

**Grow Ontario Together - A Leadership Collaboration of Ontario's Commodity
organizations**

**Policy Submission for the development of Ontario's Domestic Action Plan
under the Great Lakes Water Quality Agreement**

September 2016

1. Introduction

The Great Lakes need our help.

In the late 1970's significant efforts were directed towards improving water quality in the Great Lakes and these efforts were rewarded with great success. However, the changing ecology of this fresh water ecosystem has demanded that we once again focus our efforts. For example, in Lake Erie phosphorus loadings have remained relatively stable over the past 30 years, and levels in the Western basin are lower today than they were in 1970¹.

However, changes to the ecosystem as a whole have resulted in excessive algae formation which has led to decreased water quality. Given the direct relationship between phosphorus inputs and algae growth, reducing phosphorus levels is the most direct way to combat this threat and restore the health of the Great Lakes.

As leaders in the Agriculture sector in Ontario we acknowledge this problem and are committed to providing the leadership required to resolve it. As farmers, we are stewards of the land and care deeply about ensuring a robust and resilient environment with healthy soils and clean water.

Annex 4 of the Great Lakes Water Quality Agreement calls for bi-national coordination to manage nutrient concentration and loadings into the Great Lakes. In 2015, the Governments of the United States and Canada adopted the ecosystem and substance objectives for Lake Erie – setting targets for phosphorus and other nutrient reductions. The Agreement calls on the Great Lakes governments to cooperate within the jurisdictions of the Lake Erie basin and to develop Domestic Action Plans to identify programs and measures to achieve reduction targets.

Farmers are part of the solution to this problem.

As farmers protecting the environment we live and work in is one of our core values.

Grow Ontario Together (GOT) is a collaboration of agriculture organizations that recognize the need to work together – with each other, with the public, with environmentalists, with municipalities, concerned citizens and with governments – to provide leadership that supports the triple bottom line for Ontario:

- A healthy environment.
- A healthy economy.
- And strong, healthy communities.

¹ <https://www.ec.gc.ca/indicateurs-indicators/default.asp?lang=en&n=A5EDAE56-1>

The purpose of this document is to provide input into the development of Ontario's Domestic Action Plan (DAP) from the perspective of Ontario's commodity organizations.

As a collaborative we know this is a problem we cannot ignore.

That's why we've come together to take a leadership role in efforts to reduce the amount of phosphorus entering the Great Lakes watershed.

By working together with the government and other interested groups we can collectively ensure we are taking effective and coordinated action.

As farmers we are committed to protecting our natural resources for future generations - while continuing to produce the food that feeds cities.

Ontario's commodity organizations are taking action to reduce nutrient runoff now.

At the same time, more needs to be done.

We believe we need to pursue a mix of reduction tools to optimize outcomes.

GOT believes there are both immediate and long term activities that should be incorporated into the DAP development – these include a mix of incentives, regulations and education initiatives.

Learning from past successes:

GOT believes that the phosphorus reduction framework laid out in Lake Simcoe Protection Plan offers vital lessons to the achievement of the DAP targets.

The Simcoe strategy set an overall target and sought to achieve that target with specific activities based on contributions and effectiveness toward achieving the outcome.

We believe that the approach to the Lake Erie DAP should be based on four key principles:

1. Build on the scientific monitoring and research undertaken to date in order to set realistic, intermediate goals for reducing phosphorus, using the best scientific information currently available to predict and mitigate the environmental impacts of all pollution sources.
2. Set short and long term goals that target reductions from all sources, proportional to their contribution.
3. Consider the relative costs and benefits of the phosphorus reduction options; and, the investment and contribution needed by those responsible for source reductions.

4. Continuously improve and adapt – as science advances, necessary actions will become more stringent and specific.

Strategies:

Building these four principles, Ontario's DAP should incorporate several key strategies, including:

1. Adaptive Management;
2. Watershed Approach;
3. Stewardship and Community Action;
4. Source-specific Actions (prioritizing cost effective and efficient actions);
5. Monitoring and Compliance; and,
6. Research, Modeling and Innovation.

What follows below are GOT's recommended strategies for the Ontario DAP development.

2. ADAPTIVE MANAGEMENT

Adaptive Management means continuously improving a series of actions over time.

It means learning from the outcomes of past actions and decisions, adjusting our course where it makes sense and continuing to move forward.

The principles of adaptive management include:

- Taking immediate action, based on the best available scientific information, that builds on past actions to ensure continuous progress – such as the application of the 4R's nutrient stewardship principles;
- Setting, evaluating and measuring progress towards targets and goals as knowledge advances over time;
- Pursuing scientific monitoring and modeling to expand and improve on the information available;
- Supporting research and innovation to improve the solutions available for reducing phosphorus; and,
- Incorporating new scientific information and innovative technology as it becomes available, to improve actions and enhance results over time.

3. WATERSHED APPROACH

In order for an approach to be meaningful, its proposed solutions must correspond to the realities of individual sub-watersheds which can vary significantly, e.g. in terms of their land use, population density and production practices.

Ontario's DAP should utilize a watershed approach to manage the phosphorus load in Lake Erie by looking at problems and pursuing solutions across the entire watershed. Under this approach, the Province and its partners will develop "sub-watershed" phosphorus loading targets that add up to the overall DAP target.

The research, modeling and monitoring work should be established in such a way as to help to establish these sub-watershed targets and fine-tune priorities for action.

Moreover, activities should be prioritized that seek to achieve reductions in the watershed. In the meantime, immediate actions are needed to address the phosphorus problem – as agriculture leaders we have specific ideas for reduction strategies. As concerned citizens of Ontario we want to ensure that the full scope of the problem is incorporated into the DAP.

Based on existing research, the main sources of phosphorus loading includes:

1. **Combined Sewer Overflows (CSO):** in older parts of many cities (e.g., Windsor, Hamilton, Toronto and Kingston) storm-water and sewage are collected in the same pipe system destined for the waste- water treatment plant. When too much rain overwhelms the system, water from the combined sewers flows largely untreated into lakes and rivers.
2. **Septic systems:** septic systems that store and treat sewage on individual rural and shoreline properties can leach phosphorus and other contaminants into nearby water bodies when not properly maintained or monitored.
3. **Non point source run-off from agricultural lands:** fertilizers, manure and eroded soil can be washed into creeks and streams with rain and melting snow.
4. **Urban runoff:** rain and snowmelt in urban areas can carry a combination of phosphorus and other contaminants into storm sewers and watercourses. Sources of phosphorus in urban runoff include construction activities (which can loosen and release nutrient-laden sediments into water), lawn and garden activities, pet waste, and leaves from deciduous trees.
5. **Atmospheric deposition:** phosphorus can also make its way into water bodies from the air by wind, rain and snowfall. Studies in 2011 determined that six per cent of the total phosphorus entering Lake Erie comes from atmospheric sources. Sources include decomposition of sewage sludge, exposed landfill and

compost heaps, coal combustion, and dust from quarries, agricultural fields and unpaved roads.

6. **Internal loading:** when the soil and sediments are stirred up during dredging activities (the process of clearing or deepening navigational routes) or natural processes that cause the lake waters to mix (due to changes in temperature), phosphorus can make its way back into the water.

4. STEWARDSHIP AND COMMUNITY ACTION

Ontario's DAP should recognize education and public engagement as essential ways to promote community-based stewardship and to address many of the impacts and threats to the watershed, including phosphorus reduction.

This is particularly true for promoting individual actions that require behavioral changes or changes in habits, and where regulations have been shown to be difficult to develop, implement and enforce.

Voluntary stewardship, through education, community engagement and cost-share incentives, when possible, helps to foster an improved understanding of a shared connection to, and an increased responsibility for, environmental protection by promoting collective, cumulative actions and behavioral changes that help reduce phosphorus inputs to the watershed over the long term.

Since the majority of the watershed is privately owned and managed by individual residents, businesses and industry, the opportunities for phosphorus reduction are directly dependent on the actions of those who are responsible for managing these private lands.

5. AGRICULTURE SOURCE-SPECIFIC ACTIONS

We need to develop a DAP that recognizes the role of agriculture with the phosphorus problem. And in so doing, recognize that we need to take action on our farms.

We also need to acknowledge that we are not starting from scratch – we are building on some successful initiatives to enhance reductions.

Voluntary participation in agricultural and rural stewardship programs has a long history of success. The OSCIA's Great Lakes Agricultural Stewardship Initiative (GLASI) and the long running Canada-Ontario Environmental Farm Plan's suite of programs (EFP) are successful because they combine education with incentives to adopt Best Management Practices (BMPs), resulting in changes in land management that provide sustained environmental benefits over time.

Commodity organizations have also been working at this problem, for example, the Grain Farmers of Ontario have invested \$1.5 million in investments to determine the movement of phosphorous in the soil so we can figure out solutions to keep it where it is needed

Other examples of practices that help to reduce phosphorus loads include:

- Nutrient management practices (including for manure, fertilizers, and bio solids) through appropriate storage and land application methods;
- Shelterbelt/native vegetation establishment on fragile and highly erodible land;
- Improved cropping practices
- Runoff control;
- Fertilizer capture and reuse systems;
- Erosion control structures and cover crops; and,
- Efficient use of phosphorus in livestock feeds, e.g. use of phytase to enhance the bio-availability of phosphorous in feeds.

However, there is a need for continued support for phosphorus reduction activities, and for those activities to be given priority.

Immediate term goals:

- Enhanced internal industry/member education outreach and promotion of existing industry best practices including mitigation programming – such as:
 - 4R Stewardship program
 - Nutrient Management Act policies and standards
 - Promotion of cover crops
 - Promotion of established and/or innovative best practices
 - Promotion of existing and upcoming stewardship and cost-share programming

- Ensure that Lake Erie phosphorus reduction activities are a priority for existing and new funding programs. In particular, consideration should be given to:
 - Facilitating uptake of practices that improve P-banding to soil and plants and contribute to reduced run-off risk (e.g. technology that enables nutrient injection, incorporation, and crop side-dressing);
 - Facilitating the collection and use of nutrient data on farms to better monitor/quantify nutrients required and being applied (e.g. soil and manure sampling; manure flow meters, GPS / soil mapping software and upgrades)
 - Measures that broaden the effective window for manure application and reduce pressure to apply during high-risk periods, including technology that facilitates manure application on crops in the summer (e.g. manure side-dresser, and wider applicator booms to minimize crop damage); and that minimize compaction (e.g. drag hose equipment).
 - Facilitate investment in proper drainage to minimize harmful effects of soil compaction, surface erosion and wet/-saturated soil that can affect poorly drained soils.
 - Support the formation of new habits through sufficiently sustained incentive programs.
 - Enabling smaller growers to overcome economies of scale that may limit their ability to invest in nutrient management technologies.

- Reduce application of nutrients in the non-growing season (winter) through a range of measures including:
 - Awareness and producer outreach
 - Support for capacity building (e.g. manure storage) to ensure farms have sufficient storage (240 days minimum) allowing them to hold their nutrients over the non-growing season. For farms who do not have a minimum 240-day storage, a government should grant be made available to cover up to 90% of the cost to install the required storage. This would enable more producers to meet the current standard for winter spreading as defined in the current nutrient management regulations.
 - Expanding the voluntary adoption of existing nutrient management tools and standards to achieve greater consistency across farms using and/or generating nutrients within the priority watersheds.
 - Develop a more integrated approach for extension staff and producers to combine information about nutrient management, soil health, crop planning and available programs/resources into their discussions and customize the information into an actionable plan for the producer's operation. GLASI's Farmland Health Check-up model could serve as a possible prototype.
 - Coordinated information, advocacy and education to ensure awareness, and utilization of BMP's and ensure other essential information is available. These broader awareness efforts should include encouraging producers to utilize extension staff support for one-on-one type consultations where available.

- Ensure sufficient “boots on the ground” (e.g. CCA’s, extension staff agronomists) presence by extension staff to help producers customize solutions most effective for their operations and to help identify existing programs that may facilitate their implementation.
- Leverage existing and emerging government infrastructure programming with Ontario and Canada by placing a priority on high impact investments: e.g. sewage and waste-water in Leamington hot spots and other key agricultural phosphorus loading point sources.
- Reiterating to the federal government the importance of completing the review of its Feeds Regulations, which continue to prescribe an out-dated and excessive minimum phosphorus level in animal feeds, not reflecting the advancements made in animal nutrition over the past decade.

Longer-term goals:

A joint process for developing priorities for action to ensure effective prioritization of mitigation activities including:

- Research priorities to ensure more effective mitigation
- Monitoring infrastructure to evaluate successes and ensure activities are producing desired outcomes.
- Infrastructure and other green initiatives should incorporate phosphorus management priorities to assist in mitigation investments.
- Review the current NMS and NMP documentation, training and certification requirements in order to examine possible opportunities to improve or streamline the process, improve the business utility of data generated through nutrient planning, and make the requirements proportionate to the farm size and risk being addressed so that small farms are not unduly burdened by red tape.
- Consider developing solutions to improve the market mobility of nutrients to
 - Enable movement of nutrients from geographic areas of high supply (e.g. intense livestock, anaerobic digesters) to areas with less self-generated nutrients, and
 - More effectively leverage the soil health potential of such nutrient sources for Ontario’s crop land (e.g. organic amendments).
- Support for community solutions that capture and treat nutrient laden sources before they reach the Great Lakes.

5. MONITORING AND COMPLIANCE

Monitoring

Long term monitoring is a critical part of the overall effort to restore the health of the Great Lakes.

An integrated monitoring network across all jurisdictions in the Lake Erie basin will be necessary to assess progress. An integrated network is necessary to not only support ongoing measurement of progress towards compliance with the adopted targets, but also to provide sufficient information to support an adaptive management approach. Limitations of current monitoring networks highlight the need for all jurisdictions to undertake an assessment of current monitoring capabilities and identify gaps in order to align water quality monitoring with the adopted targets to meet the ecosystem objectives called for in the Agreement. Establishing an accurate baseline will be key to achieving measurable progress.

Compliance

The DAP should recognize that numerous provincial ministries, agencies, and local municipalities already have strong legislative and regulatory frameworks in place to mitigate sources of phosphorus to the Lake.

Achieving the phosphorus reduction targets throughout the watershed represents a significant challenge—one that requires all stakeholders to assume shared responsibility and be accountable for their actions. To achieve the DAP reduction objectives, compliance with the existing regulations and controls that are now in place will be critical. Moreover, actions to reduce phosphorus must become widespread and self-sustaining—in the same way that household recycling has become a widely practiced part of waste management across Ontario.

6. RESEARCH, MODELING AND INNOVATION

Research

With the adaptive management approach underlying the DAP, we should anticipate that phosphorus reduction actions in the watershed will improve over time as the results of research help to enhance and refine the range and types of actions that are taken.

To ensure this happens, ongoing collaborative research will be a key component of achieving targets for each watershed. This work will build on past and current research and monitoring programs. It will also help to identify emerging issues in the watershed, while supporting the adaptive management approach adopted in the DAP.

Modeling

Modeling and analysis will play a significant role in the adaptive management process adopted by the DAP. As more detailed or up-to-date information becomes available, models can be run again to ensure they represent the watershed as accurately as possible.

Innovation

Research into innovative technologies and solutions will explore ways to prevent current problems and new problems that relate to increased population growth and new development.

CONCLUSION

The Grow Ontario Together collaboration is confident that the ecological health of the Great Lakes and its watershed can be protected and restored through continued stewardship efforts, targeted research, new and innovative technology for wastewater and storm water management, and a commitment to managing the watershed and its resources in a sustainable manner.

This paper is presented as a starting point to achieve the reduction outcomes we all agree are critical to the health and well being of our province.

We are hopeful that, with the sufficient level of commitment and support, it is possible to achieve an outcome that not only improves the health of our lakes, but also supports on-farm innovation and the capacity of Ontario's farms and greenhouses to produce food in this great province.