurisdiction and where

contamination is contained onsite (all spills must first be reported to the MECP's Spills Action Center, and the MECP retains control in cases where fuel spills go offsite).

Despite the TSSA's central role in regulating fuel, none of the licences or approvals issued by the TSSA for fuel handling and storage are subject to the Clean Water Act, and nor is the TSSA legally required to comply with source protection policies (i.e., the TSSA is not an implementing body).⁶⁶ As a result, several source protection committees felt constrained in developing policies related to fuel handling and storage – i.e., unlike the option available to address other threats (waste, manure, etc.), committees could not enlist the help of the main body charged with regulating the sector. Some committees noted that the MGCS and the TSSA took the position that environmental protection generally, and source water protection in particular, was beyond their mandate and outside their areas of authority (see box).

In developing policies related to fuel handling and storage, committees could not enlist the help of the main body charged with regulating the sector.

The TSSA's perspective

The TSSA reiterated to the ECO that the Technical Standards and Safety Act does not expressly grant the TSSA any environmental jurisdiction or set out environmental protection as an objective for the corporation. The TSSA also stated that activity under the Clean Water Act is highly location-specific, whereas most fuel-related activities are common across the province and should be regulated uniformly. The TSSA explained that its codes and standards, which govern its licences and approvals, “provide uniform safety (and environmental) protection regardless of local conditions.”

The TSSA also noted that representatives from conservation authorities and the MECP's Source Protection Programs Branch participated in consultation sessions regarding updates to both the Liquid Fuel Handling Code in 2017, to reflect new technologies and address emerging issues such as source water, and the Fuel Oil Code in 2016. The TSSA stated that “the fuel oil code includes Ontario-specific requirements that enhance the outcomes of source protection policies.”

When asked about the role of the TSSA in source protection, the MECP noted that the TSSA's authority is bound by the terms of its operating agreement with the MGCS, and that the agreement does not speak to source protection. The MECP further indicated that it believed it would not be appropriate to put significant responsibility on the TSSA to ensure that privately owned equipment does not pose a threat to source water because it is an owner's responsibility to maintain fuel equipment. The MECP expressed satisfaction with the arrangement reached in most source protection plans, in which the TSSA has agreed to carry out education and outreach activities and to share information with the source protection authorities.

Despite the MECP's endorsement of the TSSA's current role in protecting water sources, several committees remain concerned about the agency's limited role. The body charged with regulating fuel equipment, and that already has convenient regulatory tools at its disposal, should use those tools to protect source water from fuel leaks. The MECP and MGCS should listen to these concerns. **The ECO recommends that the Ministry of the Environment, Conservation and Parks add TSSA instruments related to liquid fuels to the list of prescribed instruments under the Clean Water Act, 2006.**

Manure threats on farms subject to the Nutrient Management Act

The province's rules under the Clean Water Act also fail to give source protection committees the tools needed to manage significant threats from manure spreading on farms that are subject to the Nutrient Management Act.

As noted in section 1.3.2, the Nutrient Management Act regulates manure spreading on some large farms through property-specific nutrient managements plans. Currently, 1,303 farms, which collectively spread 44% of the province's total manure by volume, are regulated in this way. Where source protection committees have identified significant drinking water threats from manure spread in vulnerable areas on these regulated farms, the Clean Water Act relies almost entirely on the farmer (and on the certified nutrient management planner retained by the farmer) to protect drinking water from the threat through the nutrient management plan.

There is no government oversight of these plans. Unless the source protection committee chooses to outright prohibit manure spreading in the vulnerable area (which committees are directed to do only as a very last resort), the committee is forced to rely on the farmer and planner to change their own nutrient management plan to reduce the threat. The planner gives the farmer a “statement of conformity” that the plan complies with the local source protection policy. No one checks the planner's conclusion that the plan is adequate to protect drinking water sources. Under the Clean Water Act, risk management officials have no power to ensure the plan

protects drinking water. They cannot add conditions to a nutrient management plan or require a risk management plan for a farm that has a nutrient management plan. The OMAFRA does not review or approve these nutrient management plans either.

Compounding this lack of government oversight on what the plan says is a gap in enforcement of these plans once they have been adopted. Together, these two gaps make it unlikely that manure threats to water sources from these farms can be caught and corrected. Risk management inspectors may only check if these farms have a nutrient management plan and statement of conformity from the planner. Risk management inspectors are not allowed to check whether the plans, or the farm's activities, comply with the source protection policies. The MECP is responsible for inspecting and enforcing compliance with nutrient management plans. However, the MECP inspects few farms (see section 1.3.2), and when it does, it only looks at whether farms are complying with the plans as written, not whether the plans protect drinking water sources.

No one in government is checking to see if nutrient management plans are indeed protecting drinking water sources from manure contamination.

In short, no one in government is checking to see if nutrient management plans are indeed protecting drinking water sources from manure contamination. Risk management officials and inspectors are not allowed to implement or enforce source protection measures on these regulated farms. The OMAFRA and the MECP could and should, but do not.

We should not underestimate the threat posed by manure to drinking water sources. The very crisis that sparked the creation of the Clean Water Act was manure contaminating a Walkerton well. The MECP and the OMAFRA should fix this serious gap. **The ECO recommends that the OMAFRA review, and as needed amend, nutrient management plans for**

farms within a vulnerable source water area to ensure the plans comply with source protection policies, and that the MECP prioritize inspecting these farms to ensure compliance with the plans.

1.5.4 Stronger tools to mitigate historical contamination

The intent of the Clean Water Act is to protect drinking water sources by preventing threats to municipal sources of drinking water. The law focuses primarily on addressing existing and future activities that may pose a threat to drinking water, but “conditions” – historical contamination from past activities that left contaminated soil and/or groundwater behind – may also pose a drinking water threat.

The Clean Water Act provides no effective means for source protection committees to address drinking water threats posed by historical contamination. It can be challenging for committees to identify conditions as significant threats, and even if identified, the committees have no real powers to do anything about these threats.

Barriers to identifying conditions as drinking water threats

Source protection committees must identify conditions that pose a significant threat to municipal drinking water sources. The Technical Rules set out the criteria for committees to determine if a site can be identified as a condition, and if so, if the condition is a significant threat.



Photo credit: Dorin_S, (iStock standard licence).

Some participants in the assessment process raised concerns about the difficulty identifying conditions, particularly the evidentiary burden necessitated by the Technical Rules, given the challenges locating information about historically contaminated sites. Committees were largely reliant on records provided by the MECP and the local municipalities. The MECP reviewed available district and regional files and provided source protection authorities with materials that it had located relating to properties within their area, and conducted a records search for any specific property that committees inquired about. Nonetheless, many properties known or suspected to be contaminated do not have historical records available, making it difficult or impossible for committees to identify these sites as threats. For example, the MECP might never have become involved (i.e., if there was no knowledge of contamination migrating onto a neighbouring property) and so would not have any records.⁶⁷ Or, for some smaller municipalities, the records might be in paper copies that are hard to access and search.

Even in cases where there were records, a lack of comprehensive information about the status of the contamination could make it difficult to confirm whether a condition met the thresholds set out in the Technical Rules to be listed as a significant threat. In particular, some participants in the assessment process stated that the requirement for evidence of offsite contamination with the potential to deteriorate the source water presented too high a threshold. It is not unusual for testing of contamination in soil or groundwater to be limited to one property, and although there may be strong reason to believe that contamination continues beyond that property line, without hard proof the site cannot be designated as a condition and significant threat. Source protection committees generally do not have the capacity to carry out investigative work to confirm suspected conditions, as such investigations are expensive and often require access to private property, which may not be granted.

Lack of tools for addressing conditions once identified

Unlike activities that are identified as significant threats, for which source protection committees must develop policies, committees have the discretion to address threats from historical conditions. Even if committees wish to develop policies to address conditions, the Clean Water Act provides minimal policy options. Committees cannot use prohibitions, risk management plans to compel remedial or other action, or land

Committees can identify conditions that pose a significant threat to drinking water, but there is little they can do to address the danger.

use restrictions to manage threats from conditions. Committees can require certain bodies to monitor the conditions, as well as make non-binding policies, such as requesting others to investigate and share information about the condition. But essentially, a source protection committee wanting to clean up historical contamination identified as a significant drinking water threat is reliant on the Minister of the Environment, Conservation and Parks to, at his or her discretion, use its powers under the Environmental Protection Act to issue an order (e.g., a control or clean-up order) to address the condition.

The outcome is that committees can identify conditions that pose a significant threat to drinking water, but there is little they can do to address the danger. Although the fact that a committee has identified a contaminated property as a threat may influence the MECP to take some action under the Environmental Protection Act, there is no obligation on the ministry to address the issue at all. Committees are utterly dependant on the MECP's discretion to act, which it may not (see Solution is often to take a well offline rather than address historical contamination).

Solution is often to take a well offline rather than address historical contamination

Often with historical conditions, it is hard to identify the original source of the contamination, and even if the source can be identified, the original polluter is frequently long gone or bankrupt. In many cases, when drinking water wells are contaminated by a historical condition, the MECP finds it easier (and much cheaper) for the municipality to take the well offline (shut it down), rather than for the MECP to remediate or control the historical contamination.

For example, the City of Barrie had to shut down one of its municipal drinking water wells in 2000, when it detected excessive levels of trichloroethylene (TCE) – a chlorinated solvent, commonly used as an industrial degreaser, that is a known carcinogen. The precise source of the TCE contamination remains unknown, but it is suspected to have leaked from the industrial area into the aquifer decades earlier.⁶⁸ The well remains closed to this day. Similarly, a municipal well in the City of Guelph has been shut down since 1994, when TCE in the city's fractured dolostone aquifer was found to have contaminated the well. TCE has been located beneath several nearby industrial properties, but the precise source of the contamination remains unknown.

Once a municipal well is offline, the MECP can refuse to act, arguing that addressing the contamination is not a priority because the well is not currently in use, and consequently there are no adverse effects on drinking water.

Municipal responsibility, provincial control

The Clean Water Act gives the perception that the law addresses conditions that are drinking water threats, without actually doing so. Source protection committees have no substantial tools at their disposal to protect drinking water sources from historical contamination. Municipalities, which bear the onus of providing safe drinking water to their residents, similarly have no such powers. Municipalities very rarely have the finances to control or remediate contamination themselves, nor do they have any authority to force property owners to remediate. They can only ask the province to act.

The province should be obliged to address historical conditions that are significant threats to the relatively small vulnerable source water areas, whether the contamination threatens an existing source of municipal drinking water or a source that has been shut down but is critically needed by a municipality to supply residents with drinking water.

Where the province owns a contaminated property that is a significant threat in a vulnerable area, the province should prioritize the immediate control or clean-up of such sites. For sites within the relatively small vulnerable source water areas that are not owned by the government, the MECP should use its authority under the Environmental Protection Act to order property owners to control or remediate the contamination as needed. **The ECO recommends that the MECP take action to ensure that historical conditions that have been identified as significant drinking water threats are controlled or remediated so that they cease to pose a risk to drinking water sources.**

1.5.5 Ensuring secure capacity and funding going forward

Implementing the source protection program has been a massive endeavour, requiring a significant amount of work from many bodies. Between 2004 and 2018, the provincial government has provided over \$275 million for the source protection program (see Figure 7).⁶⁹ Of this:

- \$224.3 million went towards the initial work of the source protection committees, led by the conservation authorities, and municipalities to complete technical and scientific studies for the assessment reports.
- \$24.5 million was provided as financial assistance to landowners through the “Ontario Drinking Water Stewardship Program” to encourage early voluntary

actions (up until 2013) to protect water supplies. The program helped landowners take over 3,000 early actions, such as measures to control runoff and erosion, inspect and upgrade septic systems, and close or upgrade wells.⁷⁰ The program also funded early education, outreach and incentive programs related to source protection.

- \$14.1 million was provided to almost 200 small, rural municipalities through the “Source Protection Municipal Implementation Fund” to offset some of their costs of taking on new source protection duties (including risk management planning, land use policy changes, and education and outreach).
- In 2018, the MECP advised the ECO that the province has committed another \$7.2 million to support local source protection activities in 2018/19.

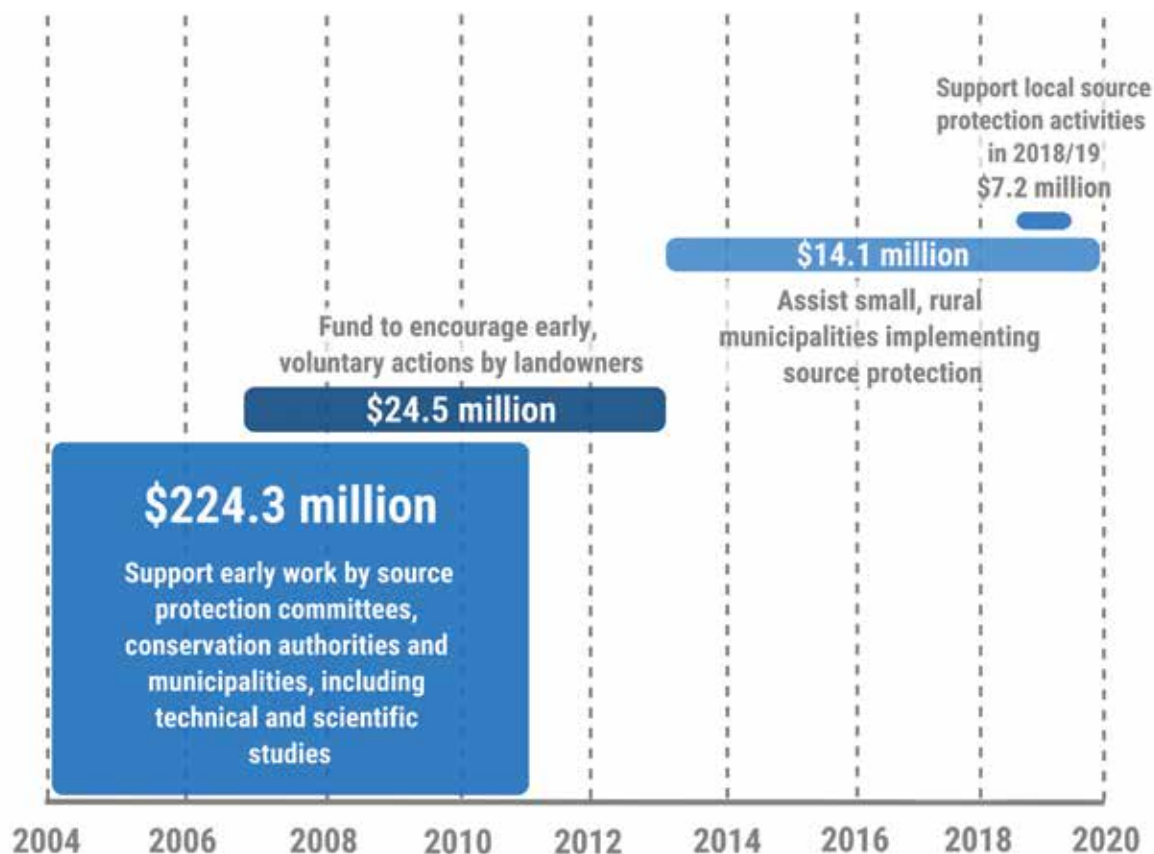


Figure 7. Provincial funding for source protection, 2006-2018 (millions).

Source: Created by the ECO, based on information from the MECP.

The province made a big investment in the early development of the source protection program, including funding the source protection authorities' and committees' work to produce detailed technical and scientific information about their watersheds. This investment has provided immensely valuable information that not only supports source protection, but also supports other important work of conservation authorities to protect Ontario's watersheds. Other start-up costs, such as the training of risk management officials and inspectors and the creation of education materials, will also provide long-term value. With most of the upfront work now complete, the cost of the source protection program will decrease, but it will not go to zero. The ongoing success of the source protection program depends on the responsible bodies having the resources they need to keep doing their jobs.

Uncertainty about secure funding beyond March 2019 leaves the success of the source protection program up in the air.

Currently, the province has committed to provide funding for source protection work only until March 31, 2019. Uncertainty about secure funding beyond March 2019 leaves the success of the source protection program up in the air. The MECP, conservation authorities, source protection committees, and municipalities all require ongoing resources to implement, review, update, monitor and enforce the source protection program.

Funding for conservation authorities, source protection committees and municipalities

Conservation authorities and municipalities are responsible for implementing about two-thirds of the source protection policies.⁷¹ Implementing these policies requires considerable human and financial resources. Local risk management officials and inspectors, employed by either the local municipality or conservation authority, are permanent positions

and require ongoing resources to perform their duties. Similarly, education and outreach programs, carried out primarily by municipalities and conservation authorities, should also be continual; these bodies advise that they can only carry out such programs when resources are provided.

Source protection committees and conservation authorities (who act as source protection authorities and members of source protection committees) also require resources to ensure they have the capacity to periodically review and update the assessment reports, including the scientific and technical studies that underlie the assessment reports, and source protection plans as required by the law.

Updating the underlying scientific and technical studies (i.e., to delineate vulnerable areas and identify threat activities) is critical to the success of the source protection program, as threats are not static and new threats can emerge. The province had funded earlier technical studies, but has not committed to fund future technical work or science updates, despite the fact that much information requires updating. For example, several conservation authorities have identified the need to update outdated drainage maps, which influence the shape and size of vulnerable areas.

Some conservation authorities and larger municipalities may have the resources and capacity to update technical work, but such studies are not cheap, and many conservation authorities and smaller municipalities cannot afford the costs. A lack of funding means that the science can not be updated to identify new or changing threats in parts of the province, undermining confidence in the program's role to protect municipal source water from all significant threats.

Lastly, conservation authorities and municipalities also require resources to do monitoring work. Monitoring and sampling of source water is critical to both detect water quality problems in raw water supplies and to evaluate the effectiveness of the source protection policies. The province has previously provided funding to some conservation authorities to sample source water, but with no current funding, important monitoring

work is now limited to the few municipalities with the resources to do so.

It is thus not surprising that the ECO repeatedly heard municipalities and conservation authorities express a need for steady-state funding for source protection. The ECO heard from conservation authorities that even slight decreases in their annual funding can lead to a reduction in staff dedicated to source protection. Moreover, the uncertainty of year-over-year funding (renegotiated through annual funding agreements between the MECP and conservation authorities) can result in job insecurity and the loss of in-house expertise as staff leave to find more secure employment elsewhere.

Municipalities and conservation authorities require secure long-term resources and capacity for full-time staff to ensure ongoing implementation, monitoring and enforcement of source protection policies, but no long-term source of funding for this work has been identified.

Capacity within the MECP

The MECP also requires ongoing capacity to carry out its many responsibilities under the source protection program, including: finishing the review and updating of prescribed instruments, reviewing the source protection authorities' annual progress reports and compiling the province's own progress reports, reviewing and approving plan amendments, evaluating and reviewing the overall source protection program, and implementing continuous improvement to address shortcomings in the program as well as changes on the landscape.

In particular, the ECO has concerns about the MECP's capacity to swiftly review the upcoming amendments to the assessment reports and source protection plans. During the first round of assessment reports and source protection plans, it took the MECP over three years to approve all source protection plans.

Sufficient capacity within the MECP, conservation authorities, municipalities and source protection committees is vital to ensure the future success of the

The province should not squander the substantial investment it has made.

source water protection program. The government should commit to multi-year funding to ensure all responsible bodies can continue ongoing source protection work. The province should not squander the substantial investment it has made. **The ECO recommends that the Ontario government commit steady-state, multi-year funding for the source protection program to ensure that the MECP, conservation authorities, municipalities and source protection committees have sufficient capacity to successfully implement, monitor, review and amend source protection plans.**

1.6 Conclusion

After all that time, effort and money, are sources of drinking water safer? For the 82% of Ontarians whose drinking water sources are protected by the Clean Water Act, the answer is yes, with much more work to do.

The hard work done by source water protection authorities and committees has revealed hundreds of significant threats to municipal water sources across Ontario.

The Clean Water Act is designed to reduce both chronic contamination and the risk of acute spills from 20 common threats to source water quality. The hard work done by source water protection authorities and committees has revealed hundreds of significant threats to municipal water sources across Ontario. These astonishing findings should remind us all how much our municipal water supplies had been relying on luck in the years before the Walkerton water tragedy.

As a result of the Clean Water Act, and the substantial funds invested to implement it, thousands of actions

have been taken to reduce drinking water threats. In many areas, septic systems have been repaired, manure handling improved and fuel storage better managed. These actions should, over time, reduce both chronic sources of contamination and the number of accidental spills that threaten municipal drinking water sources. They should also ensure that any source of pollution that threatens municipal water quality is detected and reported more quickly than what happened in the Walkerton water tragedy.

It could take time for these improvements to be reflected in source water monitoring data. The measures within source protection committees' control may only gradually reduce chronic contaminants, and can only reduce, not eliminate, some kinds of threats. In addition, the Clean Water Act does not deal effectively with "conditions", i.e., contamination coming from historical activities, which can persist for decades. Contaminants still threaten some municipal water supplies, and 18% of Ontarians receive no comparable protection of their drinking water sources. Still, it is encouraging to see early reports that some municipal water intakes are reporting lower levels of some contaminants. And, of course, there has been no recurrence in Ontario of the Walkerton water tragedy.

In summary, the Clean Water Act has been good for Ontario. Justice O'Connor was correct; in addition to good water treatment by municipal water treatment plants, Ontario must actively protect the quality of our sources of drinking water, much better than we did before 2000. Ontario needs the Clean Water Act and the source water protection committees of Ontario, with local program delivery led by the conservation authorities, have done a good job in implementing it.

But this is no time for the MECP to turn its back on source water protection, as the last funding commitment to support source protection runs out early next year. Drinking water threats are not static, and the vigilance necessary to protect drinking water sources will never be unneeded. Growing populations, loss of natural buffers such as wetlands and woodlands, the warmer wilder weather that climate change brings,

new fuels and new chemicals, all will require fresh threat assessments and responses. Education and enforcement will remain significant tasks indefinitely.

The ECO recommends that the Ministry of the Environment, Conservation and Parks:

- **use the knowledge and tools developed through the source protection program to protect other water resources from contamination, particularly drinking water sources not protected by the Clean Water Act**
- **amend the Technical Rules to include threats to groundwater from above-grade outdoor fuel storage tanks as significant threats as soon as possible**
- **add TSSA instruments related to liquid fuels to the list of prescribed instruments under the Clean Water Act, and**
- **take action to ensure that historical conditions that have been identified as significant drinking water threats are controlled or remediated so that they cease to pose a risk to drinking water sources.**

The ECO recommends that the Ontario Ministry of Agriculture, Farms and Rural Affairs review, and as needed amend, nutrient management plans for farms within a vulnerable source water area to ensure the plans comply with source protection policies, and that the Ministry of the Environment, Conservation and Parks prioritize inspecting these farms to ensure compliance with the plans.

The ECO recommends that the Ontario government commit steady-state, multi-year funding for the source protection program to ensure that the Ministry of the Environment, Conservation and Parks, conservation authorities, municipalities and source protection committees have sufficient capacity to successfully implement, monitor, review and amend source protection plans.

Endnotes

1. There are legally 38 source protection plans – one plan for each of the 38 source protection areas. Some areas are grouped into regions, creating a total of 10 regions and 9 stand-alone areas. Many of the regions submitted replica plans for each source protection area within the region, and so they are often collectively referred to as one source protection plan. As such, the total number of source protection plans is often counted as 22 or 24 distinct plans. However, the Ministry of the Environment, Conservation and Parks currently cites the total number of plans as 38 (despite some being exact copies of the same plan).

The Ministry of the Environment, Conservation and Parks approved the final source protection plan, for the Grand River Source Protection Area, in November 2015.
2. Auditor General of Ontario, Annual Report 2014, Chapter 3, Section 3.12, Source Water Protection (Toronto: Queen’s Printer for Ontario, 2014) at 413: “A study conducted by the U.S. Environmental Protection Agency in the mid-1990s estimated that the cost of dealing with contaminated source water is on average 30 to 40 times more than preventing contamination in the first place.”

See also Environmental Commissioner of Ontario, 2017 Energy Conservation Progress Report (Volume One), Every Drop Counts: Reducing the Energy and Climate Footprint of Ontario’s Water Use (Toronto: ECO, May 2017).
3. See, for example, Abell, R., et al. *Beyond the Source: The Environmental, Economic and Community Benefits of Source Water Protection* (Arlington, VA: The Nature Conservancy, 2017) at 128.
4. A watershed is an area of land in which all water, including rain and snowmelt, flows into a common body of water such as a river or lake.
5. Conservation authorities are local watershed management agencies established under the Conservation Authorities Act. Conservation authorities deliver programs and services, in partnership with government, landowners and other organizations, to ensure the responsible management of Ontario’s water and other natural resources. There are 36 conservation authorities in Ontario.
6. There is a preliminary step before this. Terms of reference must first be prepared and approved by the Ministry of the Environment, Conservation and Parks for each source protection area. Terms of Reference set out a work plan for the major tasks required for source protection planning in the area.
7. Source protection areas cover about 14% of the total land mass of the province (Auditor General of Ontario, Annual Report 2014, Chapter 3, Section 3.12, Source Water Protection (Toronto: Queen’s Printer for Ontario, 2014) at 410). Vulnerable zones only cover a small subset of that area. Note, however, that the majority of Ontario’s land mass is uninhabited and outside areas of development, so is not subject to the same risk of pollution.
8. At the time of development of the source protection plans, this threat – establishment and operation of a liquid hydrocarbon pipeline – was not included, and so is not yet addressed the source protection policies. This threat was added in April 2018, and came into force on July 1, 2018.
9. Auditor General of Ontario, Annual Report 2014, Chapter 3, Section 3.12, Source Water Protection (Toronto: Queen’s Printer for Ontario, 2014) at 415.
10. Organic matter that is produced on farms and applied to fields as a source of nutrients for the soil is called “agricultural source materials” or “ASM”. ASM is defined in section 1(1) of O. Reg. 267/03 under the Nutrient Management Act, 2002, and incorporated into the Clean Water Act, 2006 through s.1.1(2) of O. Reg. 287/07.
11. Nutrient Management Strategies address the generation, transfer and storage of manure from some farms. A Nutrient Management Strategy requires, for example, construction of proper storage of manure and controls to avoid run-off. Nutrient Management Strategies are only required for existing large farms that generate more than 300 “nutrient units” of manure and/or milkhouse washwater, or to new or expanding farms that produce over 5 “nutrient units” and that construct a barn or manure storage facility (a “nutrient unit” is calculated based on the amount of manure produced by a given livestock, e.g., 1 cow produces 3 nutrient units).

Nutrient Management Plans can only be required if the farm is also already required to have a Nutrient Management Strategy and the farm either produces more than 300 nutrient units and/or is within 100 meters of a municipal well. The Nutrient Management Plan specifies criteria for the application of nutrients on the field.
12. Ontario Ministry of Agriculture, Food and Rural Affairs, information provided to the ECO (July 2018); Statistics Canada, CANSIM table 004-0200 - Census of Agriculture, farms classified by the North American Industry Classification System (Ottawa: Statistics Canada, 2016).
13. Ontario Ministry of Agriculture, Food and Rural Affairs, information provided to the ECO (July 2018).
14. That farm produced only about 60 nutrient units of manure, so would not have been subject to the nutrient management regulations. Auditor General of Ontario, Annual Report 2016, Volume 2: Follow-Up Reports on Value-for-Money Audits, Chapter 1, Section 1.12, Source Water Protection (Toronto: Queen’s Printer for Ontario, 2016) at 164.
15. Auditor General of Ontario, Annual Report 2014, Chapter 3, Section 3.12, Source Water Protection (Toronto: Queen’s Printer for Ontario, 2014) at 426-427.
16. Ministry of the Environment, Conservation and Parks, information provided to the ECO (17 October 2018).
17. Approved Explanatory Document: CTC Source Protection Region, July 28, 2015 at 24.
18. This order was the subject of lengthy litigation. See: *The Corporation of the City of Kawartha Lakes v. Director, Ministry of the Environment*, 2012 ONSC 2708.
19. See Venetia E.K. Whiting et al., “Spills and the Dangers of DIY,” Bennet Jones Blog (3 August 2017), online: <www.bennettjones.com/TheKawarthaLakesSagaContinuesOilSpillsandtheDangersofDIY>.
20. See, for example, Greg Davis, “Drinking water advisory lifted at Balsam Lake,” Global News (17 May 2018), online: <globalnews.ca/news/4215812/drinking-water-advisory-balsam-lake/>. The Ministry of the Environment, Conservation and Parks determined that home heating oil leaked after a fuel line was ruptured and disconnected from a storage tank from a nearby residence.
21. Approved Explanatory Document: CTC Source Protection Region, July 28, 2015 at 17.
22. The implementation timelines relate to the date that the source protection plan came into effect (the “effective date”). The Source Protection Plans came into effect gradually over a couple of years, with the last plans coming into effect in July 2016. As such, timelines vary from area to area.

23. For example, South Georgian Bay Lake Simcoe Region's Source Protection Annual Progress Report (1 May 2018), observes at page 8 that "a consultant's report suggests it could take between 10-38 years to see the effects of any implemented risk management measures" on the nitrate levels in the groundwater.
24. Ministry of the Environment, Conservation and Parks, information provided to the ECO (24 January 2017; 11 April 2018).
25. Ministry of the Environment, Conservation and Parks, information provided to the ECO (11 April 2018).
26. Ministry of the Environment, Conservation and Parks, information provided to the ECO (11 April 2018).
27. Ontario Ministry of Agriculture, Food and Rural Affairs, information provided to the ECO (24 April 2018).
28. Ontario Ministry of Agriculture, Food and Rural Affairs, information provided to the ECO (24 April 2018).
29. Ministry of the Environment and Climate Change, Minister's Annual Report on Drinking Water 2016 (Toronto: Queen's Printer for Ontario, 2016) at 9.
30. Ontario Ministry of Agriculture, Food and Rural Affairs, information provided to the ECO (24 April 2018).
31. See the Ministry of the Environment, Conservation and Parks' Risk Management Measures Catalogue, online: www.ontario.ca/data/risk-management-measures-catalogue.
32. Greater Sudbury Source Protection Annual Progress Report (April 27, 2018) at 8.
33. Mississippi-Rideau Source Protection Region, Source Protection Annual Progress Report (April 30, 2018) at 7.
34. For example, see Ministry of the Environment, Conservation and Parks Source Protection Programs Branch, Standard Operating Procedure - Considering and Incorporating Emerging Issues into Source Protection Program, (April 14, 2016).
35. See Environmental Registry Policy Decision Notice #010-7573, Proposed Amendments to the technical rules made under section 107 of the Clean Water Act, 2006 with respect to the preparation of an assessment report; (18 November 2009); Environmental Registry Policy Decision Notice #011-2168 (10 December 2015); and Environmental Registry Policy Decision Notice #012-8507, Proposed Amendments to the Director's Technical Rules made under Section 107 of the Clean Water Act, 2006 (9 March 2017).
36. See Environmental Registry Policy Decision Notice #012-8507, Proposed Amendments to the Director's Technical Rules made under Section 107 of the Clean Water Act, 2006 (9 March 2017); for description of the issue, see also Auditor General of Ontario, Annual Report 2014, Chapter 3, Section 3.12, Source Water Protection (Toronto: Queen's Printer for Ontario, 2014).
37. MECP Source Protection Programs Branch, Standard Operating Procedure - Considering and Incorporating Emerging Issues into Source Protection Program (April 14, 2016).
38. See, for example, John Lancaster, "Keeping track of Toronto-area pipelines," CBC News (28 October 2013), online: www.cbc.ca/news/canada/toronto/keeping-track-of-toronto-area-pipelines-1.2254389; David Lee, "Bronte Creek gas spill cleanup may take years to complete," InsideHalton.com (28 August 2013), online: www.insidehalton.com/news-story/4052635-bronte-creek-gas-spill-cleanup-may-take-years-to-complete/; Hamilton Spectator, "Gas spill in Bronte Creek" (5 May, 2010), online: www.thespec.com/news-story/2120329-gas-spill-in-bronte-creek/.
39. A source protection committee may identify an activity not on the list of prescribed activities as a local drinking water threat using the alternate "local threats-based approach." This approach requires the committee to provide information to the MECP Director of the Source Protection Programs Branch indicating that the activity has a high chemical or pathogen hazard rating, as defined in the Technical Rules (see rules 119 to 121). Identification of a threat using the local threats-based approach requires permission from the MECP Director.
40. Environmental Registry Regulation Decision #013-1839, Amendments to Ontario Regulation 287/07 "General" under the Clean Water Act, 2006 (5 April 2018).
41. The supporting document "Changes to the Tables of Drinking Water Threats Established under the Technical Rules – July 2018" states that the pipeline circumstances contain the following: "The conveyance of a liquid hydrocarbon by way of a pipeline within the meaning of Ontario Regulation 210/01 under the Technical Standards and Safety Act, or that is subject to the National Energy Board Act." This includes both provincially regulated pipelines (i.e., those that fall entirely within the provincial borders as regulated under O. Reg. 210/01), as well as transboundary pipelines (those regulated federally under the National Energy Board Act).
42. Based on 2006 data. Ministry of the Environment, Conservation and Parks, information provided to the ECO (24 January 2017).
43. Based on 2006 data. Ministry of the Environment, Conservation and Parks, information provided to the ECO (24 January 2017).
44. Leslie Collins et al., "Source Water Protection Planning for Ontario First Nations Communities: Case Studies Identifying Challenges and Outcomes" (2017) 9:7 Water 550.
45. O. Reg. 287/07 (made under the Clean Water Act, 2006, S.O. 2006, c. 22), s. 12.1.
46. Ministry of the Environment, Conservation and Parks, information provided to the ECO (7 June, 2016).
47. Leslie Collins et al., "Source Water Protection Planning for Ontario First Nations Communities: Case Studies Identifying Challenges and Outcomes" (2017) 9:7 Water 550.
48. See Government of Canada's website, Water in First Nation communities, online: www.sac-isc.gc.ca/eng/1100100034879/1521124927588.
49. Since the ECO reported in 2017, 11 communities in Ontario have had their long-term advisories lifted, and one new one (Wabaseemoong) has been added. As of September 30, 2018, there were 26 communities with long-term advisories. See: Government of Canada's website, Water in First Nation communities, online: www.sac-isc.gc.ca/eng/1100100034879/1521124927588. Note: this is the number of communities affected by advisories, rather than the number of advisories – one community can have multiple advisories because each individual system will be under a separate advisory.
50. O. Reg. 284/07 (made under the Clean Water Act, 2006, S.O. 2006, c. 22), Table 2 and Table 3. Those areas were consolidated into the Saugeen, Grey Sauble, Northern Bruce Peninsula Source Protection Region and the South Georgian Bay-Lake Simcoe Source Protection Region, respectively.
51. Based on 2006 data. Ministry of the Environment, Conservation and Parks, information provided to the ECO (24 January 2017).
52. Based on 2006 data. Ministry of the Environment, Conservation and Parks, information provided to the ECO (24 January 2017).

53. O. Reg. 287/07 (made under the Clean Water Act, 2006, S.O. 2006, c. 22), s. 4.1(1). Private wells and intakes are excluded unless the municipality chooses to include, through a council resolution, a cluster of six or more wells or intakes (including clusters of private wells, communal systems, and other non-municipal supplies) in the source protection process.
54. Note, at least one committee (North Bay Mattawa Source Protection Committee) had proposed to include a cluster of private wells (the Trout Creek well cluster), but it was subsequently removed from the source protection plan. See the North Bay Mattawa Source Protection Area approved plan, March 5, 2015 (Letter of Submission to Source Protection Authority, section 1.4, and Appendix B).
55. Auditor General of Ontario, Annual Report 2014, Chapter 3, Section 3.12, Source Water Protection (Toronto: Queen's Printer for Ontario, 2014) at 423.
56. Ministry of the Environment, Conservation and Parks, information provided to the ECO (9 November 2015).
57. For example, Ontario's Auditor General noted in 2016, "During our 2014 audit, we noted that 36% of the 166,000 private-well water samples that were tested by Public Health Ontario in 2013 tested positive for bacteria, including *E. coli*." Auditor General of Ontario, Annual Report 2016, Volume 2: Follow-Up Reports on Value-for-Money Audits, Chapter 1, Section 1.12, Source Water Protection (Toronto: Queen's Printer for Ontario, 2016) at 162.
58. United States Environmental Protection Agency, USEPA Onsite Wastewater Treatment Systems Manual, February 2002, at 1-4 and Table 1-3. While the US EPA's data is older, it provides among the most comprehensive estimate of septic system failure rates.
59. Ministry of the Environment, Conservation and Parks, Minister's Five Year Report on Lake Simcoe: To protect and restore the ecological health of the Lake Simcoe watershed (23 October 2015) at 9.
60. Ministry of the Environment, Conservation and Parks, Minister's Five Year Report on Lake Simcoe: To protect and restore the ecological health of the Lake Simcoe watershed (23 October 2015) at 9.
61. South Georgian Bay Lake Simcoe Region Source Protection Annual Progress Report (1 May, 2018) at 5.
62. For example, Massachusetts' time-of-transfer inspection identified a 20% failure rate based on an inspection of each septic system prior to home sale (and the Massachusetts program only identifies failures according to code and does not track ground water contamination that may result from septic system failures). United States Environmental Protection Agency, USEPA Onsite Wastewater Treatment Systems Manual, at 1-4.

Similarly, in Michigan: "Several counties that require septic tank inspections during real estate transactions have reported a septic system failure rate of 20 percent to 25 percent, according to a Michigan Department of Environmental Quality report." Jeff Alexander, "Thousands of failed septic tanks across the state threaten Michigan's waters," MLive (14 May 2013), online: <www.mlive.com/environment/index.ssf/2013/05/thousands_of_failed_septic_tan.html>.
63. The Ontario Building Code regulatory process essentially ends with the permit-related inspection at the completion of an installation. Municipalities can voluntarily establish a local septic re-inspection program, but these appear to be few.
64. The Table of Drinking Water Threats does not distinguish between different tanks based on use (i.e., residential vs. industrial), only by the size of the tank. Tanks under 2,500L include virtually all residential tanks, as well as other types of properties that would have a smaller tank (i.e., many farms and small businesses). Residential tanks generally range between 280 and 1,250 litres.
65. Environmental Registry Policy Decision # 012-8507, Proposed Amendment to the Director 's Technical Rules made under Section 107 of the Clean Water Act, 2006 (9 March 2017).
66. Government of Ontario, Source Protection Planning Bulletin – Technical Standards and Safety Authority (December 2010) at 5, online: <www.sourcewaterprotection.on.ca/wp-content/uploads/meetings/M33/Technical%20Standards%20&%20Safety%20Authority%20Bulletin_MOE.pdf>.
67. Ministry of the Environment, Conservation and Parks, information provided to the ECO (24 January 2017).
68. See for example, Huntsville Forrester, "City well stays closed because of contamination," MuskokaRegion.com (19 May 2002), online: <www.muskokaregion.com/news-story/3600624-city-well-stays-closed-because-of-contamination>.
69. Ministry of the Environment, Conservation and Parks, information provided to the ECO (24 January 2017).
70. Ministry of the Environment, Conservation and Parks, Source Protection, online: <www.ontario.ca/page/source-protection>.
71. Auditor General of Ontario, Annual Report 2014, Chapter 3, Section 3.12, Source Water Protection (Toronto: Queen's Printer for Ontario, 2014).

Chapter 2

Polluting our waters



Abstract

Ontario is lucky to have so many lakes and rivers, containing some of the most abundant fresh water in the world. Unwisely, we still pollute much of it.

Since the Walkerton water tragedy, Ontario has put significant effort into protecting those limited water resources that provide municipal drinking water (see Chapter 1). Nothing comparable has been done to protect the rest of Ontario's lakes and rivers, many of which are being seriously harmed by pollution. This pollution is threatening many provincial aquatic ecosystems, impairing Ontarians' ability to swim and fish, and harming economic activities that rely on clean water.

Government laws and policies have reduced many types of water pollution over the last half-century. But big, deliberate gaps in these laws are allowing some water pollution problems to persist or worsen, especially when compounded by population growth and climate change.

This chapter examines four significant sources of major pollutants that threaten Ontario's waters, and the province's failures to regulate them:

1. Raw municipal sewage – a major source of potentially dangerous pathogens like *E. coli*, that spoil some Ontario beaches (section 2.2);
2. Agricultural runoff – a major source of phosphorus, that contributes to algae blooms (section 2.3);
3. Industrial wastewater – a major source of metals and toxic chemicals, that can harm aquatic animals and potentially humans (section 2.4), and
4. Road salt – a major source of sodium and chlorides, that damage aquatic ecosystems and can render sources of drinking water undrinkable (section 2.5).

*Fresh water is precious.
Government allows too much
pollution to pour into it.*

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2.1 Introduction: a sea of pollutants is harming Ontario's waters

Ontario is fortunate to have an abundance of freshwater. The province is home to over 250,000 lakes – including four of the five Great Lakes – as well as countless rivers, streams and creeks. In contrast to the water stress that faces many people around the globe, most Ontarians have easy access to one of life's basic necessities: clean drinking water. In 2000, Ontario received a shocking reminder of the vigilance necessary to protect this precious resource. See Chapter 1 for how, following the Walkerton tragedy, the Clean Water Act has improved the protection of those limited water resources that provide municipal drinking water.

However, nothing comparable has been done to protect the rest of Ontario's lakes and rivers, many of which are being seriously harmed by pollution. Most of Ontario's lakes and rivers fall outside of the Clean Water Act's protected vulnerable zones, including the drinking water sources of almost one-fifth of Ontario's population. Further, the need for drinking water is not the only reason to keep Ontario's water bodies unpolluted. Ontario's lakes and rivers are essential habitat for an amazing variety of aquatic life. They are where many people prefer to go for tourism and recreation, including swimming, fishing and boating. They also support jobs and businesses, from farming to manufacturing to energy generation.

Today, pollution is threatening many provincial aquatic ecosystems, impairing Ontarians' ability to swim and fish, and harming economic activities that rely on clean water. Despite existing laws that are supposed to control water pollution, a growing array of contaminants pour into Ontario's lakes and rivers every day – including faeces, plastic, petroleum products, salt, heavy metals, pesticides, nutrients and pharmaceuticals.¹ Once these pollutants have entered waterways, they are difficult or impossible to remove. Many cause adverse impacts, even in low concentrations. Some kill or sicken fish and wildlife; some are toxic to humans; some trigger excess plant or algae growth; some change the chemical or biological

Pollution is threatening many provincial aquatic ecosystems, impairing Ontarians' ability to swim and fish, and harming economic activities that rely on clean water.

composition of the ecosystem. The Ministry of the Environment, Conservation and Parks (MECP) does not know what long-term effects this chemical soup has on ecosystems and on us.

Government laws and policies have reduced many types of water pollution over the last half-century. But big, deliberate gaps in these laws are allowing some water pollution problems to persist or worsen, especially when compounded by population growth and climate change.

To illustrate the problem, this chapter examines four significant sources of major pollutants that threaten Ontario's waters, and the province's failures to regulate them:

1. untreated sewage from municipal sewer systems – a major source of pathogens
2. agricultural runoff – a major source of phosphorus
3. industrial wastewater – a major source of metals and other toxic chemicals, and
4. road salt – a major source of sodium and chlorides.

These four sources of pollutants are significant threats because:

- each discharges into Ontario waters in large quantities
- each causes major harm, and
- current Ontario laws and policies do not effectively control them.

Ontario's new government, upon election in June 2018, identified "protecting and preserving our waterways" as one of its priorities.² As this chapter shows, they have a lot of work to do.



Litter is another common source of pollution in Ontario lakes.

Photo credit: ECO.

2.1.1 Laws to protect Ontario's water resources from pollution

Several laws are intended to protect Ontario waters from pollution (Table 1). The Ontario Water Resources Act and the Environmental Protection Act regulate many activities that may pollute water and generally prohibit the discharge of most contaminants into water without a permit. The federal Fisheries Act also prohibits depositing substances that may degrade water quality in or near “waters frequented by fish.”³

Ontario added some new laws after the Walkerton water tragedy in 2000. These include the Nutrient Management Act, which regulates nutrient-containing material on some farms, and the Clean Water Act, designed to restrict activities that risk polluting waters that are sources of municipal drinking water (see Chapter 1).

Table 1. Ontario's four key laws to protect Ontario's water resources from pollution. The Ministry of the Environment, Conservation and Parks (MECP) is responsible for administering and enforcing all of these laws, except for the Nutrient Management Act, which is administered by the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) and enforced by the MECP.

<p>Ontario Water Resources Act (originally enacted in 1956, as the predecessor Ontario Water Resources Commission Act)</p>	<p>Ontario's primary law to regulate water pollution</p> <ul style="list-style-type: none"> • Prohibits discharge of polluting materials into or near water that may impair the quality of the water (surface or groundwater) • Regulates the discharge of municipal and industrial sewage (wastewater) and stormwater through sewage works approvals • Authorizes the ministry to issue orders prohibiting or regulating sewage discharges or requiring measures to prevent, reduce or alleviate impairment of water quality
<p>Environmental Protection Act (enacted in 1971)</p>	<p>Ontario's general pollution control law</p> <ul style="list-style-type: none"> • Prohibits discharge of contaminants into the environment (including water) that cause or are likely to cause adverse effects • The law and its regulations govern a number of potential sources of water pollution, including: landfills, sewage systems, mining, pulp and paper, road salt, etc. • Sets rules for cleaning up spills of pollutants • Does not apply to “normal farming practices”
<p>Nutrient Management Act (enacted in 2002)</p>	<ul style="list-style-type: none"> • Regulates the management, storage and use of nutrient-containing materials (such as manure, biosolids and food waste) on some farms to prevent contamination of surface and groundwater
<p>Clean Water Act⁴ (enacted in 2006)</p>	<ul style="list-style-type: none"> • Regulates pollution threats to surface and groundwater that are a specific source of municipal drinking water (see Chapter 1).

In addition, the Great Lakes and other border waters are subject to a number of treaties, compacts, and other agreements that aim to facilitate inter-jurisdictional cooperation, such as the Great Lakes Water Quality Agreement and the Canada-Ontario Agreement on Great Lakes Water Quality and Ecosystem Health. (These Great Lakes agreements are outside the scope of this report, for more information refer to Part 3.1 of the ECO's 2014/2015 Annual Report.)

Even more recently, geography-specific laws have been adopted, such as the Lake Simcoe Protection Act, 2008, and the Great Lakes Protection Act, 2015. Together, these laws have dramatically reduced many types of water pollution. Yet none of these laws have proved effective in stopping the continuing pollution described in this chapter.

2.2 Untreated sewage: transporting pathogens and spoiling beaches

The first pollutant we examine is raw and diluted sewage from municipal sewer systems. About 90% of Ontario's population is serviced by sewers that take sewage to treatment plants. These sanitation systems are essential to a modern society and do much to protect the health and wellbeing of Ontarians and our environment. However, far too often, raw and partially treated sewage flows from these sewage systems into lakes and rivers through bypasses and overflows (see section 2.2.2).

Untreated sewage is dangerous, carrying potentially harmful pathogens like pathogenic *E. coli*, and threatening human health as well as aquatic life. Local source protection plans developed under the Clean Water Act help to keep untreated sewage out of municipal drinking water, but as described in Chapter 1, that law does nothing to protect most Ontario waterways, or the drinking water of many rural and remote Ontarians.



Photo credit: NASA, (CC by 2.0).

The ECO honours Josephine Mandamin for her leadership and inspiration. Ms. Mandamin is the water walker, an Anishinaabe grandmother who walked

10,900 kilometres all the way around the Great Lakes, to remind us all that water is precious and that it is wrong to pollute it.

What's in raw sewage?

Raw sewage can contain anything that people or businesses put down their sinks, toilets and drains, including:

- human urine and excrement (which can carry pathogens)
- other bodily wastes like hair, toenails, blood, vomit and mucus
- paper products (toilet paper, tissues)
- soaps, detergents and other cleaning agents
- personal care products
- pharmaceuticals
- food waste
- condoms
- feminine hygiene products, and
- process wastewater and chemical wastes flushed down drains from businesses and industries.

In combined sewer areas, raw sewage can also contain anything that rain and snowmelt washes off outdoor areas and the streets, including:

- salt
- petroleum products
- wildlife and domestic animal excrement
- metal and rubber fragments
- fertilizers and pesticides, and
- litter.



Debris from a sewage overflow is seen attached to a grate covering the outflow pipe.

Photo credit: HugoTagholm, (CC BY-SA 4.0).

2.2.1 Impacts of pathogens: swim advisories and beach closures

Playing in the water is an iconic part of an Ontario summer for both adults and children. Ontario has hundreds of beautiful beaches, 26 of which are certified as consistently safe and clean and so can fly the international Blue Flag.⁵

However, a good experience cannot be taken for granted at other beaches. Far too often, many beaches are fouled by pollutants including garbage, nutrients that cause algal blooms (see section 2.3), and harmful pathogens like

Far too often, many beaches are fouled by pollutants including garbage, nutrients that cause algal blooms, and harmful pathogens like some types of *E. coli* bacteria.

some types of *E. coli* bacteria. The presence of *E. coli* in particular can lead to swim advisories or full beach closures (see box) to protect people from swimming in water dangerous to their health.

When is a swim advisory or beach closure declared?

According to the Ministry of Health and Long-Term Care, the local health unit should issue a swim advisory when beach quality is not suitable for recreational use, and should order a beach closure when a significant risk to health and safety has been identified.

Until early 2018, the provincial threshold to swim safely was a maximum 100 units of *E. coli* bacteria/100 mL water; the province has recently changed the threshold to 200 units of *E. coli* bacteria/100 mL to align with the national standard.



Sign posted at Toronto beaches if it is unsafe for swimming due to high bacteria levels.

Source: Toronto Public Health.

E. coli exceedances at Ontario beaches are unfortunately a regular occurrence. While most of Ontario's monitored Great Lakes beaches met bacterial standards for swimming, the conditions in some areas are declining. For example, Windsor and Essex County's 10 monitored beaches contained too much *E. coli* 46 times in the 2017 summer season, i.e., in 34% of all samples taken. Huron County's 10 beaches, including Goderich and Bayfield, had too much *E. coli* 58 times in 2017, i.e., in 21% of samples taken. The City of Toronto had 103 exceedances in the summer of 2018 (see box).

In addition to the public temporarily losing the use of the beach, the effects can be felt economically by the local small businesses and the municipality. For example, recreational activities on Lake Simcoe are estimated to contribute \$200 million annually to the local economy. Public beach closures in such an area can cause serious economic losses over time.



Harmful pathogens can impact vulnerable populations (like children) more significantly.

Photo credit: taniadimas, (CC0 1.0).

Toronto swim advisories

The City of Toronto takes daily samples at its 11 supervised beaches during the summer (generally early June to Labour Day) to check the level of *E. coli*. From 2007 to 2018, the percentage of summer days with too much *E. coli* ranged from 2% at Gibraltar Point Beach on Toronto Island to 36% at Maris Curtis Park East Beach on the west side of the region (Figure 1). In the summer of 2018, there was too much *E. coli* at one or more Toronto beaches 103 times.

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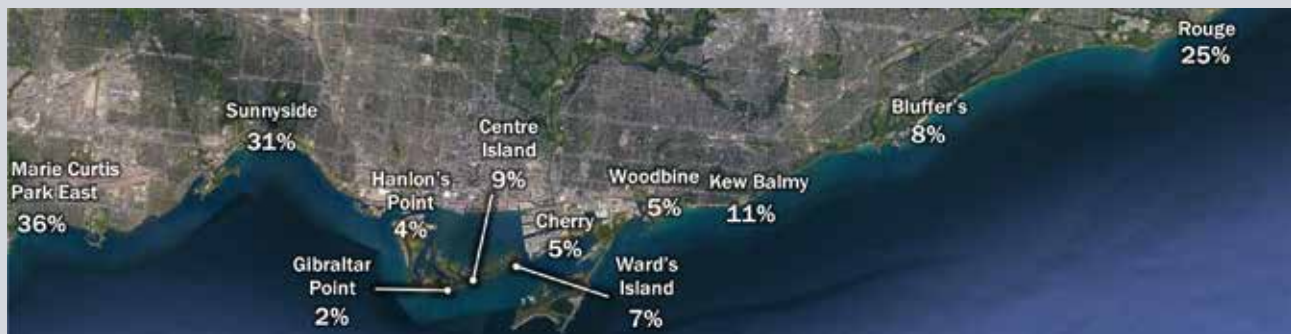


Figure 1. Map showing the percentage of sampled days during the summer months for the years 2007 – 2018 that exceeded the *E. coli* threshold at each of Toronto's 11 supervised beaches.

Source: Beach data provided by the City of Toronto; map data provided by Google Earth; graphic compiled by the ECO.

2.2.2 Combined sewage overflows take pathogens to our beaches

Pathogens can come from a variety of sources, including stormwater (e.g., from dog and geese excrement washed into the lakes during rain storms), leaky sewer pipes, faulty septic systems (see section 1.5.2 of Chapter 1), and manure runoff from agriculture (see section 2.3 as well as section 1.3.2 of Chapter 1). But the main source of pathogens that pollute many Ontario beaches is typically overflows and bypasses from municipal wastewater infrastructure, primarily from combined sewage overflows – mixtures of untreated sewage and stormwater from combined sewers.

Combined sewers carry both sanitary sewage (i.e., domestic, industrial and commercial sewage from toilets, sinks and drains), plus stormwater (i.e., rain or

snow melt). Combined sewers were cheaper to install, and most of the time they offer the environmental benefit of treating the pollutants and debris that stormwater sweeps off the streets. Their fatal flaw occurs in wet weather, when heavy rainfall or rapid snow melt floods into the sewers, mixes with sanitary sewage and overwhelms the capacity of the sewage treatment plant. To prevent the sewage mixture from backing up into homes and businesses, public spaces and the sewage treatment plant itself, municipal sewage systems are designed to allow the mixture to overflow or bypass directly into nearby streams, rivers and lakes.

These overflows and bypasses are typically called combined sewer overflows, and they are a major water pollution hazard. Combined sewer overflows can occur at a number of points in the sewage system (see Figures 2 and 3).

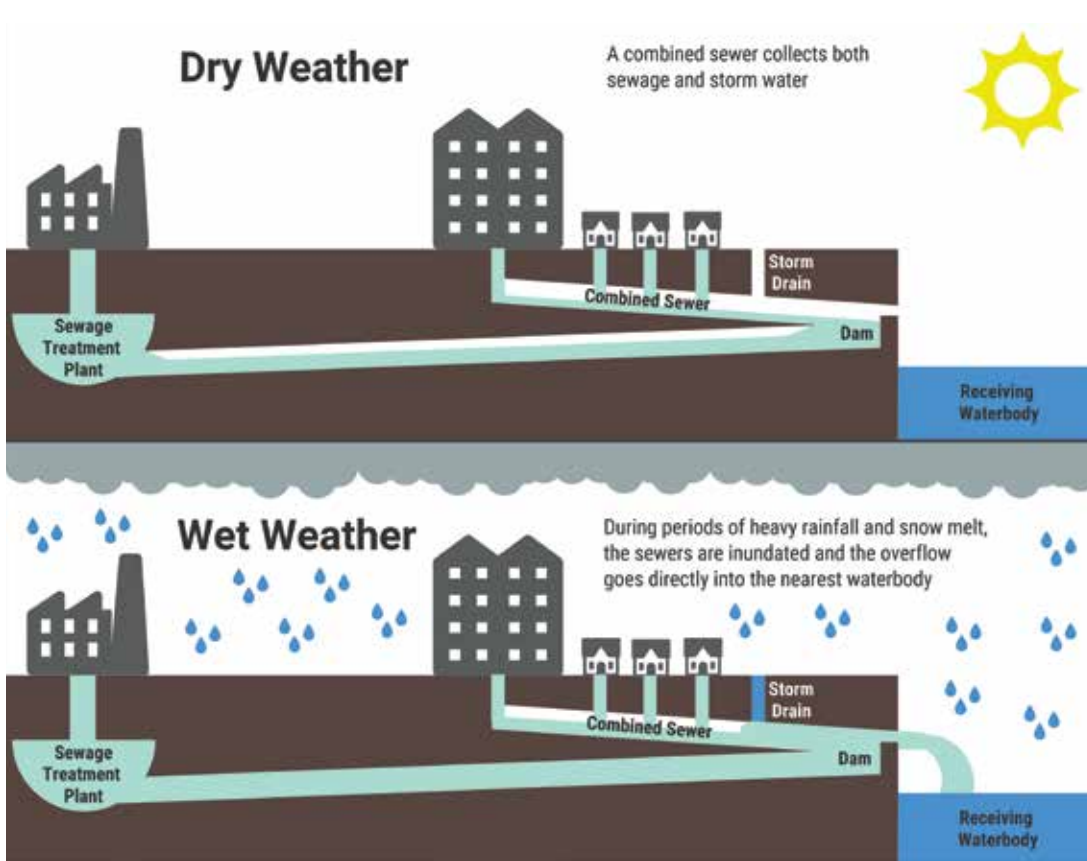


Figure 2. Diagram of a combined sewer overflow and how it can discharge diluted or raw sewage into Ontario's waters.

Source: Created by the ECO.

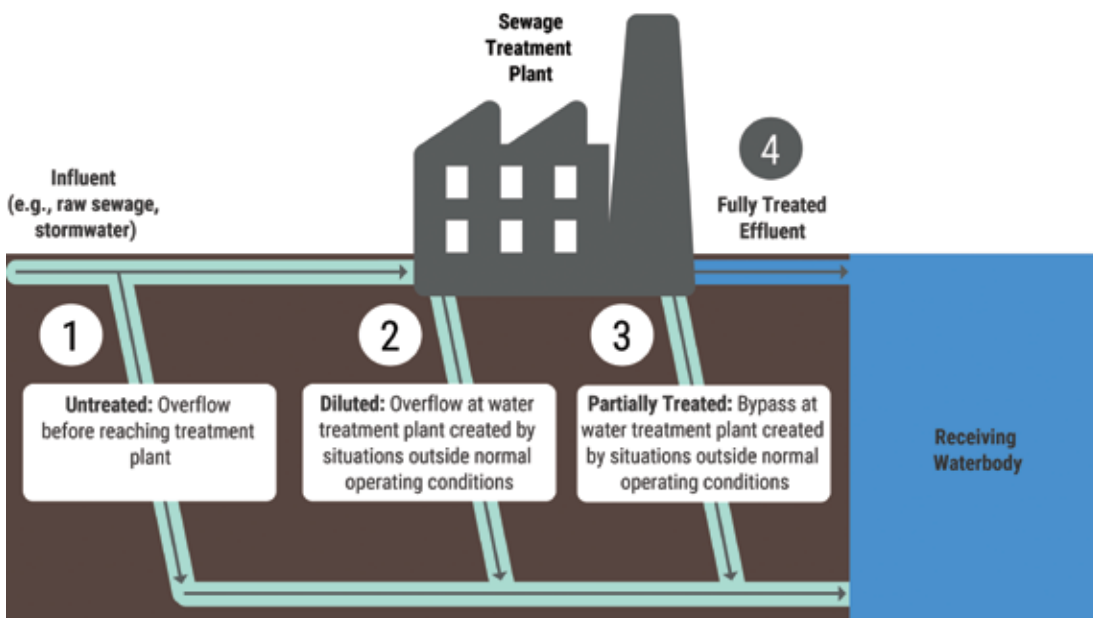


Figure 3. Graphic showing the locations of overflows and bypasses in a typical sewage treatment system.

Source: Created by the ECO (adapted from the Ministry of the Environment and Climate Change).

Many combined sewers date from the 1940s or earlier. Since 1985, Ontario has prohibited any municipality from installing new combined sewers; however, there are still 57 combined sewer systems in 44 municipalities (see Figure 4).⁶ These municipalities are listed in Table 2.

There are still 57 combined sewer systems in 44 municipalities.

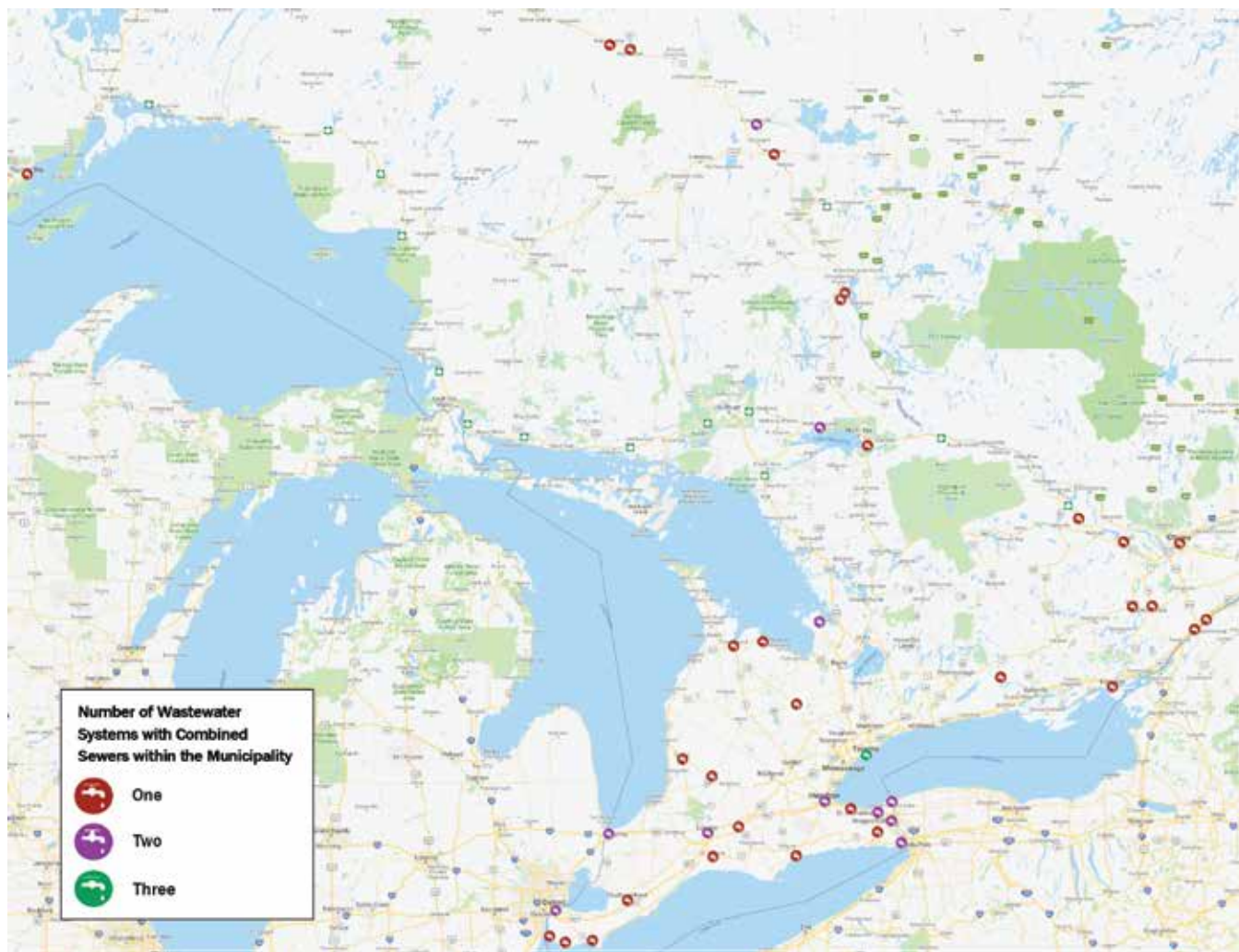


Figure 4. Map of combined sewers across Ontario.

Source: sewer data provided by the MECP, map data provided by Google maps, graphic compiled by the ECO.

Table 2. List of the 44 municipalities with 57 combined sewer systems.

Municipality	System Name
Amherstburg	Amherstburg
Arnprior	Arnprior
Black River-Matheson	Matheson (Black River)
Callander	North Himsworth Lagoon
Central Huron	Clinton
Chatham-Kent	Chatham
Cobalt	Cobalt Constructed Wetlands
Cornwall	Cornwall
Drummond-North Elmsley	Perth Lagoon
Edwardsburgh / Cardinal	Cardinal
Essex	Harrow Lagoon
Fort Erie	Fort Erie – Crystal Beach
	Anger Ave.
Grimsby	Grimsby - Baker Road
Hamilton	Dundas
	Hamilton-Woodward Ave.
Ingersoll	Ingersoll
Iroquois Falls	Iroquois Falls
	Porquis Junction Lagoon
Kapuskasing	Kapuskasing
Kenora	Kenora
Kingston	Kingston (Ravensview)
Leamington	Leamington
London	Vauxhall
	Greenway
Meaford	Meaford
Moonbeam	Moonbeam Lagoon
Niagara Falls	Niagara Falls – Stamford
	Stevensville – Douglastown Lagoon

Municipality	System Name
Niagara-On-The-Lake	Niagara-On-The-Lake
	Newark
Norfolk	Norfolk – Port Dover
Ottawa	Robert Pickard Environmental Centre
Owen Sound	Owen Sound
Penetanguishene	Penetanguishene Main Plant #1
	Penetanguishene (Fox)
Prescott	Prescott
Sarnia	Bright's Grove Lagoon
	Sarnia
Shelburne	Shelburne
Smiths Falls	Smiths Falls
St. Catharines	St. Catharines – Port Dalhousie
	Port Weller
St. Thomas	St. Thomas
Temiskaming Shores	Haileybury
Thunder Bay	Atlantic Avenue
Toronto	North Toronto (East York)
	Humber (Etobicoke)
	Main (Toronto – Ashbridges Bay)
Trent Hills	Campbellford
Welland	Welland
West Nipissing	Verner Lagoon
	Field
West Perth	Mitchell (West Perth)
Whitewater Region	Cobden
Windsor	Little River
	Lou Romano Water Reclamation Plant

Within each of these municipalities, combined sewers are usually found only in older areas. In Toronto, for example, about 23% of the city still relies on combined sewers.⁷ Similarly, in Kingston, about 25% of the city is still served by combined sewers (see Figure 5).

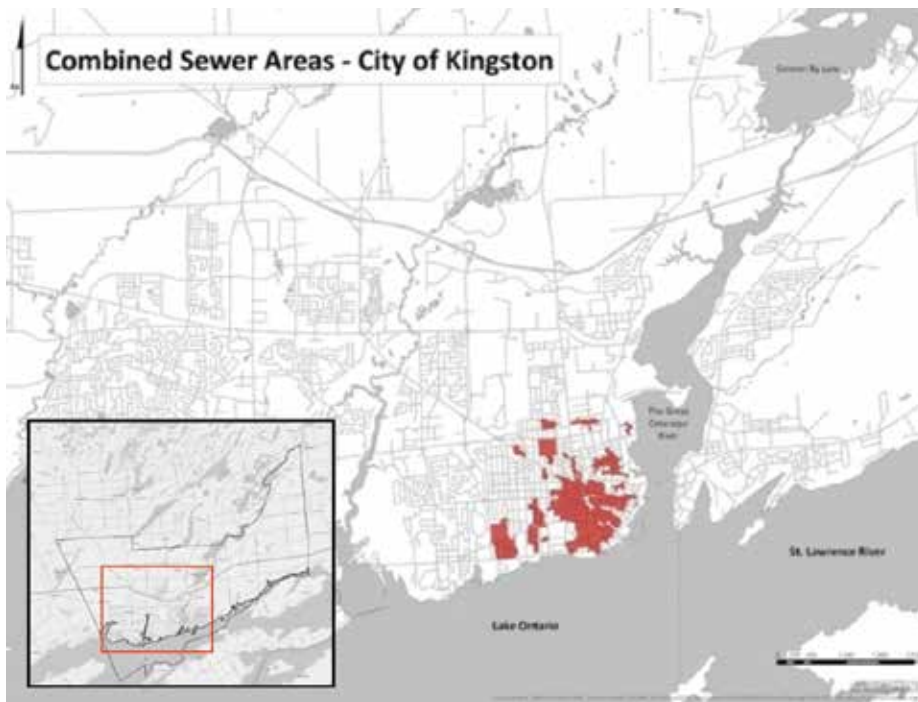


Figure 5. Map of the areas of Kingston serviced by combined sewers.

Source: Utilities Kingston.

Despite decades of work to reduce the environmental hazards of combined sewers, in 2017-2018 Ontario had 766 combined sewage overflows. An additional 561 overflows and bypasses occurred due to situations outside normal operating conditions at sewage treatment plants including emergency situations and/or unscheduled shutdowns of treatment units causing other units to operate above design capacity.⁸ The risk of a combined sewage overflow is compounded by more intense precipitation due to climate change, as well as by population growth, which increases the volume of sanitary sewage. Land use intensification, like the conversion of natural areas to hard surfaces like roofs and asphalt, also increase the speed and volume of stormwater runoff, which in turn can exacerbate sewage overflows where combined sewers exist.



Many components of a sewage treatment plant can be overwhelmed by rain or snow-melt leading to overflows and/or bypasses. Pictured is a settling pond, a key part of primary sewage treatment.

Photo credit: Brandonrush, (CC BY-SA 3.0).

The public does not usually know when or where combined sewage overflows occur, at least until the Medical Officer of Health closes a local beach because of its contamination. In the meantime, people or pets could have been exposed to the contamination. As a result of public use of the Environmental Bill of Rights, this is starting to change.

Update on successful use of the EBR to get public notification of sewage bypasses in some cities



Figure 6. The first sewage bypass notice posted by the City of Toronto on Twitter in June 2017.

In July 2014, the ECO received an EBR application from members of the public requesting a review of the need to require the City of Toronto to notify the public when sewage bypasses occur, as these bypasses create a public health risk. The Ontario Water Resources Act requires municipalities to notify the MECP of sewage bypasses, but there is no requirement for public notification.

The MECP undertook the review and, in July 2015, ultimately agreed with the applicants that the public should be informed when a sewage bypass occurs. The MECP committed to consult with Toronto Public Health, Toronto Water (the City's division responsible for stormwater management),

the Ministry of Health and Long-Term Care, Lake Ontario Waterkeeper and others to develop messaging about the health risks of poor water quality. The MECP also reported that it was in discussions with Toronto Water about how the City could report bypass events in real time.

The MECP subsequently amended the water treatment plants' environmental compliance approvals in June 2016, requiring the city to report more frequently and requiring a procedure to notify the public and downstream water users that may be adversely impacted by a bypass or overflow.⁹

Despite the MECP's decision, it took the City of Toronto considerable time to implement a public notification process for sewage bypasses. Finally, in June 2017, the City of Toronto began alerting the public of sewage bypasses via Twitter (Figure 6).

The MECP has since amended 12 water treatment plant environmental compliance approvals to include a similar notification procedure and will amend more as proponent-led amendments are received.¹⁰ This large legacy of problematic sewer systems is so pervasive that a private members bill was introduced in 2017 requiring municipalities or other operators of a sewage facility to publicly report bypasses and overflows.

These municipalities report bypass and overflow information including the number of events and volume of raw and diluted sewage that enters nearby waters. For example, Utilities Kingston provides both real-time overflow and bypass information in addition to annual summaries. However, these reports do not explain why such contamination is continuing to occur nor what is being done to stop it.

2.2.3 Combined sewer overflows can be stopped

Municipalities have many options to reduce combined sewer overflows, to reduce the volume of sewage discharged, and to minimize its toxicity and adverse effects. These include:

- Increasing the capacity of sewage treatment systems to safely handle larger flows by:
 - Using storage tanks to hold mixed sewage until the sewage treatment plant can treat it
 - Optimizing treatment plant operations to better manage increased mixed sewage flow.
- Keeping stormwater and groundwater from mixing with sanitary sewage by:
 - Replacing combined sewers with separate pipes for stormwater and sanitary waste
 - Improving leak detection and repair to reduce groundwater infiltration of combined sewers
- Reducing the amount of stormwater that flows into combined sewers with:
 - Downspout and weeping tile disconnection programs
 - Green infrastructure to reduce surface runoff towards streams and sewers
 - Stormwater area charging, to give property owners a financial incentive to keep stormwater out of combined sewers (as described in the ECO's 2016 report *Urban Stormwater Fees: How to Pay for What We Need*), and
- Reducing sanitary flows in combined sewers with:
 - Water conservation programs (as described in the ECO's 2017 *Energy Conservation Progress Report, Every Drop Counts*).

Green infrastructure

Green infrastructure or low impact development is an important, but underused option. It replaces impervious surfaces (like concrete and asphalt) with permeable materials that can absorb water, such as rainwater gardens, vegetated highway medians and green roofs. Green infrastructure filters and stores stormwater, cleaning it, slowing it and reducing the amount of water entering the sewers. As well as reducing combined sewer overflows, green infrastructure helps to reduce flooding and adds green space, which can improve both physical and mental health.¹¹

Toronto's Green Building Standard is better than that of most Ontario municipalities, but pales in comparison with other jurisdictions and with the increasing intensity of rain. For example, Toronto's green roof bylaw requires buildings to retain 5 mm of precipitation, while Rotterdam's requires buildings to retain 60 mm. In August 2018, some areas of Toronto received 130 mm of precipitation in a single storm, almost all of which flooded swiftly into the sewers.



Permeable areas like this green median divert water from a municipality's combined or stormwater system by allowing more water to absorb into the ground.

Photo credit: Philadelphia Water Department, (CC BY 2.0).

2.2.4 Inadequate regulation of combined sewer overflows

It is the MECP's job to ensure that municipalities place sufficient priority on stopping the flow of sewage into Ontario's lakes and rivers. The MECP is well aware of the harm of combined sewer overflows, but has not taken effective measures to bring them to an end. Section 30 of the Ontario Water Resources Act clearly prohibits combined sewer overflows, because they impair water quality:

Section 30: Discharge of polluting material prohibited – Every person that discharges or causes or permits the discharge of any material of any kind into or in any waters or on any shore or bank thereof or into or in any place that may impair the quality of the water of any waters is guilty of an offence.

So why does the MECP almost never prosecute municipalities for these overflows? Municipalities with combined sewers are entitled to be excused for breaching this law, but only if they have used due diligence, i.e., have taken *all* reasonable steps to avoid each combined sewer overflow. Although considerable efforts have been made, it seems unlikely that each of the 44 municipalities have taken all reasonable steps to avoid each and every one of the 766 combined sewer overflows that occurred last year.

Municipalities have legitimate financial and/or technical constraints. But how can a municipality claim to be exercising due diligence to prevent overflows unless it is using all of the options listed in section 2.2.3 to the best of its ability? Few, if any, of the 44 municipalities with combined sewers can justly make this claim. For example, few have adopted stormwater fees and none use green infrastructure to its full effect, even in the areas of their municipalities served by combined sewers. In other words, the MECP tolerates combined sewage overflows from municipalities without requiring them to exercise due diligence to comply with the Ontario Water Resources Act (see box for example).

The MECP tolerates combined sewage overflows from municipalities without requiring them to exercise due diligence to comply with the Ontario Water Resources Act.

Every one of the 57 sewage systems with combined sewers requires, and must comply with, an environmental compliance approval issued by the MECP under the Ontario Water Resources Act.¹² These legally binding approvals could, but do not, require the 44 municipal owners to do much more to end combined sewer overflows that occur during high rates of flow or in emergencies. For most systems, the approvals merely require municipalities to sample and report during combined sewer overflows.

Instead, the MECP cites a non-legally binding guidance document known as Procedure F-5-5 – Determination of treatment requirements for municipal and private combined and partially separated sewer systems (the “Procedure”) – which the MECP does not even rigorously follow. The MECP Procedure, published in 1997, has three modest goals, none of which have been achieved:

- to eliminate the occurrence of combined sewer overflows in dry weather
- to minimize the impacts of combined sewer overflows on human health and aquatic life, and
- to achieve compliance with recreational water quality objectives at beaches impacted by combined sewer overflows for at least 95% of the four months, June 1 - September 30, in an average year.

To achieve these goals, the Procedure states that “... each municipality or operating authority of a combined sewer system will be expected to...develop a Pollution Prevention and Control Plan....” The Plan is to describe

the nature, cause and extent of pollution problems, examine alternatives, propose remedial measures, and set out an implementation program including cost estimates and schedule. The MECP is supposed to “ensure that the proponent is in compliance with the Procedure prior to the issuance of [an environmental compliance approval].”

Instead, the MECP does not ensure that the 57 sewage treatment systems with combined sewers use a Pollution Prevention and Control Plan to reduce their overflows. According to the MECP, only 23 of the 57 have reported even having a Plan. None of them are obliged to post the Plan publicly, so the ECO could not evaluate when the Plans can be expected to finally stop sewage overflows.¹³ The MECP does little to ensure that these Plans are implemented, by any particular date or at all. Twenty years after the Procedure was adopted, the MECP should be embarrassed by its inaction.

The ECO recommends that the MECP insert, into the environmental compliance approval of every municipality that has a combined sewer system, a legal obligation to adopt a public Pollution Prevention Control Plan to virtually eliminate combined sewer overflows within a reasonable time, and the MECP should enforce these Plans.



Some algal blooms can be toxic to fish, animals and people such as the blue-green algal bloom off the southeast shore of Pelee Island, Ontario in 2011.

Photo credit: Tom Archer. Used with permission.

EBR investigation illustrates lack of enforcement

A recent EBR application for investigation illustrates the lack of enforcement to stop combined sewage overflows. The applicants alleged that the City of Timmins is allowing discharges of raw sewage into Porcupine Lake, and that the city has failed to meet deadlines to upgrade its sewage system, as required by an MECP Provincial Officer's Order, after years of delay.

The MECP investigation confirmed that the applicants are correct. The city is breaking the law. Its deteriorating sewage system causes sewage to bypass treatment and discharge directly into the Porcupine Lake. The City of Timmins does not have a stormwater fee system to reduce stormwater flow into its combined sewers. Nor has the city met the deadlines in the Order to upgrade its sewage system. However, the ministry took no enforcement action, and accepted the city's excuses for its non-compliance. The city argued that the required sewage system upgrades had been delayed again by ground settling, which caused a major sewer pipe to break shortly after it was installed. (For more details about this application, see Volume 1, Chapter 2 of this report.)

Resources for municipal sewage infrastructure

Many municipalities are working hard to reduce combined sewer overflows, to reduce the volume of sewage discharged, and to minimize its adverse effects. For example, the City of Hamilton has cut its volume of combined sewer overflows by half, after building seven combined sewer overflow tanks that can hold roughly two billion litres of mixed sewage until the sewage plant has capacity to treat it. Utilities Kingston has installed nine combined sewer overflow tanks, is replacing 3-4% of its combined sewer pipes each year, and has increased pipe and pumping capacity at its treatment plants.

However, a purely engineered approach, focussed on building sewage infrastructure, is expensive. For example, the City of Niagara Falls estimates the cost to replace all of its combined sewers with separated sewers is around \$100 million. In total, municipalities have an estimated shortfall of more than \$8 billion for municipal water, stormwater and sewage management infrastructure.¹⁴ Municipalities typically look to senior levels of government to fund such large projects, but there is never enough funding to meet more than a small fraction of the demand.¹⁵ Provincial unwillingness to fund new infrastructure is often blamed for municipal combined sewer overflows, and may partly explain the province's lack of enforcement when overflows occur.

The provincial government has been working with municipalities to identify the sewage infrastructure in most need of upgrade. The Infrastructure for Jobs and Prosperity Act, 2015 requires mandatory asset management plans for all municipalities, which is a key first step to identifying priority infrastructure for improvement, such as combined sewers.¹⁶ The province has been providing millions of dollars in training, support and financial assistance to small, rural and northern municipalities to complete their asset management plans through the Ontario Community Infrastructure Fund.

The province should ensure that municipalities look much harder at comparatively inexpensive upstream options, such as green infrastructure, water conservation, and stormwater fees.

Still, in a time of government financial restraint, municipalities cannot count on receiving large provincial cheques for all their preferred “gray infrastructure” solutions, such as storage tanks, separating pipes and moving outfalls. Instead, the province should ensure that municipalities look first, and much harder, at comparatively inexpensive upstream options, such as green infrastructure (see box in section 2.2.3), and water conservation. And it is no longer reasonable to expect that stormwater management should take place only on public land at public expense. Every area served by combined sewers should be required by law to implement stormwater charges to provide a strong direct financial incentive to property owners to keep stormwater out of sewers whenever possible (see our 2016 report, *Urban Stormwater Fees: How to Pay for What We Need*).

The province should also ensure that municipalities collect from their residents and businesses the true cost of providing them with sewage systems, and use the money for this purpose. The total replacement value of stormwater and sewage infrastructure is many billions. It is far less expensive to keep this valuable infrastructure in good repair than to let it run down and then have to rebuild it, but municipalities often skimp on the maintenance and upgrade of invisible infrastructure, especially if they do not have dedicated resources at hand.

The Walkerton Inquiry strongly recommended mandatory full-cost recovery for water infrastructure, but the province has implemented it only partially and only for drinking water systems. A law passed in 2002 would have required municipalities to implement

full-cost pricing for all water infrastructure, including sewers, but the necessary regulations were never adopted and the law was repealed in 2012.

Full-cost accounting can admittedly be challenging. For example, checking the physical condition of stormwater and sewage infrastructure can be expensive, so assumptions are often made based on each asset's age alone. Such assumptions may not give a clear picture of the true condition of the infrastructure, potentially leading to incorrect priority-setting and missed opportunities for maintenance.¹⁷ Further, there is no single definition of "full-cost." Different jurisdictions weigh different factors differently such as environmental, operating, financing, renewal, replacement, and improvement costs.¹⁸ There is a role for both the province and municipalities to help address the funding shortfall through a full-cost recovery model. **The ECO recommends that the Ministry of Infrastructure and the MECP work with municipalities to achieve full-cost recovery for stormwater and sewage systems.**

2.3 Agricultural runoff: excess phosphorus contributing to algal blooms

A second significant source of water pollution is agricultural runoff that carries excess nutrients, primarily phosphorus. Phosphorus is a key nutrient leading to algae growth in Ontario's waters. Once phosphorus enters a waterbody, it can stay there and contribute to algal blooms for decades.

Agriculture is a major – but not the only – source of phosphorus. There are several other sources that leak phosphorus into Ontario's lakes and rivers. In section 2.3.2 below, we discuss discharges from municipal sewage treatment plants, notably the Duffin Creek plant in Ajax. Elsewhere in this volume, we discuss ways to control the other major sources of phosphorus. In particular, in section 2.2 above, we discuss measures to reduce combined sewage overflows (containing a mix of phosphorus-laden untreated sewage and stormwater), as well as measures to better control

direct runoff of urban stormwater through increased use of green infrastructure and stormwater charges. In Chapter 1, we discuss the need to address leaking septic systems, another considerable source of phosphorus in some regions (see section 1.5.2 of Chapter 1).

But in many areas of the province, the major Ontario source of phosphorus is agricultural runoff, past and present. Most of this section therefore focuses on agricultural runoff.

2.3.1 Impacts of phosphorus: algal blooms

Phosphorus feeds the growth of algal blooms, which can clog drinking water intakes and impair the quality of our drinking water. Algal blooms can spoil our shorelines and cause beach closures, make boating difficult and decrease property values. Some types of algae create "nuisance" blooms, while others can be toxic and cause adverse health effects on people, fish, and animals. Treating water that contains excessive algae is expensive, and the chemicals that are used can form by-products that have been associated with reproductive and developmental health problems in humans. Excess algae can also disrupt energy generation. For example, four reactors at the Pickering nuclear power plant were shut down in July 2018 after significant amounts of algae, stirred up by a storm, clogged the intakes.

Excess algae can alter ecosystems in ways that harm fish and, in turn, damage recreational and commercial fishing. For example, all types of algal blooms can deprive aquatic organisms of available dissolved oxygen in the water, resulting in higher death rates for local fish, invertebrate and plant populations. These low oxygen conditions, called hypoxia, can last as little as minutes or can cause long-term adverse impacts on oxygen levels in the water. Excess algae also costs Ontario a lot of money both in clean up and lost revenue. In 2015, Environment and Climate Change Canada estimated that algal blooms in the Canadian Lake Erie basin could cost the economy up to \$272 million annually.

Algal blooms and drinking water

Algal blooms can not only harm aquatic ecosystems and recreational activities, they can also have serious impacts on drinking water sources. Some forms of blue-green algae may release toxins, including microcystin-LR, which is a dangerous hepatotoxin. Toxic algal blooms near water intake pipes can force water treatment plants to make potentially costly operational changes and upgrades to safeguard drinking water (which have, so far, successfully ensured no detections of unsafe microcystin-LR in treated drinking water in the province), on top of other actions to address the sources of the problem.

For example, Pelee Island in Lake Erie has been faced with increasingly frequent and severe blue-green algal blooms. A particularly harmful algal bloom in 2014 resulted in numerous beach closures, made it unsafe to drink water from the lake or shoreline wells, and temporarily closed Pelee Island's water treatment plant. The municipality has had to upgrade the plant and adopt more expensive operational procedures, in part to better remove algae and neutralize their toxins in the drinking water. The majority of residents on Pelee Island are on private wells and must take their own precautions to protect their drinking water.



Algal bloom surrounding Pelee Island in 2014.

Photo credit: NASA Earth Observatory/Landsat.

Microcystin-LR is also an issue for other Lake Erie municipal drinking water intakes, such as the Harrow-Colchester, Union, and Wheatley water treatment plants, as well as a potential issue that must be addressed on Lake St. Clair.

The City of Greater Sudbury faces similar challenges with phosphorus levels and algal blooms at its surface water intake on Ramsey Lake. The municipality has to monitor Ramsey Lake weekly from June to October to detect algae blooms. The water treatment plant then uses specialized operating procedures to treat it for the microcystin-LR so that it is safe for drinking. In the summer of 2018, Public Health Sudbury and Districts warned about algal blooms in several of the area's lakes, advising people not to drink the water or swim in it.



Photo Credit: Courtesy of the Sudbury Star. Used with permission.

Algae problems in the Great Lakes and Ontario's inland waters are worsening.¹⁹ An algal bloom in 2014 contaminated drinking water in Toledo, Ohio and, in 2015, Lake Erie experienced what scientists described as the most severe toxic algal bloom of the century. In August of 2018, Ramsey Lake in Sudbury, Ontario experienced the largest algal bloom in a decade. Reports of cyanobacteria blooms, which have the potential to produce toxins that can impact human health, are increasing. Blooms in Ontario are also occurring and persisting later in the year due, in part, to climate change creating warmer conditions for algae growth.

Algae problems in the Great Lakes and Ontario's inland waters are worsening.

Given these trends, it is essential that Ontario address the main sources of phosphorus that are creating these blooms.

2.3.2 Where does phosphorus pollution come from?

Municipal wastewater (i.e., sewage) treatment plants used to be a major source of phosphorus pollution, and were consequently the focal point of most provincial phosphorus regulation. As a result, most Ontario wastewater treatment plants now employ relatively extensive – secondary or tertiary (see box) – treatment to remove phosphorus from their effluent, and have become a less significant source of nutrient pollution. In the Lake Erie basin, all of the municipal wastewater treatment plants provide at least secondary treatment and some use tertiary treatment to enhance phosphorus removal.

While municipal wastewater treatment plants have become a much smaller contributor of phosphorus in Ontario, a few are still an important source of phosphorus (see box below on the Duffin Creek Water Pollution Control Plant).

The different levels of wastewater treatment

Different levels of treatment are used in combination by treatment plants to meet the performance criteria requirements outlined in their environmental compliance approvals.

Treatment type	Description	Percentage of Ontario population serviced by treatment type ²⁰
Primary	Removes contaminants only through settling, usually without additional chemical treatment	2.2%
Secondary	Removes dissolved organic compounds by consuming them with microorganisms. The MECP calls for secondary treatment at a minimum.	89.4%
Tertiary	Removes non-dissolved materials that are too small to be removed by primary and secondary treatment as well as soluble components, by addition of chemicals	8.4%
Quaternary	Employed where enhanced source water protection is required or for water reuse applications and includes reverse osmosis, membrane filtration and activated carbon technologies	0%

Algal blooms in Ajax: the Duffin Creek water pollution control plant

The Duffin Creek water pollution control plant, operated jointly by the Regional Municipalities of Durham and York, is located in Ajax, east of Toronto. Just downstream is a large amount of green algae fouling the Ajax and Pickering nearshore waters, which the Duffin Creek plant outfall is likely contributing to with its phosphorus discharge.

In 2006, Durham and York Regions sought to expand the Duffin Creek plant to accommodate large increases in wastewater from their growing populations. To the dismay of many Ajax residents, the regions propose to just “optimize” their existing secondary treatment processes, not to add tertiary treatment.

The proposed expansion must first undergo the Class Environmental Assessment for Municipal Infrastructure Projects (Class EA). The Minister received 90 formal requests from the public to “bump-up” the class EA to an individual environmental assessment, on the grounds that the class EA process is inadequate to address their significant environmental concerns. The Minister has not yet decided whether to grant these bump-up requests. To help decide, the minister required the regions to submit a proposed phosphorus reduction action plan.

The regions submitted the phosphorus reduction action plan in January 2018. They again proposed optimized secondary treatment rather than tertiary treatment. The regions argue that they should not have to pay the high costs of tertiary treatment because optimization of their existing secondary treatment could reduce monthly average phosphorus concentrations to about half of the maximum allowed in the plant’s current environmental compliance approval and that the levels that would be achieved through tertiary treatment are more stringent than current and proposed regulations require.

The Town of Ajax strongly disagrees. The town notes that, even with “optimized” secondary treatment, phosphorus discharged from the plant is forecast to increase over time due to population growth and thus more sewage. The town argues that, given the serious algae problem in the area, a significant decrease – not merely a slower increase – of phosphorus discharge is essential, at least during the summer when algae growth occurs. Further, the town argues that the two regions are overstating the cost of tertiary treatment, and offer a different tertiary treatment option that is a quarter of the cost.

Years later, the algae problem remains unresolved. All parties are still waiting for the Minister to decide the bump-up requests and, ultimately, how much phosphorus the Duffin Creek water pollution control plant will be allowed to discharge.

Other than a few small pockets like Ajax, “non-point sources” such as agricultural, rural and urban stormwater runoff are now typically the largest contributor to phosphorus loads, but government policy has not caught up. For example, the Canada-Ontario Lake Erie Action plan contains goals for phosphorus reductions from municipal wastewater treatment plants (which contribute less than 15% of the phosphorus in Lake Erie) but not for the larger non-point sources.²¹

The precise amount of phosphorus from each non-point source is not well-established and differs from watershed to watershed.

In some areas, urban stormwater is the major contributor of phosphorus. Stormwater carries, among other contaminants, phosphorus from wildlife and domestic animal excrement, as well as from fertilizer used on lawns, gardens, and golf courses. In some cases, efforts to reduce combined sewage overflows by separating sewers can actually result in more stormwater flowing untreated into water bodies. As discussed in section 2.2 above, the province should require municipalities to reduce and better manage poorly controlled urban stormwater, such as through increased use of green infrastructure as well as the use of stormwater charges to provide a strong direct financial incentive to property owners to reduce stormwater runoff (see also the ECO’s 2016 report *Urban Stormwater Fees: How to Pay for What We Need*). These measures are needed in all urban areas that experience algae.

In many areas of the province with the worst algae problems, runoff from agricultural lands is the main source of phosphorus.

However, in many areas of the province with the worst algae problems, runoff from agricultural lands is the main source of phosphorus. For example, in the most southwestern portion of Ontario, where almost all of the

watersheds have water quality problems from excessive phosphorus,²² the dominant land use is cropland used to grow soy and corn. In the case of Lake Erie, an estimated 85 to 90% of the phosphorus loading is from non-point sources originating from rural and agricultural land from both sides of the border;²³ a large portion of those phosphorus loads come from the American rivers and lakes, accounting for 84% of total phosphorus load to Lake Erie.

2.3.3 Curbing phosphorus runoff from agriculture

Farmers provide essential services by growing our food and contributing to our economy, and many are good environmental stewards. Most farming practices include the addition of phosphorus-containing fertilizer in the form of manure, inorganic chemical fertilizer or “non-agricultural source materials” such as leaf and yard waste, food waste, pulp and paper biosolids, and sewage sludge, to enhance crop growth. Crop residues may also contain phosphorus. However, phosphorus from these fertilizers and residues can run off into waterways, either overland or through subsurface flow in agricultural tile drains.

Farmers can save money and help alleviate Ontario’s algae problem by keeping phosphorus in the soil where it is needed, and not letting it run off.

Farmers can save money and help alleviate Ontario’s algae problem by keeping phosphorus in the soil where it is needed, and not letting it run off. However, some farming practices can lead to increased runoff. For example, some farmers put phosphorus-containing manure and fertilizers on their land in the fall and winter, after the growing season. This may help a farmer short on manure storage or save them time in the spring, but can result in large phosphorus runoff over the winter.

The Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) has two main approaches for reducing nutrient pollution, including phosphorus, from farms. First, it provides cost-sharing for farmers that adopt “best management practices” through voluntary programs, and promotes adoption through outreach.²⁴ Second, it has some mandatory standards for nutrient management from manure and fertilizer on a minority of farms, under the Nutrient Management Act. These two approaches have not yet reduced phosphorus levels in Ontario waters and should be made more effective.

In Chapter 4 of the ECO's 2017 Environmental Protection Report, the ECO reported on other options for the province to reduce nutrient contamination by runoff from agricultural land. A little progress has been made since then. In April 2018, the OMAFRA ministry released *New Horizons: Ontario's Agricultural Soil Health and Conservation Strategy*. This strategy correctly recognizes that healthy soils do a better job retaining phosphorus within the soil, and thus reduce runoff. However, the ministry should do more to ensure that Ontario farms will have healthy soils and support farmers in converting from conventional to soil-focused agriculture.

Best management practices

An Environmental Farm Plan is a voluntary self-assessment of a farm's environmental impacts, with an implementation plan for environmental best management practices, some of which aim to reduce nutrient runoff. Best management practices that can reduce phosphorus runoff include planting cover crops, upgrading manure application equipment, and creating wetlands, among others. About 70% of Ontario's farm businesses (just over 35,000 farms) have Environmental Farm Plans.²⁵ Developing a plan means farmers intend to implement some best management practices and many of these practices would also theoretically help to keep nutrients from phosphorus in the soil and out of Ontario's water. About 850 farms also implement best management practices under the Farmland Health Check-Up initiative, a voluntary program partially focused on helping farmers improve their nutrient management and soil health in specific watersheds. Farmers may also qualify for other cost-share programs

focussed specifically on creating habitat for species at risk or improving soil health, which may have the co-benefit of reducing phosphorus runoff.

The OMAFRA spends hundreds of millions of dollars each year in farm support programs, including crop insurance. A tiny amount of this, \$22 million over five years (2013-2018), has gone to help farmers implement environmental best management practices in their Environmental Farm Plans, the Great Lakes Agricultural Stewardship Initiative, and other similar programs. The OMAFRA has committed to keep funding similar cost-share programs under the Lake Erie Agriculture Demonstration Sustainability (LEADS) program (a subprogram of the Canadian Agricultural Partnership) until 2023.

Best management practices can, in theory, be effective in reducing nutrient runoff. However, the OMAFRA inspects only 20% of projects that utilize best management practices to ensure they are adequately implemented according to program rules. There is also no coordinated database to track best management practices implemented through the various publically funded voluntary programs, or long-term monitoring to check whether these practices are still in use. We need better information on best management practices so we can connect the dots between the actions farmers take on their fields and their impacts on phosphorus loads in Ontario's waters.

There have been positive steps in the right direction. For example, the recently ended federal-provincial Great Lakes Land Stewardship Initiative Priority Subwatersheds Program helped farmers implement best management practices that specifically targeted

We need better information on best management practices so we can connect the dots between the actions farmers take on their fields and their impacts on phosphorus loads in Ontario's waters.

nutrient loss and will be monitored for several years to determine ongoing phosphorus loss from participating farms. Going forward, the ministry states that measuring performance and improving outcomes are important priorities under the Canadian Agricultural Partnership,²⁶ but has not said how “best management practices” will be monitored nor how outcomes will be defined and measured. Similarly, the Canada-Ontario Lake Erie Action Plan states that the province will investigate the adoption of best management practices within the Lake Erie basin, but does not provide any specifics or timelines.

Effective monitoring of phosphorus reduction in farm runoff is a long-term endeavor and the collection of better information on best management practices is the crucial first step.

Effective monitoring of phosphorus reduction in farm runoff is a long-term endeavor and the collection of better information on best management practices is the crucial first step. We need to start now; many years of data are needed to reliably distinguish the effectiveness of best management practices versus other variables such as weather, and to be sure that public money is being well spent. For soil that contains large amounts of phosphorus, it may take up to a decade of best management practices to reduce nutrients leaving the farm in runoff.

To address the growing prevalence of algae in Ontario’s lakes and rivers, **the ECO recommends that the Ontario Ministry of Agriculture, Food and Rural Affairs track best management practices across publically funded programs, and increase monitoring efforts to check whether the best management practices it has funded are in use.** This is the first step to scaling up effective practices that drive down phosphorus pollution from agricultural land in Ontario’s rivers and lakes.

The Nutrient Management Act

The OMAFRA’s second approach to phosphorus runoff is through regulation of storage and land application of nutrients on a small number of farms under the Nutrient Management Act. This law was adopted after the Walkerton water tragedy, to help keep manure and similar contaminants out of water sources. Unfortunately, the Nutrient Management Act lacks the scope, strength and enforcement effort to substantially reduce phosphorus losses from agricultural lands.

Doing a better job identifying and regulating areas at high-risk for nutrient loss

Phosphorus is a high-risk threat to water quality where a concentrated source of phosphorus (i.e., manure, commercial fertilizer or some non-agricultural source material) has high potential for transport to a sensitive location (see Figure 7).²⁷

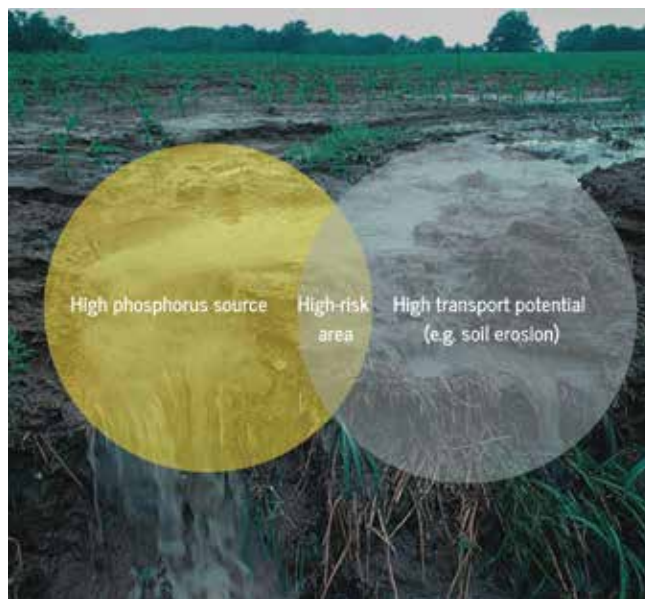


Figure 7. Factors determining risk for nutrient loss on agricultural land.

Source: Adapted from Andrew Sharpley, The Pennsylvania State University (2001). “Managing Phosphorus for Agriculture and the Environment.” Created by the ECO.

Photo Credit: Lynn Betts, USDA (CC0).

To identify areas that are high-risk for phosphorus loss (i.e., high phosphorus and high transport potential), the OMAFRA offers farmers an assessment tool called NMAN. With this tool and others like it, farmers input the rate and method they use to apply nutrients (including phosphorus) on their farm, the soil nutrient levels on their cropland, and the characteristics of the land that may increase the risk of nutrient pollution (such as the slope and proximity to surface water). From this information, NMAN enables the farmer to assess their overall risk of contaminating nearby surface water with nutrients and helps them with “nutrient balancing” (i.e., applying nutrients in a responsible way).

However, only a few Ontario’s farmers are required to use assessments to calculate their risk and balance their nutrients. Assessments like NMAN are only

compulsory for the few farmers who must complete a Nutrient Management Plan or a Non-Agricultural Source Materials (NASM) Plan under the Nutrient Management Act. Only larger livestock farms that generate a large amount of manure and apply it to cropland are required to have Nutrient Management Plans, and only farmers that spread non-farm generated nutrients, such as sewage biosolids, are required to complete a NASM plan. In total, only the 1000 farms that have a NASM Plan, plus the 1,303 farms that have a Nutrient Management Plan (6% of the 22,215 Ontario farms that use manure as fertilizer) are required to complete assessments that test soil for nutrient build-up, document nutrient application practices, and calculate the risk of nutrient loss based to nearby water (see Figure 8).

Nutrient management on Ontario farms

Large Ontario farms that store manure are required to complete a Nutrient Management Strategy detailing how the manure will be stored and managed on the land. A Nutrient Management Plan is required of the farms with strategies that also apply manure to their land as fertilizer. These plans describe how manure and other nutrients, such as commercial fertilizer, will be applied.

Number of Ontario farms required to have a Nutrient Management Plan compared to total Ontario farms applying commercial fertilizer or manure to their land:

Note: 1,000 farms that spread non-agricultural source materials (like sewage biosolids) must complete a NASM plan, which also describes how nutrients will be applied.

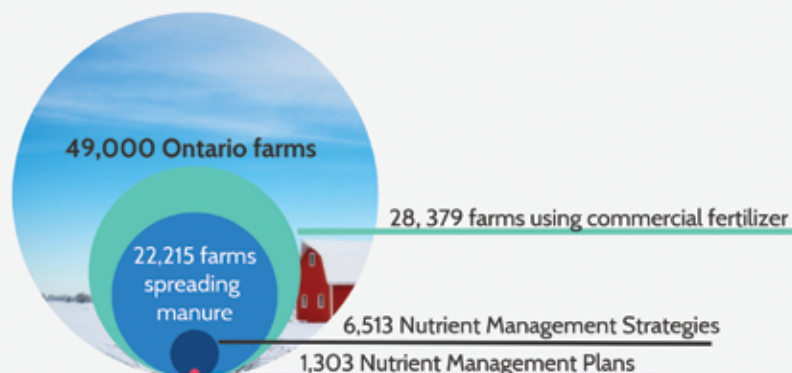


Figure 8. Subset of Ontario farms required by law to have a Nutrient Management Plan.

Sources: Statistics Canada, Census of Agriculture, 2016; OMAFRA, 2018.²⁸ Data compiled by the ECO.

This leaves out:

- most livestock farms that generate manure²⁹
- all farms that spread manure supplied by other farms, and
- all phosphorus pollution risks from the tens of thousands of farms that use only commercial fertilizer, but no manure or off-farm biosolids.³⁰

As a result, many farm phosphorus pollution risks are probably not being assessed, even in the highest risk and most polluted areas. **The ECO recommends that the Ontario Ministry of Agriculture, Food and Rural Affairs require all farms in Ontario's most impaired watersheds to assess their nutrient runoff risks and submit a plan to minimize that risk.**

In addition, the ministry should be proactive in identifying areas where the soil and topography create a high risk of nutrient runoff, so that high risk farms can be targeted with regulatory efforts as well as financial, technical or educational resources to help them reduce phosphorus loss.

Strengthening the Nutrient Management Act requirements related to winter spreading

Most phosphorus loss from farmland occurs in the non-growing season. Frozen, snow-covered, or saturated ground leaves nutrients concentrated at the soil surface, easier to run off. When soil is bare, the lack of vegetation creates an easy pathway for nutrients to flow over bare land in the event of rainfall or snowmelt.

For this reason, jurisdictions like Manitoba and Quebec ban wintertime nutrient spreading. Some jurisdictions go further; Ohio restricts the spreading of manure on agricultural land located in the western basin of the state when the top two inches of soil are saturated or before significant rainfall. Instead, Ontario has minimal restrictions on the winter-spreading of manure, no restrictions related to rain-saturated soils or imminent rainfall, and no restrictions on winter-spreading of commercial fertilizer. Even on the small number of farms regulated under the Nutrient Management Act, the winter spreading of manure is “not recommended” but is permitted on most farms (subject to some

regulatory requirements). Although most farmers are good stewards, the harmful practice of winter manure spreading is still happening in Ontario.³¹

Although most farmers are good stewards, the harmful practice of winter manure spreading is still happening in Ontario.

The OMAFRA has been working in partnership with representatives from the livestock industry to encourage peer education on the potential harmful impacts of spreading manure on frozen or snow-covered ground, but in the ECO's view, this is not enough. The ECO's 2016/2017 Environmental Protection Report (Part 4.3.2) recommended eliminating the practice of nutrient application in winter to reduce phosphorus runoff from agricultural land. Simply put, manure (or any type of fertilizer) should not be put on frozen farm fields, because it is highly likely to runoff and contaminate lakes and rivers instead of fertilizing crops. This easy regulatory change would catch up with neighbouring provinces, and could go a long way to reduce the growing algae problem. **The ECO reiterates our 2017 recommendation that Ontario ban the spreading of manure and fertilizer on frozen ground, snow-covered or saturated ground, with no exceptions.**



22,215 Ontario farmers reported using manure as fertilizer on their farms in 2016.

Photo Credit: Paul Clarke, (CC BY 2.0).

Increasing enforcement and compliance with the Nutrient Management Act

The MECP is responsible for enforcing compliance on the small fraction of farms that are regulated under the Nutrient Management Act. The inspection rate remains low. In 2016/2017, only an estimated 3% of regulated farms with Nutrient Management Plans were inspected, and 62% of those inspected were found to be non-compliant with the Nutrient Management Act.³²

Only an estimated 3% of regulated farms with Nutrient Management Plans were inspected, and 62% of those inspected were found to be non-compliant with the Nutrient Management Act.

In 2017, in response to earlier critiques from the Auditor General about the ministry’s inspection program,³³ the MECP began a risk-based inspection approach to enforcing the Nutrient Management Act. It now selects farms for inspection that have the highest risk of endangering human health through manure

contamination of drinking-water sources, considering the farm’s size, number of animals, manure management strategy and proximity to a drinking-water source. Notably, the MECP selection criteria do not prioritize risks of nutrient pollution that cause environmental harm, such as algae, and omit important environmental risk factors such as nutrient build-up in soil and the phosphorus levels in the receiving lake or river.

The ECO is pleased that the MECP is conducting more targeted inspections for Nutrient Management Act compliance, but is concerned by the incomplete targeting and by the high levels of non-compliance. The ECO urges the ministry to also focus enforcement efforts in areas at high risk for nutrient loss into highly vulnerable water bodies, particularly at times when the risk of nutrient loss is at its highest (e.g., periods of heavy rains, snowmelt, or on frozen ground).

Soil health

Soil erosion increases the quantity of phosphorus running off into surface water. Good soil health practices can reduce erosion, keep water and nutrients in the soil where they are needed, and increase soil resilience to floods and droughts. They promote food security, protect water quality, and help with climate change mitigation and adaptation (see Figure 9).

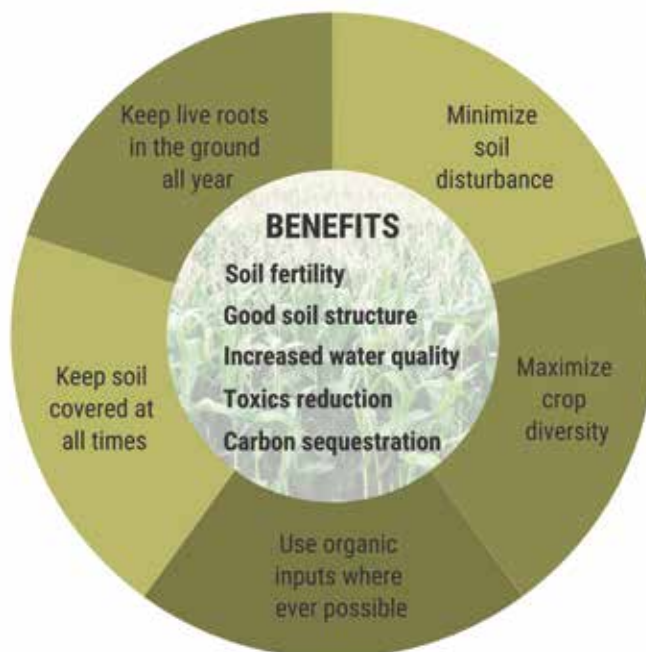


Figure 9. The principles and benefits of the soil health approach.

Source: Created by the ECO.

As described in our 2016 report, Putting Soil Health First, healthy soil practices include:

- crop rotations
- keeping the soil covered at all times with cover crops, regular crops or crop residues
- reduced use of agricultural chemicals
- minimizing ploughing and other forms of soil disturbance, and
- leaving living roots in the ground as long as possible.

In 2015, two members of the public used the Environmental Bill of Rights to ask the government to develop new policies, programs and financial incentives to encourage farmers to improve soil health (see Volume 1, Chapter 2 of this report). In 2018, the Government of Ontario responded with a new soil strategy, *New Horizons: Ontario's Agricultural Soil Health and Conservation Strategy*. The strategy recognizes that increasing soil organic carbon and lowering the risk of erosion are desired outcomes, and includes some useful actions such as mapping, evaluating, and monitoring. The strategy states that Ontario will rely on Agriculture and Agri-Food Canada indicators – such as those measuring soil organic carbon, soil erosion risk, and soil cover – to gauge province-wide success in improving soil health.

However, the strategy does not commit Ontario to do much to actually achieve better soil health. There are no concrete targets, and lacks new financial incentives for farmers to improve soil health. For example, other jurisdictions, such as Iowa, give farmers a discount on their crop insurance rates if they plant cover crops; Ontario does nothing comparable.

In summary, the government has responded to agricultural runoff with weak laws, poor monitoring, minimal enforcement, and too little financial support for improving soil health. It should therefore be little surprise that agricultural nutrient runoff is feeding algae growth in so many of Ontario's lakes and rivers.

The government has responded to agricultural runoff with weak laws, poor monitoring, minimal enforcement, and too little financial support for improving soil health.

The ECO recommends that the Ontario government adopt clear targets, effective monitoring and financial incentives for dramatic reductions in phosphorus runoff from farms.

2.4 Industrial wastewater: toxic chemicals polluting our waters

Many industries in Ontario produce valuable goods and services, but in the process release toxic chemicals and heavy metals that have significant lasting effects on Ontario's waters.

2.4.1 Impacts of toxic chemicals: long-lasting threats to humans and the environment

As many areas in Ontario have experienced, toxic industrial wastes can create long-lasting legacies of contaminated lakes and rivers that are, at best, difficult and expensive to clean up. For example, heavy metals, such as lead and mercury, can persist in the aquatic environment indefinitely, posing a long-term serious threat to humans and the environment. Heavy metals never break down. Instead, they can accumulate in tissues and cause neurological, physiological, and mental dysfunction. These contaminants may lay dormant in lake or river sediment for decades, but can be re-suspended in the water by a storm or other disturbance, where they can again adversely affect people and the ecosystem.

One notorious example is the enduring mercury contamination in Grassy Narrows from mercury dumped by a long-closed pulp and paper mill. After decades of neglect, the Ontario government has committed \$85 million to hopefully clean up this contamination (see Chapter 3.1 of the ECO's 2017 Environmental Protection Report).

Prior to modern environmental laws, the industrial boom in the early 20th century left some parts of Ontario's Great Lakes too toxic for most aquatic life. An unfortunate example is the Randle Reef in Hamilton Harbour on Lake Ontario. The aquatic ecosystem of Randle Reef is severely impaired because of contamination by polycyclic aromatic hydrocarbons and other toxic chemicals in the lake bed sediment from local industries. The remedial planning process for Hamilton Harbour was initiated by the Ministry of the Environment, Conservation and Parks in 1985. Work has been underway since 2015 to entomb the contaminants in concrete, at a cost of \$139 million, in the hope of making nearby water safer for people and aquatic species.

Many other toxic chemicals are discharged into Ontario waters, some in very high volumes, and many with potentially very significant, and in some cases not-yet-known, impacts on humans and the environment.

Many other toxic chemicals are discharged into Ontario waters (see Table 3 for some examples), some in very high volumes, and many with potentially very significant, and in some cases not-yet-known, impacts on humans and the environment. For example, nonylphenol, a toxic chemical widely used as an industrial detergent, is an endocrine disruptor that can interfere with human pregnancies. Many of the full effects of toxics on people and the environment are not even known, especially the long-term impacts of chronic and varying exposure to multiple toxics, sometimes called toxic soup. For some contaminants, like mercury, even small quantities can have very serious health impacts.

Table 3. A few of the more than 50 pollutants legally released into Ontario waters by industry in 2016.

Substance	Releases in 2016 (kg)	Examples of Sources	Chronic effects
Ethylene glycol	76,000	<ul style="list-style-type: none"> Paper production Steel manufacturing 	Neurobehavioral effects, similar to Parkinson's disease
Methanol	51,000	<ul style="list-style-type: none"> Industrial processes 	Headache, dizziness, insomnia, nausea, gastric disturbances, conjunctivitis, visual disturbances
Nonylphenol (and its ethoxylates)	40,000	<ul style="list-style-type: none"> Industrial cleaning and degreasing Paint and adhesive manufacturing Pulp and paper 	Endocrine disruptor with hormone-like effects, associated with breast cancer risk
Arsenic (and its compounds)	3,680	<ul style="list-style-type: none"> Burning of fossil fuels Metal production Waste burning 	Human cancer-causing agent, decreased blood cell production, abnormal heart rhythm, numbness in hands and feet
Lead	2,780	<ul style="list-style-type: none"> Fuel additive Paints 	Delayed intellectual and behavioural development, neurobehavioural and cognitive effects
Mercury	20	<ul style="list-style-type: none"> Metal mining and smelting Coal-fired power generation 	Respiratory failure, development delay, neurological effects including tremors, changes in vision and loss of muscle coordination
Benzene	10	<ul style="list-style-type: none"> Natural gas dehydrators Steel manufacturing 	Carcinogenic, primarily leukemia



An effluent pipe.

Photo credit: Pxhere, (CC0 1.0).

2.4.2 Regulation of industrial toxic discharges

Most of Ontario's most severe toxic contamination that continues to impair surface and groundwater comes from yesterday's industries, dumped decades ago or leaked from old landfills. But toxic water pollution is still occurring. Many of today's businesses still routinely use toxic chemicals, such as dry cleaners, auto mechanics, painting and varnishing operations, and especially industrial manufacturing. While Ontario has some rules to limit toxic chemical discharges into water bodies, those rules relating to industrial manufacturing have not been updated in a quarter century and are out of date.

In Ontario, toxic pollution discharges to water from nine major industrial sectors are supposed to be limited by the municipal-industrial strategy for abatement (MISA) regulations under the Environmental Protection Act:

- Electric power generation
- Iron and steel manufacturing
- Inorganic chemical manufacturing
- Organic chemical manufacturing
- Metal casting
- Industrial minerals

- Metal mining
- Pulp and paper
- Petroleum

Facilities within these sectors are allowed to release into Ontario's lakes and rivers over 50 types of toxic chemicals up to limits set by the MISA regulations for concentration and total loading. The regulations include limits on daily, monthly, and "acute lethality" (meaning the level of contaminants in the effluent must not be lethal to more than a specified percentage of aquatic life like fish and invertebrates). They also set out sampling, monitoring, and reporting requirements.

The MISA regulations were meant to set achievable caps on facilities' toxic water pollution, based on intensive review of each sector. The regulations were developed in the late 1980s and early 1990s, based on the pollution limits that facilities could reasonably achieve at that time using the "best available, economically achievable technology" for each industrial sector, and based on the assumed capacity of the receiving water to assimilate the pollutants (e.g., the bigger and less polluted the water body that a facility discharges into, the more pollution it can dilute). When the regulations were passed between 1992-1994, the Ministry of the Environment committed itself to keep them updated through "periodic re-examinations," with the eventual goal of "virtual elimination of persistent toxic substances." The ministry promised:

...when re-examinations find better technology has been developed, or industry abatement standards have improved, or the receiving body of water is suffering, new and lower limits will be imposed.

Twenty-five years later, this has never happened. Indeed, these outdated regulations still claim to cover facilities that no longer even operate in Ontario.

The outdated MISA regulations might not matter if up-to-date pollution limits were set by the individual environmental compliance approval issued to each facility under the Ontario Water Resources Act. But this

has not happened either. Ontario industrial wastewater approvals are not regularly reviewed and are rarely updated. Other jurisdictions, including the U.S. Environmental Protection Agency, include expiry dates on approvals for industrial facilities that release toxic chemicals to ensure regular review of the approvals; Ontario does not.

Many of the toxic industrial chemicals persist for long periods in the environment. As noted above, when the MISA regulations were developed, the goal of the program was “the virtual elimination of persistent toxic substances.”³⁵ This goal is just as important today as it was then, but the MECP seems to have been content to make no progress towards it in 25 years.

In the last quarter century, we have become more aware of the harmful effects of chemicals, while the ability of water bodies to accept them has been eroded by population growth, loss of natural areas and climate change. Meanwhile, it is reasonable to expect that industry has better technology for detecting, managing and reducing toxic chemicals, just as today’s flat screens, LEDs and smart phones outperform 1993’s tube televisions, incandescent bulbs and landline telephones. It is long past time for the MECP to update the legal limits for toxic industrial discharges into our water, especially persistent toxic substances.

In 2010, two environmental organizations submitted an application under the Environmental Bill of Rights asking the MECP to review the MISA regulations, arguing that they were insufficient and outdated even then. The ministry denied the request, claiming that:

- The ministry’s “modernization” of its approvals process would free up time for ministry staff to update the individual environmental approvals of the MISA facilities, and
- The Toxics Reduction Act, 2009, would reduce industrial toxic discharges. (Under this law, facilities must track each prescribed toxic substance, submit a publicly-available plan to reduce their use and creation to achieve targets of the industry’s choosing,

and submit an annual report to the MECP. There is no requirement for a prescribed facility to implement its toxics reduction plan and the ministry takes no enforcement action on the contents or implementation of the plans.)

The ECO considered the rejection of this application unreasonable at the time. Eight years later, the ECO still has no evidence that toxic industrial discharges to water have been reduced.

As the ECO reported in Chapter 2 of our 2017 Environmental Protection Report, the MECP’s modernization of approvals program is valuable, but it has not yet resulted in updates of the older environmental compliance approvals for MISA-regulated facilities.³⁶ Similarly, the Toxics Reduction Act has not achieved significant reductions of toxic industrial discharges. Despite small year to year decreases reported in 2017, toxic industrial discharges to air, land and water have increased by 2% since 2012. The Toxics Reduction Act has proved to be no substitute for better regulation of wastewater discharges.

It is time to bring the MISA regulations and the associated industrial wastewater approvals up to date.

It is time to bring the MISA regulations and the associated industrial wastewater approvals up to date.

The ECO recommends that the MECP update the limits in the MISA regulations and environmental compliance approvals, to require industries to use the best available technology to minimize toxic substances discharged into Ontario waters, and to require industries to virtually eliminate discharges of persistent toxic substances.

2.5 Road salt: salinizing Ontario's waters

The fourth pollutant we examined is road salt. Ontario uses enormous amounts of salt to maintain the safety of roadways and walkways during the long winter. Far too much of this salt ends up unnecessarily in Ontario's lakes, rivers and groundwater, where it does great and lasting harm. Excess road salt enters Ontario's water bodies through runoff from roads and walkways, losses at salt storage yards, and meltwater from snow disposal sites. Ontario's pollution laws do almost nothing to control this damage.

2.5.1 Impacts of road salt on Ontario's waters

High amounts of salt in Ontario's water are toxic to aquatic plants and animals in many ways. For example:

- Salt impairs animal and plant cells' ability to carry out key ecological processes, and eventually can kill the organisms.
- Salt can change the weight of lake water enough to block the normal mixing process, which is essential to bring oxygen into the deeper, cooler water that fish like lake trout need.³⁷
- Salty water can dissolve the bonds between heavy metals and sediments, making the metals more likely to harm aquatic plants and animals.

High amounts of salt in Ontario's water are toxic to aquatic plants and animals.

Road salt contaminates drinking water too

Salt can also contaminate drinking water sources (see Chapter 1 of this volume for a discussion on drinking water threats), making the water risky for humans to drink. In fact, the application and storing of road salt and salt-saturated snow are three of the 22 prescribed drinking water threats under the Clean Water Act. Many source protection committees are finding it challenging to reduce salt threats to the small parts of Ontario's water supplies that are active sources of municipal drinking water.

For example, in the Quinte Source Protection Area, the source protection committee is having difficulty determining where salt application is a significant drinking water threat, but knows that road salt is a significant threat in at least one municipality and a moderate to low threat in seven more. More than ten years after adoption of the Clean Water Act, most of the municipalities have made no progress in addressing these threats. The Trent Conservation Coalition, who administers the source protection plans for the Otonabee-Peterborough, Crowe Valley, Kawartha-Haliburton, and Lower Trent areas, reports similar challenges, but has made more progress. The region reports that it has addressed 26 road salt threats of the 48 identified.

In Simcoe, sodium (salt) levels in the town's drinking water became so high in 2017 that the Haldimand-Norfolk health officer issued a 'do not consume' warning for people with high blood pressure and sodium-restricted diets.³⁸ Such residents would have to buy bottled water for drinking, or carry it from elsewhere.

Salt can also harm soil, gardens, vegetation and trees, which we will increasingly need for shade as the summers get hotter. Salt damages shoes and other clothing, as well as injures animal paws. It corrodes cars and damages sidewalks, buildings, bridges and other infrastructure, leading to increased maintenance costs and sometimes dangerous disasters. The resulting repair and maintenance costs are substantial. The hidden costs of road salt on infrastructure and the environment range from \$200 to \$470 per ton of road salt applied,³⁹ while salt corrosion costs car owners \$850 per year and can cause vehicle brake failures.⁴⁰

Contamination of Ontario's water by road salt is being experienced across the province. Consider Frenchman's Bay in Pickering, on the north shore of Lake Ontario (see Figure 10). A 2010 study found

Contamination of Ontario's water by road salt is being experienced across the province.

more than double the level of chlorides in its waters compared to the Great Lakes generally. The reason? Salt from plowed snow and runoff from paved areas, including the nearby Highway 401. Some of the salt flows into nearby waterbodies during winter thaws, causing extreme spikes in chloride. The rest accumulates in groundwater, then is slowly released into creeks as salty water throughout the summer. This combined acute and chronic salt contamination changes the number and age structure of the fish and decreases the diversity of aquatic species.



Figure 10. Satellite image of Frenchman's Bay in Pickering, Ontario.

Source: map data provided by Google Earth, graphic compiled by the ECO.

This problem is not unique to Frenchman’s Bay. Rising salt levels have been observed all over the province. The Canadian Water Quality Guideline states that long-term average chloride levels for freshwater should be below 120 mg/litre, and short-term peaks below 640 mg/litre. Instead, chloride levels in Hotchkiss Creek, which runs into Lake Simcoe, have been measured at over 6,000 mg/litre (see Figure 11). Similar levels have

been found in many Toronto area creeks, including Etobicoke Creek and Mimico Creek. The Credit Valley Conservation Authority has found chronic chloride levels in several of its creeks well above 1,000 mg/litre, with acute readings as high as 18,000 mg/litre.⁴¹ This approaches the chloride levels found in seawater (19,400 mg/litre). Ontario’s plants and animals cannot survive so much salt.

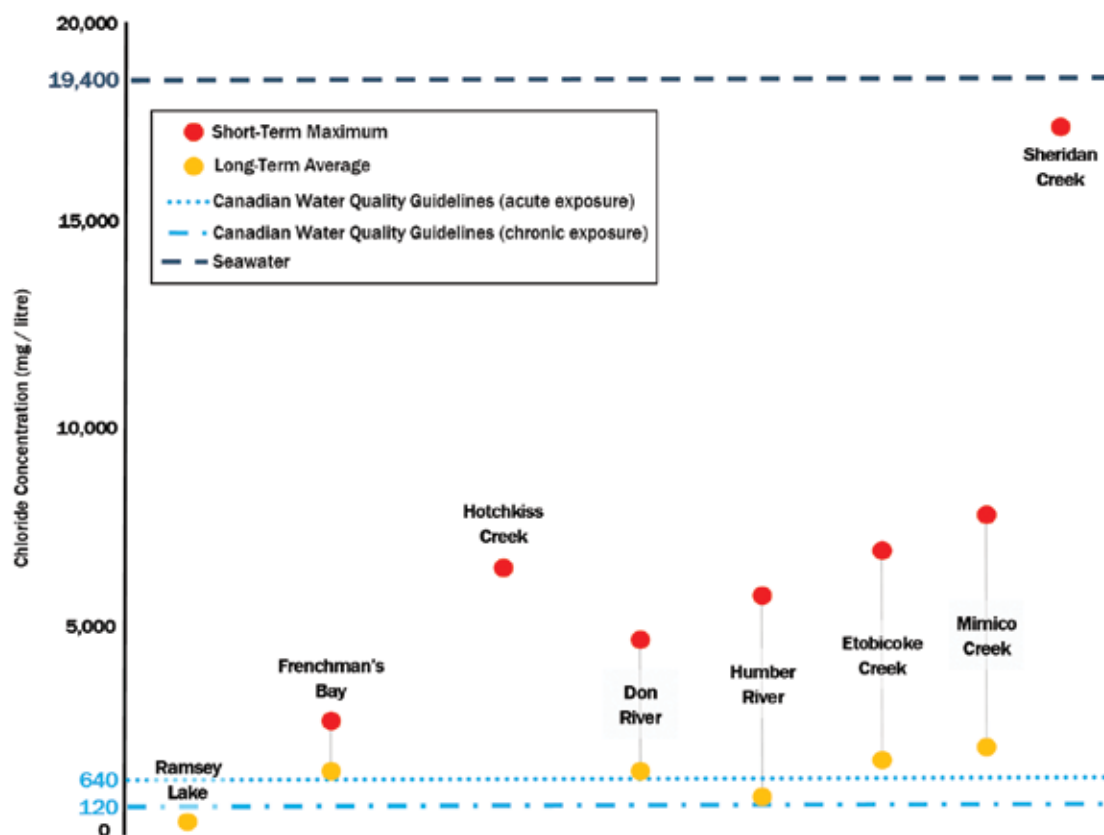


Figure 11. Comparison of chloride concentrations in a selection of Ontario waters relative to Canadian Water Quality Guidelines (graphic for illustrative purposes and not to scale).

Source: Created by the ECO based on data compiled from the Greater Sudbury Watershed Alliance, the Toronto and Region Conservation Authority, the Lake Simcoe and Region Conservation Authority, and the Credit Valley Conservation Authority.

Chloride problems exist further north too. In Ramsey Lake, Sudbury's drinking water supply, increasing salt levels prompted the Greater Sudbury Watershed Alliance to hold a public meeting and produce a discussion paper. The Alliance concludes that the increase in salt in Ramsey Lake is largely due to the additional road salt used by recent expansions to an industrial area and a new recreational facility parking lot, both located in the lake's watershed.

Road salt studies from within Ontario and across North America show that the problem is widespread and getting worse.

Road salt studies from within Ontario and across North America show that the problem is widespread and getting worse. For example, a 2017 study of chloride levels in lakes in north-eastern North America (including nine in Ontario) found that road salt is a rising threat to numerous freshwater lakes, particularly in urbanized areas. A separate, long-term study of Ontario streams showed a significant increase in chloride concentrations at almost all of the sites tested, with the highest concentrations in urbanized areas. However, chloride concentrations of 650 monitored inland lakes in Ontario are currently below the national guidelines.

Climate change may also be playing a role in rising chloride levels. Climate change will bring more extreme weather and chloride concentrations tend to be higher in years with more precipitation and total snow depth.

2.5.2 The (over) application of road salt

Environment and Climate Change Canada estimates that about 5 million tonnes of road salt is spread on roads across Canada each year. In 2009, Environment Canada and Climate Change reported that Ontario uses over 2.2 million tonnes of road salt each year (although the amount varies considerably year-over-year depending on weather conditions). The biggest single users are the Ministry of Transportation and large municipalities, but private applications on parking lots, driveways and walkways spread a huge amount of road salt, often with less precision.

At temperatures below -18 celsius, road salt is virtually ineffective.

Even more salt may now be used in Ontario. In May 2018, changes to the Municipal Act regulations (without consulting the public as required by the Environmental Bill of Rights) made municipalities responsible for snow and ice removal on sidewalks and bike lanes (in addition to their prior responsibilities for roadways). While this may enhance pedestrian and cycling safety, it could also lead to municipalities spreading more salt.

Some of Ontario's road salt is wasted. As temperatures drop further below freezing, road salt becomes less effective at melting ice. At temperatures below -18 celsius it is virtually ineffective.

Water softeners: another source of salt

While road salt makes up most of the salt that reaches lakes and rivers across the province, household water softeners can also be a considerable source of salt entering the environment.

For example, the Grand River watershed is contaminated with high levels of salt. Some streams in the watershed have average chloride levels of 560 mg/litre, almost five times higher than the national guideline of 120 mg/litre.

Much of this is from road salt. But Waterloo Region (in the Grand River watershed) drinks groundwater, and has some of the hardest drinking water in the country. Water is considered “very hard” when it has over 180 mg/litre of calcium carbonate; measurements in Waterloo Region can reach 960 mg/litre. Hard water occurs when groundwater picks up minerals in the ground such as calcium and magnesium. While hard water is safe to drink, it is a nuisance as it builds up on household fixtures and needs more soap to create lather for washing. To remedy this, 72% of households in Waterloo Region use a water softener, which uses salt to remove the minerals from the water.



Hard water can cause a build up on household fixtures like taps.

Photo credit: Hustvedt, (CC BY-SA 3.0).

Waterloo Region estimates that this extensive water softener use puts about 20,000 tonnes of extra salt into the Grand River each year, and adds to the salt threat to the city’s drinking water. Waterloo Region has been researching lower-salt methods to manage hard water, including water softeners that use less salt, and a potential salt-free alternative. The Region also has an active Smart About Salt program (see section 2.5.4 below) and a campaign to educate the public on proper road salt use called Curb The Salt.

2.5.3 40+ years, and still no commitment to finding an alternative

In 1975, the Ontario government formally recognized that road salt causes substantial environmental harm. Ever since, the MECP’s guideline for snow disposal and de-icing operations has recommended keeping chloride application to a minimum. However, the MECP has always exempted road salt⁴² from the Environmental Protection Act and other laws that control environmental contamination.

In 1995, the government reiterated the negative environmental impact of salt, and noted that it could be reduced by supporting research into alternative methods of de-icing. For example, calcium magnesium acetate, magnesium chloride and calcium chloride are alternatives, but they are usually rejected because of their higher product cost and are also not environmentally benign. Calgary increasingly uses beet brine for de-icing because it is less toxic and less corrosive than road salt and bonds better to the road.⁴³ However, Ontario has not made a major commitment to research into alternatives. Instead, it kept exempting

salt from environmental laws, waiting for someone else to make a more environmentally benign substance available at a “reasonable cost and equal effectiveness.”

In 2001, the federal government’s scientific assessment confirmed that road salts are harmful to plants, animals and the aquatic environment, and recommended that road salt be recognized as toxic, i.e., added to the federal List of Toxic Substances under the Canadian Environmental Protection Act, 1999, which would trigger legal obligations to reduce its use. This was not done. Instead, the federal government merely published a Code of Practice for the Environmental Management of Road Salt.

Ontario still calls salt the cheapest option, largely because the province leaves out road salt’s negative impacts on infrastructure and the environment.

In 2018, after more than 40 years, Ontario has still made no significant investment in less harmful alternatives. Ontario still calls salt the cheapest option, largely because the province measures only the cost of the product, leaving out all of road salt’s negative impact on infrastructure, on the environment, on vehicles and on drinking water supplies. Such an unbalanced assessment is foolish, and unwisely keeps Ontario locked in to heavy reliance on road salt.

The ECO recommends that the MECP and the Ministry of Transportation compare the cost-effectiveness of de-icing alternatives in terms of both the cost of the product, and of that alternative’s negative impacts on infrastructure, on the environment and on drinking water supplies.

2.5.4 Safe roads with less salt

While safe roads and walkways are essential, we do not need to so completely sacrifice environmental protection, drinking water sources, damage to vehicles and public infrastructure to the automatic use of road salt. At a minimum, Ontario should minimize unnecessary salt use, and has many ways to do so.

Ontario should minimize unnecessary salt use, and has many ways to do so.



Example of a de-icing truck operating on a highway.

Photo credit: ODOT, (CC BY 2.0).

Progress on provincial highways

The Ministry of Transportation has been setting a generally good example. While it does too little to support research into alternatives to road salt, it has successfully decreased the amount of road salt applied to provincial highways while maintaining a high level of road safety, through technologies such as:

- Direct application of anti-icing liquids prior to winter storms, which prevents snow and ice from bonding with the road surface, reducing the need to add salt later

- Pre-wetting salt with anti-icing liquid so that it sticks better to the road and decreases application rates, instead of running off into ditches and having to be replaced, and
- Electronic spreader controllers, which apply salt consistently across the pavement.

For example, the MTO installed Fixed Automated Spray Technology and an Advanced Road Weather Information System at the Highway 401/416 interchange near Prescott. These two systems work together to apply an anti-icing chemical in advance of icy conditions. Since its installation, salt has been more effectively applied with no winter-related accidents. The MTO also uses best management practices to reduce salt losses during salt transfer and storage, and to reduce water contamination from snow storage and disposal.

The ECO commends the MTO for these efforts and urges the ministry to continue its knowledge-sharing with municipalities.

Municipal salt management plans

Some municipalities have also successfully reduced their salt use.

Collectively, municipalities are the biggest users of road salt in the province. While necessary, they should do so carefully and only as needed. The 2004 federal Code of Practice for the Environmental Management of Road Salt recommends that large road salt users, or those that could impact vulnerable ecosystems, (including municipalities) adopt a salt management plan and keep it up to date. The plans are to specify site-specific implementation of best management practices for winter maintenance, including for snow removal and disposal, technology review, staff training, and identify environmentally sensitive areas. Environment and Climate Change Canada recommends that every municipality with a salt management plan review it annually.

Most Ontario municipalities do now have salt management plans. By 2010, about 90% of larger municipalities had developed a salt management plan, and 57% of them had reviewed their plans at least

once. As a result, some jurisdictions have significantly reduced the amount of salt they use, saving money with the same high level of road safety. For example, the Town of St. Mary's found it could safely and cost-effectively put less salt in its sand-salt blends. Similarly, the County of Wellington and its lower-tier municipalities have kept their roads safe while reducing the percentage of salt in its sand-salt mix from 10% to 5%, leading to a reduction of salt usage and cost savings.

Some Ontario municipalities have no salt management plan, and others have never updated theirs.

However, some Ontario municipalities have no salt management plan, and others have never updated theirs. This means that some may not have yet taken measures known to reduce salt contamination, such as installing domes over salt storage piles. Many others are not using up-to-date technologies and best practices, and are therefore causing more salt contamination than is necessary for public safety.

The ECO recommends that the MECP and the Ministry of Municipal Affairs and Housing require each municipality to adopt a salt management plan, and to review and publicly report on their effectiveness on a regular basis.

Excess salt on parking lots and walkways

The biggest opportunity to reduce salt damage probably occurs on parking lots and walkways, which are often one of the worst sources of road salt runoff. Observations by the Lake Simcoe and Region Conservation Authority in the Lake Simcoe watershed found that salted parking lots' runoff is four times saltier than ocean water, i.e., extremely toxic.

Much snow removal and salt application on parking lots and private walkways involves much more salt than is needed for public safety. One major reason for over-salting is concerns about liability (see below). Other reasons should be comparatively easy to solve.

Some private contractors are encouraged to over-salt because they are paid based on the amount of salt they spread. This practice should be strongly discouraged.

In addition, many contractors and landowners lack knowledge about the harm caused by excess salt, and about how to reduce salt use, while maintaining safety. This knowledge is available. A consortium of provincial, municipal and non-governmental organizations, co-ordinated through Landscape Ontario, have established scientifically defensible salt application rates for parking lots, based on extensive monitoring by researchers at the University of Waterloo. This research shows the potential for at least a 25% reduction in salt use and helps contractors who use the lower rates to prove their due diligence in lawsuits.⁴⁴

Research shows the potential for at least a 25% reduction in salt use.

Because of the serious threat that excess salt use poses to Waterloo Region's drinking water, the Region offers a Smart About Salt training program based on this research. The program certifies salt-smart contractors, and trains contractors and property owners on how to reduce salt use, while maintaining safety. The Smart About Salt administrators report that certified contractors use less salt, in some cases by as much as 50%.

This type of training should be offered, and required, for winter maintenance contractors across Ontario, and especially in areas where salt is adversely affecting surface and groundwater. To start, **the ECO recommends that the Ontario government require all contractors retained to provide winter maintenance on property that is publicly owned or open to the public (e.g., public parking lots) to be certified in the proper use of salt.**

Reduce the fear of liability

For both public and private landowners, a major factor in excess salt use is fear of being sued should a slip-and-fall or car accident occur. Judges in such cases put

substantial weight on whether property owners have spread salt, but rarely give weight to the environmental harm of excess salt.

Salt-smart training and certification of contractors provide an option for reducing such fears. For example, to reduce chloride pollution of its water bodies, the State of New Hampshire passed legislation that gives limited liability relief for landowners whose maintenance staff or contractors have completed a Green SnowPro training program. The Green SnowPro program provides training on up-to-date technologies and snow management practices, with the twin goals of safety and salt reduction.

The ECO recommends that the Ontario government adopt a law that provides liability protection for landowners and contractors who use up-to-date technologies and snow management practices to achieve road safety with the minimum amount of salt.

2.6 Conclusion: the province should do more to fight water pollution

Ontario has a wealth of freshwater that is the envy of much of the world. However, we cannot take this precious resource for granted. If Ontarians want to continue to enjoy a high quality of life that includes clean and abundant freshwater, that water requires constant vigilance. When we choose not to protect our freshwater from pollution, we cannot count on it remaining swimmable, fishable and drinkable.

The province has had laws against water pollution in place for more than 60 years. These laws have worked to reduce many kinds of water pollution, but population growth, urbanization, agricultural changes and climate change are eroding their effectiveness. And as this chapter shows, persistent regulatory failures by the provincial government are allowing huge amounts of damaging pollution to flow into Ontario surface and ground water. We can see symptoms of this pollution when lakes and creeks turn green with algae, when

beaches are closed by sewage overflows, and when creeks are too salty for freshwater plants and fish. Our environment is sending us a message.

Pollution of our lakes, rivers and groundwater is neither inevitable nor necessary.

This pollution of our lakes, rivers and groundwater is neither inevitable nor necessary. It is neither efficient nor cost-effective to keep allowing pollution into our water, in the hope of somehow treating it after it occurs. Ontario should not keep tolerating the regulatory failures that are allowing such pollution.

When our water is clean, we all benefit.

To reduce pollution from combined sewer overflows, the ECO recommends that:

- **the MECP insert, into the environmental compliance approval of every municipality that has a combined sewer system, a legal obligation to adopt a public Pollution Prevention Control Plan to virtually eliminate combined sewer overflows within a reasonable time, and the MECP should enforce these Plans.**
- **the Ministry of Infrastructure and the MECP work with municipalities to achieve full-cost recovery for stormwater and sewage systems.**

To reduce pollution from farm runoff, the ECO recommends that:

- **the Ontario Ministry of Agriculture, Food and Rural Affairs track best management practices across publically funded programs, and increase monitoring efforts to check whether the best management practices it has funded are in use.**
- **the Ontario Ministry of Agriculture, Food and Rural Affairs require all farms in Ontario's most impaired watersheds to assess their nutrient runoff risks and submit a plan to minimize that risk.**

- **the Ontario government ban the spreading of manure and fertilizer on frozen ground, snow-covered or saturated ground, with no exceptions.**
- **the Ontario government adopt clear targets, effective monitoring and financial incentives for dramatic reductions in phosphorus runoff from farms.**

To reduce pollution from industrial wastewater, the ECO recommends that:

- **the MECP update the limits in the MISA regulations and environmental compliance approvals, to require industries to use the best available technology to minimize toxic substances discharged into Ontario waters, and to require industries to virtually eliminate discharges of persistent toxic substances.**

To reduce pollution from road salt, the ECO recommends that:

- **the MECP and the Ministry of Transportation compare the cost-effectiveness of de-icing alternatives in terms of both the cost of the product, and of that alternative's negative impacts on infrastructure, on the environment and on drinking water supplies.**
- **the MECP and the Ministry of Municipal Affairs and Housing require each municipality to adopt a salt management plan, and to review and publicly report on their effectiveness on a regular basis.**
- **the Ontario government require all contractors retained to provide winter maintenance on property that is publicly owned or open to the public (e.g., public parking lots) to be certified in the proper use of salt.**
- **the Ontario government adopt a law that provides liability protection for landowners and contractors who use up-to-date technologies and snow management practices to achieve road safety with the minimum amount of salt.**

Endnotes

1. The National Pollutant Release Inventory lists more than 180 substances that are reported as released into Ontario waters annually from large industrial facilities, including substances like arsenic, cyanide, and mercury.

There are also numerous other pollutants not included in this inventory. For example, large volumes of microplastics have been found in Ontario's waters (see Environmental Commissioner of Ontario, "A problem too big to ignore: microplastics in the Great Lakes" in *Small Things Matter*, Annual Report 2014/2015 (Toronto: ECO, November 2015) at 78-82.). Another serious example is pharmaceuticals that are flushed down toilets, directly or through human waste, and find their way into Ontario's lakes and rivers (see Environmental Commissioner of Ontario, "Human Pharmaceuticals in the Aquatic Environment: An Emerging Issue" in *Planning Our Landscape*, Annual Report 2004/2005 (Toronto: ECO, October 2005) at 179-185; and Canadian Water Network, *Canada's Challenges and Opportunities to Address Contaminants in Wastewater* (Ottawa: CWN, 2018) at 22.).

Beyond direct contaminants, other water issues can also affect water quality. For example, water-takings can lower water levels in streams, and climate change can alter both water levels and temperatures, both of which can alter the characteristics and quality of the water (such as promoting algae growth).
2. "Plan for the People", online: Ontario Progressive Conservative Party https://www.ontariopc.ca/plan_for_the_people. [Accessed September 6, 2018].
3. The federal government reduced the scope and effectiveness of the Fisheries Act in 2012. However, the Department of Fisheries and Oceans Canada is currently seeking feedback to restore lost protections and incorporate modern safeguards into the Fisheries Act.
4. In addition to the Clean Water Act that addresses pollution to municipal sources of drinking water, Ontario's Safe Drinking Water Act regulates drinking-water treatment systems and drinking water testing.
5. The Blue Flag program certifies that beaches meet a set of criteria relating to the environment, education, safety, and access. Two additional beaches (Erieau Beach on Lake Erie and Station Beach on Lake Huron) are currently in the process of being certified.
6. Ontario Ministry of the Environment and Climate Change, information provided to the ECO in response to ECO inquiry (12 September 2018).
7. "The Sewers on the Street", online: City of Toronto <https://www.toronto.ca/services-payments/water-environment/managing-rain-melted-snow/what-is-stormwater-where-does-it-go/the-sewers-on-the-street/>.
8. Ontario Ministry of the Environment and Climate Change meeting, June 19, 2018.
9. Ontario Ministry of the Environment and Climate Change, information provided to the ECO in response to ECO inquiry (19 June 2018).
10. Ontario Ministry of the Environment and Climate Change, information provided to the ECO in response to ECO inquiry (19 June 2018).
11. The ECO has reported on the advantages of green infrastructure a number of times; for more information, see our 2011 and 2009 Annual Reports.
12. For example, the Ashbridges Bay plant approval is posted on Access Environment at <https://www.accessenvironment.ene.gov.on.ca/instruments/0779-ABZH7X-14.pdf>.
13. Some post all or part of their Plan voluntarily. See, for example, the City of Toronto at <https://www.toronto.ca/services-payments/water-environment/managing-rain-melted-snow/the-citys-wet-weather-flow-master-plan/> and <https://www.toronto.ca/services-payments/water-environment/managing-rain-melted-snow/what-the-city-is-doing-stormwater-management-projects/>.
14. "OSWCA Report: State of Ont. Water and Wastewater Infrastructure Shocking", online: Water Canada www.watercanada.net/oswca-report-state-of-ont-water-and-wastewater-infrastructure-shocking. [Accessed September 14, 2018].
15. The federal Clean Water and Wastewater Fund provides funding for municipalities across Canada, totalling \$2 billion, for projects that will rehabilitate water and wastewater treatment and distribution infrastructure, including combined sewers and treatment plant capacity. The Ontario Community Infrastructure Fund also provides capital funds.
16. "Building together – Guide for municipal asset management plans", online: Ontario Ministry of Infrastructure <https://www.ontario.ca/page/building-together-guide-municipal-asset-management-plans>.

"Asset management planning will allow needs to be prioritized over wants. It will help ensure that investments are made at the right time to minimize future repair and rehabilitation costs and maintain municipal assets."
17. Ontario Sewer & Watermain Construction Association, *The State of Ontario's Water and Wastewater Infrastructure* (Mississauga: OSWCA, 2018) at 18.
18. Ontario Sewer & Watermain Construction Association, *The State of Ontario's Water and Wastewater Infrastructure* (Mississauga: OSWCA, 2018) at 26.
19. Ontario Ministry of Environment and Climate Change, Ontario Lake Erie Action Plan: Partnering on Achieving Phosphorus Loading Reductions to Lake Erie from Canadian Sources, (Ontario: MECP, 2018) at ii.
20. Environment Canada, *2011 Municipal Water Use Report – Municipal Water Use 2009 Statistics*, (Ottawa: ECCC, 2011) at chart 10. <www.ec.gc.ca/doc/publications/eau-water/COM1454/long_desc-eng.htm#chart10>.
21. Ontario Ministry of Environment and Climate Change, Ontario Lake Erie Action Plan: Partnering on Achieving Phosphorus Loading Reductions to Lake Erie from Canadian Sources, (Ontario: MECP, 2018) at 35.
22. Many conservation authorities grade the health of the water bodies in their watersheds, using total phosphorus measured in the surface water. Almost all conservation authorities in the southwestern tip of Ontario graded the health of the water bodies in their watersheds as very poor or poor, with a few graded average.
23. Canada Ontario Lake Erie Nutrients Working Group, "Engaging on the Development of Canada-Ontario's Plan to Reduce Phosphorus Loads to Lake Erie" (presentation, July 13, 2016) slide 31.
24. Ontario farmers also participate in voluntary technological initiatives to reduce their phosphorus from agricultural runoff. For example, a partnership between the Cities Initiative and the Ontario Federation of Agriculture, the Thames River Phosphorus Reduction Collaborative, has raised \$1M toward at least 10 demonstration projects of infield and drain technologies that will be up and running by spring 2019.
25. Ontario Ministry of Agriculture, Food and Rural Affairs, information provided to the ECO, October 12, 2018

26. Ontario Ministry of Agriculture, Food and Rural Affairs, information provided to the ECO, June 8, 2018.
27. Andrew Sharpley, "Managing Phosphorus for Agriculture and the Environment", (The Pennsylvania State University: College of Agricultural Sciences Agricultural Research and Cooperative Extension, 2011) at 10. <extension.psu.edu/programs/nutrient-management/educational/soil-fertility/managing-phosphorus-for-agriculture-and-the-environment>.
28. Statistics Canada, Census of Agriculture, manure and manure application methods in the year prior to the census, Table 32-10-0410-01 (Ottawa: Statistics Canada, 2016); Statistics Canada, Census of Agriculture, farms classified by farm type, Table: 32-10-0403-01 (Ottawa: Statistics Canada, 2016); Statistics Canada, Census of Agriculture, land inputs in the year prior to the census, Table: 32-10-0409-01 (Ottawa: Statistics Canada, 2016); The Ontario Ministry of Agriculture, Food and Rural Affairs, information provided to the ECO, July 5, 2018.
29. Nutrient management strategies are only required for existing large farms that generate more than 300 "nutrient units" of manure (and/or milkhouse washwater), or to new or expanding farms that produce over 5 "nutrient units" and that construct a barn or manure storage facility (a "nutrient unit" is calculated based on the amount of manure produced by a given livestock, e.g., 1 beef cow and calf produces 1 nutrient unit).
30. The documented management of commercial fertilizer is only mandatory for the same small subset of farms that are required to have either a NASM or Nutrient Management Plan.
31. Ontario Ministry of Agriculture, Food and Rural Affairs, "Reducing Phosphorus Loss to Lake Erie: Application & Timing of Nutrients" (presentation, April 26, 2016) slide 8. www.farmfoodcareon.org/wp-content/uploads/2016/07/Nutrient-Application-and-Timing-Matt-Wilson-04-26-16-1.pdf.
32. Ontario Ministry of the Environment, Conservation and Parks, information provided to the ECO, October 17, 2018. In 2016/17, the MECP conducted 174 nutrient management inspections (out of 6,513 farms with Nutrient Management Strategies) and found only 38% to be in full compliance.
33. The Auditor General found that the MECP had low inspection rates and that that inspections were not focussed on farms at the highest risk of causing water contamination. Ontario Auditor General, "Source Water Protection: Follow Up on VFM Section 3.12, 2014 Annual Report" in Annual Report 2016 (Toronto: Ontario Auditor General, 2016) at 165-166.
34. Ontario Ministry of the Environment, *Municipal-Industrial Strategy for Abatement (MISA): a policy and program statement of the Government of Ontario on controlling municipal and industrial discharges into surface waters* (Toronto: Queen's Printer for Ontario, 1986).
35. "Water Management: Policies, Guidelines, Provincial Water Quality Objective", online: Ontario Ministry of the Environment and Climate Change <https://www.ontario.ca/page/water-management-policies-guidelines-provincial-water-quality-objectives#section-1>. [Accessed July 24, 2018].
36. Ontario Ministry of the Environment and Climate Change meeting, June 20, 2018.
37. In almost all Ontario lakes, shallow oxygenated water cools in the spring and fall, and sinks. This turnover mixes oxygen-rich waters throughout the lake, which would otherwise have dangerously low oxygen levels in deeper water. Salty water is heavier than uncontaminated water, and can therefore block or slow the normal turnover.
38. "Advisory for Simcoe Ontario", online: WaterToday.ca <http://www.watertoday.ca/textm-a.asp?province=8&advisory=17179>.
39. "Michigan Road Salt: What is it Costing Us?", online: Mackinac Center for Public Policy <https://www.mackinac.org/15189>. [Accessed September 7, 2018].
40. Tristan Hopper, "The awesome price we pay for road de-icing: melting cars, collapsing bridges, billions in damage", *National Post* (January 6, 2017) online: <https://nationalpost.com/news/canada/the-awesome-price-we-pay-for-road-de-icing-melting-cars-collapsing-bridges-billions-in-damage>.
41. "Real-Time Monitoring", online: Credit Valley Conservation <https://cvc.ca/watershed-science/watershed-monitoring/real-time-monitoring/>. [Accessed August 30, 2018].
42. And any other substance used to keep roads safe from snow or ice.
43. Melissa Gilligan, "Snow? Just beet it! Calgary uses beet brine to clear icy streets", *Global News* (December 19, 2017), online: <https://globalnews.ca/news/3924376/snow-just-beet-it-calgary-uses-beet-brine-to-clear-icy-streets/>.
44. Sustainable Technologies Evaluation Program, *Verification Protocol for Parking Lot Salt Spreaders* (Toronto: TRCA, 2016) at 1.



Environmental
Commissioner
of Ontario



1075 Bay Street, Suite 605, Toronto, Ontario M5S 2B1
Tel: 416-325-3377 Fax: 416-325-3370 1-800-701-6454
www.eco.on.ca

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VOLUME 3

BACK TO BASICS

Wildlife and Wilderness



2018 Environmental Protection Report



Environmental
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of Ontario



Purposes of the Environmental Bill of Rights include:

1. The prevention, reduction and elimination of the use, generation and release of pollutants that are an unreasonable threat to the integrity of the environment.
2. The protection and conservation of biological, ecological and genetic diversity.
3. The protection and conservation of natural resources, including plant life, animal life and ecological systems.
4. The encouragement of the wise management of our natural resources, including plant life, animal life and ecological systems.
5. The identification, protection and conservation of ecologically sensitive areas or processes.

Select citations have been included to help readers understand where the information the ECO cites comes from and to assist them in investigating an issue further should they be interested. Citations may be provided for: quotes; statistics; data points; and obscure or controversial information. Endnotes for these facts are generally only included if the source is not otherwise made clear in the body of the text and if the information cannot be easily verified. Exhaustive references are not provided.

Ministries were provided the opportunity to provide comments on this report. Ministry comments are available on our website.

Wildlife and Wilderness

Biodiversity is the variety of life on earth, both within and between species of plants, animals and microorganisms, and within the ecosystems that support them. It is essential to the air, water, soil and food that humans depend on for survival. The rapid loss of biodiversity is one of the most critical environmental problems facing the planet. This volume explores two fundamental measures the government can and should take to conserve Ontario's wildlife and wilderness.

The first chapter of this volume describes the importance of improving biodiversity monitoring. There are a variety of good programs, but current monitoring efforts are uncoordinated and the results are not pulled together into a comprehensive picture of Ontario's species and ecosystems. The government needs to effectively collect and analyze more comprehensive information on species status and long-term trends, and ensure it is communicated to the public.

Chapter two describes the growing threats of wildlife diseases, and their implications for biodiversity and human health. Wildlife diseases are likely to multiply and spread due to the legal and illegal wildlife trade, the movement of goods and equipment across borders, habitat loss, and climate change. The Ontario government needs to be prepared to prevent, detect and manage new threats as they emerge in order to protect wildlife and safeguard the province's biodiversity.



The Prothonotary warbler, which lives primarily in forested wetlands, is endangered in Ontario, primarily due to habitat destruction. In 2005, it was estimated that only 28-34 individuals remained in Ontario.

Photo credit: Francesco Veronesi, (CC BY-SA 2.0).

Chapter 1

Good Science, Better Decisions: Monitoring Ontario's Species and Ecosystems



Abstract

The loss of biodiversity is one of the most pressing problems facing the planet. Biodiversity is fundamental to our own well-being and important for its own sake. Yet Ontario's species are under tremendous pressure from habitat destruction, invasive species, overexploitation, pollution, disease and parasites, and climate change. Fortunately, the Ontario government can take action to prevent the further loss of species and ecosystems. To protect our biodiversity, the government first needs good scientific information to determine which actions to take and where to most effectively direct its efforts.

This chapter examines how well the Ontario government is gathering, tracking, analyzing and communicating information about the state of our province's species and ecosystems. The ECO found that the government, in partnership with others, has a variety of good programs to collect and keep track of information about nature. But raw data from multiple, unco-ordinated programs can only get us so far. The valuable information collected by all these programs needs to be pulled together to create a big picture of how nature is doing in Ontario.

Analyzing and the data better and ensuring that it is publicly shared would help government and others identify bigger problems and trends that demand attention, and help prioritize actions that will most effectively conserve our critical biodiversity. The ECO recommends that the Ministry of Natural Resources and Forestry commit to enhanced, long-term support for the Ontario Biodiversity Council and its reporting on the State of Ontario's biodiversity. Without the council's vital work, the limited resources available for effective conservation and the management of our natural resources may not be put to their best use.



Ontario collects a lot of data, but we need to connect the dots.

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1.1 Introduction: ignoring the warning signs

Plants, animals and other organisms are under assault from a range of human-caused threats, including habitat destruction, invasive species, overexploitation, pollution, disease and parasites, and climate change.¹ Globally, we are losing species at a rate that is unprecedented in human history – the world’s species are going extinct at 1,000 times the natural rate.² Two-thirds of global fish stocks are overexploited.³ Half of Canada’s monitored populations of wildlife populations are in decline.⁴ Nearly one-third of North American bumblebees are in decline.⁵ White-nose syndrome has wiped out more than six million North American bats.⁶ One-third of North American birds are at risk of extinction.⁷ Here in Ontario, 248 species (and species populations) are listed as at risk under the Endangered Species Act;⁸ many others are in danger but are not listed.

The world’s species are going extinct at 1,000 times the natural rate.

Species populations across the Americas are about 31% smaller than they were at the time of European settlement, and experts predict that the growing effects of climate change and other pressures may push this decline to 40% by 2050.⁹



Old growth forests are important to sustain Ontario’s pine martens.

Photo credit: SeventhDayPhotography, (iStock standard licence).

Together, all of these losses of species and their habitats amount to what is known collectively as the loss of biodiversity. These biodiversity losses are significant and in some cases irreversible.

What is biodiversity?

Biodiversity is the variety of life on earth. It is the diversity of plants, animals, microorganisms and ecosystems all around us that have evolved over billions of years, and that humans depend on for our existence. It’s the nature that surrounds us. Biodiversity includes “diversity within species, between species, and of ecosystems” (Figure 1).¹⁰

Diversity within species

can also be thought of as genetic diversity, which is the natural variability in genetic traits among individuals of the same species. The different genetic makeup of each individual can provide different advantages under different conditions.



Genetic Diversity

Diversity among species

refers to the number of different species as well as the abundance of each species. Scientists have identified more than 1.7 million species in the world,¹¹ and more than 30,000 species in Ontario. There are millions more species in the world that have not yet been discovered.



Species Diversity



Community/Ecosystem Diversity

Figure 1. Components of biodiversity.

Diversity of ecosystems refers to the variety of habitats, vegetation types and ecosystem processes across a region. It includes the many relationships between distinct species that rely on one another for their existence – directly or indirectly.

While it may be too late to recover some losses, the good news is that there is time to protect Ontario's many native species and ecosystems, provided that all levels of government take quick and effective action. Because of all of the different pressures on wildlife in Ontario, a broad array of actions is needed to effectively prevent biodiversity loss. These actions include increasing public education, protecting and managing habitat, managing wildlife sustainably, and taking steps

to control pollution, invasive species, and disease (see Chapter 2 of this volume for a discussion of wildlife disease); the government needs to monitor biodiversity to prioritize and carry out all of these actions effectively.

Why are we losing species?

Ontario's species face a wide variety of threats, including habitat loss and degradation, climate change, disease and parasites, invasive species, pollution, and overexploitation.



Caribou need large areas of intact habitat.

Photo credit: MNRF.

Habitat loss and degradation

Habitat loss and degradation is the single greatest threat to biodiversity – it is the primary reason that most species become extinct or locally extirpated. There are many causes of habitat loss, including: land use change (e.g., converting natural areas to new subdivisions or farm land), resource extraction (e.g., logging or mining), fragmentation (e.g., roads, hydro corridors), pollution, invasive species, and changing climatic conditions.

For example, boreal caribou were once widespread in Ontario, but are now listed as threatened. Caribou need large areas free from human disturbance to survive.¹² Instead, humans have destroyed, degraded and fragmented their habitat, pushing this species to the brink. In our 2015 Environmental

Protection Report the ECO reported on the lack of measures to protect boreal caribou in Ontario.

Climate Change

Climate change is already having drastic impacts on global biodiversity. One recent study found evidence that climate change is negatively impacting almost 700 species of threatened mammals and birds around the world.¹³



Decreasing sea ice in Hudson Bay is linked to a decline in Ontario's polar bear population.

Photo credit: Mario Hoppman, (CC-BY 2.0).

Higher air and water temperatures, along with changes to precipitation patterns, will reconfigure Ontario's ecosystems. Some of Ontario's native species will be able to adapt to these changing conditions, such as by expanding their range northward, but others will not. Climate change can also exacerbate the other pressures that species experience, like habitat loss.

Species that live in northern Ontario will be among those most severely affected by climate change. Some species, like polar bears, may soon be unable to survive in Ontario. It is likely that Ontario's

population of polar bears will be gone from the province within 40 years because of decreased sea ice in Hudson Bay, which is a key part of their habitat.¹⁴ The loss of sea ice makes it hard for polar bears to hunt. This is especially problematic for females – the lack of access to prey makes it difficult for them to produce cubs.¹⁵ The number of polar bears in the subpopulation that principally inhabits Ontario declined 17% from 943 to 780 bears between 2011 and 2016.¹⁶

Invasive species

The spread of non-native plants, animals and insects that harm ecosystems is a major threat to biodiversity. Ontario has a high frequency of invasions because large amounts of goods and people move within and across the province's borders. As much as 66% of Ontario's species at risk are threatened by invaders that have established themselves in Ontario's ecosystems.¹⁷

Invasive species can disrupt food chains, introduce diseases, and out-compete native plants and animals because they can often grow and reproduce prolifically, act as efficient predators, and/or tolerate many different environmental conditions.



Phragmites australis is an aggressive invasive reed that is spreading in Ontario.

Photo credit: huggy1, (iStock standard licence).

One widespread invasive with severely damaging effects on habitat is non-native phragmites. This invasive reed grows in dense stands in wetlands, beaches and on riverbanks, choking out native plants and changing water levels. Phragmites stands are an extremely poor habitat and food source, especially compared to the habitat they displace. Phragmites can also interfere

with agriculture, lower property values by blocking views, and prevent swimming, boating and fishing. The dense, dry stems are also a fire hazard. The ECO reported on Ontario's efforts to address phragmites and other invasive species in 2016.

Disease and parasites

As with humans, diseases and parasites are a normal occurrence in most species populations, but sometimes epidemics can develop that can cause extirpations or extinctions.



A little brown bat suffering from white-nose syndrome.

Photo credit: Ryan von Linden/USFWS, (CC-BY 2.0).

One of the most dramatic examples in recent years is the collapse of bat populations across eastern North America. Since 2010, millions of bats have died from an invasive fungal disease called white-nose syndrome. Four of Ontario's eight native bat species have become endangered. In our 2016 Environmental Protection Report, the ECO reported on the province's efforts to combat white-nose syndrome.

Pollution

Environmental toxins are another major threat to biodiversity. Pollutants in air, water and on land can cause both direct and indirect harm to species and lead to substantial declines.

For example, scientific evidence is mounting that the widespread use of neonicotinoid pesticides has contributed to the greatly increased mortality of honey bees and other pollinators. The impacts of



The use of neonicotinoids is putting pressure on pollinators like the common eastern bumblebee.

Photo credit: Judy Gallagher, (CC BY 2.0).

neonicotinoids and similar insecticides could have cascading impacts on food webs and ultimately, on their vital ecosystem functions. The ECO reported on this problem in our 2014 and 2015 Environmental Protection Reports.

Unsustainable harvesting and poaching

Many species around the world are disappearing because of unsustainable harvesting. For example, Algonquin wolves are a threatened species in Ontario. One of the main threats to this species is hunting and trapping.¹⁸ Unlike other threatened species, the Ontario government allows the Algonquin wolf to be hunted and trapped across much of its range. The ECO reported on the inadequacy of Ontario's measures to protect the Algonquin wolf in our 2017 Environmental Protection Report.



The Algonquin wolf is the only threatened species that can be legally hunted and trapped in Ontario.

Photo credit: MNRF.

1.2 Monitoring: an essential first step to halting biodiversity loss

As a critical step in conserving biodiversity, the Ontario government needs good scientific information to determine which actions it should take and where to direct those conservation efforts to have the biggest impact. For example, the province needs this information to decide where it should prohibit new development to prevent the destruction of important habitat, like a significant wetland or woodland that is home to species at risk (see Volume 4 of this report). This information is also needed to know where, conversely, it's sustainable to encourage development.

Monitoring biodiversity also enables the government to identify and respond quickly to emerging problems. For example, unusual declines in species populations can indicate that a species is at risk of extinction and needs protection. Information from monitoring can also be used to evaluate whether government conservation actions are effective and how different government decisions, such as choices about land use, are impacting biodiversity.

Essentially, for government to make informed decisions about conserving biodiversity, it needs to know how species are doing, including which species are found in the province, their abundance, and where they live. It also needs to know whether ecosystems are healthy, and whether they are providing enough high-quality habitat to maintain healthy populations of plants and animals.

Collecting this information is not a one-time exercise – biodiversity monitoring needs to be ongoing.



Volunteers at an Ontario BioBiltz event in the Credit River watershed observe a snapping turtle, a species of special concern.

Photo credit: Fatima Ali/Ontario BioBlitz, (CC BY-NC-SA 2.0).

Using Proxy Measures to Monitor Biodiversity

In an ideal world we could track all species in all parts of the province, but this would be prohibitively time-consuming and expensive. Monitoring programs can instead use indirect measures that function as proxies for many different species in an ecosystem. Proxy measures might include tracking an indicator or umbrella species (that can point to the health of ecosystems or even larger groups of species) or measuring the amount and distribution of different types of habitat (e.g., forest cover, cold water streams, grasslands, etc.). Although proxy measures are not perfect (for example, there is no guarantee that habitat will actually be occupied by a given species) proxies can serve to inform biodiversity monitoring when comprehensive monitoring isn't possible.

Information from other types of sources, including traditional Indigenous knowledge, can also supplement direct species observation.

Collecting this information is not a one-time exercise – biodiversity monitoring needs to be ongoing to gather long-term data. Only long-term monitoring can show changes and trends over time, and the longer data have been collected, the more certain we can be about whether observed trends are natural fluctuations or signs of a developing problem.¹⁹ Long-term monitoring can also help assess the effectiveness of conservation efforts and improve it over time.

Nearly every country in the world – as parties to the Convention on Biological Diversity – have agreed that monitoring biodiversity is a global priority.²⁰ In 2010, Canada signed on to specific targets (known as the Aichi Targets) as part of a strategic plan intended to halt the loss of biodiversity by 2020. In 2012, the Ontario government developed its own biodiversity plan that set out multiple action items to advance the Aichi Targets. One of the most important action items under the plan is a commitment to develop a long-term biodiversity monitoring program. (For more information on the government's biodiversity plan, see Part 4.1 of our 2014/2015 Environmental Protection Report.)

Below, the ECO examines how well the Ontario government is following through on this commitment. We look specifically at how the government is gathering, tracking, analyzing and communicating information about our province's species and ecosystems.

Why does biodiversity loss matter?

Biodiversity loss has potential ecological, social and economic consequences that are on par with those posed by climate change – and in combination with climate change, the consequences could be catastrophic.

Biodiversity loss has potential ecological, social and economic consequences that are on par with those posed by climate change.

Biodiversity is crucial in supporting a variety of “ecosystem services,”²¹ such as the ability of trees and other plants to purify our air and control flooding, or the role of healthy soils and pollinators in supporting agriculture and food production.

Biodiversity also offers direct benefits to human health, such as buffering the spread of infectious disease.²² For example, studies have found that predators in an ecosystem (like foxes) can reduce the transmission of Lyme disease, because they eat the smaller animals that act as hosts for diseased ticks.²³



Predators like red foxes can help to reduce the transmission of Lyme disease.

Photo credit: SeventhDayPhotography, (iStock standard licence).

Other species are critical for medical research and medicinal uses. For example, Indigenous communities in Ontario have used a variety of medicinal plants like yarrow and birch for thousands of years.

Biodiversity is also the foundation for nature-based recreation, which has been proven to provide a number of benefits for human health, like reduced stress, anxiety and depression, lower blood pressure, and improved concentration, among many others.²⁴

Conserving biodiversity is also critical to many of Ontario's economic sectors that depend on healthy species and ecosystems, such as forestry, hunting and fishing, agriculture, and tourism. Ontario residents spend \$4.3 billion each year, and support 77,900 jobs, through participating in nature-related activities such as wildlife viewing, hunting, fishing, camping and trapping;²⁵ forestry, fishing, hunting and agriculture contribute over \$5 billion of Ontario's GDP.²⁶ A loss of biodiversity that directly impacts any of these activities (such as bee deaths affecting crop pollination) could have significant economic ripple effects. More broadly, the estimated value of ecosystem services provided by our biodiversity in Canada is \$3.6 trillion per year.²⁷

Finally, it is equally important to recognize the intrinsic value of species. Ontario's native species evolved over millions of years and deserve to thrive regardless of any use or benefit they might provide to humans. These species should not be deprived of their very existence by inadvertent or deliberate human action.

The link between biodiversity and climate change

Climate change poses a major threat to biodiversity, and yet biodiversity is essential to both fighting climate change and adapting to its impacts. Biodiversity creates resilience – the greater the variety of species and ecosystems in a region, the better that region will be able to adapt to new conditions that may arise from climate change and other pressures (e.g., pollution, species introductions, disease, etc.). This resilience is becoming more important than ever as Ontario starts to feel the impacts of climate change.

At the species level, a greater diversity of characteristics among individual members of the same species makes it much more likely that some of those individuals will have the traits needed to survive under changing conditions. For example, individual plants that have genes that enable them to thrive in dry conditions may help a species persist when a drought occurs.

At the ecosystem level, a greater diversity of species within the ecosystem makes it more likely that there will be different species that can play similar roles to help that ecosystem function. This means that if one species in an ecosystem is unable to survive under new conditions (e.g., shorter winters), another

species may be able to fulfill this same role and that ecosystem can continue to function.²⁸

Biodiversity can help us adapt to climate change in other ways too. Healthy ecosystems can provide services or benefits to people, such as controlling overland flooding through wetlands, which can help buffer the negative impacts of climate change. For example, researchers recently found that plant diversity in grasslands increased the resilience of ecosystems to a range of climate events, including both drought and unusually wet conditions.²⁹ In other words, biodiversity can help to counteract the destabilizing influence that climate extremes can have on ecosystems.

Well-functioning ecosystems can also help to mitigate climate change.

Well-functioning ecosystems can also help to mitigate climate change by allowing natural areas like forests and peatlands to continue to store large amounts of carbon. One recent study estimated that terrestrial ecosystems currently absorb the equivalent of about 20% of human-caused greenhouse gas emissions, and have the potential to sequester much more through conservation and restoration of natural areas.³⁰

1.3 How well is Ontario gathering biodiversity data?

Ontario has a large variety of programs for gathering biodiversity data. The government operates dozens of ecological monitoring programs, collecting a breadth of information; however, these programs tend to focus heavily on economically important species (like moose), and less on species like rare plants and insects that can have ecological importance. Encouragingly, external organizations and ordinary citizens are contributing large amounts of biodiversity data for the province, including observations of some previously less-targeted organisms. Ontario is also starting to incorporate the knowledge and expertise of Indigenous communities to further improve the province's understanding of our biodiversity. Moreover, some of Ontario's monitoring programs are beginning to embrace new technologies and advances in data gathering methods, which are improving our ability to efficiently collect large quantities of information.

Despite these positive observations, the ECO's review found that some gaps in data persist. Fortunately, with advancing technology and growing public engagement, the traditional barriers to biodiversity monitoring are quickly falling away, and the government's capacity to efficiently gather large amounts of biodiversity information across the province is growing each year.



Peregrine falcon populations collapsed in the 1950s and 60s, and were extirpated from Ontario because of the widespread use of toxic chemicals. Restrictions on the use of DDT, along with a national captive rearing program, restored peregrine falcon populations. They are now listed as "special concern" under the Endangered Species Act.

Photo credit: SteveOehlschlager, (iStock standard licence).

1.3.1 Government-led monitoring

The Ministry of Natural Resources and Forestry (MNRF) and the Ministry of the Environment, Conservation and Parks (MECP) administer dozens of projects and programs that collect important biodiversity data. For example, a 2014 MNRF report identified 80 long-term ecological monitoring programs operating in the province.³¹ Despite this large number of monitoring programs, there are still gaps in our biodiversity data.

Most of Ontario's formal species monitoring programs focus on large, charismatic species like caribou or bears. Species that are harvested (i.e., hunted, trapped or fished) are particularly well monitored, both through direct sampling by government and from reporting by hunters, trappers and anglers. For example, the MNRF obtains relatively robust data on the province's moose populations by conducting aerial surveys of wildlife management units (though weather conditions sometimes impede planned surveys). Similarly, the ministry's Broad Scale Inland Lakes Monitoring Program evaluates the state of Ontario's fisheries by collecting information from a selection of lakes across the province on a five-year cycle.



Hunters who hold black bear licences are required to report their hunting activities and harvests to the MNRF.

Photo credit: SeventhDayPhotography, (iStock standard licence).

The MNRF does track some information on smaller but important organisms like insects, plants and lichens, but in general, the ministry does not consistently monitor these types of species on a large geographic scale. These often overlooked species are not only important as a measure of biodiversity, but many species can serve as sentinels for broader ecosystem and public health issues. For example, lichens are highly sensitive to air pollution and are often used as “bioindicators” to identify air quality problems.³²



Fungi and lichens collected during a BioBlitz event in Ontario.

Photo credit: Camille Tremblay Beaulieu/Ontario BioBlitz, (CC BY-NC-SA 2.0).

In addition to programs that collect data about individual species, gathering information about broader scale biodiversity characteristics – such as natural heritage features and land cover – is equally important. To this end, the government operates programs such as the Forest Health Monitoring Program, the National Forest Inventory, the Southern Ontario Land Resource Information System, and the Far North Land Cover project. While programs like these gather important information, the data from these discrete programs are generally not brought together to provide a picture of biodiversity in the province as a whole.

The ECO has long-standing concerns with the government’s operation of this program.

The MNRF is also responsible for the Provincial Wildlife Population Monitoring Program, which is supposed to monitor representative wildlife throughout the area where commercial logging is conducted, which covers over 40% of the province. However, the ECO has long-standing concerns with the government’s operation of this program.

The government also gathers biodiversity information from proponents of development and industrial projects. Proponents seeking approvals for these projects are often required to conduct natural heritage studies and/or ongoing monitoring, which must be submitted to the MNRF. The quality of these studies can vary significantly.

Problems continue with the Provincial Wildlife Population Monitoring Program



The Provincial Wildlife Population Monitoring Program is supposed to assess the effects of commercial logging on wildlife.

Photo credit: Jun Zhang, (iStock standard licence).

The Provincial Wildlife Population Monitoring Program is legally required as part of the Class Environmental Assessment Approval for Forest Management on Crown Lands in Ontario, which allows commercial logging operations to take place in forests on publicly owned land. Put in place in 1994, the program is intended to assess how vertebrate wildlife species are affected by forestry at a provincial level. The goal is to use this information to ensure that these species and their habitats are

maintained, relative to what would be expected under natural conditions. This information is needed to ensure that commercial forestry is sustainable, and to make changes to its rules when necessary.

In 2012, the ECO reported on the implementation of this program and found that it was in a state of abject failure because it did not include any direct monitoring, only addressed a very small selection of bird species, and was not provincial in scale.

Subsequently, the MNRF redesigned the program to expand the geographic scope and monitor a wider variety of species using an array of techniques. However, it still remains to be seen whether this redesign is meeting the intended goals of the program because the ministry has not reported on its results, as it is required to.

The redesigned program commits to releasing an annual report summarizing the activities and results of the monitoring program. But three years on, the ministry has not produced a single annual report.³³ According to the ministry, the reports “have been delayed due to the time requirements associated with quality assurance and quality control and data compilation; however, MNRF has continued to collect field data since 2014.” The MNRF states that it plans to prepare an annual report for 2019, and a 5-year summary report in 2020.



Children learn about insects at an Ontario BioBlitz event.
Photo credit: Stacey Lee Kerr/Ontario BioBlitz, (CC BY-NC-SA 2.0).

1.3.2 Citizen science

Citizen science has a long, and growing, record of making important contributions to knowledge about Ontario’s biodiversity. For example, in 2016 alone, 48,000 volunteers contributed more than 750,000 hours to projects with Bird Studies Canada, a national charity dedicated to conserving wild birds.³⁴ Similarly, citizen naturalists all over Ontario participate in various “BioBlitz” events, where groups of nature enthusiasts come together to identify as many species as possible in a given area during a short period of time.

Much of the biodiversity data gathered in Ontario comes from citizen science programs.

Much of the biodiversity data gathered in Ontario comes from citizen science programs, and the amount of data coming from these programs is growing every year. In fact, data generated by citizen science programs accounts for over 40% of the observations of the provincially tracked species by the ministry’s Natural Heritage Information Centre (NHIC) (see Figure 2).

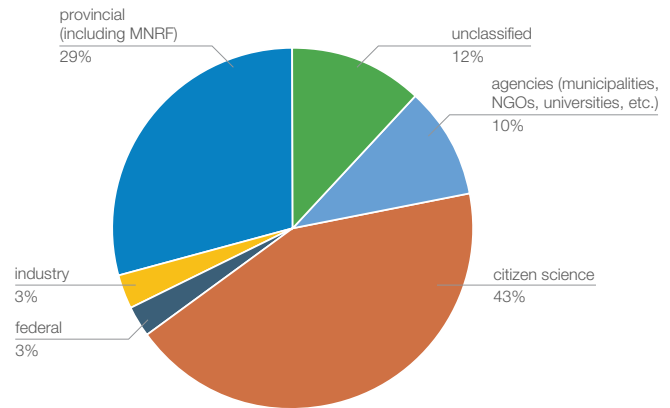


Figure 2. Citizen science programs are the largest source of information for the Natural Heritage Information Centre’s species database.

Source: Science and Research Branch, MNRF.

Today, smart phones and other new technologies are making it easier than ever for regular people to report species observations and environmental data, as well as provide contextual detail, like location and times, images, and even audio files so that their observations can be confirmed by experts. Many new mobile apps are presenting greater opportunities for citizen science programs.

Smart phones and other new technologies are making it easier than ever for regular people to report species observations and environmental data.

For example, Ontario Nature offers a mobile app for the Ontario Reptile and Amphibian Atlas. This app, which has over 3,300 users, allows people to submit sightings of turtles, salamanders, and other reptiles and amphibians to the atlas from their phones, including geo-tagged photos, as well as audio and video files, that can later be verified by experts. In 2017 alone, contributors submitted 24,600 records to the Atlas; 10,600 were submitted through the app. This project has resulted in species observations in new areas. In 2017, an ice fisher reported a common mudpuppy, Canada’s largest salamander, in



A citizen scientist logs a ribbonsnake observation using Ontario Nature's Ontario Reptile and Amphibian Atlas app.

Photo credit: Jory Mullen. Used with permission.

Haliburton County – more than 100 kilometres away from the nearest previous sighting for this species.

Recently, the MNRF has started to directly engage citizen scientists through a mobile platform called iNaturalist. In March 2017, the NHIC launched a project in iNaturalist to track rare species in Ontario. The project has grown rapidly. Since it was initiated, more than 160 members have submitted almost 14,000 observations (as of August 2018). Observations are initially vetted by community members, but NHIC experts follow up and review all records before they are tracked in the provincial database. The project has even led to observations of species that are very rare in Ontario, like the imperilled ghost tiger beetle.



The NHIC's iNaturalist project has enabled recorded observations of very rare species like the ghost tiger beetle.

Photo credit: Greg Shchepanek, (CC-BY-NC).

There are limitations to citizen science. Contributors may not always accurately identify species, or may provide incomplete information.³⁵ But when citizen science submissions are reviewed by people with the necessary expertise, such programs can generate very useful data. The information collected through citizen science monitoring programs can also provide a jumping off point for the MNRF or other experts to engage in more rigorous and targeted monitoring.



Launched by Earthroots in 2016, the Ontario Wolf Survey collects DNA from wolves and coyotes in Ontario to fill in gaps in provincial monitoring.

Photo credit: Hannah Barron. Used with permission.

Many government monitoring programs have historically focused on economically important or harvested species, leading to a lack of information about less popular species like rare plants and insects. However, broader interest in these types of organisms among citizen scientists is beginning to reverse this trend. For example, many of the observations submitted through iNaturalist are for insect species.

1.3.3 Engaging Indigenous communities

Several of the key actions in Ontario's biodiversity strategy speak to incorporating traditional knowledge into biodiversity science, research, and decision making. Indigenous communities can make an invaluable contribution to our shared knowledge of the province's biodiversity – both past and present. For example, extensive Indigenous traditional knowledge about the American eel has played a major role in the Ontario government's recovery planning for this endangered species.

Indigenous communities can make an invaluable contribution to our shared knowledge of the province's biodiversity – both past and present.



Aboriginal Traditional Knowledge has been critical to recovery planning for the endangered American eel.

Photo credit: Clinton and Charles Robertson, (CC BY 2.0).

Ontario is also beginning to integrate traditional knowledge with modern technology. This year the Anishinabek/Ontario Fisheries Resource Centre, Trailmark Systems, and Biigtigong Nishnaabeg (also known as the Ojibways of Pic River First Nation) collaborated to develop a mobile app to allow First Nations to monitor Ontario's declining moose population. Users can record moose sightings, harvests, and other information like photos, audio and text to help develop an understanding of what is happening with moose populations in traditional territories.

1.3.4 Adopting advanced methods and technologies

Traditionally, high labour and financial costs presented major barriers to monitoring programs. Monitoring might involve thousands of hours of staff time for field observations, require expensive equipment for

Emerging methods and technologies are giving researchers the ability to do much more efficient and effective monitoring than ever before.

aerial monitoring, or involve paying large sums to process genetic samples. But emerging methods and technologies are gradually chipping away at these barriers, and are giving researchers the ability to do much more efficient and effective monitoring than ever before. Some of the new technologies that are beginning to be used in Ontario are described below. While many of these new methods have limitations, together, and when combined with more traditional methods of gathering data in the field, they are starting to provide a more complete picture of Ontario's biodiversity, which can be used to make and evaluate management decisions.

Genetic sampling

Traditionally, the only way to obtain certain biodiversity information was for people to go out into the field to directly observe and identify species (or indications of their presence on the landscape). Genetic sampling can now make direct observation less necessary for monitoring biodiversity.

One genetic sampling technique now in use in Ontario is DNA barcoding, which allows scientists to detect species by identifying short but distinct sections of DNA. Pioneered at the University of Guelph, this process allows individual species to be identified in batches of samples that are processed together; for example, a variety of insect species could be captured

in a trap and processed simultaneously. This method can allow rapid and extensive surveys of biodiversity in particular regions – by giving researchers an efficient way to identify the range of species that are present in different areas.

Barcoding can be used to detect environmental DNA (“eDNA”) to determine the presence of species in ecosystems. eDNA is genetic material that organisms shed into the environment through faeces, blood, skin cells, hair, etc.³⁶ Using eDNA detection is particularly suited to sampling aquatic species like fish. One of the major advantages of this technique is that collecting samples is relatively easy. There is no need to encounter an individual member of a species, so it can be used to detect species that are present but have very low abundances, including species at risk or new invasive species. In Ontario, eDNA sampling is being used to detect the presence of Asian carp in the Great Lakes.

Satellite remote sensing

Remote sensing is the use of satellite imagery to gather environmental information, which can serve as indicators of biodiversity. High-resolution satellite images can be used to observe data related to land cover and land use, topography, habitat disturbance and fragmentation, vegetation productivity, and snow cover.³⁷ This provides information about ecosystem structure and function at multiple spatial scales, and can often be extrapolated to draw conclusions about patterns of the variety and abundance of species and their distributions.³⁸ For example, researchers in Ontario have shown that vegetation productivity, land cover and elevation can be used to predict the number of breeding bird species at regional scales.³⁹

Camera traps and acoustic monitoring

Over the last decade or so, evolving technology and decreasing costs have led to a proliferation of monitoring programs using video and acoustic recordings.

Camera traps are now widely used to detect animals, estimate their distribution and abundance, and make inferences about behaviours and community structure.⁴⁰



A lynx captured by one of Pukaskwa National Park's trailcams.

Photo credit: Parks Canada.

Similarly, acoustic monitoring uses microphones to make audio recordings of the various sounds that animals make at a variety of locations. Analyzing these sounds can provide information about the distribution and abundance of many species, especially birds, frogs, bats and insects. This technology is advancing rapidly. Researchers have developed algorithms to distinguish between not only species, but also sexes, age groups and individuals. Both trail cams and audio recording have recently been integrated into the Provincial Wildlife Population Monitoring Program.

1.3.5 Filling the remaining data gaps

The MNRF and its partners gather a wealth of biodiversity data. This biodiversity data is invaluable for making informed decisions about land use planning, site-specific approvals, species at risk protection and recovery, as well as broader policies and regulations that impact biodiversity. For example, the forestry industry relies on the government's biodiversity data to meet their legal obligations under the Crown Forest Sustainability Act in planning their operations.

This biodiversity data is invaluable for making informed decisions.

Similarly, the Committee on the Status of Endangered Wildlife in Canada and the Committee on the Status of Species at Risk in Ontario both rely on the province's biodiversity data to make decisions about listing new species at risk.

Ontario still has some critical gaps in our biodiversity knowledge.

However, Ontario still has some critical gaps in our biodiversity knowledge, such as for the many species that are not hunted, trapped or fished. This means that we don't always have the information we need to make good decisions, such as where to direct conservation efforts versus where to encourage development, infrastructure or other projects (for an example how this plays out in practice, see Volume 4 of this report). This incomplete information also means that the Ontario government risks not becoming aware of an emerging issue or crisis, such as a wildlife disease outbreak/epidemic (see Chapter 2 of this volume), until the problem is too big.

Ideally, Ontario's monitoring efforts should be guided by broader strategic direction that ensures the right information is being collected in the right places. In *Biodiversity: It's In Our Nature* (the Ontario government's biodiversity conservation plan covering the period 2012-2020), the Ontario government committed to do just that, to: "develop an integrated, broad-scale monitoring program for all aspects of Ontario's biodiversity." According to the MNRF, it is in the preliminary stages of assessing design options for such a program.

Luckily, the traditional barriers to biodiversity monitoring are quickly falling away, and the capacity to efficiently gather large amounts of information all over the province is growing each year with advancing technology and public engagement. The ECO encourages the MNRF to take advantage of these opportunities to fill in the remaining important data gaps for biodiversity in the province. Such broader-scale

monitoring should ensure that the Ontario government has the right information to make the best decisions about both development and conservation priorities.

Finally, to both enhance Ontario's biodiversity data, and to meet the Government of Ontario's commitment to engage in reconciliation efforts, the MNRF should proactively engage Indigenous communities and incorporate the knowledge and expertise of Indigenous communities into the province's biodiversity monitoring efforts to the extent possible. Such efforts can hopefully fill in some of the gaps in Ontario's knowledge about biodiversity, including a lack of historical records.



#DYK elk populations were extirpated from Ontario in the late 1800s and have now been reintroduced? Elk restoration began in the 1990s and the population is now self-sustaining in parts of Ontario! We want to know where you're seeing elk. Report here: bit.ly/2rwoVzK



The MNRF asks Ontarians to submit their elk observations so that it can plan more efficient elk population surveys in the future.

Photo credit: MNRF/Twitter.

1.4 How well is Ontario tracking, analyzing and sharing its biodiversity data?

To make good use of all the collected biodiversity monitoring data, they need to be analyzed and assessed, and shared with government staff and the public. Synthesizing the raw data and regularly reporting on the state of biodiversity can also inform the public and decision-makers about conservation successes and failures, and help the government and other stakeholders prioritize actions to enhance and conserve biodiversity.

The ECO's review found that while the MNRF does an excellent job tracking the data, there are opportunities to get more value from the information it collects. The government should be analyzing its biodiversity data to determine broad trends, problems, and opportunities, as well as ensuring that this information is shared with the public.

1.4.1 Keeping track of biodiversity data: the Natural Heritage Information Centre

Ontario has established an effective program for keeping track of the biodiversity data it collects. The Natural Heritage Information Centre, which is part of the MNRF's Science and Research Branch, manages the data gathered on Ontario's biodiversity. This includes information on species of conservation concern, rare and exemplary plant communities, wildlife concentration areas, and natural areas.

The NHIC maintains a database of the information gathered by ministry monitoring programs, along with data from citizen science programs and other conservation partners, including municipalities, environmental organizations and universities. The MNRF requires any data on provincially tracked species that are acquired by ministry staff (including at the local, park, regional and provincial levels) to be entered into the NHIC database. Data from proponent studies for development and industrial projects are also incorporated into the NHIC database.



Volunteers collect aquatic samples at an Ontario BioBlitz event.

Photo credit: Stacey Lee Kerr/Ontario BioBlitz, (CC BY-NC-SA 2.0).

The NHIC uses a standard, internationally-recognized tracking methodology developed by the NatureServe Network. The NatureServe network encompasses 82 natural heritage programs across 14 countries, which means that Ontario's data can be placed within a broader geographic and ecological context that extends beyond provincial boundaries. The NHIC also assigns conservation ranks to species, which estimate a species' risk of going extinct or being extirpated.

In total, the NHIC tracks just over 2,000 rare species in the province and maintains natural heritage information for more than 9,000 natural areas. It also maintains a master list all species that are known to occur (or have occurred) in Ontario.

The NHIC has created an excellent system to manage much Ontario's biodiversity data. But to make the best use of all of this information and that from other programs, it needs to be analyzed to discern trends and emerging issues, and it needs to be disseminated in a useful format so that it can inform decision making.

1.4.2 Better analysis and reporting on biodiversity could enable better use of resources

The MNRF makes much of its biodiversity information available to the public. For example, a large amount of the raw data tracked by the NHIC, including coarse-scale GIS information, is publicly available online. However, raw data cannot always be readily used by government decision-makers or the public because it is difficult to interpret the information about broader trends. In addition, some sensitive information like the locations of some rare or at-risk species is (properly) withheld from the public to deter illegal poaching. The MNRF will, however, provide such sensitive information to individuals and organizations for the purposes of responsible planning and conservation efforts on a need-to-know basis and under licence.

The MNRF's data on some biodiversity trends is also used in a variety of species- or sector-specific reports, including: atlases like the Atlas of Breeding Birds of Ontario and the Ontario Reptile and Amphibian Atlas; Moose Resource Reports; the State of the Woodland Caribou Resource Report and Caribou Integrated Range Assessment Reports; and The State of Ontario's Natural Resources – Forests report. These reporting efforts are incredibly valuable and necessary. However, even taken together, these reports do not provide a big picture of the state of Ontario's biodiversity.

The only biodiversity reporting for Ontario as a whole comes from the Ontario Biodiversity Council, an organization composed of stakeholders from environmental organizations, industry associations, Indigenous organizations, academia, and government agencies. The council voluntarily produces a report, titled The State of Ontario's Biodiversity, on a five-year cycle.

To date, the Ontario Biodiversity Council has done a commendable job in reporting on the state of biodiversity in the province – particularly since there is no requirement for it to do so. However, it is the Ministry of Natural Resources and Forestry that is primary government body that is responsible for looking

after Ontario's biodiversity (although the Ministry of the Environment, Conservation and Parks also now plays a role). As the government stewards of Ontario's biodiversity, these ministries should be supporting the Ontario Biodiversity Council to the fullest extent possible. Currently, government support for the council is minimal, albeit critical to the council's work; it receives secretariat support from the MNRF, and approximately \$10,000 in annual funding.



Snowy owls breed in the Arctic, but can be spotted in Ontario when they migrate south for the winter.

Photo credit: SeventhDayPhotography, (iStock standard licence).

Without the Ontario Biodiversity Council's reporting on broader biodiversity trends, it would be more difficult for decision-makers and members of the public to know how nature is doing and what problems need to be addressed. As such, it would be challenging for the government to make good decisions about protecting species and ecosystems. The council's State of Ontario's Biodiversity reports also help ensure that we are efficiently and strategically using the limited resources available for protecting nature.



1.5 Conclusion: good science for better decisions

The old cliché that “what gets measured gets managed” holds especially true for biodiversity – monitoring is foundational to all conservation efforts, as well as broader wildlife and natural resource management programs. For government to make informed decisions about conserving biodiversity it needs good information about which species live in the province, where they are found, and how many of them there are.

The Ontario government collects and tracks a wealth of information about nature. This is immensely important work and should continue to be supported. Ontario also has several opportunities to leverage the resources it invests in monitoring to get the most benefit from these efforts.

First, we need to make sure we are gathering the right information, in the right places. Filling in the gaps in our information about species and geographic areas that are not adequately monitored will help us make better informed decisions. The monitoring programs that are already in place are a good start, but it is now a matter of taking better advantage of new opportunities (including technological advances and engaging citizen scientists) to fill in the gaps. In the meantime, the ECO is encouraged that the MNRF is in the early stages of developing a broad scale monitoring program for the province.

Second, the government needs to ensure someone is taking on the important task of assessing and reporting on Ontario’s biodiversity writ-large. While the MNRF does a good job of tracking Ontario’s natural heritage data and reporting on discrete subjects, like the state of the protected areas it manages, it has not taken on this important larger role itself. Instead, this critical work has been undertaken by the Ontario Biodiversity Council. This work helps the government and others identify bigger problems and trends that demand attention, and helps prioritize actions that will most

effectively conserve our wildlife and wilderness. **The ECO recommends that the Ministry of Natural Resources and Forestry commit to enhanced, long-term support for the Ontario Biodiversity Council and its reporting on the State of Ontario’s Biodiversity.** Ontarians care deeply about our moose, salmon, polar bears, snapping turtles, songbirds and pollinators – and if we don’t have a good picture of what is going on with species like these across the province we are effectively managing them blindly.

More comprehensive monitoring, and continued analysis and sharing of this information will provide greater assurance that the limited resources allocated to conservation work and wildlife management are being put to their optimal use.

Together, more comprehensive monitoring, and continued analysis and sharing of this information can be used to make better choices, and create the necessary social licence for the Ontario government’s decisions to approve industrial and development projects. It will also provide greater assurance that the limited resources allocated to conservation work and wildlife management are being put to their optimal use – and conversely, that they are not being squandered on unnecessary efforts. Biodiversity loss is an urgent and complex challenge. We must do the best we possibly can to conserve the plants and animals, forests and wetlands, and all other parts of nature that Ontarians love and depend on.

Endnotes


- Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, Summary for policymakers of the regional and subregional assessment of biodiversity and ecosystem services for the Americas, IPBES, 6th Session, IPBES/6/L.5 (2018).
- Stuart Pimm et al, "The biodiversity of species and their rates of extinction, distribution and protection" (2014) 344:6187 *Science* 987.
- Christopher Costello et al, "Global fishery prospects under contrasting management regimes" (2016) 113:18 *PNAS* 5125.
- WWF Canada, Living Planet Report Canada: A National Look at Wildlife Loss (Toronto: WWF, 2017).
- Paul Williams and Sarina Jepsen, eds, Bumblebee Specialist Group Report (London: IUCN BBSG, 2013).
- US Fish and Wildlife Service, White-Nose Syndrome: The devastating disease of hibernating bats in North America (October 2017).
- North American Bird Conservation Initiative, The State of North America's Birds 2016 (Ottawa: Environment and Climate Change Canada, 2016).
- O. Reg. 230/08 (Species at Risk in Ontario List), Schedules 1-4.
- Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, Summary for policymakers of the regional and subregional assessment of biodiversity and ecosystem services for the Americas, IPBES, 6th Session, IPBES/6/L.5 (2018) at 22.
- The Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets, UNEP/CBD/COP/DEC/X/2, 2010, Article 2.
- Catalogue of Life, online: <<http://www.catalogueoflife.org>>.
- Environment Canada, Recovery Strategy for the Woodland Caribou (Ottawa: Environment Canada, 2012).
- Michela Pacifici et al, "Species' traits influenced their response to recent climate change" (2017) 7 *Nat Clim Change* 205.
- Government of Ontario, Polar Bear government response statement (2016).
- Charles T Robbin et al, "Hibernation and seasonal fasting in bears: the energetic costs and consequences for polar bears" (2012) 93:6 *Journal of Mammalogy* 1493.
- Martyn E Obbard et al, "Re-assessing abundance of Southern Hudson Bay polar bears by aerial survey: effects of climate change at the southern edge of the range" (2018) *Arctic Science* <https://doi.org/10.1139/AS-2018-0004>.
- Ministry of Natural Resources, Invasive Species Discussion Paper (August 2013).
- Committee on the Status of Endangered Wildlife in Canada, COSEWIC Assessment and Status Report on the Eastern Wolf *Canis sp. cf. lycaon* in Canada (Ottawa: COSEWIC, 2015); Committee on the Status of Species at Risk in Ontario, Ontario Species at Risk Evaluation Report for Algonquin Wolf (*Canis sp.*), an evolutionarily significant and distinct hybrid with *Canis lycaon*, *C. latrans* and *C. lupus* ancestry (Ontario: COSSARO, 2016).
- For example, see Anne E Magurran et al, "Long-term datasets in biodiversity research and monitoring: assessing change in ecological communities through time" (2010) 25:10 *Trends Ecol Evol* 574.
- Convention on Biological Diversity, 5 June 1992, 1760 UNTS 79 (entered into force 29 December 1993), Article 7; The Strategic Plan for Biodiversity 2011-2020 and the Aichi Biodiversity Targets, UNEP/CBD/COP/DEC/X/2, 2010, para 25.
- For example, see Lars Gamfeldt et al, "Higher levels of multiple ecosystem services are found in forests with more tree species" (2013) 4 *Nat Commun* 1340; see also Forest Isbell et al, "High plant diversity is needed to maintain ecosystem services" (2011) 477 *Nature* 199; Tom H Oliver et al, "Declining resilience of ecosystem functions under biodiversity loss" (2015) 6 *Nat Commun* 10122.
- Felicia Keesing et al, "Impacts of biodiversity on the emergence and transmission of infectious diseases" (2010) 468 *Nature* 647; see also M Denise Dearing and Laurie Dizney, "Ecology of hantavirus in a changing world" (2010) 1195 *Ann NY Acad Sci* 99.
- Tim R Hofmeester et al, "Cascading effects of predator activity on tick-borne disease risk" (2017) 284:1859 *Proc R Soc B* 20170453; Taal Levi et al, "Deer, predators, and the emergence of Lyme disease" (2012) 109:27 *PNAS* 10942.
- Cecily Maller, Mardie Townsend & Peter Brown, Healthy Parks Healthy People: The Health Benefits of Contact with Nature in a Park Context – A Review of Current Literature (Melbourne, Australia: Deakin University and Parks Victoria, 2002).
- Ministry of Natural Resources, State of Ontario's Forests Indicator Report (2011), online: <http://www.web2.mnr.gov.on.ca/mnr/forests/public/publications/SOF_2011/indicators/513.pdf>.
- Ministry of Agriculture, Food and Rural Affairs, "Gross Domestic Product, Ontario Economy 2011-2016", online: <http://www.omafra.gov.on.ca/english/stats/economy/gdp_all.htm>.
- Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, Summary for policymakers of the regional and subregional assessment of biodiversity and ecosystem services for the Americas, IPBES, 6th Sess, IPBES/6/L.5 (2018).
- For example, see Julia Reiss et al, "Emerging horizons in biodiversity and ecosystem functioning research" (2009) 24:9 *Trends Ecol Evol* 505.
- Forest Isbell et al, "Biodiversity increases the resistance of ecosystem productivity to climate extremes" (2015) 526 *Nature* 574.
- For example, see C Le Quere et al, "Global carbon budget 2014" (2015) 7 *Earth Syst Sci Data* 47; see also Bronson W Griscom et al, "Natural climate solutions" (2017) 114:44 *PNAS* 11645.
- Martina Furrer et al, Monitoring Programs Sponsored by the Ministry of Natural Resources and their Relevance to Climate Change, Ministry of Natural Resources Climate Change Research Report CCRR-38 (Sault Ste. Marie: Queen's Printer for Ontario, 2014).
- For example, see P Malaspina et al, "Combining spectroscopic techniques and chemometrics for the interpretation of lichen biomonitors of air pollution" (2018) 198 *Chemosphere* 417.
- The last annual report produced for the PWPMP covers the 2014-2015 period.
- Bird Studies Canada, 2017 Annual Report (Port Rowan: Bird Studies Canada, 2017).
- For example, see AS Kallimanis, "Quality of non-expert citizen science data collected for habitat type conservation status in Natura 2000 protected areas" (2017) 7 *Sci Rep* 8873.

- 
36. Kristine Bohmann et al, "Environmental DNA for wildlife biology and biodiversity monitoring" (2014) 29:6 Trends Ecol Evol 358.
 37. Ryan P Powers et al, "A remote sensing approach to biodiversity assessment and regionalization of the Canadian boreal forest" (2013) 37:1 Prog Phys Geog 36.
 38. Woody Turner et al, "Remote sensing for biodiversity science and conservation" (2003) 18:6 Trends Ecol Evol 306.
 39. Nicholas C Coops, Michael A Wulder and Donald Iwanicka, "Exploring the relative importance of satellite-derived descriptors of production, topography and land cover for predicting breeding bird species richness over Ontario, Canada" (2009) 113 Remote Sens Environ 668.
 40. A Cole Burton et al, "Wildlife camera trapping: a review and recommendations for linking surveys to ecological processes" (2015) 52:3 J Appl Ecol 675.
 41. Daniel T Blumstein et al, "Acoustic monitoring in terrestrial environments using microphone arrays: applications, technological considerations and prospectus" (2011) 48:3 J App Ecol 758.
 42. Ministry of Natural Resources and Forestry, "Get natural heritage information" (3 April 2018), online: Ontario.ca <<https://www.ontario.ca/page/get-natural-heritage-information>>.

Chapter 2

Keeping Nature Healthy: Managing Wildlife Disease in Ontario





Wildlife disease is a threat to biodiversity and people. Are we prepared?

Abstract

Disease is part of life, for both humans and wildlife. But wildlife disease can create risks to human health and the economy, as well as the very survival of some species. The Ontario government is currently doing a good job preventing, detecting and managing wildlife disease, but we can expect to face new threats. At a minimum, the Ontario government should make a formal commitment to sustained funding for the Canadian Wildlife Health Cooperative (CWHC), which has been a critical and cost-effective component of the province's success in dealing with wildlife health issues to date.

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2.1 Introduction: the threat of wildlife disease to species and people

Disease is a part of life, for both humans and wildlife. Wildlife diseases shape the evolution of species and ecosystems, but they also have the potential to have devastating impacts on plants, animals, our economy, and our very own health. Monitoring and managing wildlife health is key to minimizing unacceptable risks from disease. According to the World Organisation for Animal Health, monitoring, preventing and controlling wildlife disease are crucial factors for safeguarding biodiversity, and public and animal health worldwide.

Recent declines in Ontario's populations of bats and moose, and the emergence of illnesses like Lyme disease and West Nile virus, have brought wildlife health to the public's attention. In this chapter, the ECO looks at the Ontario government's efforts to prevent, detect and manage wildlife disease. We looked at the roles of the Ministry of Natural Resources and Forestry (MNRF) and other organizations in managing wildlife health. We also looked at a number of case studies to see how the MNRF is actively addressing wildlife disease.



A northern myotis bat with white-nose syndrome.

Photo credit: University of Illinois/Steve Taylor USFWS, (CC BY 2.0).

Diseases can cause major population declines, or even local or total extinctions of a species.

2.1.1 The increasing risk of wildlife disease: new diseases, new environmental conditions

Many diseases have a limited impact on wildlife, occurring at levels that leave species and ecosystems relatively stable. But sometimes, diseases can cause major population declines, or even local or total extinctions of a species. Diseases that arrive in new areas and infect wildlife populations that have never developed immunity can be especially destructive.¹ Unfortunately, wildlife disease is likely to continue to spread into new regions in Ontario as a result of several factors: ongoing wildlife trade, spill over from domestic animals (pets and livestock), the movement of goods and equipment across borders, habitat loss, and a changing climate.

Climate change is worsening the extent and impacts of many wildlife diseases.

Climate change is worsening the extent and impacts of many wildlife diseases.² Most pathogens and the organisms that spread them (called “vectors”) need specific environmental conditions to reproduce and infect hosts, including the right temperature, precipitation and humidity levels. New climatic conditions can expand the geographic range of some diseases and the organisms that carry them. Changing climatic conditions can also make wildlife more susceptible to disease because they may have to move into new areas in order to survive, their migratory patterns may change, or they may suffer reduced immunity due to heat, nutritional stress or even freezing rain. Some of the diseases that affect Ontario's wildlife

that are expected to worsen with climate change are highlighted in boxes spread throughout this chapter.

One non-Ontario, but tragic, example is what happened to the saiga antelope of Kazakhstan. In the spring of 2015, more than 200,000 saiga antelope died in just three weeks, wiping out more than 60% of this critically endangered species. The culprit was a normally harmless bacteria that is commonly present in the noses of saiga. But unusually humid and warm conditions allowed the bacteria to proliferate, causing the animals to suffer hemorrhagic septicemia, or blood poisoning.³ Bizarre and tragic events like these will likely become more common as changing climate conditions begin to shift relationships that have evolved between species over many years. Globally, “mass mortality events” – when many animals die from disease over a short period of time – have been increasing in recent decades.⁴ Events like this one are warning signs for us in Ontario.



In 2015, more than 200,000 saiga antelope died in just three weeks in Kazakhstan, an event that wiped out more than 60% of this critically endangered species.

Photo credit: Navinder Singh, (CC-BY-SA-4.0).

2.1.2 The link between wildlife health and human wellbeing

Wildlife health and our own health are inextricably linked. In 2003, Canada was struck by a devastating outbreak of Severe Acute Respiratory Syndrome (also known as SARS) – a highly contagious viral infection. In just six months, Canada saw an estimated 375 cases of SARS, including 44 deaths. The disease was first diagnosed in China in late 2002 before quickly spreading around the world to infect more than 8,000 people. It is believed that the disease was first transmitted from bats to civet cats, and then to people, who likely picked up the virus in live animal markets in China.⁵

SARS is just one of the many diseases that can be passed from animals to people (known as zoonoses). Researchers estimate that over 60% of existing infectious diseases are zoonotic,⁶ and at least 75% of emerging infectious diseases have animal origins (Figure 1).⁷ The frequency of emerging infectious disease events has been increasing significantly.⁸ In Ontario, zoonotic diseases like Lyme disease (see Part 1 of the ECO’s 2018 Greenhouse Gas Progress Report) and rabies are a serious concern.

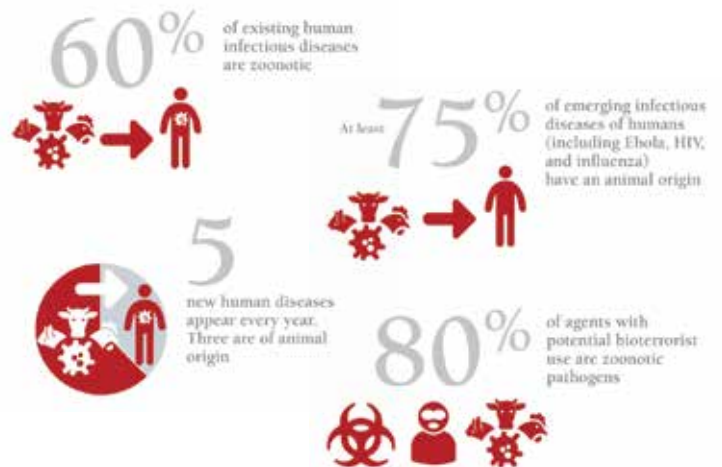


Figure 1. Many infectious diseases originate in wildlife populations.

Source: World Organisation for Animal Health (www.oie.int). Used with permission.

In some cases, diseases can also be passed back and forth between wild populations and domesticated animals like livestock, threatening Ontario's agricultural sector, food safety, and trade relationships. Similarly, wildlife disease can compromise the safety or quality of harvested animals like deer and fish. For example, a number of mammals in Ontario, including foxes and coyotes, are afflicted by mange (a skin disease caused by mites). Beyond the painful effects on the afflicted animals, the spread of mange in Ontario impacts the trapping industry – trappers generally have to burn or bury trapped animals that have mange.

Because of these spillover effects, wildlife disease can have serious impacts on both human health and the economy.

Wildlife disease can have serious impacts on both human health and the economy.

2.2 Managing wildlife health and disease in Ontario

Jurisdictions around the world, including Ontario, have adopted a multi-disciplinary “One Health” approach that recognizes the interrelatedness of human, animal and environmental health (Figure 2). To make this work, however, governments must commit sufficient stable funding to keep tabs on animal health and its intersection with human and environmental health. In Ontario, strategies and actions to deal with wildlife health and disease are shared among different organizations and levels of government.

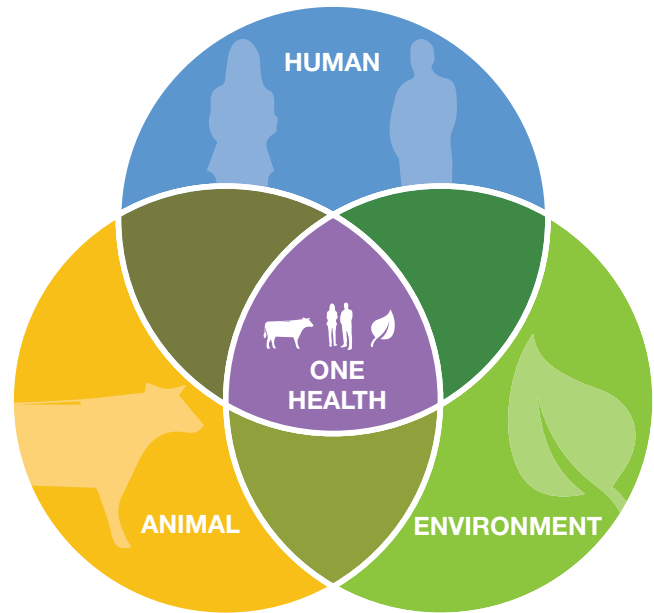


Figure 2. The One Health framework recognizes the interrelatedness of human, animal and environmental health.

The federal, provincial, and territorial governments in Canada share the responsibility of managing wildlife health. Because there are so many facets to wildlife health, there are a variety of agencies and ministries with different interests and obligations, ranging from wildlife management to public health to agriculture and international trade. As a result, it is essential to co-ordinate these responsibilities effectively. The federal, provincial and territorial governments are currently working to develop a National Approach to Wildlife Health in Canada to facilitate a national focus for wildlife health policy.

The Canadian Wildlife Health Cooperative (CWHC) is a national, cost-effective non-governmental hub for information and expertise on wildlife health that co-ordinates efforts to track, diagnose and manage wildlife disease throughout the country. The CWHC runs six regional centres at Canada's veterinary colleges, including the Ontario/Nunavut regional centre based at the University of Guelph. In Ontario, the CWHC and the MNR work in partnership to address wildlife health issues. The Ministry of Health and Long-Term

Care collaborates with CWHC on diseases that have an impact on public health. Similarly, the Ministry of Agriculture, Food and Rural Affairs (OMAFRA) is involved where livestock could be affected; for example, this ministry provides guidance to livestock owners and industry on appropriate biosecurity strategies. Together, all of these groups collaborate to undertake the key elements of a wildlife health program, including: prevention, detection, response and management, and communication.

Brain worm and winter tick – putting pressure on Ontario’s moose



Ontario’s moose population has declined by 20% over the last decade.

Photo credit: bcameron54, (CC BY-SA 3.0).

What’s harmful to one species can sometimes be relatively benign to another. White-tailed deer are known carriers of brain worm, a parasitic worm. While deer can generally tolerate brain worm, when it is passed along to elk or moose through deer feces, an infection is almost always fatal. Infected moose become disoriented and walk in circles, are unable to eat, and eventually die. Brain worm is not currently widespread in Ontario’s moose populations, but deer

ranges are moving northwards because of forestry practices and changing climatic conditions. The risk of brain worm is therefore increasing for Ontario’s northern cervids, including moose, elk and caribou.⁹

Moose health is also compromised by winter ticks, parasitic ticks that feed on moose during the winter. Affected moose must replenish lost blood, and can suffer hair loss resulting from excessive grooming and rubbing on trees for symptom relief. Ultimately, this blood and hair loss can kill moose, especially in early spring. Moose in Ontario are affected by an average of 3,800 ticks, but some have been found with as many as 83,000. Warmer, shorter winters allow these ticks to flourish,¹⁰ meaning that moose will likely face higher tick loads as Ontario’s climate changes.

In the ECO’s 2016 Environmental Protection Report (see Volume 2, Chapter 3.1), we reported on a 20% decline in Ontario’s moose population over the last decade. Researchers have not been able to determine the precise causes of this decline. But in jurisdictions like Minnesota, which has lost roughly 63% of its moose since 2005, brain worm is a major factor. The MNRF is evaluating how a range of environmental factors are affecting Ontario moose, including changes in weather, habitat and the increased prevalence of disease and parasites caused by climate change.

2.2.1 Preventing wildlife disease

The most effective and cheapest way to manage wildlife disease is to prevent it from occurring in the first place. Once a disease becomes established it is often very difficult to control, and management costs and financial impacts can skyrocket.¹¹ In contrast, early detection can sometimes permit effective steps to be taken to prevent diseases from taking hold, such as: vaccinating vulnerable wildlife, creating buffer zones between domesticated and wild animals, or restricting the importation or movement of wild animals known to harbour diseases. These proactive steps often depend on good communication across different jurisdictions to identify emerging threats.

The most effective and cheapest way to manage wildlife disease is to prevent it from occurring in the first place.

For example, global amphibian populations have been decimated by the fungal disease known as Bsal Chytridiomycosis. This fungal infection originated in Asia – but quickly spread with the international commercial trade in amphibians.¹² Luckily, Ontario amphibians have not yet been affected. This could change, however, due to shifting climatic conditions and the potential arrival of the Bsal strain of fungus that has devastated salamander populations in Europe.¹³ In an attempt to prevent this disease from being introduced to Canada, the federal government banned all imports of foreign salamanders without a permit (which is generally only issued for scientific and research purposes) in May 2017. So far, this ban has been effective. Without the detection of this disease in Europe, and good communication about its spread, Canada would not be able to take these proactive measures to safeguard our amphibians. (For more information on amphibian declines, see Chapter 3.3 in our 2015/2016 Environmental Protection Report.)

Keeping chronic wasting disease out of Ontario

Chronic wasting disease (CWD) is a fatal disease that affects cervids like deer, elk, moose and caribou. CWD is caused by prions, which induce abnormal proteins to accumulate in the brain, leading to brain damage and eventually death. This disease is similar to bovine spongiform encephalopathy, also known as mad cow disease, which has killed several hundred people and was devastating to the European livestock sector. Both wild and farmed cervids are susceptible to the disease – and it can easily spread between farmed deer and elk to wild populations. (For more information on CWD, see Chapter 8.1 in our 2002/2003 Environmental Protection Report.)

Culls of infected animals are often done to control CWD, resulting in potentially huge economic costs. If the disease isn't detected in time, it could spread rapidly in the wild and put entire populations of deer, moose, elk and caribou at risk. The evidence on whether CWD can infect humans is inconclusive, and Health Canada warns that the possibility of human transmission cannot be excluded.¹⁴ As a result, CWD may be a serious health risk to those that consume farmed and wild deer, moose, elk and caribou. All of these risks are of great concern to game farmers, wildlife managers, Indigenous communities, hunters, and other Ontarians.

Farmed deer and elk are more susceptible to infection by CWD and other diseases because they are confined together. Deer and elk farming is a small but significant farm industry in Ontario. CWD could spread to Ontario's wild populations through the escape of infected farm deer or elk, and then through natural migration. Escapes of farmed game animals, such as non-native deer species, have happened in Ontario. It could also be introduced to Ontario through infected wild animals that cross into our province from the United States.

CWD has been a major concern in Canada over the last two decades. It was first discovered in Canada in 1996 in a farmed elk that was imported into Saskatchewan from the United States.¹⁵ Since then, outbreaks have occurred in Saskatchewan and Alberta, in both free-ranging and farmed populations. The disease has also been detected in all five states that border Ontario, but to date the disease has not been found in wild cervids in Ontario (Figure 3).

In September 2018, CWD was detected at a livestock farm north of Montreal, Quebec. Subsequently, their provincial government temporarily shut down deer hunting in the Laurentian and Outaouais regions in order to test if it has spread in wild deer populations.

CWD can spread quickly and there is no treatment. The only way to keep the disease from becoming established is to detect it early and take swift action to eradicate it. The best way to catch it early on is to conduct ongoing surveillance of both farmed and wild cervids.

When CWD was detected in nearby jurisdictions, it prompted Ontario to develop a proactive program to prevent the disease from being introduced here. In 2005, the province developed the Ontario Chronic Wasting Disease Surveillance and Response Plan, which provided for multi-agency co-ordination of prevention, surveillance, control and eradication, recovery and communications efforts. The province also introduced regulatory

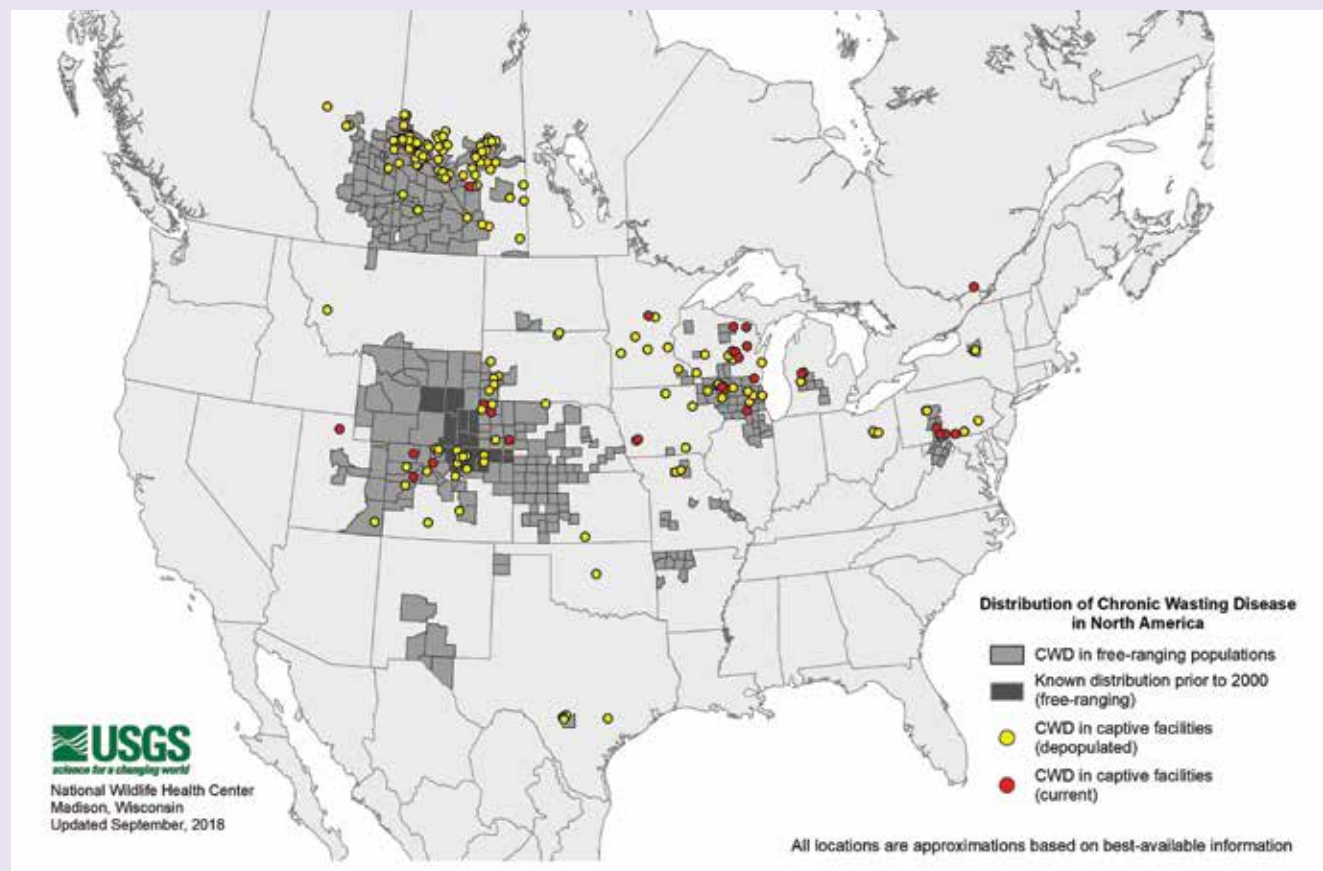


Figure 3. Distribution of chronic wasting disease in North America.

Source: U.S. Geological Survey National Wildlife Health Centre.

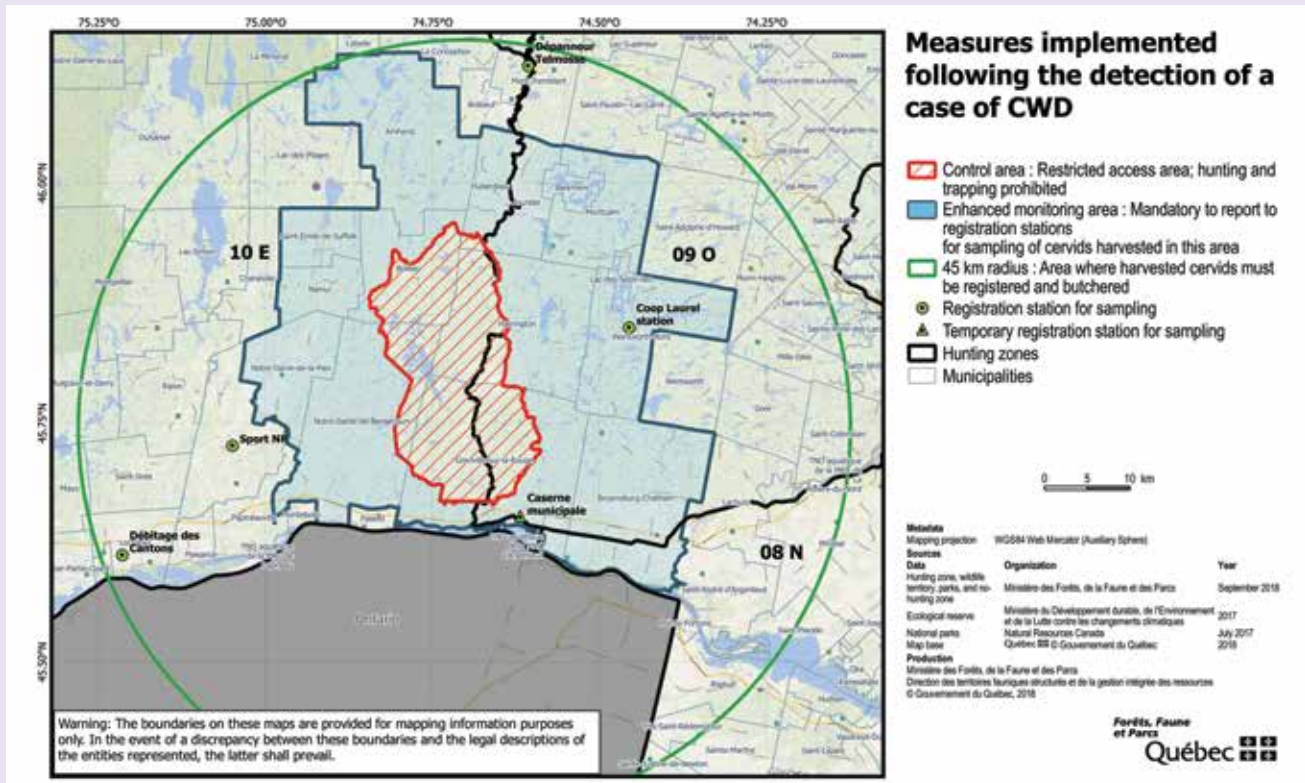


Figure 4. Chronic wasting disease response measures in Quebec.

Source: Gouvernement du Québec

requirements for importing dead and live cervids into the province.¹⁶ A key part of Ontario's CWD efforts is a robust surveillance program, led by the MNR, that samples some wild deer harvested in high-risk locations to monitor for outbreaks of CWD. The OMAFRA also administers a voluntary CWD surveillance program for farmed animals. These effective surveillance programs are critical to allow Ontario to respond rapidly if an outbreak were to occur.

Ontario's chronic wasting disease surveillance programs provide important disease detection and prevention at a very low cost relative to the potential economic impacts of an outbreak of chronic wasting disease. For example, the OMAFRA's surveillance project has only cost roughly \$20,000 per year. In contrast, eradicating the disease

from Canadian farms cost over \$40 million dollars.¹⁷ Surveillance in wild populations is funded through the fees collected for hunting and fishing.

Ontario's cervids are at a high risk for chronic wasting disease. The Ontario government should commit to continue its essential CWD surveillance programs to ensure that Ontario remains free of the disease. The spread of CWD across North America has resulted in huge costs to the public and the destruction of many confined and wild deer and elk.¹⁸ If CWD became established in Ontario, it would have a huge impact on Ontario's wild cervids, which would cause incredible ecological damage. It could also cause millions of dollars in economic losses caused by efforts to control the disease, the destruction of farmed animals, and the loss of hunting opportunities.¹⁹

2.2.2 Detecting disease in wildlife

If diseases cannot be prevented, early detection is critical to minimizing potential damage, maximizing the chances that responses will be effective, and reducing the costs of controlling an outbreak – particularly when wildlife diseases pose a risk to humans (Figure 5).

For example, rabies is a significant and dangerous wildlife disease. It used to be that rabies was primarily found in more rural areas, but the introduction of the raccoon strain of rabies to Ontario has resulted in increasing public health risks because the animals that are susceptible to these strains can live in more urbanized areas. Ontario had its first case of raccoon strain rabies in 1999. It is believed that it was introduced by a raccoon from New York State. This strain quickly spread, but early detection allowed Ontario to initiate a quick response – an effective vaccination campaign. By 2007, Ontario declared that it had eliminated raccoon strain rabies. Luckily, Ontario remained vigilant and continued to monitor for the disease. In 2015, the raccoon strain rabies was detected again in the Hamilton area. Again, this early detection allowed the MNRF to launch a proactive surveillance and vaccination program that has consistently helped to reduce the prevalence of the disease.²⁰ Without this early detection and swift response, Ontarians would certainly be facing a much greater public health risk from raccoon strain rabies.

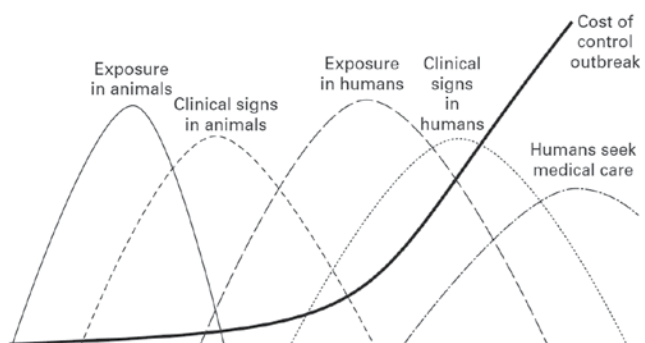


Figure 5. Early control of zoonotic disease reduces costs and minimizes human health risks.

Source: World Bank, 2012.

Because early detection is so important to minimize costs and damage, wildlife disease surveillance is a crucial part of any wildlife health program. Surveillance allows wildlife managers to recognize emerging disease and respond rapidly (when appropriate). It also enables the tracking of changes in the distribution and abundance of diseases over time.

Wildlife disease surveillance is a crucial part of any wildlife health program.

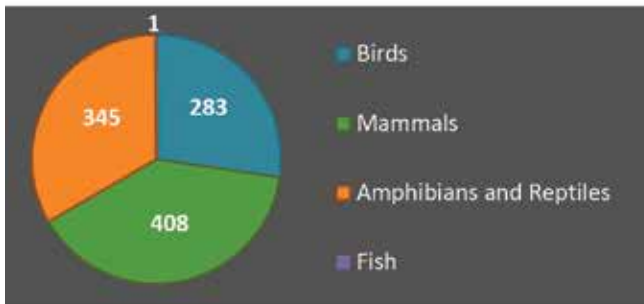
Most well-designed programs use a combination of passive and active surveillance. Passive surveillance generally involves collecting data from local individuals or groups who interact regularly with wildlife. Hunters, anglers, members of the public and government staff frequently report sick or dead animals. For example, ranavirus, a disease that has caused significant mass mortality events, was recently confirmed in a Canadian reptile for the first time after a researcher discovered a sick turtle in a wetland in Hamilton.

But passive surveillance relies mostly on chance encounters, which often results in a lack of geographic coverage and biased sampling (e.g., species that are easily identified or are of greater public interest may be reported more frequently).²¹ In contrast, active surveillance involves targeted sampling of a particular species or community to discover whether a specific pathogen is present. Once the samples are obtained, they can be screened for disease.

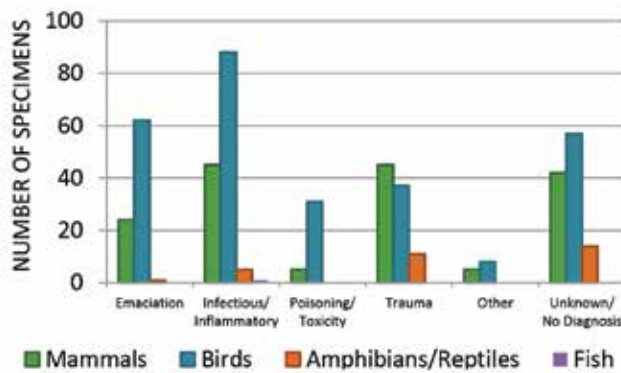
The CWHC and provincial governments work together on disease surveillance. The CWHC processes samples that are submitted by members of the public, government staff and researchers. The MNRF is responsible for most on-the-ground surveillance activities and sampling. When the CWHC receives samples, it performs diagnostic tests in order to assess and track wildlife disease (Figure 6).

SPECIMEN submission summary

- 1037 Specimens Submitted
- 569/1037 for Special Projects
- 993 Calls to CWHC Wildlife Hotline



CAUSE of death (excluding special project cases)




NOTE: Animals reported represent the data currently available in the CWHC database and should be considered preliminary. These data do not include all diagnostic testing for the selected pathogens carried out in Ontario. Additional testing is performed by other agencies and organizations.

The MNRF’s on-the-ground surveillance efforts vary widely depending on the disease and the wildlife affected. In some instances, the ministry’s surveillance efforts are targeted and robust; for example, the ministry conducts extensive sampling for chronic wasting disease. However, other disease detection programs depend on ministry staff taking samples as a secondary task while they are out in the field. For example, the ministry’s current efforts to detect the chytrid fungus associated with chytridiomycosis in amphibians largely depend on MNRF staff (like fire crews) voluntarily swabbing animals when they encounter them in the course of their other duties. MNRF staff also conduct field investigations in relation to reported incidents (such as mass die-offs), but their capacity to do so is limited.

The ministry also faces challenges in ensuring that surveillance occurs consistently throughout the province. For example, there are a number of logistical barriers to obtaining samples from more remote areas of the province. In response to this challenge, the CWHC is working on developing a remote reporting system that would allow it to detect trends that may warrant a field investigation. Even with such developments in advanced technology, however, surveillance will continue to be a challenge for the MNRF. Ongoing surveillance is critical for early detection of wildlife disease, but such field work requires a commitment to both staff and financial resources.

Figure 6. CWHC surveillance in 2017.

Source: Canadian Wildlife Health Cooperative (<http://www.cwhc-rcsf.ca>). Used with permission.



Snake fungal disease – an emerging threat

Ontario has 17 native snake species. These predators provide a wealth of pest-control services and play an important role in the food chain. But they are under threat from a variety of pressures, including road mortality, habitat loss and human persecution. Recently, an emerging fungal disease affecting snakes has been raising the alarm across eastern North America and Europe.

Infected snakes develop skin lesions and swelling, and can eventually develop fatal systemic infections. The fungus that causes the disease can persist in the environment, making it difficult to control. Climate change, including warmer hibernation temperatures and wet weather, is linked to outbreaks.

The disease was first detected in Ontario in 2015 in an eastern foxsnake in Point Pelee National Park, and has since been confirmed in several other snake species in the province.²² A 2017 study concluded that all species of snakes may be susceptible to the disease.²³ Thirteen of Ontario's snake species are already listed as at-risk under the Endangered Species Act, 2007. Snake fungal disease could be an added pressure to snake populations already threatened in Ontario.

In 2017, the CWHC released its threat assessment for snake fungal disease and concluded that it is a credible threat to Canadian biodiversity, but that the magnitude of the threat is not yet clear. The CWHC recommended a precautionary approach to managing this disease, including surveilling vulnerable populations and limiting the further release of the fungus by educating people in the pet trade and herpetologists.

The MNRF is conducting targeted research on fox snakes in Rondeau Provincial Park to determine survivorship of infected snake populations, and

is collaborating with the CWHC to investigate the effects of temperature and seasonality on snake fungal disease outcomes in corn snakes. MNRF staff are also sampling snakes for snake fungal disease elsewhere in the province.

Right now, we don't have enough information about snake fungal disease to craft an effective response. But surveillance is still critically important - gathering information about the distribution and transmission of this disease will help us find ways to manage the disease if it continues to spread.

2.2.3 Responding to and managing wildlife disease

Disease is a natural part of ecological systems, and not all wildlife disease needs to be addressed. However, the MNRF needs to assess the risks from a disease to determine when intervention may be necessary to prevent serious biodiversity losses, harm to human health and damage to the economy. Disease can be addressed by managing the pathogen or vector. For example, the Halton Health Department uses larvicides in some catch basins and storm water retention ponds to control mosquito populations in an effort to manage the spread of West Nile virus. Disease can also be addressed by managing the host population. For example, host populations may be quarantined, culled, treated or vaccinated. When choosing how to respond to a disease outbreak, government must try to strike a balance between protecting wildlife, human health and the economy.

The MNRF needs to assess the risks from a disease to determine when intervention may be necessary.

Once again, the CWHC and provincial government play co-ordinated roles in responding to disease. The CWHC provides valuable support and advice in

developing management response strategies once diseases are detected. For example, when Ontario's bats became afflicted by white-nose syndrome (a fungal disease that has wiped out millions of bats worldwide), the CWHC provided extensive advice and expertise in the development of Ontario's White-nose Syndrome Response Plan (see Chapter 3.2 of the ECO's 2016 Environmental Protection Report). White-nose syndrome is an enormous challenge for wildlife managers across eastern North America. Hopefully the lessons learned in Ontario and neighbouring jurisdictions will help stem the spread of the disease on the western side of the continent.

MNRF staff play a central role in on-the-ground disease response. For example, the MNRF is actively involved in controlling the spread of rabies in wildlife, a fatal disease that can infect all mammals, including humans. Rabies is commonly carried by bats, foxes, raccoons and skunks. As of September 2018, 450 cases of rabies had been confirmed in animals in the province over the last three years.²⁴ In response, the ministry has distributed over three million oral rabies vaccines baits, as well as operating a trap-vaccinate-release program in areas with outbreaks. The MNRF has also established surveillance zones within 50 kilometres of confirmed cases and tested over 10,000 samples (Figure 7). This incredibly dangerous and destructive disease would undoubtedly be more widespread in the province without the ministry's efforts.

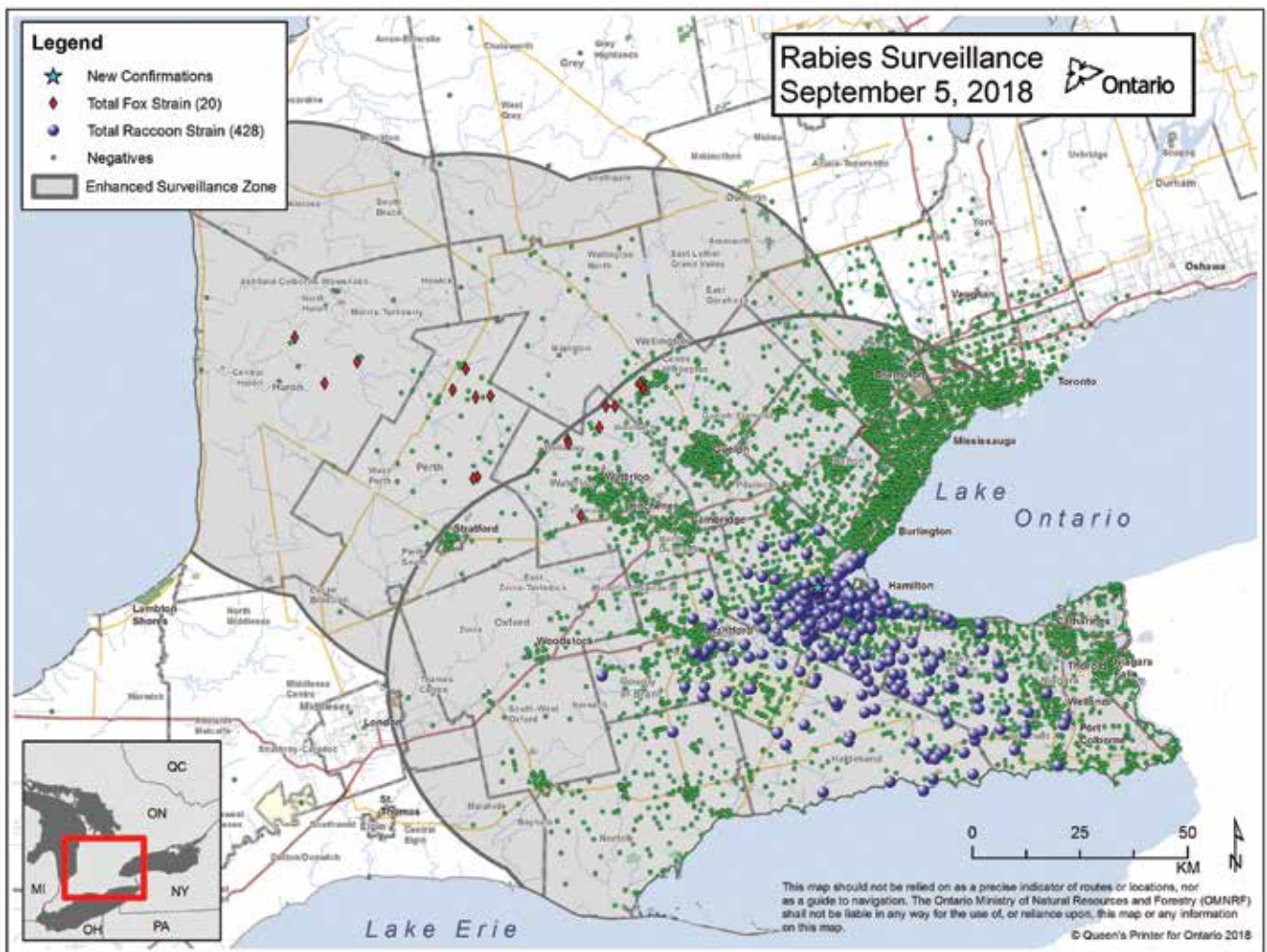


Figure 7. Rabies surveillance zones in southern Ontario.

Source: Ministry of Natural Resources and Forestry, 2018.

Viral hemorrhagic septicemia – a danger to Ontario’s fish

Sudden and mass die-offs of fish are alarming to people. The public needs to know what’s going on, and if it’s still safe to swim, drink and fish in their lake. Several mass fish-kills have been reported in Lake Simcoe in recent years and have been linked to a virus found in many species of fish.



Dead fish in Cook’s Bay, Lake Simcoe.

Photo credit: Heidi Riedner/Georgina Advocate. Used with permission.

Viral hemorrhagic septicemia (VHS) is a disease that has been found in Ontario since 2005. Infected fish tend to have bulging eyes, bloated abdomens, pale gills, darker bodies, and experience hemorrhaging in their bodies. It is not always fatal, but sick fish have much higher mortality rates when put under additional stressors (e.g., poor water quality and/or warmer water, which holds less oxygen). This means that VHS is becoming a much bigger risk to Ontario’s fish as climate change causes warmer lake temperatures.

The virus spreads in water, and by contact with infected fish or their body fluids. People can spread the virus by moving contaminated fish, live bait, water, boats and other equipment. The MNR is taking action to attempt to slow the spread of the disease, including: educating anglers; restricting the movement of commercial baitfish; restricting the collection of and treatment

of wild spawn for stocking; random sampling across Ontario; and sampling from high-risk lakes and from reported die-offs. The ministry is giving the public reassurance about the safety of their lakes, and providing them with tools to prevent the further spread of this disease in Ontario. Continued monitoring of this disease will help us evaluate the best approaches to manage it.

2.2.4 Communication

Communicating information on wildlife diseases to all of the parties involved in managing wildlife health is key – both within the province and across jurisdictions. This helps to ensure that wildlife managers are aware of emerging risks. It also makes it easier to determine if management actions are working and guide continuous improvement.

The CWHC maintains a national wildlife disease database that allows critical information to be shared between researchers, wildlife managers, decision-makers and other stakeholders. The CWHC also reports quarterly and annually on its activities and findings (see Figure 6).

Epizootic hemorrhagic disease – Ontario sees its first cases of the deadly deer disease

In September 2017, Ontario saw its first confirmed cases of epizootic hemorrhagic disease, a highly fatal deer disease. Outbreaks of this disease in the United States have decimated local deer populations; a 2012 outbreak in Michigan killed nearly 15,000 deer. Infected deer experience a sudden onset of symptoms, including loss of appetite and fear of humans, weakness, fever, excessive salivation and a rapid pulse and breathing. They eventually experience extensive hemorrhaging and typically die within 36 hours. There is no known way to treat or control the disease.

The disease is not spread deer to deer. Instead, deer become infected when they are bitten by midges

that carry the virus. The spread of the disease is highly dependent on environmental conditions – the midges that carry the virus are killed with the onset of frost and winter weather. Epizootic hemorrhagic disease is likely to become more common as climate change causes warmer temperatures and shorter winters, which can prolong the midge breeding season and the conditions that allow the transmission of the virus.

The MNRF is working with the CWHC, as well as the OMAFRA, the Canadian Food Inspection Agency, and stakeholder organizations to actively monitor for epizootic hemorrhagic disease in Ontario. In its efforts to monitor the disease, the MNRF has made extensive communications efforts through social media, fact sheets, media interviews and public presentations. This type of surveillance program is necessary in order to ensure that deer populations are managed effectively.



The MNRF’s Facebook post about epizootic hemorrhagic disease reached 1.4 million people and was shared almost 20,000 times.

Photo credit: MNRF/Facebook.

2.3 Conclusion: Ontario needs a strong commitment to wildlife health

Wildlife diseases are a threat to Ontario's biodiversity, economy and public health. This threat should not be underestimated. In general, the MNRF is responsive to wildlife disease, particularly where there are risks posed to humans or the potential for large economic losses, as evidenced by its chronic wasting disease and rabies programs.

In the coming years, managing wildlife health will become more challenging and important than ever – there are new threats on the horizon. As Ontario's climate becomes warmer and wetter, some diseases and the organisms that spread them will thrive, reducing the health of host populations. The movement of goods and wildlife across borders also increases the risk of introducing new diseases. Ontario needs to be prepared for both increasing incidences of new wildlife disease and worsening impacts from diseases that are already established in the province.

To meet these rising challenges, the government needs to maintain, and strengthen when necessary, its critical surveillance work. One of the most important parts of preparedness is the early detection of wildlife disease (see Chapter 1 of this volume for a discussion of the importance of biodiversity monitoring). This requires an ongoing commitment of staff and financial resources to conduct disease surveillance, including the collection and analysis of samples.

A critical element of the success of Ontario's wildlife health efforts to date has been the Ontario government's continued support and collaboration with the Canadian Wildlife Health Cooperative. Most of the CWHC's funding comes from the federal and provincial/territorial governments. In 2017/2018, the Ontario government provided a total of \$371,000.²⁵ In addition to providing regular funding to the CWHC, the MNRF regularly provides funding for Ontario-specific special

projects to address emerging and significant threats. For example, it has supported special CWHC projects to develop diagnostic testing capacity for chytrid fungus, snake fungal disease, canine distemper, white-nose syndrome, and epizootic hemorrhagic disease.

There are no formal commitments to sustained funding of the CWHC, which precludes effective strategic planning and makes the program vulnerable.

Ontario is benefitting greatly from its partnership with the CWHC at a very small cost. Without the CWHC, the Ontario government would have to find a way to replace the expertise and services it provides, undoubtedly at a much higher price. However, there are no formal commitments to sustained funding of the CWHC, which precludes effective strategic planning and makes the program vulnerable. Without the essential work that the CWHC does, Ontario's wildlife would be at a much greater risk from disease. **The ECO recommends that the provincial government provide a formal commitment to sustained funding to the Canadian Wildlife Health Cooperative.** When it comes to the shared health of Ontarians and our wildlife, it is critical that we are not penny wise and pound foolish.

Endnotes

1. For example, see Peter Daszak et al, "Emerging Infectious Diseases of Wildlife – Threats to Biodiversity and Human Health" (2000) 287 *Science* 443.
2. C Drew Harvell et al, "Climate Warming and Disease Risks for Terrestrial and Marine Biota" (2002) 296 *Science* 2158; Sonia Alitzer et al, "Climate Change and Infectious Diseases: From Evidence to a Predictive Framework" (2013) 341 *Science* 514; Larissa A Nituch and Jeff Bowman, "Community-Level Effects of Climate Change on Ontario's Terrestrial Biodiversity – CCRR-36 (Sault Ste. Marie: Queen's Printer for Ontario, 2013).
3. Richard A Kock et al, "Saigas on the brink: Multidisciplinary analysis of the factors influencing mass mortality events" (2018) 4 *Sci Adv* eaao2314.
4. Samuel B Fey et al, "Recent shifts in the occurrence, cause and magnitude of animal mass mortality events" (2015) 112:4 *PNAS* 1083.
5. Commission to Investigate the Introduction and Spread of SARS in Ontario, Volume 2 – Spring of Fear (Toronto: 2006).
6. Mark EJ Woolhouse and Sonya Gowtage-Sequiera, "Host range and emerging and reemerging pathogens" (2005) 11:12 *Emerg Infect Dis* 1842; Louise H Taylor, Sophia M Latham and Mark EJ Woolhouse, "Risk factors for human disease emergence" (2001) 356 *Phil Trans R Soc Lond* 983.
7. Louise H Taylor, Sophia M Latham and Mark EJ Woolhouse, "Risk factors for human disease emergence" (2001) 356 *Phil Trans R Soc Lond* 983.
8. Kate E Jones et al, "Global trends in emerging infectious diseases" (2008) 451 *Nature* 990.
9. Robert S Rempel, "Effects of Climate Change on Moose Populations: A Vulnerability Analysis for the Clay Belt Ecodistrict (3E-1) in Northeastern Ontario (Thunder Bay: MNRF, 2012) at 4. See also Murray W Lankester, "Understanding the Impact of Meningeal Worm, *Parelaphostrongylus tenius*, on Moose Populations" (2010) 46 *Alces* 53.
10. WM Samuel, "Factors Affecting Epizootics of Winter Ticks and Mortality of Moose" (2007) 43 *Alces* 39.
11. G Wobeser, "Disease management strategies for wildlife" (2002) 21:1 *Rev Sci Tech Off Int Epiz* 159.
12. Simon J O'Hanlon et al, "Recent Asian origin of chytrid fungi causing global amphibian declines" (2018) 360 *Science* 621.
13. Lee Berger et al, "History and recent progress on chytridiomycosis in amphibians" (2016) 19 *Funct Ecol* 89.
14. Bureau of Microbial Hazards (BMH), Food Directorate, Health Products and Food Branch, Health Canada, Health Products and Food Branch (HPFB) Risk Advisory Opinion: Potential Human Health Risks from Chronic Wasting Disease (26 April 2017).
15. Sarah Kahn et al, "Chronic wasting disease in Canada: Part 1" 45 *Can Vet J* 397.
16. O Reg 666/98 (Possession, Buying and Selling of Wildlife).
17. Technical Working Group assembled under the Inter-Agency Oversight Committee (IOC) for Chronic Wasting Disease, Canada's National Chronic Wasting Disease Control Strategy (Regina: Saskatchewan Environment on behalf of the Inter-Agency Oversight Committee for Chronic Wasting Disease, 2005).
18. Steve Bunk, "Chronic Wasting Disease" (2004) 2:4 *PLoS Biol* 0427.
19. Rick Rosatte et al, "Chronic Wasting Disease Surveillance Program and Proactive Response Plan for Ontario, Canada" (2014) 3:2 *CWBM* 52.
20. Canadian Food Inspection Agency, "Rabies in Canada" (21 June 2018), online: [inspection.gc.ca <http://www.inspection.gc.ca/animals/terrestrial-animals/diseases/reportable/rabies/rabies-in-canada/eng/1356156989919/1356157139999>](http://inspection.gc.ca/animals/terrestrial-animals/diseases/reportable/rabies/rabies-in-canada/eng/1356156989919/1356157139999).
21. Jonathan M Sleeman, Christopher J Brand and Scott D Wright, "Strategies for Wildlife Disease Surveillance" Chapter 37 in A Alonso Aguirre, Richard S Ostfield and Peter Daszak (eds), *New Directions in Conservation Medicine: Applied Cases in Ecological Health* (New York: Oxford University Press, 2012).
22. Canadian Wildlife Health Cooperative, *Snake Fungal Disease in Canada Rapid Threat Assessment* (January 2017).
23. Frank T Burbrink et al "Host susceptibility to snake fungal disease is highly dispersed across phylogenetic and functional trait space" (2017) 3:12 *Sci Adv* e1701387.
24. Ministry of Natural Resources and Forestry, "Rabies in wildlife" (28 June 2018), online: [Ontario.ca <https://www.ontario.ca/page/rabies-wildlife>](https://www.ontario.ca/page/rabies-wildlife).
25. CWHC-RCSF, *State of Wildlife Health – CWHC Annual Report 2017/2018*, online: [CWHC-RCSF.ca <http://2017-2018.cwhc-rcsf.ca>](http://2017-2018.cwhc-rcsf.ca).



Environmental
Commissioner
of Ontario



1075 Bay Street, Suite 605, Toronto, Ontario M5S 2B1
Tel: 416-325-3377 Fax: 416-325-3370 1-800-701-6454
www.eco.on.ca

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VOLUME 4

BACK TO BASICS

Southern Ontario's Wetlands and Forests





Purposes of the Environmental Bill of Rights include:

1. The prevention, reduction and elimination of the use, generation and release of pollutants that are an unreasonable threat to the integrity of the environment.
2. The protection and conservation of biological, ecological and genetic diversity.
3. The protection and conservation of natural resources, including plant life, animal life and ecological systems.
4. The encouragement of the wise management of our natural resources, including plant life, animal life and ecological systems.
5. The identification, protection and conservation of ecologically sensitive areas or processes.

Select citations have been included to help readers understand where the information the ECO cites comes from and to assist them in investigating an issue further should they be interested. Citations may be provided for: quotes; statistics; data points; and obscure or controversial information. Endnotes for these facts are generally only included if the source is not otherwise made clear in the body of the text and if the information cannot be easily verified. Exhaustive references are not provided.

Ministries were provided the opportunity to provide comments on this report. Ministry comments are available on our website.

Southern Ontario's Wetlands and Forests

Southern Ontario was once covered with forests, interspersed with wetlands, lakes and rivers. Almost three-quarters of these wetlands have been lost, while southern Ontario as a whole has only about 25% forest cover remaining. And yet the province is allowing continuing destruction of the remainder in favour of agriculture, urban development and aggregate extraction.

This is bad public policy.

Wetlands and forests provide vital habitat for wildlife and ecological services for humans, including essential buffers against flooding. Without them, we will lose further ground on biodiversity and resilience to climate change. Many parts of southern Ontario already have less than the minimum coverage of wetlands and forests needed to even moderately support healthy wildlife and ecosystems. The Ontario government has claimed for years to be protecting the remaining wetlands and forests, but in fact they continue to be lost.

This volume shows how the provincial government continues to allow loss of both wetlands and forests, and how to get them back.

Chapter 1 shows how the Ontario government should halt and reverse the loss of wetland area and function.

Chapter 2 shows how the Ontario government should grow and protect southern Ontario's forests, ensure access to appropriate tree seeds, and support urban trees.



Wetland and forest near Crane River on the Bruce Peninsula.

Photo credit: Ian Adams. Used with permission.

Chapter 1

Protecting Southern Ontario's Wetlands



Abstract

Southern Ontario has lost over 72% of its wetlands, and wetland loss continues today. Despite the wide array of essential ecosystem services that wetlands provide, the government continues to fail to protect the few wetlands we have left. Existing wetland conservation efforts need to be enhanced, not just maintained. There are several fundamental actions the government needs to take to halt wetland loss. First, the wetland evaluation system needs to be improved. All unevaluated wetlands should be presumed significant until proven otherwise to prevent further wetland loss while completing lengthy evaluation and designation procedures. Next, wetland policies and programs need to be strengthened to tackle all the main drivers of wetland loss, including agricultural and development activities. Most importantly, the province must empower conservation authorities to effectively protect wetlands from all serious threats. Finally, strong regulations for wetland offsetting need to be developed to ensure that key ecological functions are successfully replaced in the select circumstances that wetland loss is truly unavoidable.



Wetlands provide critical habitat and flood control. Government is letting them be destroyed.

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1.1 Introduction

The world is estimated to have lost at least 64% of its original wetland area in the 20th century as natural landscapes were degraded and destroyed to make way for homes, roads, farms and industry.¹ Ontario holds about 6% of the remaining wetlands in the world, and 25% of Canada's total. However, these valuable assets are dwindling. Southern Ontario has lost nearly three quarters of its original wetland cover, and wetlands are still being destroyed to this day (see Figure 1).

Southern Ontario has lost nearly three-quarters of its original wetland cover.

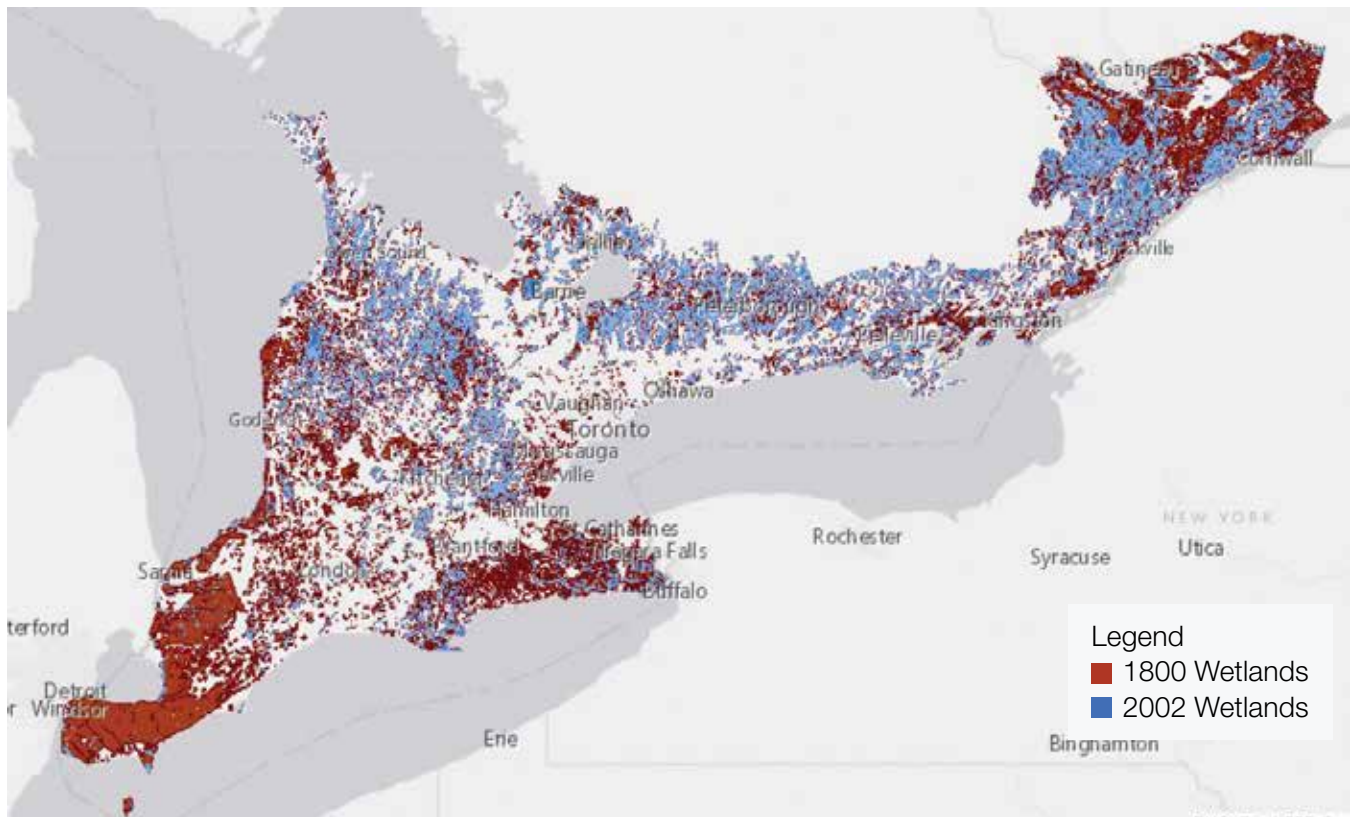


Figure 1. Map of wetland loss in southern Ontario. This map compares wetland cover in 1800 (brown and blue) to remaining wetland cover in 2002 (just blue) in southern Ontario, also referred to as the Mixedwood Plains ecozone. The brown areas therefore represent wetland area loss.

Source: Duck's Unlimited Canada, 2015. Generated using datasets from Ducks Unlimited Canada's (DUC) Southern Ontario Wetland Conversion Analysis (2010).



In recent decades, our understanding and appreciation of wetland services has grown and the government has taken steps to protect certain wetlands. Many wetlands across southern Ontario have been recognized as significant for their ecological, social, cultural and economic values. Eight of Ontario’s wetlands are designated as internationally important under the Ramsar Convention, an international wetlands treaty. Ontario’s Great Lakes coastal wetlands provide migratory bird habitat of continental significance, with many species flying each year from Central and South America all the way to Ontario. The peatlands in Ontario’s Far North are among the most biologically productive subarctic wetlands in the world, and represent a globally significant carbon store.

Unfortunately, simply recognizing the significance of these wetlands has not resulted in sufficient protections. Despite the essential ecosystem services these wetlands provide, they are often regarded as obstacles to competing land uses. The province has long failed to confront the leading causes of wetland loss, leaving even our most significant wetland habitats vulnerable to destruction.

The Ontario government has recently released its Wetland Conservation Strategy for Ontario, 2017-2030, which commits to halting net wetland loss by 2025. However, in the absence of meaningful policy action, the strategy’s timelines still allow wetland loss to continue for at least the next seven years. This chapter examines how the Ontario government can address the key barriers to wetland conservation to prevent further wetland loss in southern Ontario and ultimately achieve net gain of both area and function.

1.1.1 What is a wetland?

Wetlands are lands that are seasonally or permanently covered in shallow water, or lands where the water table is close to the surface of the soil. In both instances, the presence of water creates conditions that favour the growth of water-tolerant or water-loving plants and the development of hydric (waterlogged) soils.

Wetlands are often transitional habitats, connecting aquatic and terrestrial ecosystems. They can exist in isolation or can be functionally connected to other wetlands, forming large wetland complexes. Wetlands vary in size and type, and their distribution across the province depends on various ecological and geographical factors. More recently, humans have become significant drivers of change in wetland distribution.

There are four main types of wetlands: swamps, marshes, bogs and fens.



Swamp in Keddy Nature Sanctuary.

Photo Credit: Awakebutterfly, (CC BY-SA 4.0).



Marsh in Point Pelee National Park.

Photo Credit: Ken Lund, (CC BY-SA 2.0).



Sphagnum Bog in Mer Bleue Conservation Area.

Photo Credit: P199, (CC BY 2.5).



Fen in Torrance Barrens Conservation Reserve.

Photo Credit: Larissa Sage. Used with permission.

Swamps are largely dominated by trees and shrubs, and are often flooded for part of the year. Swamps vary widely in vegetation, age, and ecological setting, and they are generally the most biologically diverse and productive wetland type.

Marshes often have open areas of water with floating plants and non-woody emergent plants, such as cattails, reeds and grasses.

Bogs and fens are peat-filled areas that are common in northern Ontario. They are typically covered in sphagnum moss. Bogs receive water only from rainfall and surface runoff, and are strongly acidic and nutrient poor. Unlike bogs, fens are fed by groundwater. They are less acidic and more nutrient-rich than bogs, and have a higher diversity of plant life.

1.1.2 The value of wetlands

Wetlands provide Ontario with an amazing number of benefits (see Figure 2). Wetlands can store water, acting like a sponge during wet periods and gradually recharging groundwater, which in turn replenishes soils and streams across the larger landscape. Wetlands provide critical reservoirs during storms and heavy rains, protecting us from the worst impacts of floods. Wetlands can stabilize shorelines and control erosion, protecting both the land and water quality. They purify water by filtering out nutrients, sediments and pollutants from groundwater and surface runoff before discharging it to other water bodies. Wetlands also provide habitat for many species of plants and animals, including an estimated 20% of Ontario's species at risk.² For all of these reasons, both the federal and provincial governments have recognized that conserving and enhancing wetland habitat is vital for supporting Canada's actions to sustain biodiversity.

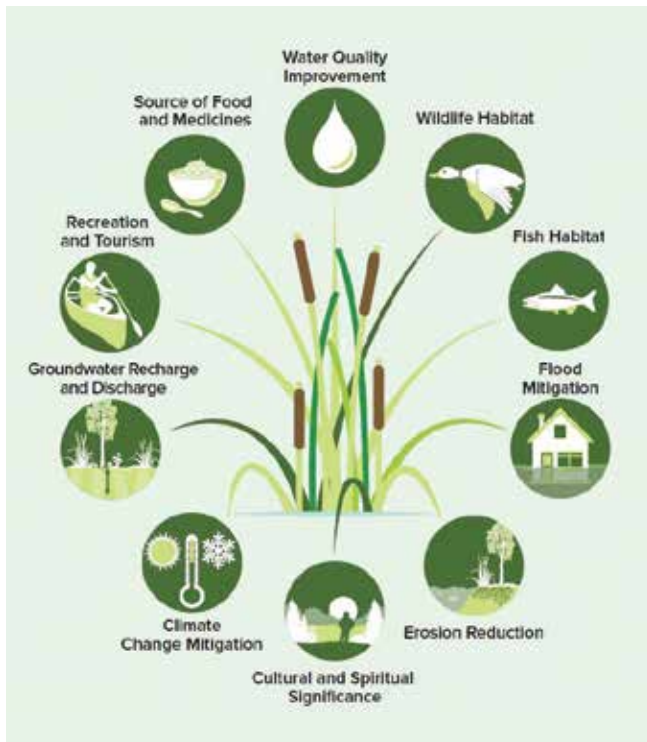


Figure 2. The many services that wetlands provide.

Source: MNRF.

Wetland services are becoming even more essential as our climate changes. Intact wetlands help to maintain water flow patterns and reduce some of the impacts of extreme weather events. Even a wetland as small as 2 hectares can retain water runoff from an area 70 times its size, buffering against flooding.³ Wetland conservation can also contribute to climate change mitigation, as undisturbed wetlands can store large quantities of carbon.



Even small wetlands, such as the one shown above beside the Credit River, help to absorb water from the surrounding landscape and can reduce flooding impacts.

Photo Credit: (CC0 1.0).

Southern Ontario wetlands often act as green infrastructure, a service that provides at least \$14 billion in annual economic benefits.⁴ For example, one recent study found that leaving wetlands intact rather than draining them for agriculture reduced the costs of flood damage from severe storms by up to 38%.⁵ However, as numerous Indigenous groups, environmental organizations, and members of the public have argued, we should not rationalize wetland conservation solely around economic benefits. Wetlands are valuable in and of themselves, irrespective of present or future human uses. Many people strongly believe that the intrinsic value of natural features is reason enough to ensure their long-term conservation.

1.2 The sad state of wetlands in southern Ontario

The failure to recognize the value of wetlands across southern Ontario has had staggering impacts. Prior to European settlement, roughly 25% of southern Ontario was covered in wetlands. As of 2002, wetland cover had shrunk to just 6.8%.⁶ As noted above, this represents a loss of over 72% of wetland cover. A study by Ducks Unlimited Canada determined that 3.5% of this total loss (equivalent to about 350 large lost wetlands each year) occurred in the not-so-distant past, between 1982 and 2002.

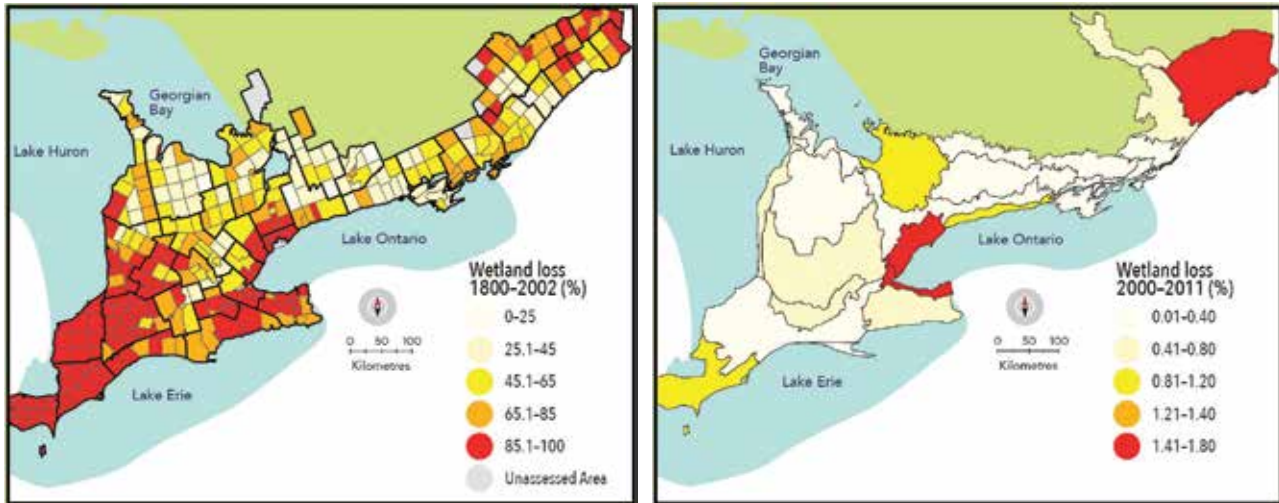


Figure 3. Wetland loss in southern Ontario's Mixedwood Plains ecozone from 1800-2002, and more recently, from 2000-2011.

Source: Ducks Unlimited Canada, Southern Ontario Wetland Conversion Analysis, (2010) (left), Ontario Biodiversity Council, (2015) (right).

Despite these profound historic losses, southern Ontario's remaining wetlands are still being destroyed (see Figure 3). Between 2000 and 2010, (the most recent period for which we have complete data) southern Ontario lost an additional 0.6% of the remaining wetland area (see Figure 4).⁷ This represents a loss of 61.5 km² of wetlands, an area roughly the size of the entire City of Waterloo. This

suggests that the rate of loss from 2000 to 2010 may be less than that of the previous two decades, but it is still continuing on a downward trend.⁸ Rates of loss have lessened for a number of reasons, including enhanced protection and restoration efforts. There are also simply fewer wetlands remaining on the landscape to conflict with human activities.

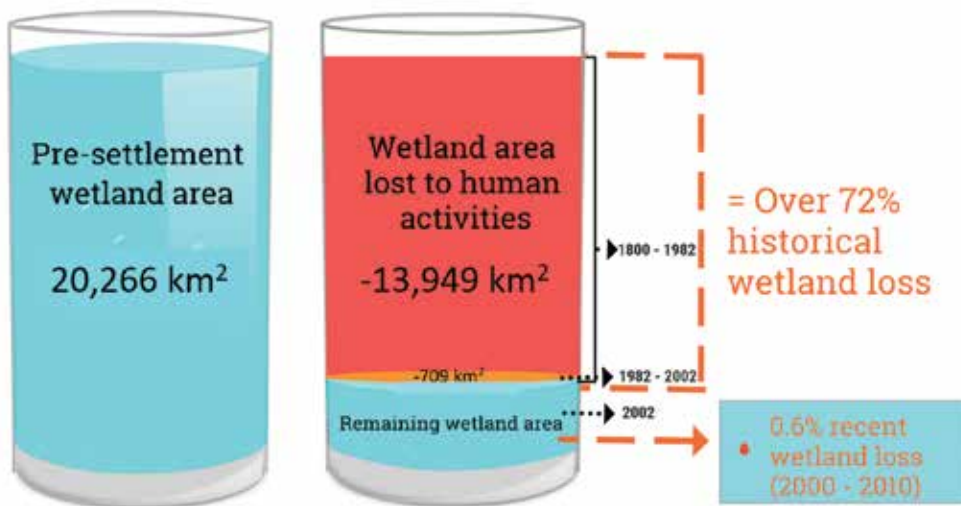


Figure 4. Recent wetland loss as a proportion of remaining wetlands. Southern Ontario lost over 72% of its original pre-settlement wetland area by 2002. The recent 0.6% loss is a proportion of the *remaining* 27.7% of wetlands in southern Ontario in 2002.

Source: Created by the Environmental Commissioner of Ontario.

Wetland loss has been most pronounced in southwestern Ontario, and some regions of eastern Ontario. For example, Essex County had the highest concentration of pre-settlement wetland area (83%), and as of 2002, only 1.6% of this original area remained.⁹ St. Clair Region Conservation Authority reported in its 2013 Watershed Report Card that wetlands cover only 0.9% of the watershed, compared to the minimum of 10% cover Environment Canada recommends for healthy watersheds.¹⁰ As of 2018, wetland cover has shrunk to just 0.1% of this watershed.

Unfortunately, these are all conservative estimates of wetland loss. Although better mapping technology now captures some smaller wetlands, wetlands that are less than 0.5 hectares (roughly the size of a football field) are still not accounted for in recent estimates of wetland loss.¹¹ Small wetlands and vernal pools (temporary pools of water) provide essential breeding ground and habitat for many species, and smaller wetlands are actually better at filtering out pollutants than larger wetlands.¹² Despite their value, small wetlands are more likely to be the first to be removed to accommodate development projects and agricultural activities.



A vernal pool in Backus Woods. Small ephemeral wetlands and vernal pools provide unique habitats for wood frogs, Jefferson salamanders and fairy shrimp with little to no threat from the fish predators found in larger freshwater environments.

Photo Credit: John Oyston, North American Native Plant Society. Used with permission.

With fewer wetlands, both rural and urban regions across the province are increasingly vulnerable to flooding, droughts, algal blooms, soil erosion, loss of species habitat and numerous other environmental consequences. Many of these threats are increasing in both frequency and severity as climate change progresses, and without healthy and abundant wetlands, we lose our ability to adapt.

1.2.1 Why are southern Ontario's wetlands disappearing?

Wetland cover in southern Ontario has been steadily shrinking due to a number of human activities that harm or destroy wetlands (Table 1). The key continuing causes of wetland loss in southern Ontario are briefly discussed below. Like most environmental pressures, the cumulative impacts of all of these activities, through repeated and multiple disturbances, have led to greater wetland loss or degradation than any threat on its own. The fate of individual wetlands is often determined on a case-by-case basis, and overall wetland cover is declining due to a slow death by a thousand cuts.

Table 1. Primary causes of wetland loss in southern Ontario from 2000 – 2010. Land cover categories represent the activities that replaced former wetland area.¹³

Source: MNRF data.

Activities responsible for wetland loss ^a	Area of loss (km ²)	Percent of total loss
Agriculture (cultivated fields, orchards, nurseries, vineyards, hay and pasture land and agricultural buildings)	26.8	43
Development and infrastructure	15.0	24
Built-up area (impervious surfaces)	12.5	20
Built-up area (pervious surfaces)	1.4	2
Transportation infrastructure	1.1	2
Undifferentiated^b (includes variety of additional agricultural and development and infrastructure activities)	11.5	19
Peat and topsoil extraction	4.6	7
Aggregate extraction	3.6	6
Stormwater management, clearing vegetation for swimming, and soil removal	0.2	<1

Agriculture

Agricultural activities have historically been, and continue to be, the greatest cause of wetland loss in most of southern Ontario. An analysis by Ducks Unlimited indicates that approximately 85% of wetland loss across southern Ontario (outside of the Golden Horseshoe) between pre-settlement and 2002 was due to conversion to agricultural uses.¹⁴ From 1967 to 2002 alone, wetland cover in southwestern Ontario shrunk by half, primarily due to intensive agriculture activities.¹⁵ According to the government, agricultural activities are still the greatest contributor to wetland losses across southern Ontario, responsible for 43% of recent wetland losses (i.e., between 2000 and 2010) (see Table 1).

Farmers often use drainage systems, such as open or enclosed ditches or tile drains, to divert water from the land. Watercourses can flow through open ditches or

enclosed pipes to remove surface water from fields. Tile drainage removes water from the soil through networks of underground pipes to lower the water table. Drainage systems can be effective and even necessary tools for managing water and increasing agricultural production. However, agricultural drainage can reduce or destroy both wetland area and function if environmental impacts are not properly assessed and avoided. Even relatively small changes to natural water levels can impair wetland functions.

Despite the fact that agricultural activities are responsible for the majority of recent wetland loss, the Ontario Ministry of Agriculture, Food and Rural Affairs (OMAFRA) does not monitor the impacts of drainage works on wetlands, and was unable to provide the ECO with data on how many hectares of wetlands have been lost or disturbed due to drainage activities. However, according to the OMAFRA, at least 1,561 km² of land

- The activities listed above represent the class descriptions used in the Southern Ontario Land Resource Information System (SOLRIS) Version 2.1, a natural resource inventory and monitoring system. Please refer to this document for complete class descriptions.
- The undifferentiated class includes idle agricultural land, urban brown fields, hydro right-of-ways, the edges of transportation corridors, upland thickets and clearings within forests. Agricultural activities are typically included in the undifferentiated class, but were analyzed separately by MNRF staff using SOLRIS the Agricultural and Agri-Food Canada Annual Crop Inventory dataset.

was drained by tile drainage contractors from 2006 to 2016 alone. Some portion of this tiling is bordering or directly overlapping with wetland areas (see Figure 5). The additional area drained from privately installed tiles (i.e., not through a contractor) is unknown, and the OMAFRA is not tracking the impacts of tiling (either by contractors or private landowners) on wetlands. The lack of publically accessible information on the impacts of agricultural drainage on wetlands in southern Ontario is especially troubling as drainage enclosures and tiling are now making up the majority of new agricultural drainage systems.

Development and infrastructure

New development and infrastructure projects often result in the “filling” of wetlands. From 2006 to 2016, 83% of population growth in Toronto was in the suburban edges of the region, a trend that is mirrored throughout Southern Ontario.¹⁶ Urban centres are sprawling into farmland and natural areas, and replacing them with an ever-increasing amount of pavement. Such impervious surfaces often obliterate natural features such as wetlands from the landscape, which

can make the entire watershed much more vulnerable to flooding. Projects that manage to avoid complete destruction can still degrade wetland function when construction encroaches on the edges of wetland habitat or alters hydrological patterns.



The expansion of impervious surfaces in urban areas increases flooding risks during severe rainfall events. The damage of this extreme flooding along the Ottawa River could have been reduced if wetlands and other vegetation bordered the river, as opposed to impervious surfaces, like this parking lot.

Photo credit: Ross Dunn, (CC BY-SA 2.0).

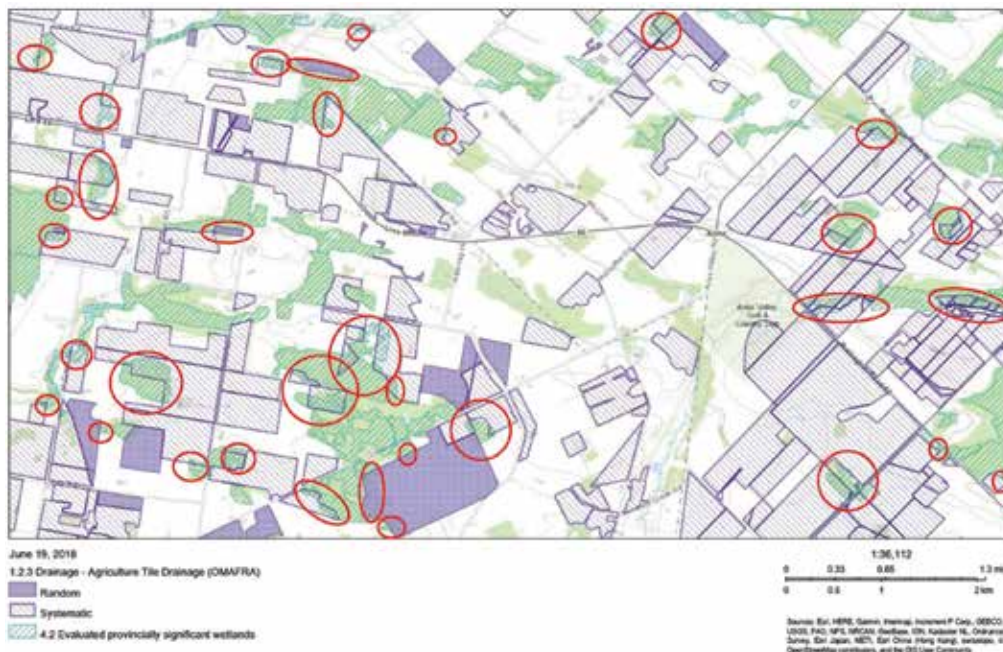


Figure 5. Map of agricultural tile drainage in southern Ontario. This map shows a section of southern Ontario where evaluated provincially significant wetlands are often bordered by tile drainage systems, and in several cases (red circles) tile drains may have been installed directly within provincially significant wetlands.

Source: OMAFRA, Agricultural System Portal.

According to recent data from the MNRF, the development of built-up areas, ranging from small rural hamlets to large cities, is responsible for 22% of recent wetland loss. Of these wetland areas lost to development, 20% were converted to impervious surfaces (Table 1). This estimate would be even higher if it included wetlands lost to other forms of development and infrastructure, grouped loosely into the “undifferentiated” class. The Toronto and Region Conservation Authority has recently reported that over half of the land cover within its jurisdiction is urban development, and in several watersheds, urban cover is six to nine times more extensive than natural cover from forests, wetlands and meadows.¹⁷

Peat and topsoil extraction

Peat and topsoil extraction account for 7% of recent wetland loss, but very little is known about where the extraction operations are taking place and why activities are not stopped before wetland loss occurs. Peat and topsoil are generally used for horticultural purposes and for gardening, however, the province does not actually track the end uses of either resource. While some municipalities and conservation authorities may regulate extraction to some extent, there is no policy that explicitly prohibits these activities in or around wetlands.¹⁸ What is clear is that a market has been created for the rich organic soils in wetlands, and rather than focusing on building soil organic matter (i.e., through composting) both at home and in the horticultural industry, wetlands are being destroyed to supply healthy soils.

Aggregate extraction

Aggregate operations account for 6% of recent wetland loss (Table 1). Land use planning policy dictates that aggregate pits and quarries must be located as close as possible to markets,¹⁹ which often means they are located just outside of urban centres in order to support expanding development needs. Unfortunately, the regions targeted for aggregate extraction frequently overlap with wetlands that have avoided urban expansion, only to then be impacted by aggregate operations. There are currently over 6,000 active licences and permits for aggregate

pits and quarries across the province. The majority of these are located in southern Ontario, and industries are advocating for reduced protections for smaller wetlands and the edges of significant wetlands to enable further expansion of aggregate operations.

Rehabilitation of aggregate pits and quarries is mandatory in Ontario, and successful projects can even result in the creation of significant wetland habitat. However, aggregate operations can last for decades, and the enforcement of rehabilitation standards is often inadequate (see Chapter 5 of the ECO's 2016/2017 Environmental Protection Report).

Pollution and degradation

Even if wetlands are not fully destroyed by human encroachment, they are frequently degraded or altered from their natural states. Wetlands are often polluted from toxic runoff, road salt, sewage, pesticides and fertilizers. Wetlands near farms or urban areas are particularly vulnerable to degradation from polluted runoff.²⁰ Wetlands naturally filter out pollutants, acting as buffers before runoff enters other waterways. However, excessive nutrient runoff and pollution can overload wetlands, which can trigger algal blooms downstream (see Chapter 4 of the ECO's 2016/2017 Environmental Protection Report). Pesticides and fertilizers are also having a severe impact on wildlife downstream from intensive agricultural areas. For example, high levels of nutrient runoff in the Holland Marsh has contributed to reduced reproductive success for amphibians such as the American toad, green frog and northern leopard frogs, resulting in declines in both population and species diversity.²¹



Northern leopard frog.

Photo Credit: Douglas Wilhelm Harder, (CC-BY SA-3.0).

Development, infrastructure and other site-alteration projects can also have indirect impacts on wetland hydrology. For example, a parking lot built beside a wetland can affect the amount of surface water and/or groundwater flowing in and out of wetlands. That in turn can impact the extent of saturation and water levels in flooded wetlands, both of which can have significant impact on the function and value of that wetland.

Climate change and invasive species

Climate change has become a significant threat to wetlands across the province. The direct and indirect impacts of climate change can shrink or completely dry wetlands, alter the types of plant or animal life found within a wetland, or shift wetland type, potentially resulting in loss of biodiversity.

Invasive species are also a growing threat to southern Ontario's wetlands. Once established, they often outcompete native plants, and can cause irreversible ecological damage. Phragmites, a common European wetland reed, has been called Canada's worst invasive plant and is recognized by the MNR as a significant threat to biodiversity in coastal marshes. It is now rapidly spreading across southern Ontario, and threatening species at risk that depend on healthy wetlands. The wetlands of Rondeau Provincial Park, which are recognized globally for their significant bird habitat, are in danger of permanently losing key ecological functions due to the exponential growth of phragmites.



Phragmites.

Photo Credit: Conrad Kuiper, (CC BY-NC-SA 2.0).

Northern Ontario wetlands: value and vulnerability

One-third of the province is covered in wetlands, the vast majority of which are located in northern Ontario (see Figure 6). In fact, the wetlands of Ontario's Far North are among the most extensive on earth. The region is dominated by peatlands and permafrost ecosystems, which are characterized by the accumulation of deep layers of saturated peat. These northern peatlands annually sequester an amount of carbon equal to about one-third of Ontario's total carbon emissions.²² The Hudson Bay Lowlands Ecozone, which covers roughly 50% of the Far North, contains the second largest peatland complex in the world and represents a globally significant carbon sink.

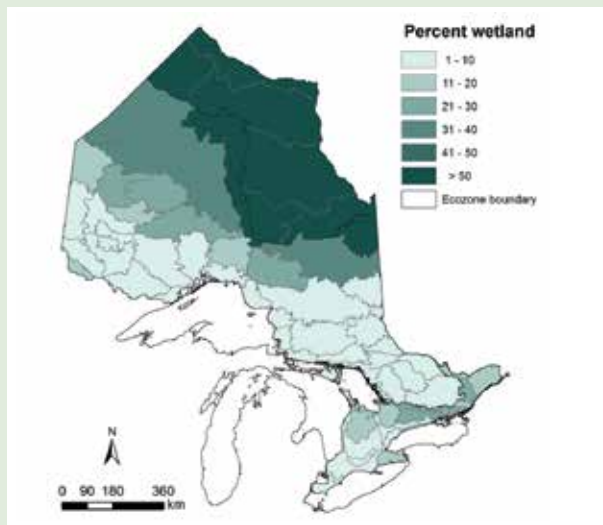


Figure 6. Distribution of wetlands across Ontario based on 2011 land cover.

Source: Ontario Biodiversity Council. 2015. State of Ontario's Biodiversity [web application].

Northern peatlands annually sequester an amount of carbon equal to about one-third of Ontario's total carbon emissions.

The wetlands and peatlands in the Far North are largely intact and relatively free from human disturbance. However, both direct and indirect threats are gradually altering northern ecosystems and the wildlife they support. Some of these threats, such as encroaching settlements and energy and transportation infrastructure, are similar to those in southern Ontario, while other, such as mining and forestry activities are relatively unique to this northern region of the province.



Peatlands, Hudson Bay Lowlands.

Photo credit: Gord McKenna, (CC BY-NC-ND 2.0).

In addition to the cumulative impacts of the various human disturbances, Ontario's northern peatlands are facing a potentially much greater threat: climate change. Peatlands depend on high water levels, low oxygen levels and low temperatures. Depending on local hydrology and geographic location, climate change may cause peatlands to thaw, shrink, or disappear entirely. These changes can, in turn, further exacerbate climate change – thawing permafrost can increase methane emissions from peat, while climate-induced drying can increase carbon dioxide emissions. Natural disturbances such as fires and insect outbreaks are also projected to increase, which can further impact carbon storage and result in cascading ecological effects. As northern peatland ecosystems, and the vast quantities of carbon they store, become increasingly vulnerable to climate change, Ontario will need to develop conservation plans to address the unique challenges this region faces. The province should work with First Nations communities to help protect northern wetlands and peatlands and the vital services they provide.



1.3 Ontario's wetland conservation strategy: a product of collaboration

Many people across Ontario are working hard to reverse the loss of wetlands. Federal, provincial and municipal governments and conservation authorities are contributing to wetland conservation and restoration efforts. Industries, non-governmental organizations, universities and local community groups are also making important contributions to wetland research and conservation.

Led by the Ministry of Natural Resources and Forestry (MNRF), the Ontario government released a Wetland Conservation Strategy 2017-2030 in July 2017. It's a much-needed step forward.

The strategy contains two very important targets:

- By 2025, halt the net loss of wetland area and function where wetland loss has been greatest; and
- By 2030, achieve a net gain of wetland area and function where wetland loss has been greatest.

Progress will be measured against a baseline year of 2010 and reports will be published every five years, beginning in 2020. The strategy sets out 67 promised actions, grouped into awareness, knowledge, partnership, and conservation. Three actions are prioritized to reverse the net loss of wetlands:

1. Improve Ontario's wetland inventory and mapping,
2. Create a no net loss policy for Ontario's wetlands, and
3. Improve the evaluation of significant wetlands.

The ECO is pleased that the province created a strategy to address wetland loss, a concern that Ontarians have been voicing for decades. The Wetland Conservation Strategy is the result of collaboration among farm organizations, forestry and aggregate industries, environmental organizations, conservation authorities, municipalities, as well as First Nations and Métis people. There is broad consensus that the province needs to take action to conserve wetland habitat, and that there are numerous opportunities for partnership across sectors to achieve wetland conservation goals.

The strategy calls for the MNRF to collaborate with other provincial ministries to develop an implementation plan for the various proposed actions. These ministries all have a shared responsibility to take action to improve wetland conservation.

Public comments on the Environmental Registry improve wetland targets

The public submitted 654 comments on the draft wetland strategy when it was open for consultation on the Environmental Registry. There was strong support for its overall direction, and many people expressed relief that the Ontario government was finally making a commitment to halt wetland loss.

However, commenters were very concerned with the original proposed targets, which were: (1) to identify and conserve Ontario's significant wetlands by 2025; and, (2) to halt the net loss of wetlands in Ontario in areas where wetland loss has been greatest by 2030.

Many comments from conservation authorities, environmental organizations, land use planners, and universities stated that the proposed targets were not aggressive enough, and that the proposed strategy tolerated the continued loss of wetlands for far too long. Many of these people also argued that the focus should be on achieving a net gain of wetlands, as opposed to just halting the net loss.

In response to these comments and other public consultation, the MNRF developed more aggressive timelines, bringing the no net loss goal forward by five years, and creating a new target for net gain by 2030. The final strategy also provides some interim timelines for meeting mapping and inventory goals. Many of the public's comments also raised concerns about the impacts of an offsetting policy, and the ministry clarified in the final strategy that the development of a wetland offsetting policy will be a distinct process with consultation opportunities and open discussion with Indigenous people, communities and organizations, and all relevant sectors.

The substantial revisions to the draft strategy highlight the critical role of the Environmental Registry and the power of public consultation. The MNRF clearly took the public feedback on this proposal into consideration and, ultimately, it resulted in a stronger strategy for wetland conservation.

Although the final Wetland Conservation Strategy substantially improved the timelines, there is still potential for ongoing loss of wetlands for the next seven years. Ontario is going to need to substantially improve wetland protections to meet the target of halting the continuing loss of wetlands in southern Ontario.

In addition, in order to achieve the second target of “net gain,” wetlands will have to be restored or created. Wetland restoration efforts will need to be scaled-up considerably, and while there is expertise and motivation among NGOs and conservation authorities, more resources from the provincial government are needed to fund restoration programs.

The strategy is largely focused on achieving net gain through wetland offsetting – restoring or constructing new wetlands to compensate for the loss of wetland area and function. Details of a potential offsetting policy are not included in the Wetland Conservation Strategy, and although the MNR has stated that this is only an “option” for halting net loss, the second target suggests that it might be a necessity. In short, it seems that the MNR is already relying on an approach that is inherently risky, and may not be an effective approach to conservation (see section 1.4.3).



Marsh in Parry Sound.

Photo Credit: Suzanne Schroeter, (CC BY-SA 2.0).

1.4 Moving wetland conservation forward

The existing system for wetland protection is not working. The fact that we continue to lose wetlands across the province is evidence that the policies and practices behind wetland conservation are not adequate. Even though the rate of loss appears to have declined, it is still unacceptably high, given the small fraction of wetlands remaining in southern Ontario.

The existing system for wetland protection is not working.

The ECO has identified five core steps that the province needs to take to reverse the net loss of wetlands:

1. overhaul the process for evaluating and identifying provincially significant wetlands (section 1.4.1),
2. strengthen baseline wetland protections in the Provincial Policy Statement (section 1.4.2),
3. provide conservation authorities with clear authority to regulate all activities that interfere with wetlands, including agricultural activities (section 1.4.3),
4. encourage landowner conservation through incentives (section 1.4.4), and
5. ensure that wetland offsetting is always secondary to protection efforts and develop strict criteria for offsetting projects (see section 1.4.5).

1.4.1 Clearing the first hurdle: identifying significant wetlands

The government’s basic premise of wetland protection in southern Ontario is fundamentally flawed. In principle, every single wetland in southern Ontario is “significant” and should be protected, particularly given the extent of historical wetland loss.

The key legal protection provided to wetlands applies only to wetlands that have been identified as “significant.”

In reality, the key legal protection provided to wetlands – under the Planning Act and Provincial Policy Statement, 2014 (PPS) – applies only to wetlands that have been identified as “significant.”²³ The PPS prohibits “development” and “site alteration” in provincially significant wetlands (PSWs) in southern and parts of central Ontario, as well as in significant coastal wetlands across the Great Lakes basin. It’s under this legal framework that municipalities map out land use designations in their official plans, including identified PSWs, which then guide municipal decisions to approve (or deny) applications for development, such as a new subdivision. Similarly, some conservation authorities choose to rely heavily on the identification of a wetland’s significance when carrying out their duties. Some municipalities and conservation authorities do go further and include protections for other wetlands, but generally, they are unlikely – and to some extent unable – to use their tools to protect a wetland unless it has been identified as a PSW.

In short, a wetland must first be evaluated and identified as significant before the land use planning system grants official provincial protections. However, the evaluation process for wetlands is very lengthy and, in the interim, unevaluated wetlands are left unprotected.

Unevaluated wetlands are left unprotected.

Waiting for evaluations puts wetlands at risk

Currently, wetlands are evaluated based on the Ontario Wetlands Evaluation System (OWES), a ranking system that assesses the environmental, economic and social values of wetlands. The MNR developed the OWES Southern Manual to evaluate the significance of wetlands within Ontario’s “Mixedwood Plains Ecozone.”^c The MNR is responsible for identifying wetlands, as well as reviewing and confirming completed evaluations, but the evaluations can be carried out by other trained individuals using the MNR’s manuals.

The OWES analyzes and scores over 50 variables, which are divided into four components – biological, social, hydrological and special features. Wetlands are deemed provincially significant if they score at least 600 points overall, or at least 200 points in either the biological or special features component. Therefore, a wetland that provides a critical function on a very local scale can still be provincially significant if, for example, it has high levels of biodiversity or provides breeding habitat for an endangered species. In this sense, the evaluation system can capture the significance of large wetlands and wetland complexes (groups of functionally-related wetlands), as well as the significance of small, isolated or even degraded wetlands.



Great blue heron.

Photo Credit: Jean Hilscher. Used with permission.

c. The Mixedwood Plains Ecozone includes the region of Ontario south of the Canadian Shield. It is bounded by Lake Ontario, Lake Erie and Lake Huron and extends along the St. Lawrence River shoreline to Quebec City.

Wetland boundaries are delineated through a combination of aerial photography, mapping analysis and field work. One key gap in the OWES is that wetlands less than 0.5 hectares are typically not mapped. In addition, while the OWES manual recognizes the importance of vernal pools, evaluators are only encouraged to collect information on vernal pools they encounter.²⁴

One of the core issues for wetland protection is that OWES evaluations are labour intensive, time-consuming and often expensive, and the MNRF has been very slow to complete wetland evaluations with its available resources.²⁵ To date, only about half (51%) of wetland area in the Mixedwood Plains Ecozone has been evaluated. The total evaluated wetland area increased by a mere 0.2% in the past year. At the current rate, it would take roughly 260 years to evaluate the remaining wetlands just in southern Ontario, let alone to carry out the evaluations in central and northern Ontario, where

At the current rate, it would take roughly 260 years to evaluate the remaining wetlands just in southern Ontario.

there are far more wetlands and far fewer evaluations have been completed.

Nevertheless, the Ontario government is committed to evaluating the remaining wetlands, nearly 5,000 km² of wetlands in the Mixedwood Plains Ecozone alone (see Figure 7). Adding to this challenge, wetlands that were evaluated many years ago may need to be re-evaluated due to changes in wetland boundaries and features (natural or otherwise), advances in mapping technology, or changes in perceived values.

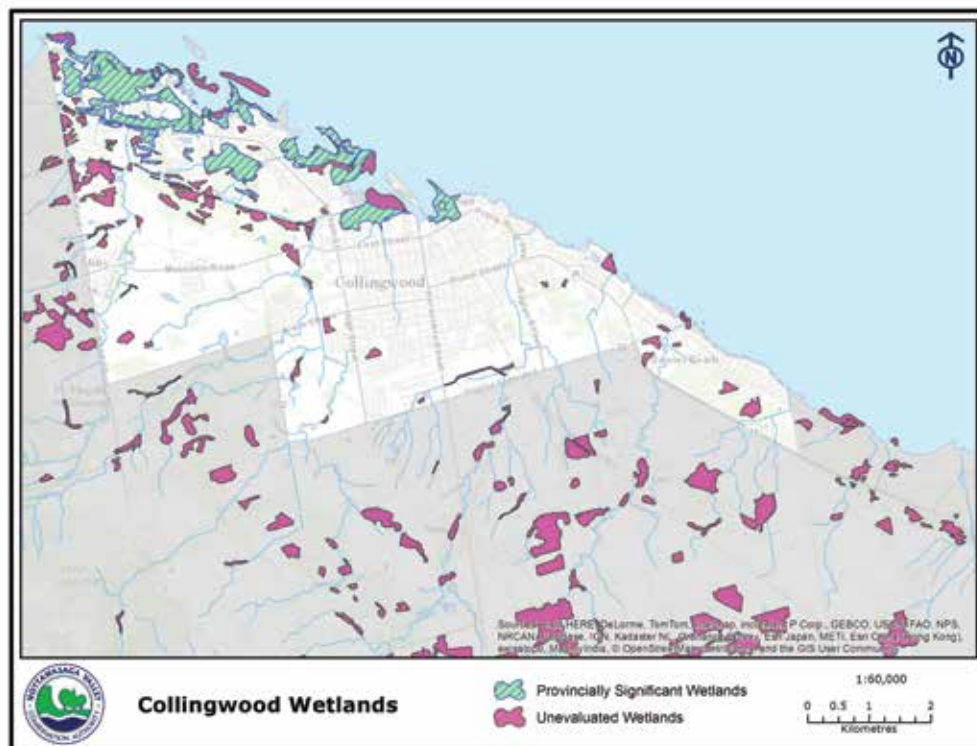


Figure 7. Map of unevaluated wetlands and provincially significant wetlands in and around Collingwood. This map provides an example of the vulnerability of unevaluated wetlands. Many of the unevaluated wetlands are near PSWs and are in areas that are currently zoned for development. The Town of Collingwood and the Nottawasaga Valley Conservation Authority have attempted to address the presence of these unevaluated wetlands, but until these wetlands are officially evaluated and designated in Collingwood's Official Plan, they will receive a lower level of protection.

Source: Nottawasaga Valley Conservation Authority, 2018.

The MNRF is currently conducting an initial evaluation of the OWES, and it is possible that improvements to the evaluation process could help reduce the cost and time required for some evaluations. However, unevaluated wetlands are being lost every year, and it is unlikely that changes would be substantial enough for evaluations to be completed within a reasonable timeframe, let alone before the first provincial target in 2025. Technological advances in remote sensing and aerial photography can speed up some aspects of the process, but eventually on-the-ground field work is needed for rigorous and accurate evaluations. There are also some things that technology cannot solve, such as waiting for landowner permission to evaluate privately owned wetlands. Wetland evaluators may have to wait weeks or even months before they even make contact with landowners, and landowners may decide for a variety of reasons to refuse access, particularly if they are concerned that a newly identified PSW might create restrictions on how they use their land.

Reverse the onus: identify wetlands as significant until proven otherwise

The current policy framework is premised on proving a natural feature is “significant” enough to be protected. Instead, given the enormity of wetland loss, continuing to this very day, the burden of proof should be shifted. Various stakeholders have suggested taking such a precautionary approach: treat all wetlands in southern Ontario as provincially significant until proven otherwise.

In this approach, the burden would be on the company or person who wants to interfere with a wetland; they would need to obtain an official evaluation and demonstrate that the particular wetland does not meet the criteria of being provincially significant. Not only would this reduce wetland loss, it would create more certainty for developers and other landowners by integrating wetland evaluations into the early stages of project approvals. Evaluations would still be conducted by individuals trained in the MNRF-approved wetland evaluation course, and would be based on the OWES guidelines.

Importantly, to avoid the risk of wet areas or muddy fields being incorrectly labelled as PSWs, the definition of wetlands should remain consistent with the OWES manual.²⁶ Under this definition, wetlands constructed and currently used for purposes other than wetland conservation (e.g., storm water management ponds or livestock watering ponds), as well as areas that no longer retain key wetland characteristics (e.g., fields that have been planted or tilled for agricultural use) are not considered wetlands and, therefore, would not be considered PSWs.

61% of wetland evaluations conducted have resulted in PSW status, which is equivalent to 90% of the total evaluated wetland area.

To date, 61% of wetland evaluations conducted have resulted in PSW status, which is equivalent to 90% of the total evaluated wetland area. It is possible that the proportion of PSWs might decline with time, as large wetlands and wetlands that are known to be valuable or sensitive are often a higher priority to evaluate. However, it is also true that we have fewer and fewer wetlands left, so their relative significance increases with time. A dramatic change from the status quo will be needed if Ontario is to halt the loss of wetlands, especially considering that the natural features in much of southern Ontario are still under serious pressure.

Given that the majority of evaluated wetlands are PSWs, and that there are relatively few wetlands remaining in southern Ontario, **the ECO recommends that the government formally identify all wetlands in southern Ontario as PSWs until proven otherwise.** Protecting wetlands pre-emptively is a first step the province can take to demonstrate its commitment to halting net loss of wetland area and function.



Luther Marsh Wildlife Management Area.

Photo Credit: Janet Baine, (CC BY-NC-ND 2.0).

1.4.2 Enhancing protections: addressing gaps in land use rules

Even if all wetlands in southern Ontario were instantly declared provincially significant (as recommended above), wetland loss would still not be halted. The PPS provides the overarching direction for municipal land use planning decisions in southern Ontario, and includes some baseline protections for natural features. However, the PPS's protections for wetlands are limited. Even PSWs, which are afforded the highest level of protection, are vulnerable to destruction due to *de facto* exemptions, caveats and discretionary wording. Therefore, a second important step to halt wetland

loss is to increase the level of protection for wetlands provided in the PPS and Ontario's other land use planning laws and policies.

The Provincial Policy Statement provides limited wetland protection

The PPS prohibits "development" and "site alteration" in PSWs, but the definitions of these terms do not include other destructive land uses such as infrastructure projects and drainage works.²⁷ The PPS' natural heritage provisions also state that nothing in the policy is intended to "limit the ability of agricultural uses to continue," which essentially serves as a *de facto* exemption for ongoing agricultural operations, despite

the fact that it continues to be the single greatest cause of wetland loss across southern Ontario. The ambiguity of this exemption with regard to existing versus new agricultural uses is part of the problem. While some conservation authorities and land use planners interpret this provision to apply only to existing agricultural land, others can rely on the unclear wording to argue that draining or clearing a wetland to expand agricultural land is a necessary part of continuing agricultural use. More importantly, agricultural practices can change over time in such a way that destroys or degrades wetlands, even if a landowner is not actually expanding their fields.

The PPS only directly addresses one of the major causes of wetland loss: development.

Similarly, while the PPS does not provide an explicit exemption for aggregate extraction, it prioritizes aggregates over other land uses by enabling aggregate sites to be located in or near PSWs. In these cases, the PPS merely suggests minimizing environmental impacts and requires site rehabilitation after the aggregate extraction is complete to “mitigate negative impacts to the extent possible.”²⁸ This more lenient policy likely stems from the fact that aggregate operations are considered to be an “interim land use,” even though rehabilitation requirements do not necessarily entail restoring the property to its former use. There is also no specific language regarding peat and topsoil extraction in the PPS.

In other words, the PPS only directly addresses one of the major causes of wetland loss: development (see Table 1 above), leaving a massive hole in this ostensible wetland protection. On top of this, the already-narrow definition of development does not account for infrastructure projects approved under the Environmental Assessment Act, which can also contribute to wetland destruction. In addition, development approvals that might be decades old are

“grandfathered in,” despite the fact that they no longer conform with current natural heritage policies and can have devastating environmental impacts.

Another glaring omission is that the key protections in the PPS only apply to PSWs and significant coastal wetlands. Wetlands that are either unevaluated, awaiting official designation, or fail to reach the standard of provincial significance (such as locally significant wetlands), are vulnerable to destruction. Although most conservation authorities do require permits for activities that might impact other wetlands, there is currently no consistent approach, and the PPS does not recognize any “middle ground” in terms of significance.²⁹ For example, a wetland that scores very low under the OWES would receive the same level of protection as a wetland that almost reaches the threshold for significance.

The PPS also allows development and site alteration on lands adjacent to PSWs as long as it has been demonstrated that there will be “no negative impacts” on the wetland’s ecological functions.³⁰ This caveat allows activities to be approved on lands bordering PSWs, despite the fact that it is very difficult to prove that there will be no negative impacts, especially in the long-term. The province provides recommendations on how municipalities can determine what constitutes a reasonable distance for proposed adjacent activities,³¹ but even if these guidelines were strictly followed, they would still not necessarily be sufficient for preventing pollution, shoreline erosion, or disruptions to local hydrology. For example, a subdivision that is built adjacent to a wetland may not cause immediate negative impacts, but eventually, the cumulative impacts from this expansion, such as road salting, fertilizer runoff, leaking fuels, wildlife predation from domestic cats and recreation overuse (e.g., from off road vehicles and mountain bikes), can severely degrade wetland functions.



A new housing development adjacent to a wetland.

Photo Credit: Andrew McLachlan, Ducks Unlimited Canada. Used with permission.

Coastal wetlands and PSWs in the Canadian Shield (central Ontario) are protected to some degree in the PPS, but again, development and site alteration are permitted in most of this region if “no negative impacts” are demonstrated.³²

Should protecting a wetland from development be seen as a landmark decision?

Provincially significant wetlands are supposed to be protected from development. The reality is that battles are typically fought on a site-by-site basis, and wetlands often lose in planning decisions. But a rare success story for wetland protection shows the power of public participation in planning decisions.

Recently, a local citizen group and Curve Lake First Nation succeeded in stopping a development project along the shores of Stoney Lake, near Kawartha. The proposed 58-unit condominium project was to be constructed adjacent to two provincially significant wetlands, one of which is a large wetland complex. The development project would have destroyed habitat for numerous

wildlife species, including species at risk like the Blanding’s turtle, and had the potential to degrade the entire aquifer.

The opponents of the proposal provided evidence at an Ontario Municipal Board hearing. The Board rejected the developer’s proposal, concluding that the proponent had failed to demonstrate that the development would have “no negative impacts” on the two PSWs.³³ The decision also recognized the importance of wetland complexes and the various ecological interactions at play.



The Fraser Wetland site is believed to contain over 450 different species, including the Blanding’s turtle and the butternut tree.

Photo credit: Scott Wootton. Used with permission.

However, in a certain light, it is troubling that some people have called this case a “landmark decision” for the protection of wetlands. The Fraser wetlands were only protected because concerned citizens voluntarily put in the time, effort and resources to appeal a planning decision, and provided persuasive testimonies on the risks of the proposed development. The existing protection measures in place are clearly not adequate – even for provincially significant wetlands. Until wetland protections are strengthened in our land use planning system, the protection of many of them will continue to rely on passionate local citizens taking action at their own expense.

The PPS' overarching provision to protect natural heritage features also contains discretionary wording that further enables other land uses to be prioritized above wetland protection. The fact that the PPS only encourages the protection of long-term ecological function and biodiversity of natural heritage systems suggests that there is still a failure to understand that conserving natural heritage features is not sufficient if their functions are lost or degraded.³⁴ Moreover, the PPS does not contain requirements to consider cumulative impacts of repeatedly encroaching on land surrounding PSWs. These impacts are especially serious for species that rely on wetlands for at least part of their life cycle.

There is still a failure to understand that conserving natural heritage features is not sufficient if their functions are lost or degraded.

Raise the bar for wetland protection across all provincial land use planning tools

In addition to the PPS, Ontario has a patchwork of land use laws and policies across southern Ontario (see Figure 8), which provide varying levels of protection to wetlands depending on the geographic region. Several of these area-specific land use plans have stronger wetland protections than the PPS. For example, the Oak Ridge Moraine Conservation Plan contains clear prohibitions on new development and site alteration activities (with

the exception of some infrastructure projects) that would negatively impact *any* wetland within the region (not just PSWs).³⁵ Several regional plans also provide stronger provisions to protect wetlands from new and expanding aggregate operations.

The Ministry of Municipal Affairs and Housing has recently released the Growth Plan for the Greater Golden Horseshoe, 2017. The updated growth plan mirrors the natural heritage policies discussed in that all wetlands in the Natural Heritage System are afforded some level of protection as opposed to just PSWs, but there are still several exceptions. Notably, new or expanded aggregate operations are allowed in non-significant wetlands if certain replacement or rehabilitation requirements are met, and the "full range of existing and new agricultural uses" are permitted within the entire Natural Heritage System.³⁶

Clearly, none of these plans offer full protection for PSWs,³⁷ and since they only apply to specific areas, there are gaps and inconsistencies in wetland protection across southern Ontario.

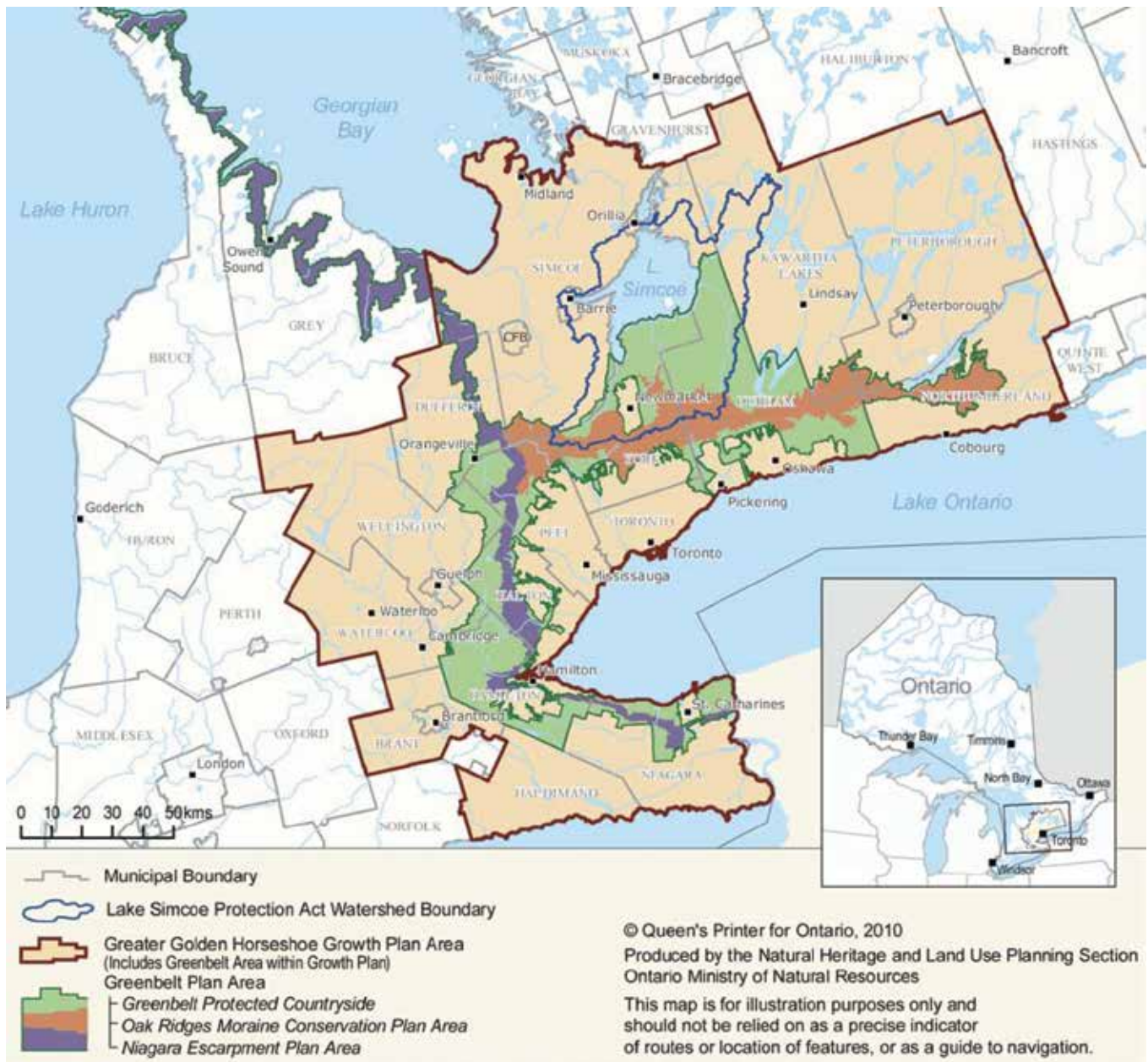


Figure 8. Area-specific land use plans in Southern Ontario. The Lake Simcoe Protection Plan, Greenbelt Plan, Oak Ridge Moraine Conservation Plan, Niagara Escarpment Plan and the Growth Plan for the Greater Golden Horseshoe each include additional protections for natural features, including wetlands, in the respective area. The Greater Golden Horseshoe Growth Plan is an overarching plan to manage growth throughout the region.

Source: MNRF, 2010.

To provide stronger and consistent protection for wetlands throughout all of southern Ontario, the ECO and others have urged government many times before to strengthen the PPS to prevent the loss of wetlands. The PPS's discretionary wording and narrow definitions of development and site alteration create exemptions for too many activities, leaving Ontario's most valuable wetlands vulnerable.

The ECO recommends that the Ministry of Municipal Affairs and Housing revise the Provincial Policy Statement to strengthen protection for southern Ontario's remaining wetlands.

Specifically, the PPS should clarify that the provisions in the natural heritage policies regarding agriculture only apply to *existing* agricultural uses, and that any expansion of agricultural lands that interferes with provincially significant wetlands is prohibited. The province should also ensure that municipalities have a clear understanding of their role in enhancing wetland protection and provide them with guidance to effectively implement the PPS.

1.4.3 Strengthening conservation authorities' ability to protect wetlands

Ontario's 36 conservation authorities play an important role in protecting wetlands. The Conservation Authorities Act gives each conservation authority the power to create its own regulation, subject to approval by the MNRF, to prohibit or regulate activities that are capable of "changing or interfering in any way with a wetland."³⁸

However, which specific activities each conservation authority regulates, and how they exercise their powers within their respective watersheds, varies considerably. Some conservation authorities do not impose any restrictions on certain activities that can impact wetlands. This might be in part because it is a complicated process to refuse an application, but also due to pressure to accommodate other interests, such as development. Similarly, some conservation authorities choose to only regulate PSWs designated in official plans, while others regulate unevaluated and locally significant wetlands too.

To protect wetlands in southern Ontario from continuing loss, the third – and potentially most important – measure is for the province to strengthen the ability of conservation authorities to regulate wetland threats. This includes empowering every conservation authority to regulate all threats to wetlands within their respective watersheds.

Vague language, resource constraints and conflicting priorities limit the power of conservation authorities

Many conservation authorities struggle due to a lack of provincial direction with regard to definitions, policies and technical guidance, which is compounded by inadequate provincial funding for programs and staff. These shortfalls predispose conservation authorities to narrow the scope of their activities and, thus, the extent to which they regulate impacts on wetlands. A key consequence is that conservation authorities vary greatly in how they regulate wetlands.

Many conservation authorities struggle due to a lack of provincial direction with regard to definitions, policies and technical guidance, which is compounded by inadequate provincial funding for programs and staff.

The fact that the Conservation Authorities Act contains language that is open to wide interpretation also discourages conservation authorities from enforcing wetland protections. For example, the absence of clear definitions in the Conservation Authorities Act for key terms – such as what constitutes "interfering" with a wetland – is one of the fundamental obstacles for wetland protection.³⁹

Conservation authorities struggle to determine the extent to which they can or should regulate certain activities, partially because the lack of a clear definition

Conservation authorities vary greatly in how they regulate wetlands.

makes it challenging to prove that a wetland has in fact been interfered with. Despite many conservation authorities requesting clarification from the government for years, there is still no definition or explicit list of activities that are known to “interfere” with wetlands. Even the definition of “wetland” can be an obstacle, due to a qualifier that wetlands be connected to surface watercourses.⁴⁰

This lack of clear language and direction in the Conservation Authorities Act creates uncertainty for conservation authorities both in terms of:

- their ability to regulate *all threats* to wetlands, including from agriculture drainage and peat extraction, and
- their ability to regulate threats to *all wetlands*, including wetlands that have not yet been evaluated or formally designated in a municipal official plan as a PSW, as well as those wetlands that do not meet the criteria of a PSW.

How weak definitions can undermine protections: St. Luke's Marsh

St. Luke's Marsh is a PSW on Lake St. Clair that is currently completely vulnerable to agricultural drainage. It is directly adjacent to the St. Clair National Wildlife Area, an internationally significant wetland designated under the Ramsar Convention. According to the Lower Thames Valley Conservation Authority, the landowner has made it clear that St. Luke's Marsh could be converted to farmland at any time.

Across the road from St. Luke's Marsh lies the former Triangle Marsh, a 49 hectare PSW that was drained for agriculture in 2008 (see Figure 9). Unfortunately, the conservation authority and environmental

organizations didn't realize what was going on until it was too late.

Now that St. Luke's Marsh is at risk, the Lower Thames Valley Conservation Authority has looked into how it might intervene. In this instance, its hands are tied because of the Conservation Authorities Act's definition of a wetland. St. Luke's Marsh is a coastal marsh that is controlled by pumps that move water between the lake and the wetland. Because it is not connected to a surface watercourse (i.e., rivers, streams and creeks), it does not meet the law's definition of a wetland, which limits the powers of the Conservation Authority to intervene. As of now, there is no plan in place to protect this PSW.



Figure 9. Aerial photographs of Triangle Marsh. The 2006 aerial image shows channels that were constructed for restoration work directed by the province in 1985 to address wetland loss in the Chatham Kent region. The marsh was drained for agricultural previously in the 1800s and was drained again in 2008.

Source: Lower Thames Valley Conservation Authority. Used with permission.

Although conservation authorities have the power to take violators to court, they are often reluctant to exercise this power to protect wetlands because of the potentially very high cost of defending their enforcement actions, and – due to the vague language of the law – uncertainty that the court will uphold their right to prosecute the case. For smaller conservation authorities, the choice to prosecute a landowner may even mean cuts to other conservation programs and activities. In some cases, prosecutions can also damage a conservation authority's relationships within the larger community, which can make it more challenging to effectively regulate activities within their jurisdiction.

On top of all of these constraints, conservation authorities often struggle to balance the conflicting priorities of conserving wetlands and securing funding from municipalities, who are often seeking to grow development.⁴¹ The financial and political pressure to accommodate the interests of municipalities, developers or farmers can interfere with the ability of a conservation authority to carry out some of its responsibilities. For all of the above reasons, some conservation authorities have narrowly interpreted their responsibility to focus more on natural hazard prevention (i.e., flooding and erosion issues), choosing – willingly or otherwise – to give less attention to protecting wetlands.

Uncertainty about role in protecting wetlands from agriculture and other serious threats

One of the fundamental obstacles to wetland protection in southern Ontario is the province's continuing lack of action to address the primary threat of wetland destruction: drainage for agriculture. Unfortunately, the government has given no indication that this trend will change, and has proposed no specific measures in its Wetland Conservation Strategy to address this major threat. The Strategy contains only a short section on wetland threats in which agriculture, development, and resource extraction are all lumped together as "land conversion," which is identified as the primary cause of wetland loss. Seeing as the agricultural sector is essentially treated as exempt from the provisions

under the PPS to protect natural heritage features, conservation authorities hold one of the very few potential tools to protect wetlands from agricultural drainage. However, the province will need to clarify and strengthen this tool to confront wetland loss in a meaningful way.

Conservation authorities can help fill gaps in wetland protection from agriculture drainage

The OMAFRA facilitates agricultural drainage by providing grants for municipal drainage works, and loans for individual tile drainage projects. The OMAFRA's only restriction is that it no longer provides grants for new municipal drainage systems that run directly through or from identified PSWs, unless it has been demonstrated that the project will not interfere with the wetland function in a negative way.⁴² Beyond this, the OMAFRA imposes no restrictions for municipal or tile drainage projects that may impact a wetland.⁴³ In other words, outside of the conservation authorities' limited powers, municipalities and landowners are not restricted by any provincial law or policy to construct a drainage project for agricultural purposes that reduces wetland function or area, regardless of the wetland's significance.

While the Conservation Authorities Act is fairly clear that conservation authorities can regulate development (and that they may not regulate aggregate activities),⁴⁴ it is much less clear whether, and to what extent, conservation authorities can regulate drainage and other agricultural activities. As a result, some conservation authorities do not impose any restrictions on agricultural tile drainage, despite the threat it poses to wetlands.

Although the definition of development under the Conservation Authorities Act includes "the temporary



Some conservation authorities do not impose any restrictions on agricultural tile drainage.

or permanent placing, dumping, or removal of any material,” there is still some uncertainty around regulating peat and topsoil extraction, which is likely exacerbated by insufficient resources. Some conservation authorities, such as the Grand River Conservation Authority, have chosen to regulate peat extraction; however, they have been limited in their ability to actually enforce regulations. Conservation authorities have the ability to grant permits for extraction, but if the conditions are violated, they can only request that the work is stopped or take violators to court.

A precedent for regulating agricultural interference with wetlands

Despite the many obstacles, some conservation authorities are exercising their power to regulate agricultural activities that interfere with wetlands. The Lower Thames Conservation Authority recently convicted a landowner and a drainage contractor for clearing wetland areas to create additional agricultural land, and installing tiles drains adjacent to the wetland. When the landowner was denied a permit by the conservation authority, he illegally interfered with the wetland in an attempt to claim additional agricultural land. Although it would have been easy to turn a blind eye, the Lower Thames Conservation Authority recognized that this wetland destruction violated the Conservation Authorities Act, and that it had the power and responsibility to act. The landowner was fined \$15,000 for three charges, and ordered to remove the tiles he installed and rehabilitate the wetland area he destroyed.

Uncertainty about role in protecting all wetlands, not just designated PSWs

The PPS only applies prohibitions and restrictions on development and site alteration in PSWs and coastal wetlands. Conservation authorities are required to act in a manner that is consistent with the PPS, in terms of how and what they regulate.⁴⁵ As a result, conservation authorities are sometimes hesitant to regulate wetlands that haven’t yet been identified and designated as PSWs, as well as wetlands that don’t meet the criteria to be a PSW. This is despite the fact that the Conservation Authorities Act itself provides no such qualifications around the term “wetland.”

As noted above, it can take years before a wetland is evaluated. But even after a wetland has been evaluated, some conservation authorities still do not apply their protections until the wetland has been formally designated as a PSW in the local municipal official plan. Unfortunately, official plan designation often takes years, during which time wetlands can be lost through legal loopholes. For example, official plans are now on 10-year review cycles and it is possible for a wetland that has been evaluated and identified as a provincially significant wetland to take another decade to be designated in an official plan. In the interim, wetlands can be destroyed.

Municipal delays in designating PSWs in their official plans due to landowner disputes can leave wetlands unprotected for even longer. In some cases, farmers may attempt to smooth the way for development projects by removing wetland features on their properties to pre-empt a PSW designation. This risk becomes more plausible when agricultural land is already held by developers or speculators, and landowners can take the opportunity to drain and clear wetlands under the guise of “normal farm practices” (see pages 57-58 in the ECO’s 2010/2011 Environmental Protection Report).

Designation delayed, protection denied

The case of the Goulbourn Wetland Complex near Ottawa provides a cautionary tale. In 2006, the boundaries of this PSW were re-evaluated by the MNR and expanded to include 20 additional wetland areas. However, the City of Ottawa has delayed designating several identified PSWs in its official plan for 12 years due to disputes with landowners over the validity of the ministry's re-evaluation of the wetlands.

The Rideau Valley Conservation Authority and concerned local residents agree that there is evidence of filling and newly installed drainage works

within the Goulbourn Wetland Complex, indicating that wetlands are being destroyed while they await designation.

Despite evidence of wetland loss, the board of the conservation authority determined in 2009 that until the wetlands are officially designated it is unable to enforce the wetland protection provisions in its regulation.⁴⁶ Landowners are able to dispute the re-evaluated wetland boundaries until the end of 2018, at which time the City of Ottawa intends to amend its official plan (see Figure 10). This is the opposite of a precautionary approach. The result is wetlands are left vulnerable despite having been proven (time and again) to be significant.

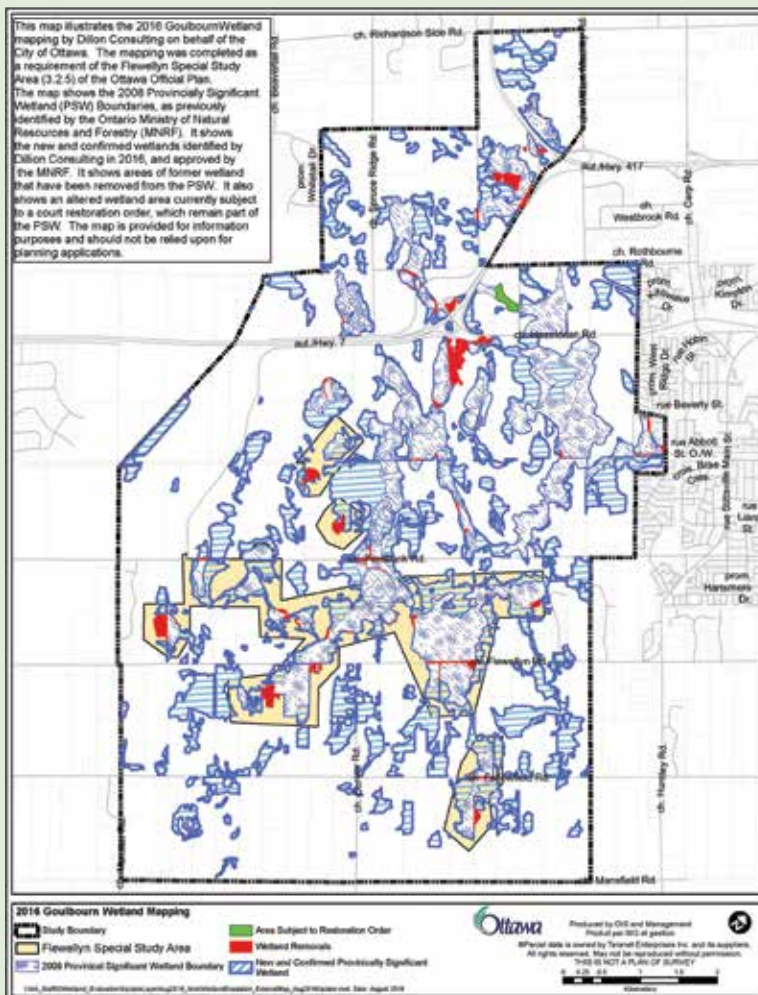


Figure 10. Map of revised boundaries of the Goulbourn Wetland Complex. The map shows the 2008 PSW boundaries as well as the areas where wetland boundaries expanded (blue horizontal lines). It also shows areas of wetland removals (red), due to residential development, quarries and agricultural drainage. Areas that were altered and are not subject to court restoration orders are shown in green.

Source: City of Ottawa, 2016. Used with permission.



Protect wetlands by creating stronger conservation authorities

Conservation authorities can and should be key players in the province's efforts to reverse net wetland loss. However, conservation authorities currently lack the necessary power and resources to allow them to effectively and consistently carry out this responsibility across southern Ontario.

In 2017, the government amended the Conservation Authorities Act to increase consistency and clarify the responsibilities of conservation authorities. Notably, the government transferred the authority to make regulations for each specific watershed from the individual conservation authority to the MNRF to help alleviate inconsistencies among conservation authorities.⁴⁷ The amendments also enable conservation authorities to issue stop work orders, as well as increased fines for offences.⁴⁸ Prior to this, conservation authorities could only send violators to court, a time-consuming process that left wetlands vulnerable throughout the negotiations.

However, these amendments may not actually come into force for several years, as they depend in part on the completion of a four-year work plan for the Conservation Authorities Act review.⁴⁹ The previous amendments to enable conservation authorities to protect wetlands took eight years to come into force.

Clear regulations under the Conservation Authorities Act for both agricultural and development activities are necessary for conservation authorities to protect wetlands in their jurisdictions. Avoiding unnecessary delays is critical if the province is to successfully reverse the net loss of wetlands by 2025. But even if these changes to the Conservation Authorities Act happen quickly, there is no guarantee that there will be further restrictions on activities that interfere with wetlands.

To enhance overall wetland protection, the province must take a stronger stance as to what activities should be expressly prohibited or regulated in wetlands. **The ECO recommends that the Ontario**

government give conservation authorities clear direction to regulate *all* activities that interfere with *all* wetlands, regardless of significance.

This could potentially be achieved by defining the term "interference" and/or explicitly listing all activities known to impact wetland function, including agricultural activities and peat extraction.

While recent amendments to the Conservation Authorities Act may eventually help to strengthen enforcement powers, ultimately conservation authorities need more funding from the province to carry out their responsibilities. This is especially true given that the province will need the support of conservation authorities to meet the new wetland conservation targets. **The ECO recommends that the Ontario government allocate sufficient funding to conservation authorities to effectively enforce regulations for all activities that interfere with wetlands.**

Ultimately conservation authorities need more funding from the province to carry out their responsibilities.

Getting early input from conservation authorities

Giving conservation authorities the power and tools to regulate wetland threats is imperative, but it will not be nearly as effective if they are not involved in the early stages of land use planning. Currently, conservation authorities are often only engaged in the final hour of land use planning and the issuance of other approvals under the Environmental Assessment Act and the Drainage Act. If a development proposal interferes with wetland function, conservation authorities are in the position of trying to minimize the damage to wetlands by issuing a permit with restrictive conditions. Conservation authorities might be challenging a project that is on the cusp of getting final approval (or has already been approved), and possibly already has millions of dollars and years of work invested in it.

To avoid this kind of a reactionary approach to wetland regulation, the ECO urges the province to require developers and planners work with conservation authorities in the early stages of planning decisions that impact wetlands. Requiring wetland impacts to be considered pre-emptively would reduce wetland loss and create a more efficient approval process for developers and other landowners.



A Blanding's turtle resting on a log in Frontenac Provincial Park.

Photo credit: Bob Hilscher. Used with permission.

1.4.4 Encouraging wetland stewardship on private land

As discussed in the sections above, government needs to take serious measures to stem the loss of wetlands. But wetland protection in southern Ontario requires more than just government action. Wetland conservation efforts will not succeed unless private landowners keep the wetlands on their properties.

Wetland conservation efforts will not succeed unless private landowners keep the wetlands on their properties.

The Conservation Land Tax Incentive Program (CLTIP) is a voluntary program that encourages stewardship by offering 100% property tax exemption on eligible portions of a property to landowners who protect

identified natural heritage features.⁵⁰ Evaluated PSWs that are at least 0.2 hectares in size are eligible for this tax exemption. CLTIP has been operating since 1998, but landowner participation has hovered at around 40% of eligible properties. Unfortunately, the number of eligible properties has also declined since 2014.⁵¹ Low enrollment is likely driven by several factors:

- lack of awareness or understanding of program details
- reluctance to file onerous paperwork that must be re-submitted annually
- size criteria are too strict
- concerns that enrollment may result in a loss of future income (e.g., lower resale value or restrictions on developing or cultivating the land in the future), and/or
- general mistrust of a government program that restricts activities on private land.

Perhaps the biggest reason for low enrollment is that the financial incentive is not strong enough for farmland owners. Agricultural lands already receive a 75% tax reduction relative to the residential rate, and the additional 25% is often seen as a marginal increase that simply isn't worth the hassle. For example, farmers may decide that it is more lucrative to drain wetland features to increase the land they have under production.

Simplify and re-frame the program to attract more landowners

To increase enrollment, the MNRF should simplify the administrative process for this program and widen the eligibility criteria. The MNRF should also develop new strategies to attract additional landowners and consider re-framing the program to help promote awareness and interest.

Going one step further, **the ECO recommends that the Ontario government make all wetlands on agricultural land eligible for a rebate through the Conservation Land Tax Incentive Program, regardless of size or significance.** This would mean that a wetland on a farmer's land would still be eligible even if it was evaluated as a non-PSW. Instead of offering a tax exemption, the province should provide a tax



rebate. A rebate will still reward participating landowners, but will do so without penalizing municipalities.⁵²

Re-framing CLTIP to attract landowners and recognize and reward their participation would likely go a long way to ensuring wetlands are protected on private land. While this might mean creating more significant financial incentives, it could also be achieved by making the program's objectives more understandable. A first step could be changing the program's somewhat complicated name to something that actually sounds interesting and exciting. Giving landowners signs for their lawns would be a simple way to recognize them for what they're doing, and also to advertise to other local people that could participate. Both of these actions could remind people that they are contributing to environmental protection simply by letting natural features like wetlands to continue to *exist* on their property.

Wetlands help protect valuable assets by reducing damage from temperature extremes, flooding, and droughts, all of which are projected to increase in southern Ontario with climate change. They also provide direct services for farmers by creating essential pollinator habitat and improving water quality. Farmers

who conserve and restore wetlands on their properties are not only reducing their own susceptibility to these environmental risks, they are helping to protect other landowners that are nearby or potentially even far downstream. Organizations such as Alternative Land Use Services (ALUS) work with farmers to restore wetlands and create sustainable drainage systems. Although ALUS provides the programs and resources for ecological stewardship, the organization is driven by farmers who recognize the benefits that wetlands and other natural features bring to their properties.

Recognizing the value of wetlands as a public good is both a necessary and challenging transition, and will require the participation of many sectors. The agricultural community must be meaningfully involved in the effort, particularly since farmers have been relatively unrestricted with regard to wetland interference, compared to other main drivers of wetland loss. The province also has a responsibility to address concerns farmers might have related to loss of future income and the reluctance to have restrictions imposed on their land. The province should engage in an ongoing and open discussion as to how the government can work with farmers to conserve or restore wetlands on their farm properties.



A provincially significant wetland situated between agricultural fields and a small woodland, near Caledon, Ontario. The majority of the PSW is privately owned and protected under CLTIP.

Photo credit: Larissa Sage. Used with permission.

1.4.5 Wetland offsetting: a last resort

Ontario's Wetland Conservation Strategy has proposed using a wetland offsetting policy to halt the net loss of wetlands, and eventually achieve net gain in areas where loss has been greatest.

Offsetting is a way to compensate for wetland losses in situations when the developers and regulators have concluded that a project should proceed (such as an important site-specific infrastructure project), but where the project cannot practically avoid destroying or degrading a wetland. Losses are offset by restoring or creating new wetlands, ideally in a way that replicates the characteristics of the wetland lost (i.e., type, location, size, biodiversity and function). An offsetting requirement can help to reflect the true social and environmental costs of development in natural heritage areas. However, it is not easy to put a "price" on any natural feature.

It is extremely challenging to successfully re-create all of the functions of a natural wetland.

It is extremely challenging to successfully re-create all of the functions of a natural wetland, particularly when high levels of biodiversity and complex ecological functions are involved. For example, some wetland properties, like flood attenuation, may be easier to replicate, while other features, such as the habitat of a threatened frog species, may not be. This is partially because there is still a relatively poor understanding of how to replicate certain wetland functions, especially those of smaller wetlands. But even if functions were better understood, some features, such as a wetland's deep organic soils, can take thousands of years to accumulate. The reality is, in many circumstances, wetlands are simply not replaceable.

Wetland offsetting has been used in jurisdictions around the world, and six other Canadian provinces have developed policies or protocols to guide offsetting practices.⁵³ While some jurisdictions have succeeded with particular aspects of their offsetting policies, there is no example of a resounding success story to date.

Despite the risks associated with offsetting, the fact remains that there is a real urgency to reverse the trend of wetland loss in southern Ontario, particularly in light of wetland contributions to climate change adaptation. If done effectively, newly created and restored wetlands can help achieve the province's conservation goals. Furthermore, wetland offsetting may legitimately be the only realistic option in some situations. For example, a linear infrastructure project (such as a 400-series highway), may not be able to avoid all wetlands if it is to be affordable and safe.

Perhaps one of the strongest reasons to develop a wetland offsetting policy is that offsetting projects are already happening across the province. They are currently unregulated, and there is no consistent set of criteria that offset projects must satisfy.



Wetland restorations represent an ideal opportunity for potential offset projects. The photos above show an abandoned agricultural field (top) that was restored to a healthy wetland (bottom) by the Toronto and Region Conservation Authority by removing three agricultural tile drains.

Photo credit: Toronto and Region Conservation Authority. Used with permission.

Ensure the offsetting option is not abused

Developing an offsetting policy that requires offset projects to follow a mitigation hierarchy, as well as strict criteria with a transparent approval process, will help ensure that the various risks of offsetting are minimized. The government is considering the mitigation hierarchy as a way to ensure that offsetting will only be used as a last resort (see Figure 11). Before a potential offset is considered, project proponents should strive to: (1) avoid any negative impacts (e.g., locate project at a different site away from wetland); (2) minimize unavoidable impacts; and (3) rehabilitate wetlands that have been impacted when possible. The real challenge will be to ensure that, in practice, proponents and regulators do not quickly pass over the preceding steps and over-rely on the offsetting option.

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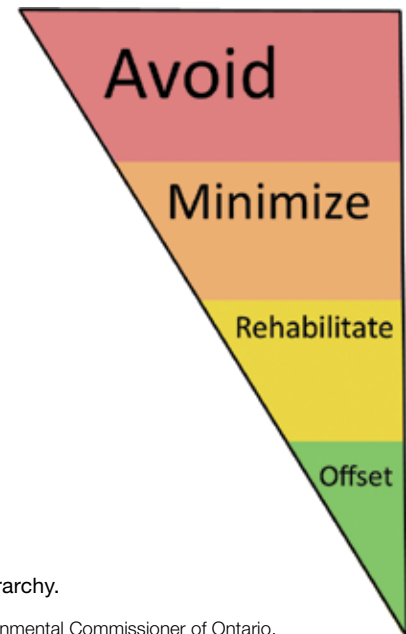


Figure 11. Mitigation hierarchy.

Source: Created by the Environmental Commissioner of Ontario.

Various versions of this hierarchy have been used in other jurisdictions, and experience has shown that it is difficult to demonstrate that avoidance and minimization measures are carefully considered before the offsetting option is accepted. This is partially due to a lack of agreement on what constitutes avoidance and minimization. Lessons from Alberta and the United States suggest that these steps are often skipped because developers aren't inclined to consider alternative locations once an application has been submitted, which is in part a consequence of narrowly defined project proposals.⁵⁴ **The ECO recommends that the offsetting policy clearly define the thresholds for avoidance and minimization of adverse impacts.** Applications for development and site alteration should document measures taken to meet the thresholds, and where efforts have been insufficient, regulators should deny applications.⁵⁵

Recommended criteria for wetland offset projects

Ensuring that offsets are additional, permanent, and representative of original wetland function is highly complex, and the province must carefully consider the successes and shortcomings of offsetting policies in other jurisdictions in developing a wetland offsetting policy. **The ECO recommends that the province's wetland offsetting policy reaffirm that offsetting will be treated as a last resort and require eligible projects to adhere to strict standards based on a net gain of both wetland area and function.**

Only wetlands that have been officially evaluated and are not significant or irreplaceable should be eligible for offsetting.

Eligibility for offsetting

The ECO suggests that, except in the rarest of exceptions (such as essential infrastructure that cannot be located elsewhere), only wetlands that have been officially evaluated and are not significant or irreplaceable should be eligible for offsetting. In other words, the following should be strictly off limits:

- unevaluated wetlands
- all provincially significant wetlands and coastal wetlands, and
- wetlands that are irreplaceable, such as bogs and fens

The government should also create clear limits on offsetting in areas of greatest historic loss. By 2002, over a quarter of southern Ontario counties had lost at least 85% of their original wetland cover.⁵⁶ Some

environmental organizations have proposed that in areas (municipality or watershed) where wetland loss has exceeded 85%, remaining wetlands should be ineligible for offsetting. The criteria for offsetting should also recognize the vulnerability of wetlands that are relatively isolated. To ensure that Ontario's existing natural wetlands are protected, it has also been suggested that offsetting only be allowed for non-significant, highly degraded wetlands.

Offsets should attempt to replicate key aspects of the wetland lost

If a wetland is eligible for offsetting, the offset project should replicate the original wetland in terms of type, function and location. A marsh should not be offset by a swamp, and if that marsh happens to be habitat for an endangered salamander species it should not be offset by a marsh that fails to replicate these habitat conditions but instead provides habitat for waterfowl. Offset locations must also be as close as possible to the original wetland. In Alberta, offset projects are to be located, to the extent possible, within the same municipality, watershed, or region as the wetland lost, or if necessary, in any area with high historic loss in the province. This language is not nearly strong enough. Proponents should be required to demonstrate that they have carefully assessed location options and the proposed location of the new wetland will help compensate the people, wildlife and local ecosystem that will be affected by the loss.



Jefferson salamanders are an endangered species in Ontario.

Photo Credit: Andrew Hoffman, (CC BY-NC-ND 2.0).



Replacement Ratios

Replacement ratios are used to calculate the amount of wetland area that needs to be created or restored. Ratios can vary to reflect the value of the wetland lost, expected time lags or the uncertainty associated with an offset project. For example, a higher ratio should be required to re-create a wetland that provides important ecosystem services. Lower ratios might be acceptable for a wetland restoration project that has a higher probability of success, but all ratios should be sufficiently high to deter proponents from skipping straight to offsetting without careful consideration of avoidance and minimization steps of the mitigation hierarchy.

A series of small wetlands cannot be replaced with one large wetland.

All offset projects should be required to reproduce the key wetland functions that are lost to the extent possible – ratios should be treated as an additional measure to increase overall wetland area. A series of small wetlands cannot be replaced with one large wetland, especially given that smaller wetlands are better at filtering pollutants and can provide unique habitat for species at risk. Similarly, some systems for offsetting ratios should be unacceptable, such as that of Alberta, which allows for 1 ha of an “A” value wetland (the highest level of significance) to be replaced with 8 ha of a “D” grade wetland (the lowest level of significance).⁵⁷ Not only does this system allow for the destruction of the most valuable wetlands (Alberta’s equivalent to Ontario’s PSWs), it perpetuates the misguided assumption that larger areas can be used to compensate for the loss of valuable and rare ecological functions. In addition to prohibiting offsetting for PSWs, the Ontario government should require higher replacement ratios for the province’s eligible wetlands, in order to reflect their value as well as the time lags and inherent uncertainty of offsetting.

Timing and duration of offset project

Before a project is carried out, an offset project proposal should be approved and paid for. Timelines for completion should be reasonable, and the offset ratio should reflect the fact that there will invariably be time lags in establishing a successful project. Because not all offset projects will be successful and the province’s goal to achieve net gain of both area and function, wetland offset projects should be designed to last in perpetuity. All offsetting projects should be subject to long term monitoring and maintenance to ensure they continue to meet project requirements over time.

The government’s Wetland Conservation Strategy focuses heavily on offsetting as a means to halt the net loss of wetlands, rather than making clear commitments to enhance wetland protections.⁵⁸ This emphasis on offsetting suggests that the government’s intention is to allow ongoing loss, provided that these losses can be compensated for.

Wetland offsetting is inherently risky both in terms of effectiveness and the dangers of creating an option that essentially justifies the destruction of an existing wetland. Concerns have been raised across sectors about the risk that an offsetting policy will undermine existing wetland protections, which are not adequate in the first place. Offsetting should be viewed as a small component of a much broader plan to protect our remaining wetlands, not as the solution to halt the net loss of wetlands.

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Wetland adjacent to a subdivision restored by the TRCA.

Photo Credit: Toronto and Region Conservation Authority, 2009.

1.5 Conclusion

The Ontario government's approach to wetland conservation must reflect the urgency of the situation. The scattered wetlands remaining in southern Ontario are still being destroyed, and cannot afford further delay of meaningful change to wetland protections. This is especially true in light of the number of threatened and endangered species that depend on these unique habitats and the increasingly important role wetlands are playing in buffering changes to our climate.

The baseline protections for wetlands in southern Ontario provided under the Provincial Policy Statement, 2014 are inadequate for stopping wetland loss, primarily because the definitions of development and site alteration exclude agricultural activities, infrastructure projects and other destructive activities. Although conservation authorities are expected to regulate activities that interfere with wetlands in any way, their regulatory capacity is limited by insufficient resources, unclear definitions and a lack of provincial direction. Strengthening the PPS and the Conservation Authorities Act will help to close the gaps in wetland protection and support the province's new wetland conservation targets. Increased protections need to occur in conjunction with a concerted effort to increase wetland restoration activity, so that our remaining wetlands are healthy and capable of supporting rich biodiversity and the numerous ecosystem services we depend on.

The government's Wetland Conservation Strategy sets targets to reverse wetland loss and identifies opportunities for improvement, but it does not commit to any concrete steps to achieve those targets. The ECO is also concerned that the province is already relying far too heavily on a wetland offsetting policy to reverse the net loss of wetlands. Although offsetting will likely be necessary to some extent, successfully replicating complex wetland functions is challenging, if not impossible, and it creates an alternative to wetland protection that can be easily abused.

Enhancing protections for the remaining wetlands in southern Ontario is the safest and most effective way of preventing the loss of area and function. **The ECO strongly recommends that the province reprioritize its approach to wetland conservation and ensure that protections are strengthened for the remaining wetlands in southern Ontario.** The goal should be to raise the bar for wetland protections by prohibiting degradation and destruction of PSWs and unevaluated wetlands, giving conservation authorities clear direction to protect and regulate all wetlands, and enforcing strict offsetting requirements when wetland loss or degradation does occur (see Figure 12).

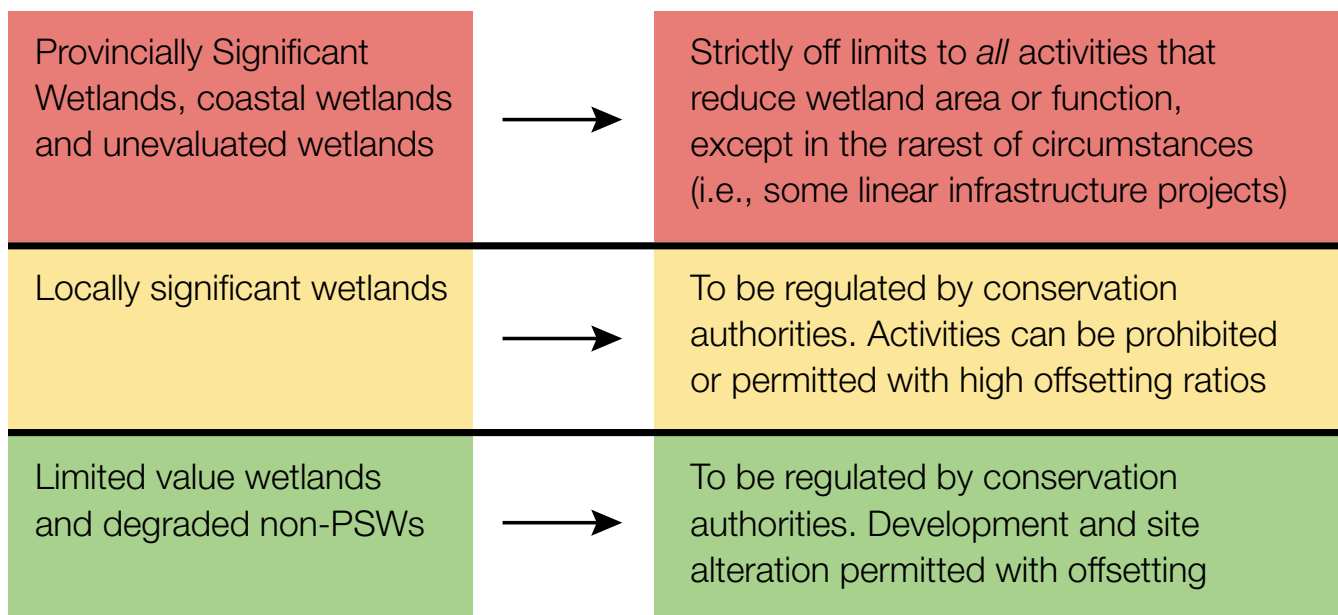


Figure 12. Proposed system to strengthen wetland protections and increase certainty for developers and landowners. Currently, PSWs receive some protections, but there is no “middle ground” for protections in Ontario’s land use planning policy, leaving locally significant and unevaluated wetlands vulnerable to destruction.

Source: Created by the Environmental Commissioner of Ontario.

The ECO recommends that the government formally identify all wetlands in southern Ontario as PSWs until proven otherwise.

The ECO recommends that the Ministry of Municipal Affairs and Housing revise the Provincial Policy Statement to strengthen protection for southern Ontario’s remaining wetlands.

The ECO recommends that the Ontario government give conservation authorities clear direction to regulate all activities that interfere with all wetlands, regardless of significance.

The ECO recommends that the Ontario government allocate sufficient funding to conservation authorities to effectively enforce regulations for all activities that interfere with wetlands.

The ECO recommends that the Ontario government make all wetlands on agricultural land eligible for a rebate through the Conservation Land Tax Incentive Program, regardless of size or significance.

The ECO recommends that the offsetting policy clearly define the thresholds for avoidance and minimization of adverse impacts.

The ECO recommends that the province’s wetland offsetting policy reaffirm that offsetting will be treated as a last resort and require eligible projects to adhere to strict standards based on a net gain of both wetland area and function.

The ECO strongly recommends that the province reprioritize its approach to wetland conservation and ensure that protections are strengthened for the remaining wetlands in southern Ontario.



Provincially significant marsh along the Bruce Peninsula's Lake Heron shoreline.

Photo credit: Larissa Sage. Used with permission.

Endnotes

1. Nick C Davidson, "How much wetland has the world lost? Long-term and recent trends in global wetland area" (2014) 65 Mar Freshwater Res at 934.
 2. Ontario Nature conducted a species-by-species review of habitat and threats using the Ontario Species at Risk List to determine the percentage of species at risk dependent on wetland habitat.
 3. David Godschalk et al, *Natural Hazard Mitigation: Recasting Disaster Policy and Planning* (Washington, DC: Island Press, 1999).
 4. Ontario Ministry of Natural Resources and Forestry, *Estimation of Ecosystem Service Values for Southern Ontario* by Austin Troy and Ken Bagstad (Pleasanton, CA: Spatial Informatics Group, 2013).
 5. Intact Centre on Climate Adaptation, *When the Big Storms Hit: The Role of Wetlands to Limit Urban and Rural Flood Damage*, Prepared for the Ontario Ministry of Natural Resources and Forestry, by Natalia Moudrak, Anne-Marie Hutter and Blair Feltmate, (Waterloo, Ont: Intact Centre on Climate Adaptation, University of Waterloo, 2017).
 6. Ducks Unlimited Canada, "Southern Ontario Wetland Conversion Analysis, Final Report" (March 2010), at 21, online: Ducks.ca www.ducks.ca/assets/2010/10/duc_ontariowca_optimized.pdf
 7. Ontario Biodiversity Council, "Extent of Wetland Cover and Wetland Loss" (Peterborough, Ont: Ontario Biodiversity Council, 2015), online: State of Ontario's Biodiversity <sobr.ca/_biosite/wp-content/uploads/Indicator-Extent-of-Wetland-Cover-and-Wetland-Loss.pdf>.
- Note that the Ontario Biodiversity Council uses the dates "2000-2002 to 2011" whereas the MNRF data provided to the ECO is for 2000 -2010. This is because each version of SOLRIS is made up of multiple years of imagery to get the seamless cloud-free coverage of all of southern Ontario. SOLRIS Version 1.0 was made up of imagery captured from 1999-2002 (the "2000" date) and Version 2.0 is made up of imagery captured between 2009-2011 (the "2010" date).
8. The recent estimate for 2000 to 2010 wetland loss cannot be directly compared to Ducks Unlimited Canada's historical analysis due to differing methodologies and different wetland size classes that were assessed. The State of Ontario's Biodiversity Report (2015) discusses the differences between the two assessments in more detail.
 9. Ducks Unlimited Canada, "Southern Ontario Wetland Conversion Analysis, Final Report" (March 2010), at 7, online: Ducks.ca www.ducks.ca/assets/2010/10/duc_ontariowca_optimized.pdf
 10. Environment Canada, *How much Habitat is Enough?* 3rd ed, (Toronto: Environment Canada, 2013).
 11. The historical analysis by Ducks Unlimited Canada excluded wetlands less than 10 ha. If smaller wetlands were included in the study, the percentage lost would be even higher. In more recent estimates, SOLRIS coverage includes wetlands as small as 0.5 ha within all of the ecoregions in the Mixedwood Plains Ecozone with the exception of Manitoulin Island. Cumulatively, these small losses could be substantial.
 12. Frederick Y Cheng & Nandita B Basu, "Biogeochemical hotspots: Role of small water bodies in landscape nutrient processing" (2017) 53:6 Water Resour Res 5038.
 13. Ministry of Natural Resources and Forestry, information provided to the ECO (March 5 2018, May 8 2018).
 14. Ducks Unlimited Canada, "Southern Ontario Wetland Conversion Analysis, Final Report" (March 2010), at 16, online: Ducks.ca www.ducks.ca/assets/2010/10/duc_ontariowca_optimized.pdf.
 15. In 1967 Essex, Kent, Elgin, Lambton, Middlesex and Oxford counties had 47, 372 ha of wetland cover combined, and by 2002, there were only 23,388 ha (ibid at 7-8).
 16. David L A Gordon, *Still Suburban? Growth in Canadian Suburbs, 2006-2016 (Working Paper #2)*, (Council for Canadian Urbanism and Queen's University: August 2018) at 2.
 17. Toronto and Region Conservation Authority (TRCA), "Toronto and Region Watersheds Report Card 2018", online: <reportcard.trca.ca>.
 18. While there is no explicit policy, the Natural Heritage Reference Manual recommends that where there is a planning application, the activities associated with extraction of peat constitute site alteration, and as such are not permitted in significant wetlands. Where no planning application is made, planning authorities can use the powers under the Municipal Act to pass a site alteration by-law to prohibit the removal of topsoil or peat.
 19. Ontario Ministry of Municipal Affairs and Housing, *Provincial Policy Statement, 2014*, (Toronto: MMAH, 2014) Policy 2.5.2.1.
 20. Jeff E Houlahan and C Scott Findlay, "The effects of adjacent land use on wetland amphibian species richness and community composition" (2002) 60 Can J Fish Aquat Sci 1078; Natalie Gottschall et al, "The role of plants in the removal of nutrients at a constructed wetland treating agricultural (dairy) wastewater, Ontario, Canada" (2007) 29 Ecol Eng 154.
 21. Christine A Bishop et al, "Anuran Development, Density and Diversity in Relation to Agricultural Activity in the Holland River Watershed, Ontario, Canada (1990-1992)" (1999) 57 Environ Monit Assess 21.
 22. Science for a Changing Far North: The Report of the Far North Science Advisory Panel (Final Report), a report submitted to the Ontario Ministry of Natural Resources. (Toronto: Queen's Printer for Ontario, 2010); Ontario Ministry of Natural Resources and Forestry, "Measuring Carbon Exchange in the Hudson Bay Lowlands" (Presentation to the ECO, March 8, 2017).
 23. In the Provincial Policy Statement, 2014, the term "significant," (with regard to wetlands) is defined as: "wetlands, coastal wetlands and areas of natural and scientific interest, an area identified as provincially significant by the Ontario Ministry of Natural Resources using evaluation procedures established by the Province, as amended from time to time."
 24. Whether or not a vernal pool is mapped depends on the extent of vegetation cover and if it is surrounded by wetland vegetation. However, even if conditions are right for an evaluator to map a vernal pool, they are not required to collect information on its characteristics (e.g., species utilizing the pool).
 25. From 2016 to 2017, the MNRF completed seven wetland evaluations in the Mixedwood Plains ecozone, which corresponds to 0.1% of the remaining unevaluated wetland hectares. From 2017 to 2018, only five evaluations were completed.
 26. The Ontario Wetland Evaluation System (southern manual) states that "if an area no longer meets the definition of a wetland, in terms of water, soil/substrate, and vegetation characteristics, then it should not be considered to be a wetland. Conversely, land which is under agricultural use, but has retained the characteristics and function of a wetland, is still considered to be one."
 27. The Provincial Policy Statement does not restrict development for infrastructure projects approved under the Environmental Assessment Act or drainage projects approved under the Drainage Act or the Tile Drainage Act. The definition of "development" in the Provincial Policy Statement, 2014 also does not apply to "underground or surface mining of minerals or advanced exploration on mining lands in significant areas of mineral potential in Ecoregion 5E, where advanced exploration has the same meaning as under the Mining Act."

28. Ontario Ministry of Municipal Affairs and Housing, Provincial Policy Statement, 2014, (Toronto: MMAH, 2014) Policy 2.5.2.2, 2.5.3.1.
29. The new Wetland Conservation Strategy does note that the conservation of all wetlands and their functions is important, including “locally and regionally important wetlands,” but does not provide any details as to how this might occur.
30. Ontario Ministry of Municipal Affairs and Housing, Provincial Policy Statement, 2014, (Toronto: MMAH, 2014) Policy 2.1.8.
31. Ontario Ministry of Natural Resources, Natural Heritage Reference Manual, for Natural Heritage Policies of the Provincial Policy Statement, 2005, 2nd ed (Toronto: Queen’s Printer for Ontario, 2010) at 62.
32. The Provincial Policy Statement affords the same level of protection to PSWs in ecodistrict 5E (which is on the shield) as those in ecodistricts 6e and 7e (the south), but PSWs north of 5E and coastal wetlands are afforded a lower level of protection if no negative impacts have been demonstrated.
33. *Burleigh Bay Corporation v North Kawartha (Township)*, 2017 CanLII 66321 (ON LPAT) at 138.
34. Ontario Ministry of Municipal Affairs and Housing, Provincial Policy Statement, 2014, (Toronto: MMAH, 2014) Policy 2.1.2.
35. Oak Ridges Moraine Conservation Plan, O Reg 140/02, s 22.
36. Ontario Ministry of Municipal Affairs and Housing, Growth Plan for the Greater Golden Horseshoe, 2017, (Toronto: Queen’s printer for Ontario, 2008 – 2018) policies 4.2.8, 4.2.3.1 (d) and 4.2.2.3 (b).

The Growth Plan does contain restrictions on expansions or alterations to existing agricultural building and structures in the Natural Heritage System. Expansions and alterations within key features (i.e. wetlands) are to be limited if there are no alternatives, and must have a minimum of 30 metre “vegetation protection zone” from key features. It must be demonstrated that impacts on the feature and its functions are minimized and mitigated to the extent possible.
37. Ducks Unlimited Canada, Earthroots, Ecojustice and Ontario Nature, “Protecting Greenbelt Wetlands: How Effective is Policy?” (2012), online: <www.greenbelt.ca/protecting_greenbelt_wetlands_how_effective_is_policy>.
38. Conservation Authorities Act, RSO 1990 c C-27, s 28(1)(b).
39. In addition to not defining “interference,” the Conservation Authorities Act gives conservation authorities the power to prohibit or regulate activities that might affect the “conservation of land,” but does not define or explain this term.
40. The Conservation Authorities Act states that “wetland” means land that “directly contributes to the hydrological function of a watershed through connection with a surface watercourse.” This definition of wetland differs from that of Provincial Policy Statement, which creates unnecessary complications in implementing both policies. Specifically, this qualifier limits the ability of conservation authorities to regulate wetlands that are isolated, fed by pumps or are adjacent to lakes.
41. There is also pressure to accommodate municipal interests because conservation authorities typically have elected or appointed municipal officials on their boards, and municipalities are their primary source of funding. The typical breakdown of funding sources for conservation authorities is as follows: municipal levies (54%), self-generated revenue (34%), provincial grants & Special Projects (9%), and federal grants or contracts (3%). See: Conservation Ontario, “Conservation Authorities”, (Conservation Ontario, 2018), online: <conservationontario.ca/conservation-authorities/about-conservation-authorities/>
42. Ontario Ministry of Agriculture, Food and Rural Affairs, Agricultural Drainage Infrastructure Program: Administrative Policies, (Toronto: Queen’s Printer for Ontario, 2016) at Policy 2.3(d).
43. Neither the Drainage Act nor the Tile Drainage Installation Act contain specific prohibitions for wetland interference. In fact, wetlands are not even mentioned in either act.
44. Conservation Authorities Act, RSO 1990 c C-27, s 28(11).
45. *Gilmor v. Nottawasaga Valley Conservation Authority*, 2018 CanLII 3410 (SCC) at para 51.
46. As of Jan. 25 2018, the Rideau Valley Conservation Authority no longer considers these wetlands exempt from the conservation authority’s regulation pertaining to wetland interference (O Reg 174/06).
47. Conservation Authorities Act, RSO 1990 c C-27, s 40(3)(e). Note this section is not yet in effect.
48. Conservation Authorities Act, RSO 1990 c C-27, s 30.4 (1) and 30.5(2). Note these sections are not yet in effect.
49. Ontario Ministry of Natural Resources and Forestry, *Conserving Our Future: A Modernized Conservation Authorities Act*, (Toronto: Queen’s Press for Ontario, 2017).
50. Ontario Ministry of Natural Resources and Forestry, *Conservation Land Tax Incentive Program*, (Toronto: Queen’s Printer for Ontario, 2012-2018), online: <www.ontario.ca/page/conservation-land-tax-incentive-program>.
51. Ontario Biodiversity Council, “Participation in Provincial Tax Incentive Programs” (Peterborough, Ont: Ontario Biodiversity Council, 2015), online: <sobr.ca/indicator/participation-provincial-tax-incentive-programs/>.
52. The ECO recommends the CLTIP program offer a tax rebate, rather than a tax exemption. This will enable the province to reward and incent landowners but avoid penalizing municipalities by reducing their property tax revenue. Since the realignment of service responsibility between municipalities and the Province in 1998, municipalities have born the burden of the Farm Land Tax Incentive Program, the Managed Forest Tax Incentive Program and the CLTIP, meaning the more properties enrolled in these programs, the less tax revenue the municipality collects.
53. Ontario Nature, *Navigating the Swamp: Lessons on Wetland Offsetting for Ontario*, by David W Poulton and Anne Bell (Toronto: Ontario Nature, 2017).
54. Shari Clare et al, “Where is the avoidance in the Implementation of Wetland Law and Policy?” (2011) 19 *Wetlands Ecol Manage* 165 at 168.
55. For further discussion, see: Ontario Nature, *Navigating the Swamp: Lessons on Wetland Offsetting for Ontario*, by David W Poulton and Anne Bell (Toronto: Ontario Nature, 2017) at 44.
56. Ducks Unlimited Canada, “Southern Ontario Wetland Conversion Analysis, Final Report” (March 2010), at 12-13, online: Ducks.ca <www.ducks.ca/assets/2010/10/duc_ontariowca_optimized.pdf> ; Eleven of forty counties in southern Ontario had lost at least 85% of original wetland area by 2002. Please see the report for details on the assessed study area as some counties were only partially covered in the analysis.
57. Government of Alberta, *Alberta Wetland Mitigation Directive*, (Edmonton: Water Policy Branch, Alberta Environment and Parks, 2017) at 8.
58. The Wetland Conservation Strategy has promised that any wetland offsetting policy will “not reduce protection for those wetlands already protected by existing law and policy.”

Chapter 2

Southern Ontario's Disappearing Forests



Abstract

Healthy trees and forests are essential for healthy communities. Forests filter pollutants from our air, absorb and filter storm water, prevent erosion and mitigate drought. Since European settlement, southern Ontario has lost most of its forest cover to land clearing for agriculture and development – and forests continue to disappear. Today, many watersheds have below the 30% forest cover required to ensure marginally functional ecosystems.

To reverse the loss of forests in southern Ontario, the provincial government must take strategic, targeted and co-ordinated action to protect forest cover, increase tree planting, and help landowners keep healthy forests intact on their land. The government must also continue to support the services provided by the Ontario Tree Seed Plant to ensure biologically and climatically appropriate seed is accessible for tree planting projects in all parts of Ontario.

In addition to protecting and adding to forest cover across southern Ontario, the government must also work with partners to conserve and enhance urban forests (which include street, park and privately owned trees, as well as woodlots, ravines and other natural areas) in our towns and cities. With most of Ontario's population residing in urban areas, urban forests are important for our physical and mental health, and are also crucial in our efforts to adapt to climate change.

Municipalities often have limited funds and capacity to manage the complex needs of their urban forests. They require help from the Ontario government, especially when faced with the high and sudden costs of storm damage, invasive insects, and disease; all of which are becoming more frequent and/or severe due to climate change.

People and wildlife need forests. If we don't share the costs of forests fairly, we'll lose them again.

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2.1 Introduction

Many of us who grew up in southern Ontario knew a forest well. We knew the dirt paths where we could build jumps for our bikes; we knew the trees that were easily climbed; we knew where to find mulberries, woody grape vines to swing on, and mushrooms that sent up clouds of smoky spores when you stepped on them. This forest often backed on to a school or a farm field, and had a creek with steep banks. It might have been the size of a city block, or one backyard. The actual size didn't matter – it always seemed big and wild enough to make us feel as if we had been on an adventure each time we explored it.

These forests are typically remnants of woodlots from former farms, or ravines that snake through towns and cities. They are the “back 40” where the firewood

comes from; the un-farmable valleys, slopes, and swamps. They are the crumbs left behind after the march of settlement that has transformed the most populous area in Canada from a vast stretch of forests, prairies and wetlands to a highly developed agricultural and urban continuum in 200-odd years – and they continue to disappear.

Though Ontario's vast boreal forest north of Lake Superior is part of one of the largest intact forests left in the world, southern Ontario has hardly any forest left, and the little that remains is severely fragmented. Viewed from above, these forest fragments are disparate green patches surrounded by farms or development.



A satellite photo of the landscape near Stratford, Ontario (top left), dotted with small woodlots (some circled in yellow) that are surrounded by farmland.

Photo credit: Google Earth.



In this chapter we explore why we continue to lose forest cover in southern Ontario, what needs to be done to better protect forests, and how to plant more of them. We also discuss the importance of urban forests – the public and private trees in a town or city’s parks, streets and natural spaces – the challenges facing municipalities as they struggle to maintain them, and what the province could do to help.

Healthy trees and forests filter air pollution, retain and filter stormwater, and mitigate the increasingly extreme heat island effect experienced in urban areas.

Healthy trees and forests are essential for healthy communities. They are “green infrastructure” that provides us with essential services: they filter air pollution, retain and filter stormwater, and mitigate the increasingly extreme heat island effect experienced in urban areas. They also improve the physical, emotional, spiritual and mental health of residents. One recent Canadian study of over one million people showed that increased amounts of greenness (trees, vegetation and greenspace) was associated with reduced risks of dying from several common causes of death among urban Canadians.¹ Forests within and outside our urban centres also enhance soil biodiversity, provide habitat for pollinators, help prevent erosion, and mitigate drought.

Over half of the 690 species of conservation concern in Ontario use habitat in southern Ontario forests.² Forests and trees are also indispensable for climate change adaptation. They cushion the effects of warming temperatures and changing precipitation patterns by retaining moisture, filtering increased stormwater, cooling the area around them, and providing refuge for species stressed by the rapidly changing climactic conditions.

2.2 Forest loss in southern Ontario

Southern Ontario is made up of 85,000 km² of land stretching from the Quebec border near Ottawa southwest to Windsor, and north from the shores of Lake Erie and Lake Ontario to the top of Lake Simcoe. Before European settlement, the landscape of southern Ontario was almost continually forested. But today, southern Ontario as a whole has only about 25% forest cover, which is less than the minimum needed to support healthy wildlife and ecosystems (see Figure 1).³ Forest cover significantly drops off toward southwestern Ontario, which has only 12.1% forest cover.

Southern Ontario as a whole has only about 25% forest cover, which is less than the minimum needed to support healthy wildlife and ecosystems.

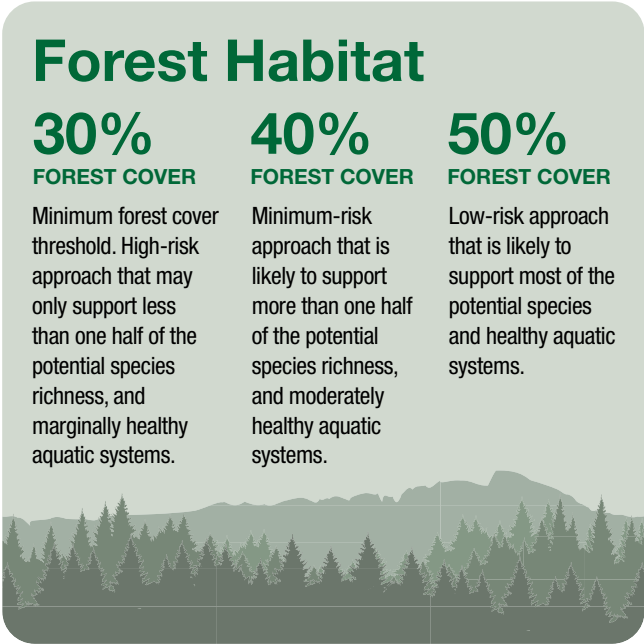


Figure 1. Forest cover thresholds and corresponding consequences for biodiversity and aquatic systems within a watershed, according to Environment Canada.

Source: Environment and Climate Change Canada.

The amount of remaining forest cover varies across southern Ontario. On a map generated from satellite imagery, remaining forest is rendered as splotches of green dotting a sea of urbanization and agriculture (see Figure 2).



Figure 2. Forest cover in southern Ontario and parts of central Ontario. Forest cover is shown in dark green.

Source: Land Information Ontario data mapped by the ECO.

Devastating forest loss occurred when settlers cleared land for farms and communities beginning in the mid-1800s and continuing throughout the following century, and southern Ontario is still losing forest cover today. Data from the Ministry of Natural Resources and Forestry (MNR) shows total forest loss in southern Ontario has increased slightly, from 3,324 hectares in 2000-2005 to 3,786 hectares in 2006-2011. Deforestation from agriculture and development in this region was 631 hectares per year, on average, according to the ministry.

Forest loss in southern Ontario often happens bit by bit. We're not necessarily bulldozing entire woodlands, but we are allowing other land uses to fragment them and chip away at their edges. With so little forest cover remaining on the landscape, each incremental loss has big impacts on the services these forests provide to society and the wildlife they support.

When a road bisects a swath of forest, not only does the road directly displace forested area, it also creates new forest edges, which can have negative

impacts on interior forest-dwelling species. For every tree directly displaced by that road, several more are impacted by soil compaction, air pollution from exhaust, road salt, and increased exposure to wind and sun, stressing them and leaving them less vigorous (i.e., smaller and with less leaf area), which means they will provide smaller benefits (e.g., lower transpiration levels, less carbon storage, less water and air filtration). For communities with little forest cover, every small patch of forest counts as a defense against erosion, stormwater run-off, air and water pollution, greenhouse gas emissions, noise and heat. A mature, diverse forest provides functions and services (seed sources, pollen, healthy soils for regeneration, greater biodiversity) that new plantations won't be able to provide for decades.

Many of Ontario's conservation authorities report on the forest condition in their watersheds. The most recent reports from 2018 show that more than half of the watersheds assessed had 25% or less forest cover, and more than one-third had 15% or less (see Figure 3).

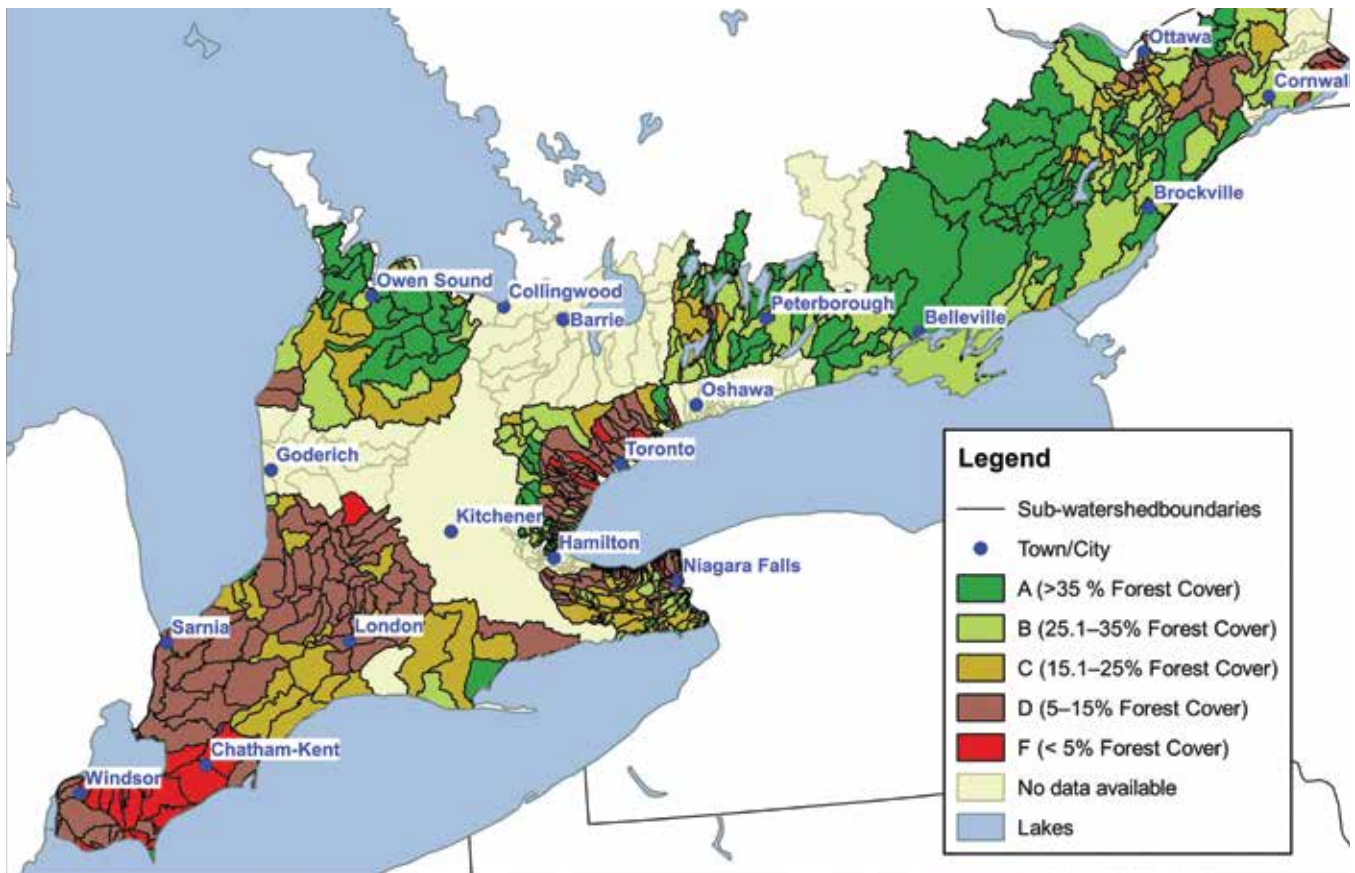


Figure 3. Percent forest cover in the watersheds of southern Ontario, 2018. Colour-coded by percent forest cover grade.

Source: Conservation Ontario data compiled and mapped by the ECO.

Some parts of southwestern Ontario, such as areas around Windsor and Chatham Kent, have less than 10% forest cover. At 30% forest cover, aquatic systems are only marginally healthy, and at anything lower, they are in dire straits.

The vast majority of land in southern Ontario is privately owned, making it vulnerable to clearing for development and agriculture. Some conservation authorities and rural municipalities, including the South Nation Conservation Authority in eastern Ontario, the Upper Thames River Conservation Authority, the County of Middlesex, the County of Perth, Haldimand County, and Grey Sauble Conservation Authority, have determined agriculture is the biggest threat to forest cover on land within their jurisdictions. In more populous areas, development is the

greatest threat to forests, as reported by Halton Region, York Region, the Nottawasaga Valley Conservation Authority (south of Barrie), and the City of London.

Forest loss in southwestern Ontario

The Upper Thames River Watershed, which encompasses the City of London, is losing forest to both agriculture and development. The watershed area lost 8 km² of forest cover between 2000 and 2010.⁴ During those ten years, just over three km² of new forest was planted. The Upper Thames River Conservation Authority determined that 45% of the forest lost was displaced by agriculture, while urban development was responsible for 35% of the forest loss (see Figures 4 and 5).



Figure 4. Aerial photos showing incremental woodland loss (red hatching and circle) in Oxford County, Ontario, to agriculture.

Photo Credit: Upper Thames River Conservation Authority, February 2018. 2000 imagery copyright © Upper Thames River Conservation Authority, 2018. 2006 imagery copyright © First Base Solutions Inc, 2018. 2010 and 2015 imagery copyright © Queen's Printer of Ontario, 2018. Used with permission.



2000



2010

Figure 5. Aerial photos showing woodland loss in Oxford County, Ontario, to a subdivision.

Photo Credit: Upper Thames River Conservation Authority, February 2018. 2000 imagery copyright © Upper Thames River Conservation Authority, 2018. Used with permission.

Forest loss in southeastern Ontario

The South Nation Conservation Authority's watershed covers land from south of the Ottawa River to the St. Lawrence River, between Brockville and Cornwall. It lost 53 km² of forest cover between 2008 and 2014 – a 4.1% decline in just six years.⁵

The South Nation Conservation Authority's watershed lost 53 km² of forest cover between 2008 and 2014 – a 4.1% decline in just six years.

Forest loss in southcentral Ontario

Halton and York regions, as well as the Toronto and Region Conservation Authority, the City of London and the Nottawasaga Valley Conservation Authority (south of Barrie) identify development as the biggest threat to forest cover in their regions. Forest loss to development often happens one project at a time (see Figure 6 below).



Figure 6. A road and bordering backyards in a new subdivision encroach on existing woodlands in a municipality in York Region. Deforestation is circled in red on the 2015 image.

Photo Credit: The Regional Municipality of York. 2012 imagery copyright © First Base Solutions Inc. 2015 imagery copyright © First Base Solutions Inc. Used with permission.

2.2.1 Why we keep losing forests: inadequate legal protection from agriculture and development

We continue to clear forests for development and agriculture across southern Ontario. Both provincial and municipal policies for protecting woodlands from destruction or encroachment are weak. Forest conservation by-laws enacted by some municipalities across southern Ontario can help protect woodlands on private property, but the types of harvest many by-laws allow are detrimental to long-term forest health. Overall, the good intentions behind provincial and municipal policies for protecting forests have yet to be realized.

Ontario's land use planning rules do not prohibit clearing forests

The Provincial Policy Statement, 2014 (PPS) sets out the general rules for land use planning in southern Ontario. Municipalities then apply these rules in their respective official plans, which must be consistent with the PPS. The PPS prohibits development or site alteration in "significant woodlands" (identified and designated by municipalities) unless it has been demonstrated that there will be no negative impacts on the natural features or their ecological functions. However, the PPS definition of "development" is limited: subdivisions and commercial buildings are included, for example, but roads, sewage or septage treatment and electricity transmission corridors are not.

Some woodlands are ostensibly cleared for agricultural uses, but then the landowner subdivides or develops the property shortly after, free from the constraints that would have applied if the woodland were still present.

The PPS does not prevent landowners from clearing or encroaching on any woodland for agricultural activity, such as expanding cropland. Indeed, the PPS directs that nothing in its natural heritage policies is "intended to limit agricultural uses to continue." Landowners sometimes abuse this allowance. Some woodlands are ostensibly cleared for agricultural uses, but then the landowner subdivides or develops the property shortly after, free from the constraints that would have applied to the development process if the woodland were still present. (For more information, see section 4.1.2 of our 2010/11 Environmental Protection Report.)



Public uses the EBR to ask for woodland protection from agricultural practices

In June 2017, members of the public submitted applications under the Environmental Bill of Rights asking the Ministry of Agriculture, Food and Rural Affairs (OMAFRA) and the Ministry of Municipal Affairs (MMA) to review the need for a new act or regulation to prevent the cutting and burning of woodlots for agricultural uses in municipalities with less than 30% tree cover. The applicants noted that Environment and Climate Change Canada recommends a minimum 30% threshold of tree coverage. They pointed to their municipality within the South Nation watershed as an example, which they say has 28.1% tree cover and is losing trees at a high rate due to an increase in soybean farming.

The applicants asserted that the loss of tree cover is contributing to increased soil erosion due to wind and run-off, reducing local water quality. They also stated that the loss of tree cover drives the

loss of biodiversity. The applicants stated that their municipality does little to regulate the impact of agriculture on woodlots, having an ineffective outdoor burning by-law and no forest conservation by-law at all. The applicants also noted that the OMAFRA's best management practices for woodlots are only voluntary and are not being applied.

Both ministries denied the application, citing a number of provincial laws, policies and programs that the ministries already have that generally relate to woodlot conservation. The ECO does not believe that the ministries' decisions to deny these applications were justifiable. Although there are indeed, as noted by both ministries, a number of laws, policies and programs intended to protect woodlots, the continuing loss of tree cover due in part to agriculture supports the applicants' assertion that the existing regulatory framework is not sufficient. (For more information on this application, see Chapter 2 in Volume 1 of this report).

Forest protection depends on municipal governments designating significant woodlands in official plans

While the PPS does not protect woodlands from clearing for agriculture, it does direct that woodlands designated as "significant woodlands" be protected from development unless the development will have no negative impact on their ecological functions. However, a woodland is not afforded these protections until the municipality has evaluated it for significance and designated it in their official plan. For example, Haldimand County, Elgin County, and the Counties of Lennox and Addington have yet to designate any significant woodlands in their official plans. If a woodland is not identified and designated as significant, it is not protected by the PPS.

If a woodland is not identified and designated as significant, it is not protected by the PPS.

The MNRF has established criteria for evaluating woodlands for significance, which includes ecological functions, uncommon characteristics, and economic and social functions. If overall forest cover is low across the municipality, the ministry guidelines recommend that even small woodlands be considered significant, but if overall forest cover is higher, the size threshold for significance is also higher.

Many upper-tier municipalities (regions, counties or large cities) can encompass hundreds of square kilometres, and forest cover can be unevenly distributed across their planning areas. Overall, percent forest cover may be relatively high, but the forests could be clustered in only one part of the municipality. For example, in the municipalities surrounding Toronto, the urban areas along Lake Ontario have very little forest cover. However, the northern parts of some of these municipalities, which often include parts of the Greenbelt, Oak Ridges Moraine or Niagara Escarpment, frequently have much more. Identifying woodlands as significant at a higher size threshold might make sense in the treed northern parts of the municipalities, but smaller size thresholds are needed in the less-treed parts to ensure the little forest cover that's left is protected.

According to the MNRF's Natural Heritage Reference Manual, the determination of woodland size should be determined on a municipal (or watershed) boundary. However, the manual also states that forest cover can vary within these areas where there are differences in landscape-level physiography (e.g. moraines, clay plains). For example, Halton Region, which encompasses the municipalities of Oakville, Burlington and Milton, took a novel approach to setting forest cover targets. The vast majority of its forest is located on the Niagara Escarpment, while land off the escarpment is significantly less forested. Thus, the region varied the official plan definition of "significant woodland" for woodlands in "urban areas" below the escarpment and above the escarpment. In an urban area, woodlands two hectares (ha) and larger are significant; outside an urban area but below the escarpment, woodlands four ha and larger are significant, and above the escarpment, woodlands outside urban areas ten ha or larger are significant.



The Six Nations of the Grand River has about 50% forest cover, significantly more than the surrounding area. Home to the Mohawk, Cayuga, Onondaga, Oneida, Seneca and Tuscarora Nations, it is the largest block of Carolinian forest left in Canada.

Photo credit: Bing Maps. Microsoft product screen shot reprinted with permission from Microsoft Corporation.

Forest conservation by-laws should prohibit unsustainable harvesting

Landowners with forest on their property own the trees just like they own the roof on their house. As long as their forest has not been designated a significant woodland in their municipality's official plan, landowners may remove or reduce the size of their forest as they wish, unless there is a municipal by-law that regulates the cutting of trees within a woodland. Such by-laws are commonly referred to as "forest conservation by-laws." Since most forests in southern Ontario are located on private land, the establishment and enforcement of forest conservation by-laws is a crucial check on forest cover loss (along with programs that incent woodland retention, discussed later in this chapter). However, there is no provincial requirement for municipalities to enact these by-laws.

Most forest conservation by-laws allow landowners to take a limited number of trees from their woodlands for personal use (like firewood or fence-rails) without requiring a permit. Landowners are also typically required to obtain a permit to cut trees for purposes other than personal use. Forest conservation does not necessarily mean complete preservation from use, it means careful, responsible and sustainable stewardship of forests by landowners, which well-written and enforced by-laws can support.

At the time of writing, 26 upper- and single-tier municipalities in southern Ontario had tree cutting by-laws to prevent forest loss, and 14 did not. Essex County and the Municipality of Chatham-Kent, both located in southwestern Ontario where overall forest cover is only 10%, are among those that don't have by-laws, as is the County of Renfrew, which has more forest cover but also more forestry activity.

The establishment and enforcement of forest conservation by-laws is a crucial check on forest cover loss. However, there is no provincial requirement for municipalities to enact these by-laws.

The requirements for obtaining a tree-cutting permit vary from municipality to municipality, and they can have a significant impact on the health of forests. Many forest conservation by-laws require logging to be carried out using "good forestry practices," which means using harvesting, planting, tending and other maintenance methods and actions that are sustainable, responsible and appropriate to the forest; it also means minimizing negative impacts on the ecosystem, habitat, soil, water, and general forest health. However, 17 southern Ontario municipalities allow what is known as "diameter limit cutting" (also called "high-grading"), where only trees with trunks over a certain diameter are logged. This type of harvest jeopardizes the health and viability of the woodland by removing the genetically best trees and leaving the weaker trees behind. It also decreases the forest's resilience to disturbance from weather, climate, insects (especially invasive insects) and disease. The MNRF's Guide to Silviculture in Southern Ontario notes that diameter-limit cutting is "not a recognized silvicultural system in Ontario." Municipalities should not permit this practice. Municipalities should also consider requiring longer-term forest management plans as part of their permit application process.



In a southern Ontario hardwood forest, diverse stands of trees with different sizes and ages are optimal for timber quality, biodiversity and overall forest health.

Photo Credit: Dan Bowes/MNRF.

2.2.2 Strengthen provincial policy and protections for forests

There is an opportunity for the provincial government to work with municipalities to tackle the problem of forest cover loss in southern Ontario. The groundwork for a strategic attack on the causes of forest cover loss is in place: the planning system provides some protections for significant woodlands, and forest conservation by-laws can help conserve all forests. These tools should now be wielded together in a co-ordinated effort to protect our remaining forest cover.

To this end, the ECO recommends the province require a goal of net forest cover gain for every upper-tier southern Ontario municipality.

To achieve this, the province should:

1. require all southern Ontario municipalities to evaluate woodlands in their jurisdictions for significance, and designate significant woodlands in their official plans,
2. amend the PPS to achieve a better balance between the protection of significant woodlands and agricultural uses, and
3. require all southern Ontario municipalities to implement forest conservation by-laws, and prohibit diameter-limit cutting within forest conservation by-law frameworks.

2.3 Growing back the forest: the need for provincial support for afforestation and forest stewardship on private land

Imagine towering white pines, gnarled old oaks, dense bush and verdant wetlands stretching across southern Ontario, right to the shores of Lake Ontario. Vast forests covered most of the province before European settlement. But in the early 19th century, extensive logging began in southern Ontario to make way for farms and towns. Even then, the Ontario government knew it had a deforestation problem. The clearing of vast areas for agriculture resulted in erosion and flooding, and large parts of the Oak Ridges Moraine became virtual dustbowls.

In the early 19th century, extensive logging began in southern Ontario to make way for farms and towns. Even then, the Ontario government knew it had a deforestation problem.

Beginning in 1871, the Ontario government used legislation and programs (see timeline below) to afforest^a denuded lands by:

- acquiring unused property
- finding and storing native seed and growing seedlings for planting
- giving away seedlings to landowners or selling them at subsidized prices, and
- providing planting and tending services to landowners.

a. Afforestation is planting trees with the intention of creating a forest on lands not recently forested. Reforestation is planting trees on lands recently cleared of forest (e.g., tree planting after a clear-cut).

Timeline of southern Ontario forest laws and programs

1871

Ontario passes its first law to encourage tree-planting: “An Act to encourage the planting of trees upon the highways in this Province, and to give a right of property in such trees to the owners of the soil adjacent to such highways.”

1883

Ontario passes The Ontario Tree Planting Act, 1883, replacing the 1871 law and directing the provincial government to pay landowners up to 25 cents per tree planted along public highways and farm property lines. This law resulted in 75,000 new trees planted in 9 years.

1905-1908

Edmund J. Zavitz, the “father of afforestation” in Ontario, identified 8,500 square miles of wastelands in southern and central Ontario not fit for agriculture but suitable for trees, leading to the establishment of provincial forestry stations and provincial tree nurseries in those areas. **Free distribution of trees from provincial nurseries to landowners begins.**

1911

Ontario passes The Counties Reforestation Act, enabling counties to pass by-laws for purchasing or leasing lands suitable for afforestation purposes.

1921

Ontario passes The Reforestation Act, 1921, laying the groundwork for the province to establish and maintain “agreement forests” on county (municipal) lands. By 1940, 12 counties were participating. **The Agreement Forest Program** changed the landscape of southern Ontario over the next 76 years; the program presided over the reforestation of 128,853 ha of land, and resulted in the planting of 147 million trees before it was terminated in 1998.

1923

Ontario Tree Seed Plant opens

1946

Ontario passes the **Conservation Authorities Act 1946**, establishing conservation authorities, who would take on reforestation and stewardship programs aimed at private landowners. By 2001, conservation authorities had planted 30 million trees on private lands through various landowner planting programs. In 1946, Ontario also passed the Trees Conservation Act, enabling legislation which would allow municipalities to pass by-laws to control the cutting of trees.

1960

Ontario passes the Forestry Act, 1960, authorizing provincial nurseries to provide tree seedlings to landowners for free.

1966

Ontario passes the **Woodlands Improvement Act**, allowing the provincial government to enter into Woodland Improvement Agreements with private landowners to help them with afforestation and stand improvement. At the program's peak in the early 1980s, over 10,000 properties were enrolled, and over 213 million trees were planted on private land over the duration of the program.

1980

Ontario passes the Forestry Act, 1980, replacing the Forestry Act, 1960, and enabling provincial nurseries to sell seedlings to landowners at a greatly reduced price – this was the beginning of the modern Over-the-Counter (OTC) Nursery Stock Program. Between 1905 and 1996, when OTC was discontinued, provincial nurseries had furnished landowners with 792 million trees for afforestation.

1992

Trees Ontario – a division of the Ontario Forestry Association (funded by the MNRF and now called Forests Ontario) – initiates **Project Tree Cover** with funding from a federal tree planting program called the Green Plan. The program was created to help offset global warming. The MNRF provided trees from its nurseries at a subsidized price as well as technical support, and Trees Ontario coordinated and managed all aspects of the program. Program was terminated in 1997, having planted 6.4 million trees with 700 landowners.

1993

Ontario begins to phase-out **Woodland Improvement Agreement Program** and cancels tax relief program on enrolled properties.

1996

Ontario repeals the Woodlands Improvement Act. The MNRF begins closing down provincial tree nurseries, and terminates **over-the-counter tree seedling sales**.

The MNRF forms a series of local Ontario Stewardship Councils, each with a paid co-ordinator. Local councils are composed of community members that represent a broad spectrum of landowners. Many councils developed small tree planting programs, but were stymied by the closure of provincial tree nurseries and the resulting lack of long-term access to tree seedlings at reasonable prices and with the correct seed source.

1997

Ontario ends **Project Tree Cover**. Ontario introduces the Managed Forest Tax Incentive Program, giving eligible landowners the opportunity to pay 25% of the municipal residential tax rate on enrolled portions of their property.

1998

Ontario closes the last provincial tree nursery in southern Ontario (St. Williams) and ends the **Agreement Forests Program**.

2007

Ontario establishes the 50 Million Tree Program. The MNRF funds the program, and Forests Ontario delivers the program through planting agents including conservation authorities. As of 2016, 22 million trees had been planted.



Satellite image of Durham East Cross Forest and Ganaraska Forest. A satellite image of Durham East Cross Forest Conservation Area (dark green area at left), and part of the Ganaraska Forest (at right), bisected by aggregate pits (white patches in centre).. Both the Durham and Ganaraska Forests were among the first to be planted through the Agreement Forests Program run and funded by the Ontario Government from 1921 to 1998.

Photo credit: Google Maps.

In recent decades, the Ministry of Natural Resources and Forestry has stopped supporting programs to help plant and take care of southern Ontario forests on private or public land. Since the early 1990s, the ministry has cancelled the Agreement Forests Program, closed provincial tree nurseries, stopped subsidized seedling sales to landowners, and reduced support to regional stewardship councils. In fall 2017, the ministry announced it would close the Ontario Tree Seed Plant – in operation since 1923 and the last remnant of what was once a robust afforestation program, with no plan in place for assuring the continuity of seed storage and seed source tracking. In July 2018, the new provincial government stated it would review this decision.

One MNRF-funded tree planting program (50 Million Trees, delivered by Forests Ontario) and one tax incentive program for landowners with forested properties (the Managed Forest Tax Incentive Program) are all that remains of Ontario's once-robust suite of afforestation and forest stewardship programs for southern Ontario forests on private land.

The MNRF's disengagement has played out at the same time that incentives and costs of farming in southern Ontario have been changing. Increasingly, farm fields are rented out, and there are less farmer-occupied on-farm residences, which may decrease landowner interest in and reasons for retaining and tending on-farm woodlots (e.g., firewood). The MNRF's decisions to close its nurseries and end its woodland improvement and subsidized seedling programs also

The MNRF's decisions to close its nurseries and end its woodland improvement and subsidized seedling programs also roughly coincided with increases in total acreage, yield and farm value for crops such as corn, making farming more attractive at the same time that tree-planting became more expensive.

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As recently as the 1980s, the MNRF routinely sold over 20 million seedlings to landowners each year.⁷ Now, the provincially-funded 50 Million Tree Program struggles to find enough landowners to plant 3 million seedlings a year – but it's not for lack of land. An MNRF study from 2002 determined that there was an estimated 10,000 km² of non-farm land suitable for afforestation in southern Ontario.⁸ A 2007 MNRF study determined that there was almost 3,000 km² of private land that landowners would be willing to afforest if they didn't have to pay the planting costs. That figure increased to 3,800 km² if the landowners were also paid an additional incentive of \$25 per hectare per year.⁹

The biggest barrier to more successful afforestation is that private landowners today have little economic incentive to plant or keep forests on their land.

Forests are a public good, and individuals who provide and maintain that public good should be compensated for doing so.

2.3.1 How the government can increase afforestation and forest retention on private land

The biggest barrier to more successful afforestation is that private landowners today have little economic incentive to plant or keep forests on their land. This has been a known problem for years. In 2001, the MNRF conducted a review of seedling production in Ontario for afforestation that recommended that the ministry subsidize afforestation stock and planting operations, and develop a policy on private land forestry and afforestation.¹⁰ To date, the ministry has done neither. It should do both, and more.

Compensating farmers and other landowners for maintaining forests on their property is good public policy. Land is expensive in southern Ontario, and many landowners want to maximize financial gain from its value. There is in most cases little to no financial benefit to the landowner for planting trees, but there is an immense environmental and health benefit to all Ontarians. Forests filter our air and water (see Figure 7), mitigate rising air temperatures through shading and transpiration, sequester carbon, and provide habitat for countless species. Forests are a public good, and individuals who provide and maintain that public good should be compensated for doing so.

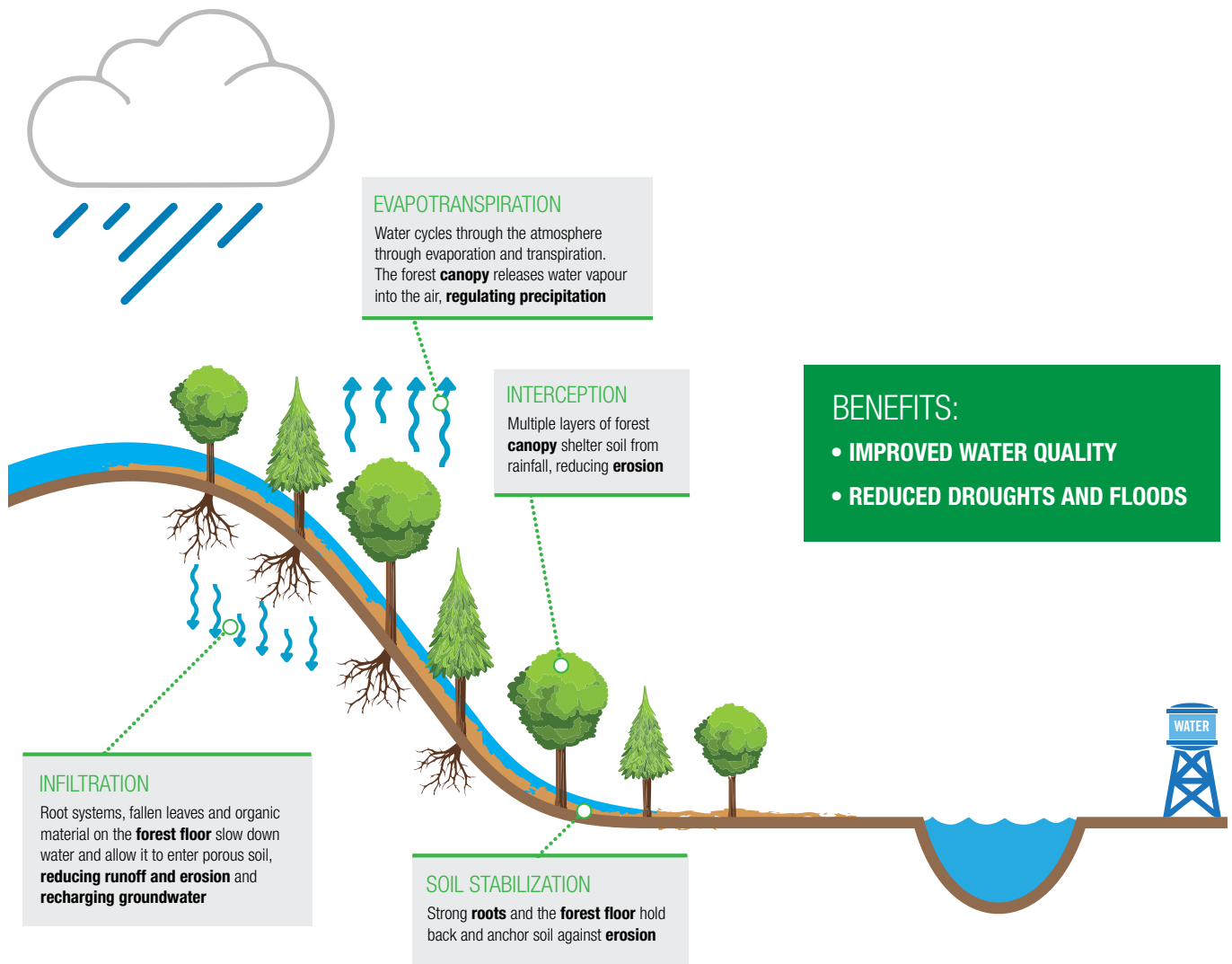


Figure 7. Trees and forests reduce erosion and runoff, and recharge groundwater.

Source: Adapted from the World Resources Institute.

Make afforestation less expensive for landowners

The 50 Million Trees Program, established in 2007 and funded by the MNRF, enables landowners with at least 2.5 acres of land who are willing to sign a 15-year contract to have their land afforested at a reduced cost – but that cost is still substantially higher than what the MNRF used to offer through now defunct programs. In 1986, afforesting 10 acres cost eligible landowners just \$340 (adjusted to 2018 dollars); today, it would cost almost four times as much.¹¹

Table 1. Current and past government-funded afforestation programs for private landowners. The table sets out the total cost to landowners of planting 4 ha/10 acres (8,000 trees), which is the minimum forest area required to qualify for the Managed Forest Tax Incentive Program. Costs adjusted to 2018 dollars; 2000 seedlings are planted per hectare (ha).

	Year	Government-funded program	Seedling cost (payable by landowner)	Planting cost (payable by landowner)	Total cost to plant 4 ha (8,000 trees)
SEEDLING PRICES (no restrictions on use, landowner plants)	1986	MNR Over-the-counter seedling sales (no restrictions – terminated in 1996)	\$0.04/seedling + \$20.50	\$0.5/seedling	\$4,340.50
	2018	Conservation Authority seedling sales (no restrictions)	\$0.5/seedling	\$0.5/seedling	\$8,000
FULL SERVICE AFFORESTATION PROGRAMS (planting provided or costs covered, restrictions apply)	1986	Full service planting: MNR Woodland Improvement Agreement Program (minimum 5 acres, signed agreement to keep land in forestry for 15 years, and to follow MNR work plan – terminated in 1996)	\$0.04/seedling + \$20.50	0 (fully covered by government)	\$340.50
	2018	Full service planting: 50 Million Tree Program (minimum 2.5 acres, signed agreement to keep land in forestry for 15 years)	\$0.15/seedling	0 (fully covered by government)	\$1,200

When the 50 Million Tree Program reaches its goal in 2025, participants will have planted 250 km². To restore forest cover to 30% in southern Ontario, the minimum amount needed for functioning ecological systems, we need to afforest 6,800 km².

Increasing the seedling and planting subsidies for landowners could have big impacts, and would spread the costs more equally between the landowners and all Ontarians, who benefit from the trees being planted.

If the government paid \$0.5/seedling in planting costs to afforest 3,000 km² of private land (the extent of land area the 2007 MNRF study reported available for afforestation if planting costs were covered by the government), the

total annual cost of a 25-year planting program would be \$12 million. According to the government's public accounts, the MNRF contributed approximately \$4.9 million to "Southern Ontario Private Land Afforestation and Urban Tree Planting Delivery Partners" in 2016-2017. For a little more than double that annual amount, 10 times the amount of land set to be planted through the current 50 Million Tree Program could be afforested in 25 years.

However, supporting a time-limited tree-planting program is just the beginning of what is necessary for successful afforestation. Protecting and enhancing forest cover on private land in southern Ontario will require ongoing provincial support of tree planting, seed collection, landowner liaison, seedling development and plantation maintenance programs. Putting trees in the ground is just the first step.

Improve and expand the Managed Forest Tax Incentive Program

The sole incentive program that the government currently offers for retaining and sustainably managing forest on private land is the voluntary Managed Forest Tax Incentive Program (MFTIP). MFTIP is a good program that helps protect forests on private land throughout Ontario by giving enrolled landowners a 75% property tax break on eligible forested lands that they manage responsibly and according to a plan approved by the MNRF. To participate in MFTIP, landowners must have at least four ha (about ten acres) of forest, submit reports every five years, and update their plan every ten years.

The government incents agricultural activity on private land with a tax reduction equal to what's offered by MFTIP. Landowners who opt to use their land for agricultural operations also receive a 75% property tax break through the Farm Property Tax Rate Program, plus they can presumably make money from crops or livestock. Also, municipalities can lower the tax rate for farm tax program participants even further, while the MFTIP rate is fixed.

The Ontario Biodiversity Council tracks enrollment in MFTIP as an indicator of the state of Ontario's biodiversity. Enrollment of participants and land area has fluctuated since the program's inception. While overall, participant enrollment has increased, total land area in the program has remained rather flat (see Figure 8).

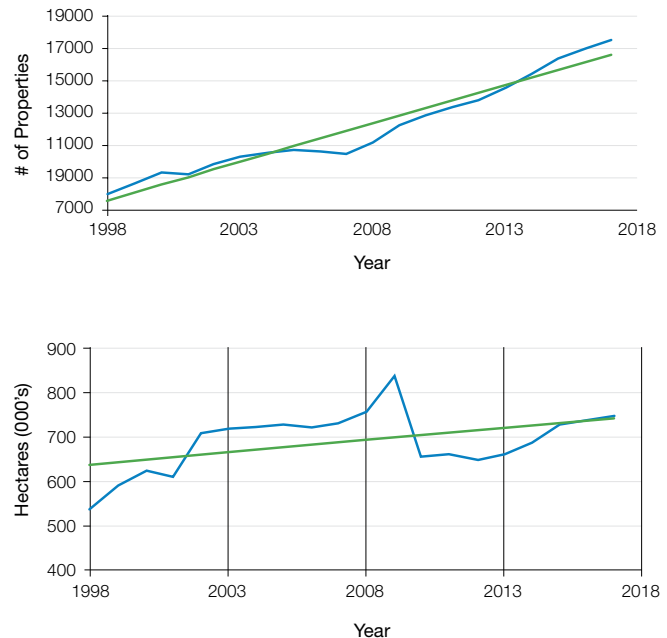


Figure 8. Participation levels in the Managed Forest Tax Incentive Program by number of hectares and number of individual properties enrolled. The large decrease between 2009 and 2010 is mostly the result of a few very large parcels of land in northern Ontario changing hands.

Source: MNRF.

MFTIP could help conserve more forest cover if the eligibility criteria were widened and landowners received a bigger tax break. Specifically, MFTIP's criteria should be changed to enable landowners who planted land through the 50 Million Tree Program to enroll. Through 50 Million Trees, landowners can plant plots of land as small as 2.5 acres, but the MFTIP program is restricted to landowners with forests greater than 10 acres. Landowners with less than 10 acres of trees (the most

Landowners with less than 10 acres of trees don't qualify for MFTIP, but if they used the land to plant a few acres with crops like grain corn, canola or soybeans, they could generate thousands of dollars in gross revenue every year.

common situation for participants in the 50 Million Tree Program) don't qualify for MFTIP, but if they used the land to plant a few acres with crops like grain corn, canola or soybeans, they could generate thousands of dollars in gross revenue every year on top of the farm property tax break.

As a result, there is no financial incentive for landowners with smaller plots of trees to keep those trees on the land beyond the program's required 15 years; and if the land changes hands at any time, the new landowner has no financial incentive to retain the plantation (the agreement is not tied to title).

Before a landowner can participate in a program like 50 Million Trees or MFTIP, they have to know about it.

Landowners who steward southern Ontario forests provide an immense benefit to the entire province. They deserve to be rewarded for the work they do. MFTIP participants should receive 100% tax relief for their forested land, the same tax relief given to landowners who are enrolled in the Conservation Land Tax Incentive Program (CLTIP) aimed at conserving natural features on private lands (see Chapter 1 of this volume on wetlands). In addition, the revival of an assistance program like the now-defunct Woodlands Improvement Program would help landowners carry out necessary tending and maintenance actions in their forests that keep them healthy and productive, but which landowners are not always capable of executing on their own due to lack of funds and/or knowledge (e.g., invasive species control, pre-commercial thinning of young plantations).

The provincial government used to bear the cost of property tax relief for landowners with farm or forested land, ensuring municipalities weren't deprived of essential tax revenue as a result of these programs. However, since 1998, municipalities have borne the total cost of such tax relief. This has been especially difficult for municipalities with small tax bases, and may even

give them a reason not to support forest conservation. Going forward, the province should again bear the cost of tax relief for the MFTIP and CLTIP programs. The forests enrolled in MFTIP are a public good that benefits all southern Ontario residents through air and water filtration, carbon storage, heat and erosion mitigation. Lifting the cost burden off municipalities could also encourage them to work towards growing their forest cover, rather than potentially associating forested land with lost tax revenue. Using the estimate of an average of \$1,186 per year of foregone taxes per property (assuming the government begins giving MFTIP participants 100% property tax relief), which is the cost reported in the MNRF's 2004 EBR review of the MFTIP program adjusted for inflation, the annual cost of MFTIP to the provincial government for the current area of enrolled land (approximately 750,000 ha) would be around \$12 million.

Attract more landowners to incentive programs and recognize them for their work

Many landowners are willing to participate in programs to care for and grow their forests because they want to benefit wildlife and nature, and the wider environment. But before a landowner can participate in a program like 50 Million Trees or MFTIP, they have to know about it.

Rural land is changing hands as aging farmers and rural landowners pass away or move closer to medical facilities. Their properties may be passed down to adult children who don't live full-time at the rural residence. These new farm and rural property owners should be a target audience for afforestation programs and MFTIP. The government needs to inform these new landowners that there are programs that will help them take care of their land, plant trees at a subsidized cost, and get tax breaks.

Changing the public-facing name of MFTIP to something more descriptive and enticing could help attract landowners.



The Ontario government also needs to better recognize landowners for participating in stewardship programs. Giving each landowner a sign that says “I planted 5,000 trees” or “My land stores carbon” or “Future Forest” is a simple way to recognize them for what they’re doing, and also to advertise to others. Even simply changing the public-facing name of MFTIP to something more descriptive and enticing such as “Forests for the Future” or “Ontario Land Stewards Rewards Program” could help attract landowners.

2.3.2 More support and incentives for landowners who steward forests

The ECO recommends that the province ensure that financial and technical supports for tree planting and forest stewardship on private land adequately incent landowner participation and lift the financial burden of tree planting and forest maintenance off the shoulders of landowners alone.

Specifically, the government should:

- subsidize the costs of seedlings and planting, and assist forest owners in carrying out sustainable forest management actions to the extent necessary to make it financially attractive to plant trees on their land (annual cost: approximately \$12 million to afforest 3,000 km² in 25 years),
- reduce the minimum size of forest required to enroll in the Managed Forest Tax Incentive Program to ensure all 50 Million Tree Program participants are eligible to enroll,
- increase the MFTIP property tax relief to provide 100% provincially-funded tax relief to all participants and bear the full cost of the tax relief (annual cost: approximately \$12 million for current land area enrolled), and
- strategically market MFTIP and the 50 Million Tree Program to landowners.

2.4 There is no forest without seed

With so many pressures on our existing forests, the need to plant and maintain new forests is greater than ever – but this will be impossible without the right seed.

Natural regeneration in a healthy forest requires the right combination of light, moisture and temperature, as well as wind and/or rodents and other animals to move, bury and scarify (scratch up) tree seeds and nuts. If these conditions combine at the right time in the right places, seeds germinate and seedlings break through the forest floor. It’s a slow and complex process.

Slow too is the march of seedlings that will advance on an abandoned field if there is a mature forest nearby to produce them. Those seedlings grow into small trees that make shade and habitat for animals to bring more seeds, and on it goes laboriously for years until a new forest finally takes shape.

However, many marginal farm fields, vacant lots and city parks don’t have seed sources nearby, and we don’t have the time to wait. If we want more forests in southern Ontario any time soon, we have to deliberately grow them. And to do that, we have to collect, store, catalogue, prepare and plant the right seeds, in the right places.

If we want more forests in southern Ontario any time soon, we have to deliberately grow them. And to do that, we have to collect, store, catalogue, prepare and plant the right seeds, in the right places.



Sugar maple keys (wings removed) and the seed of many other deciduous forest species can be stored for long periods of time. The coiled green seedlings leaves can be seen when the seed is cut in half.

Photo credit: Melissa Spearing, Forest Gene Conservation Association, 2012. Used with permission.

2.4.1 The right seed in the right place: the key to forest resilience

The right seed comes from a similar climate, and has been collected from a sufficient number of genetically distinct individual trees to ensure a diverse and therefore resilient new forest. When anticipating altered future conditions under climate change, the right seed may also be seed that comes from the climate that the planting site will experience in the near to long-term future. Finding this seed is challenging. Trees don't produce seed every year; it's a cyclical occurrence, complicated by weather. Seed forecasting is a skill and art unto itself, as is the business of collecting viable seeds. Long-term storage is also necessary to hedge against years where there are poor or no seed crops for a species, or in times of crisis like widespread fire, drought, or deadly invasive insects.



Scouting red pine branches after a thinning operation in the Ganaraska Forest, looking for evidence of developing seeds (top). High-quality white pine seed processed at the Ontario Tree Seed Plant is ready for long-term storage (bottom).

Photo credit: Melissa Spearing, Forest Gene Conservation Association, 2017 (top), 2013 (bottom). Used with permission.



The forests on the Oak Ridges Moraine and throughout many parts of southern Ontario were established by planting over 100 million trees using seed processed at the OTSP.

From 1923 to 2018 the Ontario Tree Seed Plant (OTSP) was the center of tree seed expertise for the province. The forests on the Oak Ridges Moraine and throughout many parts of southern Ontario were established by planting over 100 million trees using seed processed at the OTSP (the land had been desertified by clearing for agriculture on sandy soils that proved incapable of growing crops).

The OTSP seed bank was also a safety net for southern Ontario forests, storing seed from native tree species to ensure we don't lose those species from our landscape as a result of fire, severe storms, or invasive insects and diseases – which are all becoming more frequent because of climate change. The network of seed collectors fostered by the OTSP held the hope of seeing ash trees (devastated by emerald ash borer), butternut trees (an endangered species), beech trees (felled by beech bark disease), and American elms (almost wiped out by Dutch elm disease) in our forests again. Without stores of Ontario ash, beech and elm seeds, Ontario risks losing these native trees altogether.



A seed collection tag indicates the species, seed source and quantity of bags delivered from the Bancroft-Minden Forest Company to the Ontario Tree Seed Plant in late August 2017 (top). Seeds from conifers (needled trees) are stored at -18 Celsius in sealed plastic containers (bottom), and can remain so for decades. Temperature and moisture content are closely monitored and viability is retested periodically with germination tests.

Photo credit: Melissa Spearing, Forest Gene Conservation Association, 2017 (top). Ontario Ministry of Natural Resources and Forestry, 2013 (bottom). Used with permission.

The province shut down its afforestation programs in the 1990s, and in the end, only the OTSP was left, along with a small staff with very specialized, hard-to-come-by knowledge of how to store and process seed for the long-term. In the fall of 2017, the MNR made public its intention to shutter the plant to save the operating costs. In July 2018, the new Minister of Natural Resources and Forestry announced that the ministry would review that decision in consultation with stakeholders.

The OTSP was instrumental in starting the 50 Million Tree Program in 2007, and continued to enable essential tree seed cataloguing, and provide storage and processing for conservation authorities, conservation organizations, municipalities, private nurseries, and companies that manage Crown forests in central and eastern Ontario. Without these services, tree planting programs, forestry companies and nurseries would be forced to use whatever seed was readily available regardless of the consequences for genetic and species diversity, or purchase seeds of unknown, non-native origin from seed plants in the United States.



To verify seed viability, the Ontario Tree Seed Plant staff performed germination tests like this one on conifer seeds in a container of sterilized sand (left). Inside the OTSP's germination room (right), hundreds of tests are done each year. Individual seedlots are tested for germination percentage and vigour. Foresters and growers choose seedlots and calibrate their production systems based on these test results.

Photo credit: Melissa Spearing, Forest Gene Conservation Association, 2013 (left), 2008 (right). Used with permission.

Long-term seed storage and cataloguing is an essential service to safeguard the future of native southern Ontario tree species, and give us a fighting chance at lessening the effects of climate change on our forests. Some southern Ontario trees will be the best seed sources for reforesting northern Ontario Crown forests in the very near future, because the southern Ontario seed is adapted to the warmer climate that northern Ontario will experience before the end of the century. We can move southern Ontario seed to northern Ontario much faster than tree populations can move themselves.

Long-term seed storage and cataloguing is an essential service to safeguard the future of native southern Ontario tree species, and give us a fighting chance at lessening the effects of climate change on our forests.



2.4.2 Ensure continued support for the services provided by the Ontario Tree Seed Plant

In 2001, an MNR review recommended “the establishment and funding of a central agency to co-ordinate the forecasting and confirmation of seed and stock demand, to co-ordinate appropriate seed collection and banking and to co-ordinate the stock production and distribution in southern Ontario.”¹² This never happened, but the OTSP in partnership with its clients and the Forest Gene Conservation Association filled this role as best they could.

The decision to close the OTSP was made without consultation with the planting program agencies and clients who rely on it to carry out their mandates. Stakeholders including Forests Ontario, the Forest Gene Conservation Association, two large private tree nurseries, and a representative from central Ontario forest licence holders have been working to ensure the continuation of the critical services the OTSP provided.

The ECO recommends that the MNRF guarantee funding for the essential services formerly provided by the Ontario Tree Seed Plant, including:

- **a system for recorded chain of custody for seed and seedlings (so the right seed is always planted in the right place and seeds can be stored for the long-term when necessary); and,**
- **expertise to co-ordinate and provide education, training and information about seed collection, handling, cataloguing, cleaning, processing and storage.**

These services are estimated by stakeholders to cost under \$1 million annually.

2.5 Nurturing Ontario’s urban forests

More than 85% of Ontarians live in urban areas where the trees they see every day are likely planted in backyards, on boulevards, in planter boxes, in parks and on school grounds. These trees (on both public and private property), along with natural woodlands and ravines, make up the urban forest – a vital part of sustainable communities. The urban forest provides many essential services, including:

- mitigating the heat-island effect (see Figure 9)
- reducing the amount of energy needed to heat and cool our homes and other buildings
- absorbing and filtering stormwater
- supporting biodiversity, from insects to birds to small mammals, and creating corridors for wildlife to move through urban areas
- improving air quality by filtering pollutants
- improving residents’ physical, mental and emotional health, and
- raising property values.

As our weather becomes hotter and drier and we experience more frequent and severe storms, the services provided by urban forests are becoming more important than ever.

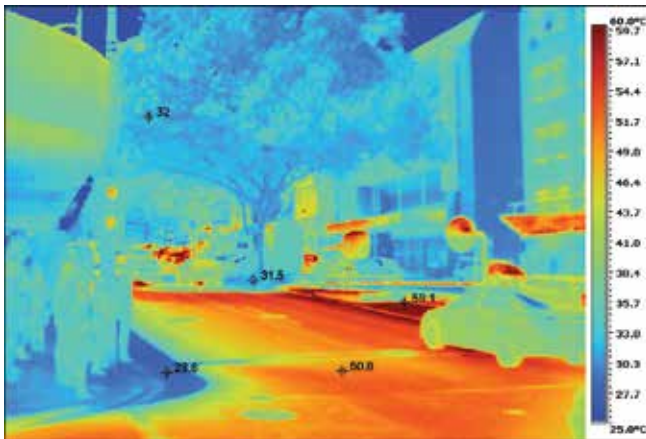


Figure 9. Thermal imaging at the streetscape level shows how trees can cool the air around them. In this example the large tree in the centre has a surface temperature nearly 20 degrees cooler than nearby concrete surfaces.

Source: City of Melbourne, Australia. Used with permission.

Municipalities require more support from the Ontario government to grow and manage healthy urban forests. They shoulder the full responsibility of maintaining urban forests, but often have limited funds and capacity to manage them effectively and to derive the most benefit for the least cost. Despite the myriad services that urban forests provide, they are strikingly undervalued as municipal assets, and chronically underfunded as a result.

2.5.1 The challenges of maintaining urban forests

Most people like trees and are disappointed when they lose them, but until disaster strikes, few people put much thought into the cost and work required to maintain urban trees in a healthy and safe condition. Urban forests become a more topical issue following high-profile natural events that damage and stress urban trees and cost municipalities millions of dollars. Events like ice and wind storms, the emergence of Dutch Elm disease in the 1970s, and the invasion of emerald ash borer that began in the early 2000s

underscore the fragility of seemingly permanent urban trees. For example, emerald ash borer, an invasive beetle that continues to wipe out ash trees (a common street tree) from southern Ontario's urban forests has cost municipalities millions of dollars, and is forcing many to develop long-overdue plans and strategies for managing their urban forests.

Urban trees face constant stresses because of their growing environment. Development and construction can damage or displace trees. Insufficient root space and compacted and/or nutrient-poor soils, as well as salt and air pollution from roadways and industry, can prevent trees from thriving.

But it is not just isolated natural disasters that threaten urban forests. Urban trees face constant stresses because of their growing environment. Development and construction can damage or displace trees. Insufficient root space and compacted and/or nutrient-poor soils, as well as salt and air pollution from roadways and industry, can prevent trees from thriving. Climate change effects, such as more frequent and severe wind and ice storms, hotter temperatures, and changing precipitation patterns can exacerbate these stresses. Some species of trees in our urban forests will not adapt well to the new temperature and precipitation patterns, and the ranges of invasive and other insect pests and tree diseases will expand to cover more of the province.



The lack of protection for this mature tree's root zone during the compaction and interference that results from construction caused its premature death.

Photo credit: Urban Forest Innovations Inc. Used with permission.



Roots of mature trees have been severed during construction.

Photo credit: Urban Forest Innovations Inc. Used with permission.



Urban trees suffer the chronic stresses of lack of root space and constant soil compaction.

Photo credit: Janet McKay, LEAF. Used with permission.

The cost to maintain a tree in an urban environment is much higher than in a rural or woodland environment. In manicured urban areas, the safety of pedestrians and property needs to be considered, and unlike woodlands, there are no new saplings nearby to naturally regenerate and take a tree's place if it dies. In a town or city, a newly planted tree is a significant investment of effort and money that may not pay off unless the tree grows to maturity. A new tree needs regular watering until it has successfully established (often for one to three years after planting). As it grows it will require regular pruning, both to maintain a safe

and strong structure, as well as to avoid conflicting with sight lines and power lines. A tree offers the most benefits once it has reached maturity: larger trees store more carbon, filter more air and water, offer more habitat, and create more shade (see Figure 10).

In a town or city, a newly planted tree is a significant investment of effort and money that may not pay off unless the tree grows to maturity.

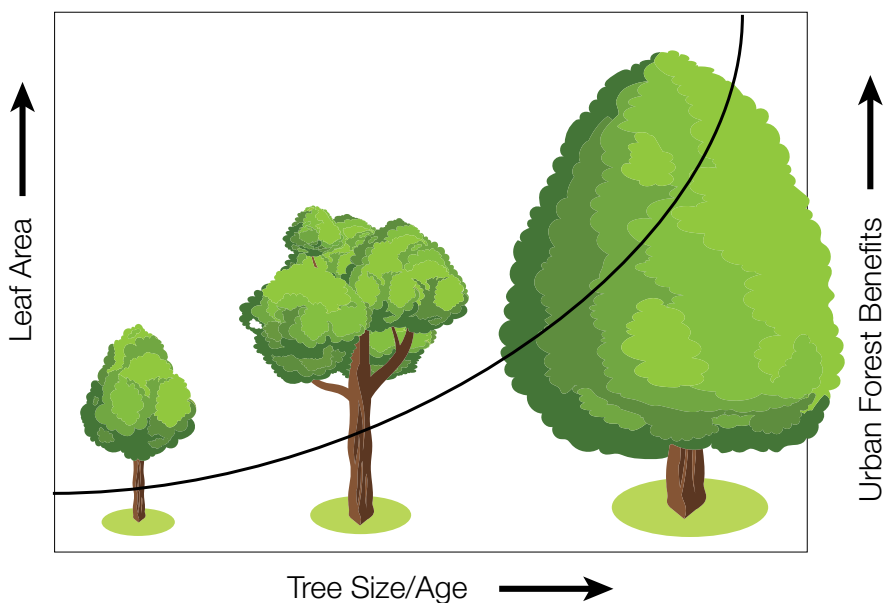


Figure 10. Bigger, older trees offer the most benefits due to their greater leaf areas.

Source: W.A. Kenney and Urban Forest Innovations Inc.

Given the stresses that urban trees are constantly under, urban forest managers need to regularly monitor them for signs of insects or disease and treat for those stresses when needed. While nurturing mature, stressed trees back to health can be costly, the

cost-benefit ratio is usually lower than removing and replacing them with new young trees, which would need to grow for years before they begin providing comparable ecosystem services (see Figure 11).

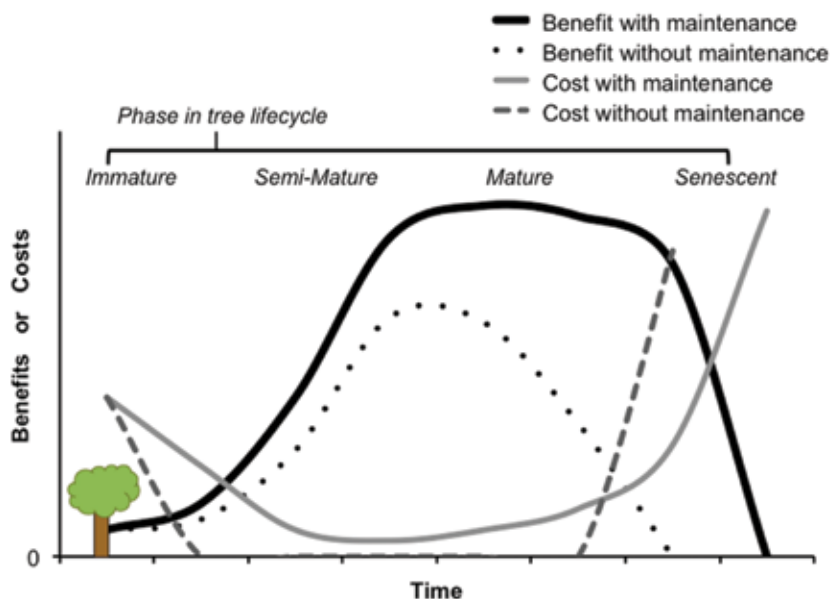


Figure 11. Costs and benefits of an individual urban tree. Theoretical costs and benefits over the lifetime of an individual tree, with (solid lines) and without (dashed lines) adequate maintenance. Ecosystem services (benefits) are maximized when a tree is mature and decline rapidly when the tree begins to die, while costs are highest when the tree is young and at the very end of its lifespan, and bottom out during stable maturity.

Source: Hauer et al. The Cost of Not Maintaining the Urban Forest. International Society of Arboriculture. Copyright © International Society of Arboriculture. Used with permission.



Municipalities bear sole responsibility for managing urban forests.

2.5.2 Urban forests need provincial support

Municipalities bear sole responsibility for managing urban forests. Many municipalities (especially those with small tax bases), struggle to meet the challenges of growing and maintaining a healthy urban forest, and may also lack political will among elected officials. Where expertise, motivation or funds are lacking, local environmental groups or volunteer urban forest committees sometimes pick up the slack – for example by organizing residents to plant, water and maintain trees in their own neighbourhoods, and even advising municipal council on management. The provincial government, however, has never taken an active role in urban forest management, and no provincial ministry has taken on the important task of working with municipalities to help urban forests thrive.

The provincial government has never taken an active role in urban forest management.

In addition to the day-to-day challenges of managing urban forests, major threats from invasive species and extreme weather – both of which are projected to become more frequent and severe – are forcing municipalities to put aside important long-term urban forest planning and maintenance initiatives in order to focus their funds and staff time on dealing with the immediate effects of these disasters. For example, the City of Guelph has budgeted \$6-8 million over 10 years, and York Region has budgeted \$10 million over 10 years to manage the effects of emerald ash borer. The ice storm in 2013 cost the City of Toronto's urban forestry department approximately \$50 million.

While the province provides some financial relief to municipalities that suffer extraordinary costs because of sudden and unexpected natural disasters, the cost of managing the effects of natural disturbances falls almost entirely on municipalities. Yet, urban forests provide a broader public good. The ecosystem services urban forests provide (carbon storage, air pollution filtration, stormwater retention, keeping buildings cooler, enhancing biodiversity) are key tools to mitigate climate change and safeguard human health. While some of these services primarily benefit the municipality's residents, others – like carbon storage – benefit the entire province. It behooves the province to support urban forests and the ecosystem services they provide for all residents of Ontario. Otherwise, we risk losing them.

Tree by-laws can fall short of intended protection

Since 2006, Ontario's Municipal Act has enabled municipalities to pass by-laws that protect trees on private and public property from removal or damage, but such by-laws are not mandatory, and they vary in restrictiveness and efficacy. Often, the fines for removing trees without a permit are not enough of a deterrent, and may be seen as the cost of doing business. Municipalities may also struggle to keep up with inspections and issuing orders.

Heritage tree designation can galvanize political will to protect valuable urban trees

Province-wide, Ontario has just 52 heritage trees protected under the Ontario Heritage Act and protected by municipal by-laws, meaning they cannot be injured or destroyed without written approval from the municipality.

In contrast, the City of Portland, Oregon, population 236,000, has nearly 300 designated “heritage trees” that are protected from injury or destruction by the city code. They can be located and learned about through an interactive map on the city’s website (portlandoregon.gov) as well as a Heritage Tree Guidebook, which includes colour photos of many of the most impressive heritage trees.

The Bronte White Oak is an example of one of Ontario’s Heritage Trees protected under the Ontario Heritage Act and protected by a municipal by-law. One of only a handful of pre-settlement white oaks left in the Municipality of Oakville, the Bronte White Oak dates back to the 1730s and is valued for its natural heritage by the community, which raised over \$343,000 to divert the expansion of Bronte Road around the tree instead of destroying it.

For trees to be protected in this way, the municipality must designate them as part of a heritage property

under the Ontario Heritage Act. The Minister of Tourism, Culture and Sport can designate a heritage property by order, and any resident of Ontario may petition the minister to do so (this has not been used for trees thus far).

Residents in north-west Toronto successfully lobbied the city to save a red oak believed to be over 300 years old. Its roots threaten the structural integrity of a home built meters from its trunk, and the homeowner was threatening to remove it to sell the property. The tree was a marker on the Toronto Carrying Place Trail, a major trading route for First Nations. This property is not currently designated under the Ontario Heritage Act, but is subject to the City of Toronto’s private tree protection by-law. In order to prevent the tree from being harmed, Toronto City Council voted to negotiate a purchase price for the property on which the oak stands at the end of July 2018.

Municipalities can pass by-laws to protect trees without including them in designated properties under the Ontario Heritage Act by defining “heritage tree” according to their own criteria for the purposes of a tree protection by-law. For example, the City of Toronto has a private tree protection by-law that enables the city to refuse to issue a permit to cut down a tree that is protected as a heritage tree under the Ontario Heritage Act, or that should, in its opinion, be protected as a heritage tree – which theoretically could enable public opinion to affect permit approvals.



Thanks to fundraising efforts by the local community, a major arterial road in Oakville was diverted around the root system of this centuries-old white oak, which is a designated heritage tree under the Ontario Heritage Act.

Photo credit: Christopher Dias. Used with permission.



2.5.3 How to grow and improve our urban forests

There are a few key actions the province could take that would greatly improve municipalities' abilities to effectively manage and enhance their urban forests, including:

- ensure infrastructure funding is available for urban forests,
- incent private land tree planting, and
- facilitate collaboration and knowledge-sharing.

These are elaborated further below.

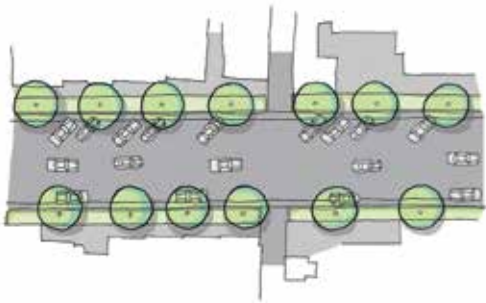
Ensure infrastructure funding is available for urban forests

The Ontario government recently made new tools available to municipalities to help manage urban forests. The Municipal Act now directs municipalities to develop policies on protecting and enhancing tree canopy and natural vegetation (section comes into force on March 1, 2019). Greater canopy cover equals greater ecosystem services (see Figure 12), and many municipalities have a canopy cover target. Urban forest managers report that the new Municipal Act requirement for a tree canopy protection and enhancement policy is improving municipalities' abilities to develop urban forest management strategies and

plans to help reach those targets. These strategies and plans are precursors to sustainable urban forests, but many Ontario municipalities have not developed them. Now, municipal councils must commit to funding their development and implementation.

The new Municipal Act requirement for a tree canopy protection and enhancement policy is improving municipalities' abilities to develop urban forest management strategies.

2012



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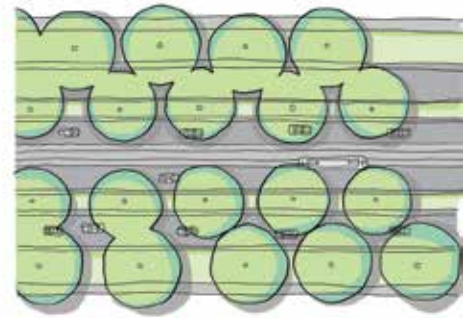



Figure 12. The more tree canopy coverage the better. Graphical representations and corresponding photos represent 20% (left) and 40% (right) canopy cover on city streets. Canopy cover refers to the area of ground covered by the branches and leaves of a tree, and the higher the percentage, the more ecosystem services the urban forest can provide. Many municipalities aim to increase their urban forest canopy over time.

Source: The City of Melbourne, Australia. Used with permission.

The Ontario government also recently passed a new regulation governing municipal asset management (O. Reg. 588/17), which could help urban forest managers secure long-term funding for urban forest management. The new asset management regulation recognizes urban forests as part of “green infrastructure,” and all green infrastructure assets as “municipal infrastructure assets.” This means that municipally-owned urban trees must be included in long-term municipal asset management strategies and plans.

Urban trees must be included in long-term municipal asset management strategies and plans.

Now that the government has recognized urban forests and other green infrastructure in legislation, the Ministry of Infrastructure should make the financial support it gives municipalities for infrastructure improvements



through programs such as the Ontario Community Infrastructure Fund available for green infrastructure improvements and projects, including those involving urban forests.

Plant trees on private property

Growing urban forests will require more trees to be planted on private property, because the vast majority of urban land is private. Often the best opportunities to plant trees are found on private land – both because of suitability (more root space, shelter, etc.), and because planting trees beside peoples’ homes ensures that residents directly benefit from their ecological services. Therefore, programs to incent residents to plant and maintain trees on their own properties are essential.

One non-profit organization has partnered with a number of municipalities to help residents plant appropriate trees on their properties at an affordable price. LEAF (Local Enhancement and Appreciation of Forests) plants native trees in residents’ backyards at subsidized prices by partnering with municipalities such as Toronto, Mississauga, and Oakville, as well as corporate sponsors. LEAF’s staff of certified arborists carefully select each tree to ensure it is healthy and appropriate for the planting site, has good structure, and is planted correctly to give the tree the best possible chance of surviving and thriving.

Think outside the box: grow a forest at a closed jail?

Tree planting on private land is crucial for increasing forest cover, but there are also opportunities to restore unused publicly owned lands. Infrastructure Ontario has surplus lands across southern Ontario, including properties of hundreds of acres such as shuttered psychiatric and correctional facilities.¹³ The grounds of closed schools, healthcare facilities, and other smaller public properties could also be considered for their potential to grow trees. Planting small areas of public land can make a difference to restoration efforts, especially in watersheds where forest cover is under 30%.

Community Hubs make use of surplus public property and facilities in communities throughout Ontario to provide public health, social, cultural and recreational services in one place. The Ontario government has supported Community Hubs for a number of years. As part of an action plan to develop

more hubs across the province, Infrastructure Ontario launched the Surplus Property Transition Initiative, which helps organizations and community groups transition publicly owned surplus properties “to meet community needs.” As part of the initiative, Infrastructure Ontario provides funding to help organizations acquire properties at below market value “to support community re-use.”

Restoration and greening are also worthy uses of surplus public property, especially in areas with little forest cover. The initiatives undertaken as part of the Community Hubs action plan could also enable a program to help conservation organizations, conservation authorities and municipalities work together and with the province to identify and procure spaces to plant trees and forests. If natural spaces and parks were also incorporated into Community Hubs they could provide ecosystem services to their communities in addition to health, social and cultural services.

In larger, highly developed municipalities like those in the Greater Toronto Area, legacy issues continue to cause time- and capacity-consuming problems.

Share knowledge to learn from the mistakes of the past

In larger, highly developed municipalities like those in the Greater Toronto Area, legacy issues continue to cause time- and capacity-consuming problems. Decisions made or not made during past development have resulted in conditions that make it difficult for the urban forest to thrive in the long term, including:

- too little soil
- poor soil quality
- invasive or inappropriate^b tree species
- low diversity of tree species, which leaves the urban forest vulnerable to outbreaks of specialist pests and diseases like emerald ash borer
- poor tree form due to a lack of early pruning or poor nursery stock quality or availability, and
- competition for space with other urban infrastructure (e.g., pipes, transportation corridors).

The upside to recognizing these legacy issues is that many lessons have been learned and can be shared with municipalities that are just now developing and urbanizing, and therefore have the chance to avoid making these same mistakes. For example, developing municipalities' urban forests will be much better off in the future if the municipalities work to:

- provide adequate soil quality and quantity in new developments

b. Many trees planted in urban areas are genetic clones of one individual, leaving the urban forest as a whole more vulnerable to stressors because of the lack of genetic variation that fosters resistance and resilience.

- retain trees and remnant woodlands as much as possible during development
- select diverse, biologically and genetically appropriate trees for planting
- ensure urban forest practitioners are involved at the design stage of developments to consult on long-term maintenance needs and costs, and
- develop and implement urban forest management plans that include maintaining a tree inventory, pruning, watering and monitoring to ensure trees establish and thrive, and actions to engage the community and stakeholders in looking after the urban forest.



Urban design and planning that leaves mature trees where they are and plans for the needs of trees in terms of root space and compaction results in a healthier, more livable urban environment – for example, shaded parking lots.

Photo credit: Georgia Silvera Seamans, localecology.org. Used with permission.

Melbourne residents write love letters to their urban trees

Soaring temperatures and crippling drought have become the new norm in Melbourne, Australia, resulting in accelerating mortality of a huge number of the city's trees, just when Melbourne residents most need the cooling benefits of trees. The city's urban forest managers are implementing a comprehensive plan to ensure there is a healthy urban tree canopy in place to protect the city's residents from the searing effects of these new-normal temperatures in order to keep Melbourne livable under climate change. One aspect of this plan is an extensive outreach and engagement strategy to keep residents informed and involved in planning and caring for their urban forest.

For starters, the city put an immense amount of information on its street and park trees online, helping foster residents' interest in and connection to its urban forest. Users can learn about the species and life expectancy of every city-owned tree by clicking on its location on an online map. They can also learn about the progress the city is making toward increasing Melbourne's canopy cover, and how climate change will drastically alter the urban forest of the future.



The City of Melbourne's online, interactive map of city-owned trees.

Source: City of Melbourne, Australia.

When a user clicks on a tree to learn its species and life expectancy, they are also offered the option of emailing the urban forestry department about the tree's condition. Urban forestry staff envisioned this tool as a way to enable the public to report broken branches or other issues with trees that needed attention, but they have also unexpectedly received over 4,000 letters to individual trees, ranging from messages of love to apologies for bad behavior to artistic tributes. Sometimes, the trees even write back!

"Dear London, I am saddened to see that your life expectancy is only around five years. I am also saddened to see that you have been labelled as a 'Plane Tree' - I do not think you are plane at all, in fact I think the way you wear your bark is quite alluring."

The city simply offered Melbourne residents information and a chance to reach out with any concerns about their public trees, but what they learned is how much people care about their urban forest – a powerful piece of information for securing sustained resources for its maintenance.

2.5.4 Create an Ontario Urban Forest Centre

Many urban forest practitioners believe Ontario's urban forests would benefit from a central co-ordinating body dedicated to sharing knowledge and tools such as plan templates, best management practices and studies; propelling and funding research and pilot projects; and providing forums for practitioners to collaborate on solutions to shared problems. Nationally, Tree Canada's Canadian Urban Forest Network is trying to provide some of these services (e.g., it hosts a national urban forest conference), but it does not have formalized, ongoing support from any level of government.

In the United States, the U.S. Forest Service Urban & Community Forestry Program serves over 8,000 communities country-wide.

In the United States, the U.S. Forest Service Urban & Community Forestry Program serves over 8,000 communities country-wide, providing funds, sharing knowledge and best practices, deploying "Urban Forest Strike Teams" to help communities recover from natural disasters, and undertaking and sharing the results of applied research.

A dedicated Ontario urban forest centre could similarly provide services and programs to address the challenges discussed above, such as:


- a province-wide private land tree-planting program
- a website with resources for municipal managers and practitioners
- forums for knowledge-sharing and tackling province-wide problems
- bulk buying schemes for good quality nursery stock (this kind of guaranteed, high-volume purchasing could incent Ontario nurseries to grow high quality native stock from source-identified seed, and cut down on the amount of non-native specimens they currently imported from nurseries in the U.S.), and
- grants for dealing with invasive species, drought, storms and other natural disturbances.

An urban forest centre could centralize and co-ordinate efforts to grow and improve urban forests throughout Ontario, and would be the first of its kind in Canada.

An urban forest centre could centralize and co-ordinate efforts to grow and improve urban forests throughout Ontario, and would be the first of its kind in Canada, serving as a template or perhaps a precursor for a national urban forest centre.

The urban forest can't be managed the same way as a woodland or large commercial forest, nor is the knowledge required to manage other municipal assets, such as a sewer system or road network, entirely transferable to managing an urban forest. The expertise needed to plan and steward urban forests that are productive, cost-efficient, long-lived and resilient is specific to the task, and for those municipalities that don't have and can't afford to purchase that expertise, an urban forest centre could be a lifeline.

How much would this cost? The Invasive Species Centre fulfills a similar function for the many public and private landowners struggling with invasive species management across the province. The MNRF contributed a little over \$1 million in 2016-2017 to the Invasive Species Centre, which is also supported by the federal government. Depending on the scope of mandate, a similar annual funding commitment could at least get something up and running.



The ECO recommends that the government work with partners to fund the establishment of an Ontario urban forest centre, a non-profit organization dedicated to protecting and enhancing urban forests throughout the province by working with municipalities and other partners.

2.6 Conclusion and recommendations

Time is running out for the forests of southern Ontario and for the species that depend on them. There is little time to adapt to the challenges society will face as a result of climate change. The ecosystem services provided by intact forests and urban trees cannot be replaced by man-made infrastructure. The provincial government has an opportunity to work with municipalities, conservation authorities, landowners and the agricultural sector to stop the loss of forest cover in southern Ontario, plant new forests where they are most needed, and help urban forests to grow and thrive. Conserving forests must become a top priority in land use planning, and creating the conditions for healthy urban trees must become a top priority in urban planning. Policy that is strongly protective of forests and plantable land, better incentives and supports for landowners to plant and maintain forests on their properties, and central co-ordination and support for municipalities to improve the condition of urban trees and forests should be top priorities for the provincial government in order to help Ontario adapt to climate change.

To better protect forests in southern Ontario, **the ECO recommends the province require a goal of net forest cover gain for every upper-tier southern Ontario municipality.**

To achieve this, the province should:

- **require all southern Ontario municipalities to evaluate woodlands in their jurisdictions for significance, and designate significant woodlands in their official plans**
- **amend the PPS to achieve a better balance between the protection of significant woodlands and agricultural uses, and**
- **require all southern Ontario municipalities to implement forest conservation by-laws, and prohibit diameter-limit cutting within forest conservation by-law frameworks.**

To create the optimal conditions for more forests to be created:

The ECO recommends that the province ensure financial and technical supports for tree planting and forest stewardship on private land, adequately incent landowner participation, and lift the financial burden of tree planting and forest maintenance off the shoulders of landowners alone.

Specifically, the government should:

- **subsidize the costs of seedlings and planting, and assist forest owners in carrying out sustainable forest management actions to the extent necessary to make it financially attractive to plant trees on their land**
- **reduce the minimum size of forest required to enroll in the Managed Forest Tax Incentive Program to ensure all 50 Million Tree Program participants are eligible to enroll**
- **increase the MFTIP property tax relief to provide 100% provincially-funded tax relief to all participants and bear the full cost of the tax relief, and**
- **strategically market MFTIP and the 50 Million Trees Program to landowners.**

To ensure a perpetual supply of source-identified, biologically appropriate seedlings for reforestation and afforestation under climate change:

The ECO recommends that the MNRF guarantee funding for the essential services formerly provided by the Ontario Tree Seed Plant, including:

- **a system for recorded chain of custody for seed and seedlings (so the right seed is always planted in the right place and seeds can be stored for the long-term when necessary); and,**
- **expertise to co-ordinate and provide education, training and information about seed collection, handling, cataloguing, cleaning, processing and storage.**

To support municipalities in creating the optimal conditions for urban trees and forests to expand and thrive:

The ECO recommends that the government work with partners to fund the establishment of an Ontario urban forest centre, a non-profit organization dedicated to protecting and enhancing urban forests throughout the province by working with municipalities and other partners.



Endnotes

1. Dan L. Crouse et al. "Urban greenness and mortality in Canada's largest cities: a national cohort study" (2017) 1 Lancet Planet Health 289.
2. Ministry of Natural Resources and Forestry, "Forest-associated species of conservation concern", online: Ontario.ca <<https://www.ontario.ca/page/forest-associated-species-conservation-concern>>.
3. William J. Crins et al, The Ecosystems of Ontario, Part I: Ecozones and Ecoregions (Peterborough: Ministry of Natural Resources, 2009).
4. Cathy Quinlan and Terry Chapman, "Forest Loss in the Upper Thames Watershed 2000-2010" (Presentation delivered to Oxford County Council, 14 February 2018).
5. South Nation Conservation Authority, 2016 Forest Cover and Trends Analysis (2016).
6. For example, see Ontario Ministry of Agriculture, Food and Rural Affairs, Corn Supply and Disposition 2006-2017 (2017), <http://www.omafra.gov.on.ca/english/stats/crops/index.html>.
7. Ministry of Natural Resources and Forestry, Critical Review of Historical and Current Tree Planting Programs On Private Lands in Ontario (2001).
8. Ministry of Natural Resources, Determining the Carbon Sequestration Potential from Afforestation in Ontario, Part II – Land Availability and Scenarios (Draft) (2002).
9. Ministry of Natural Resources and Forestry, Research Information Note Number 5 - The Carbon Sequestration Potential from Afforestation in Ontario (2007).
10. Ministry of Natural Resources and Forestry, A Review of Current and Potential Seedling Production in Ontario for Afforestation (2007).
11. Ministry of Natural Resources and Forestry, Critical Review of Historical and Current Tree Planting Programs On Private Lands in Ontario (2001).
12. Ministry of Natural Resources and Forestry, A Review of Current and potential Seedling Production in Ontario for Afforestation (2001).
13. CommunityHubsOntario Mapping Tool, online: <http://gis.communityhubsontario.ca>.



Environmental
Commissioner
of Ontario



1075 Bay Street, Suite 605, Toronto, Ontario M5S 2B1
Tel: 416-325-3377 Fax: 416-325-3370 1-800-701-6454
www.eco.on.ca

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