November 18, 2016

Ms. Madhu Malhotra
Manager, Ministry of the Environment and Climate Change
Climate Change and Environmental Policy Division
Land and Water Policy Branch
135 St. Clair Avenue West Floor 6
Toronto Ontario M4V 1P5

Re: Comments on Ontario's Proposal on Reducing Phosphorus to Minimize Algal Blooms in Lake Erie (EBR #012-8760)

On behalf of the Lake Erie Collective consisting of **Freshwater Future, Environmental Defence, Canadian Freshwater Alliance, Alliance for the Great Lakes, National Wildlife Federation, Michigan League of Conservation Voters and Ohio Environmental Council**, please accept these comments on Ontario's proposal to adopt phosphorus load reduction targets under the Great Lakes Protection Act and the proposed actions for meeting those targets. We appreciate this opportunity to provide input and recommendations early into the process of developing the Canada-Ontario Action Plan for Lake Erie (or a Domestic Action Plan, as referenced in the Canada-U.S. Great Lakes Water Quality Agreement (GLWQA)).

We applaud Ontario's leadership in being the first of the Lake Erie jurisdictions to propose enshrining phosphorus reduction targets under legislation (with timelines) and strongly encourage moving forward with the plan as quickly as possible:

> Ontario is adopting a target of 40 percent phosphorus load reduction by 2025 (from 2008 levels), using an adaptive management approach, for the Ontario portion of the western and central basins of Lake Erie, as well as an aspirational interim goal of a 20 percent reduction by 2020.

This fulfills a commitment Ontario made through the Great Lakes Protection Act to set targets for algal blooms within two years of the legislation's passage. The Lake Erie Collective hopes that other jurisdictions, including Ohio and Michigan, follow Ontario's example to legislate phosphorus reduction targets, which we believe would establish additional responsibility for the states to take action to control nonpoint source and point source pollution. Further comments about the framing of the targets are included below.

It is important, however, to recognize that the targets are only a first step, and that effective and ongoing action will be needed to achieve the targets. Ontario's proposed plan provides an overview of actions that address a range of solutions to reduce phosphorus loads from point sources, nonpoint source sources, and agricultural sources. Actions relating to natural heritage and science, monitoring and public reporting are also listed.

Ontario's proposal states "With approximately 75 percent of the Lake Erie watershed in Ontario in agricultural production, farmland is considered a substantial contributor to the total phosphorus load." Scientists agree that farmland is indeed *the biggest* contributor, and as such we are most concerned that Ontario's approach to agricultural sources is overly reliant on

voluntary adoption of agricultural best management practices. Without more ambitious action, we expect Ontario will be largely unsuccessful in reducing pollution from croplands, livestock operations and greenhouses in sufficient quantities to curb hypoxia in the central basin and algal blooms in Lake St Clair and other such as the Erie shoreline near Leamington.

We are encouraged that Ontario recognizes the level of activity required to meet the targets:

> Ambitious and aggressive actions to reduce phosphorus loads are needed to restore and protect the lake's water quality and ecological health.

This is important to acknowledge because the Annex 4 targets are complicated and could easily be misinterpreted by the public to think that limited action is required to reduce phosphorus loading by 212 MT. We recognize the targets are more complicated than that. **We recommend that education and outreach to the agriculture sector include rationale that supports basinwide change that clarifies the need for action across the Ontario portion of the Lake Erie basin (or watershed).** The province should emphasize that action is required not only to address harmful algal blooms in the western basin (which is predominantly caused by phosphorus loading from the Maumee watershed), but also to improve soil health, enhance long term food security, improve local water quality in streams and rivers, improve groundwater quality, and address blooms in Lake St Clair, Leamington and other locations along the shoreline. The community needs to understand that priority tributaries also require a 40% reduction in phosphorus loads (from 2008 levels) to address algal blooms along the shorelines and in Lake St. Clair. Further action will also be required to address eastern basin cladophora.

We recognize and appreciate the significant effort to include multiple stakeholders during the development of the Canada-Ontario Action Plan for Lake Erie. Our organizations provided specific recommendations in documents such as the *Expectations for Domestic Action Plans under the Great Lakes Water Quality Agreement* submitted to the Annex 4 subcommittee in June 2016. We are pleased to see some of the ideas from that document incorporated into the proposed actions, and we urge you to include others as well, especially those that address agricultural sources of phosphorus pollution.

Given that the proposal represents Ontario's approach to reach phosphorus load reduction targets finalized under the Great Lakes Water Quality Agreement (GLWQA), and will ultimately be part of the Domestic Action Plan being developed by the Annex 4 subcommittee, it is important that Ontario's strategy includes programs, policies and other components that will successfully meet those objectives and targets. Therefore, as part of these comments, we include the Domestic Action Plan Expectations Report (DAP Report) prepared for the Annex 4 subcommittee by the following seven organizations: the Alliance for the Great Lakes, Canadian Freshwater Alliance, Environmental Defence Canada, Freshwater Future, Michigan League of Conservation Voters, National Wildlife Federation, and the Ohio Environmental Council.[1] The DAP Expectations Report represents our initial expectations for the Domestic Action Plans. Most of the recommendations are pertinent to Ontario, and those that we believe deserve special emphasis are reinforced in the following comments.

[1] See Appendix 1

Table of Contents

COMMENTS ON PROPOSED ACTIONS **4**
POINT SOURCES 4
NONPOINT SOURCES 5
AGRICULTURAL SOURCES 6
1. Adherence to appropriate agronomic rates *7*
Soil testing 7
2. Regulatory Compliance *8*
Compliance with the winter spreading ban 8
Compliance with other provisions in the Nutrient Management Act 8
3. Accountability and proportionality *9*
Coverage of the Nutrient Management Framework 9
Greenhouses 10
NATURAL HERITAGE 11
SCIENCE, MONITORING AND PUBLIC REPORTING 12
Monitoring and tracking 12
ADAPTIVE MANAGEMENT 13
IMPLEMENTATION **13**
FUNDING AND RESOURCES ALLOCATED 14
COMMENTS ON GREAT LAKES PROTECTION ACT TARGETS 14
Sub-allocation Monitoring 15
CONCLUSION 16

Comments on Proposed Actions

The final Action Plan should include specifics about the tactics Canada and Ontario will take to address the major sources of pollution. We need specific programs and policies that include common-sense regulations on farming practices, green infrastructure investments to reduce stormwater pollution, upgrading and fixing failing home septic systems, and curbing phosphorus discharge from wastewater treatment plants. **Proposed tactics should be detailed, include clear implementation timelines, and identify which authorities will be responsible for implementation. Action plans should describe how local, provincial/state and federal programs will work together to achieve nutrient reductions.** Below, we provide comments on the various actions listed in the Ontario proposal. However, most of our comments are related to agricultural sources because they are the dominant source of phosphorus loading to Lake Erie.

Point Sources

We support the proposed actions to establish a legal effluent discharge limit for all municipal sewage treatment plants (STPs), to upgrade secondary STPs, and promote optimization of treatment plant performance.

In addition, we make the following recommendations:

- Wastewater treatment plants in the Lake Erie watershed should[2]:
    - Conduct a study of optimization of plant operations to reduce phosphorus (especially Soluble Reactive Phosphorus - SRP) in the effluent
    - Study new methods that could be employed to reduce phosphorus (especially SRP) in effluent
    - Based on the studies completed, consider options to reduce Total Phosphorus (TP) and SRP in effluent including an indication of how phosphorus loadings would be impacted by each option
    - Choose the option with the lowest achievable level of phosphorus in effluent, including an assessment of operating and cost implications
    - Identification of the seasonal window of algal growth and how phosphorus can be lowered further during this time
- Investigate the use of phosphate reducing chemical additions (such as Alum, Ferrous and Ferric) in treatment plants so ensure they are used optimally (e.g., during sewage bypass events) with minimal negative ecological impacts.
- Sewage Treatment technology and innovation
    - Investigate the development and implementation of alternative technologies for sewage treatment that may prove to be more cost effective or efficient than conventional physical-chemical treatment plants

[2] Note that there is precedent for this type of analysis. The MOECC requested a similar analysis of the Municipalities of Durham and York through a Minister's Order, April 4, 2016 in advance of a decision about a Part II Order Request.

    - Set out long term policy goals around nutrient recovery from wastewater and / or wastewater recycling and reuse, given there is available technology capable of doing so
- Require municipalities in the Lake Erie watershed to develop and implement Pollution Prevention Control Plans with new actions aimed at reducing CSOs and bypasses. These plans should include mandatory reporting requirements that are publically accessible and include reduction targets
- Ontario should work with municipalities to encourage them to submit infrastructure funding applications that include green infrastructure elements to reduce pressure on stormwater systems.
- Phase out residential phosphorus fertilizer application within five years (including on golf courses). See regulations in Michigan and New York for examples of laws that prohibit phosphorus fertilizer application unless the lawn is new or has a proven phosphorus deficiency

Nonpoint Sources

We are encouraged that Ontario recognizes that green infrastructure is part of the solution to reducing nutrient pollution:

> Ontario is working with developers and others to promote and support the use of green infrastructure and low impact development (LID), including clarifying and enhancing policies, and developing green standards. Ontario is in the process of drafting a LID guidance manual that will assist proponents in implementing their efforts. The draft manual is expected to be available for public comment in early 2017.

We support such actions and encourage the province to work with the federal government to go further in its support of green infrastructure to:

- Integrate *living* green infrastructure, including natural systems (eg. wetlands, forests), into the provincial and federal green infrastructure framework, including the federal government's new infrastructure plan. This will help to ensure sustainable and cost-effective infrastructure spending
    - Living green infrastructure can be best defined as: "Natural and human made elements that provide ecological and hydrological functions and processes. Green infrastructure can include components such as natural heritage features and systems, parklands, stormwater management systems, street trees, urban forests, natural channels, permeable surfaces, and green roofs."[3]
    - Create a dedicated funding stream for living green infrastructure projects (including natural systems) and allocate 15% of Canada's infrastructure commitments to a dedicated funding stream for living green infrastructure
    - Work with municipalities to encourage more proposals with green infrastructure, as defined above, through traditional infrastructure funding processes.

[3] Government of Ontario Provincial Policy Statement (2014)

- Green infrastructure should be a priority for stormwater and CSO management programs and policies, and green infrastructure technologies and approaches should be brought into mainstream stormwater management.

Agricultural Sources

We are encouraged by Ontario's recognition of the need to focus on agricultural sources, as it is the primary contributor to the province's total phosphorus load.

We agree that education and outreach are important tools in working with farmers to reduce phosphorus runoff and support those tools as outlined in the proposal. In addition, we believe it is critical to also **re-build capacity for government agricultural extension programs to ensure agricultural producers have access to unbiased expert opinions about nutrient application**. Outreach staff should be independent instead of the same services provided by private sector actors, particularly those selling agri-chemicals (e.g., outreach staff should be free of potential conflicts of interest). The province should create and enhance programs that help landowners understand which Best Management Practices (BMPs) are going to be most effective on their lands, and assist with implementation (including access to grants) and measuring their effectiveness. The province could initiate discussions with conservation authorities to determine if it would be appropriate to increase their capacity to do more extension and outreach.

While critical, education and outreach will likely not be adequate to achieve the level of nutrient reductions from agricultural sources that are needed. While there are a number of cost-share programs available, they are often over-subscribed and inadequately resourced to support the level of action necessary. **The province should work with the federal government to enhance existing cost share programs in a way that is on par with the US Environmental Quality Incentives Program of the past few years.**

As well, as much as the province has led the way enacting laws to address agricultural pollution, such as the *Nutrient Management Act*, more protections will be necessary to achieve the phosphorus reduction goal.

Ontario should work with the agricultural community to ensure they are following basic common sense agricultural practices. From our perspective, such practices would be consistent with the following principles:

1. Adherence to appropriate agronomic rates
    - Science-based application of nutrients based on uniform standardized soil test sampling, methods and protocols
2. Regulatory compliance
    - Ensure compliance with existing regulations including the ban on spreading of manure on frozen and snow covered ground
3. Accountability and proportionality
    - Ensure that contributors are responsible for their share of phosphorus loading

Significant reductions could be achieved with agricultural practices that abide by these principles. Such an approach would help reduce costly and unnecessary fertilizer use, protect soil health, improve water quality and recognize efforts to reduce phosphorus loading - things that all interests should be agreeable to.

Implementation of these principles can be achieved through a number practices including those described below.

1. Adherence to appropriate agronomic rates

Ontario should evaluate its agricultural policies, practices and programs to ensure they encourage and promote responsible application of nutrients. Nutrients should only be applied in situations and quantities that the plant can absorb. Excess application can lead to nutrient runoff.

We have identified a number of specific opportunities to encourage adherence to agronomic rate application:

- **Review exemptions to the ban of nutrient applications on frozen and snow covered ground in the NMA to ensure applications do not exceed agronomic rates of application.** Any exemptions (e.g., inject, incorporate w/in 24 hours, apply to crop residue, application to “living crops”) should not allow applications to exceed agronomic rates.
- **Regularly review Nutrient Application Rate provisions to ensure they are up to date**
- Ensure croplands that apply fertilizer and manure are subject to rules under the Nutrient Management Act. Croplands should be subject to requirements including soil test results and manure pile tests (subject to standardized testing and reporting protocols) to ensure nutrient applications do not exceed the agronomic rate for the crop.
- On croplands and livestock farms, encourage the application of the most appropriate best management practices in order to reduce nutrient runoff.

Soil testing

Soil testing is an important tool in ensuring that applications do not exceed agronomic rates. As stated in the DAP Expectations report, **the province should develop regular uniform standardized soil test sampling methods and reporting protocols to ensure test results are consistent throughout the Lake Erie watershed**. Standardization should direct 2.5-acre grid or zone sampling taken after harvest with tests performed at regular intervals for manure and commercial fertilizer applications. No nutrient applications should take place without the phosphorus soil test results. Those tests should use protocols based on methods that are appropriate for all soil types, and utilize uniform measurements in all reporting from testing labs.

2. Regulatory Compliance

One of the biggest challenges in addressing nutrient loading is ensuring compliance and enforcement of the laws and policies that already exist. This is an issue across the Lake Erie watershed. Therefore, the DAP Report includes specific recommendations that could be incorporated into the final Action Plan:

- Establish fair, clear and consistently enforced consequences and penalties (i.e. fines, withdrawal of funding) for non-compliance with policies and plans.
- Dedicate adequate human and financial resources committed to support compliance monitoring and regulatory enforcement.
- Create an inspection program that will randomly assess compliance with plans, programs and rules targeted at key times when nutrient pollution risk is highest.

(DAP Report, p. 15)

Compliance with the winter spreading ban

Ontario should aim to achieve full compliance with the ban on nutrient application on frozen, snow-covered or saturated ground. Currently, Ontario requires enhanced compliance and enforcement for the winter spreading ban and the implementation of Nutrient Management Plans and Strategies. According to the 2014 annual Auditor General report, the MOECC and OMAFRA rely on education and outreach to ensure that farms self-report whether they meet the conditions set out in the regulations. In 2013/14, the MOECC inspected only 3% of the farms known to have to adhere to the NMA's regulations for the proper storage and application of manure. Even though inspections normally take a day or two, agricultural inspection officers set a target of inspections that equated to less than one farm inspection every two weeks. Governments should investigate how to enhance efficiency and increase funding to hire additional Agricultural Environmental Officers (AEOs) in order to conduct more random site inspection of records and field operations. AEOs need to increase follow up on issues of non-compliance, and consider relying on punitive measures more often, such as issuing offence notices that may result in fines set by provincial courts.[4]

- Investigate and address any loopholes in the Nutrient Management Act that may be hindering the ability to lay charges against landowners who are illegally winter spreading (for example on farms that are not required to have Nutrient Management Plans).

Compliance with other provisions in the Nutrient Management Act

- **Review the compliance and enforcement program to determine its effectiveness at ensuring compliance, average length of time it takes for farms to get into compliance and associated staff costs.** This should produce recommendations on where additional opportunities exist to increase efficiency and compliance. Investigate

[4] About 50% of the farms that were inspected in the two years prior to the report were found to be non-compliant with the *NMA* and its regulations. Of these, the Ministry found that about half of the non-compliance issues were a risk to the environment and/or human health.

whether this could be done by Ontario's Auditor General or the Environment Commissioner's Office.
- Currently only Nutrient Management Plans with over 150 NU are approved by OMAFRA. Consider reducing or eliminating this threshold, or implementing random reviews of remaining plans.
- Create an oversight board, consisting of ENGOs, industry, farm and fertilizer experts
- Expand the enforcement division within the Ontario Ministry of Environment and Climate Change to verify adherence to rules for greenhouse operators that includes random site inspection of records and field operations.

3. Accountability and proportionality

It is often acknowledged that because phosphorus comes from many different sources, everyone will need to do their part to lower phosphorus loading to meet the desired targets. However, more needs to be done to properly allocate the shares of reductions required in a way that is proportional to each source's contribution. A strong accountability framework would ensure that reductions are properly identified and allocated and that no one is overburdened with a share that is not their own. Each landowner, municipality and business (at a subwatershed scale) would have a better sense of what their goals are.

Accountability requires regular and effective public reporting to track the effectiveness of policies, plans and practices, and provide the necessary information that allows for adaptations and improvements.

The nutrient management policy framework in Ontario is complicated. There are numerous exceptions and loopholes leaving some sectors more accountable for reductions than others. We recommend establishing a baseline of water protections that agricultural producers should abide by.

Coverage of the Nutrient Management Framework

Ontario should expand its nutrient management framework so that water protections apply to more farms and all agricultural sources of phosphorus. According to the 2014 annual Auditor General report, neither the MOECC nor OMAFRA have information on the total number of farms that produce manure that needs to be managed in accordance with the NMA and regulations. Many farms with less than 150 nutrient units that have not been phased-in are currently exempt, as are croplands.

- Set lower thresholds for farms required to have nutrient management plans or strategies to ensure more farms are doing their part to protect water and reduce nutrient runoff.
- Ensure fertilizer application is subject to the same provisions as manure application
- Ensure all farms develop and follow plans that include the best management practices they will implement to prevent excess manure and fertilizer nutrient loss and properly manage nutrients. Such a requirement could be phased in based on a "trigger" point

such as location in a priority watershed or if soil phosphorus test results exceed specified amounts, but ultimately the requirement should extend to the entire basin.

- **The Nutrient Management Act (NMA) (3.6.5.5.) should ensure that fertilizer application (in addition to manure application) be avoided if precipitation is in the forecast or if the temperature is forecasted to rise to a level where snowmelt is likely to occur** (a precedent for this has been set in Ohio Senate Bill 1)

Greenhouses

Effluent from greenhouses, especially vegetable growers, are particularly a problem in the Leamington tributaries watersheds. Without efforts to reduce phosphorus loading from greenhouses in this area, it is unlikely that targets will be met in the Leamington priority watershed. Effluent from greenhouses in this area have high concentrations of Dissolved Reactive Phosphorus that often significantly exceed provincial water quality standards. In 2012, the MOECC reported that wastewater from 65 per cent of greenhouse operations around the Leamington, Ontario were polluting Lake Erie with levels of nitrogen and phosphorus that exceeded water quality objectives set out in provincial and federal guidelines. These results indicated that the majority of greenhouse operations were not adequately managing their wastewater.

- We recommend an “adaptive management” approach (including triggers and consequences) for greenhouse regulations. This is to allow for adjustments to regulations that may become necessary based on monitoring results and new scientific information.
    - For example, a performance-based regulatory framework could be implemented where effluent standards are set and ratcheted down over time to zero discharge. The objective should be to ensure local provincial water quality objectives for phosphorus and other nutrients are being achieved on a regular basis. An enhanced regulatory approach should be considered if standards are not being met and if it appears that the interim target of a 20% phosphorus reduction will not be met by 2020.
- Support programs and innovations that investigate opportunities for nutrient recovery from greenhouses
- Research and develop a publicly accessible report on the state of practice in greenhouse nutrient recovery.
- Create incentive programs for greenhouses that meet or exceed standards on or before a set timeline
- Look for opportunities for the greenhouses to access municipal wastewater systems

We recommend that Ontario evaluate its policy framework to ensure it supports implementation of the above principles. Ontario should then consider what changes are required to its policies, plans and practices, as well as its budgets, and resourcing plans

to ensure farmers are adequately supported and encouraged to follow such practices. The final step is to measure and track progress, which is described in further detail below.

Natural Heritage

We agree with Ontario when it says "actions to improve and restore natural areas provide enhanced opportunity for improving the overall health of Lake Erie." But beyond this, we believe fully protecting wetlands in the Lake Erie basin is incredibly important in being able to meet the phosphorus load targets. Weak protections for natural heritage features, including wetlands, will make achieving the targets more costly because we will need to increase efforts in other areas to compensate for wetland loss. For example, the few existing wetlands in the Thames watershed are providing significant economic benefits by improving water quality in areas where little other natural filtration occurs. Any activities that jeopardize the ecological integrity of those wetlands could have significant downstream and watershed-wide impacts that include significant contributions to the toxic algal blooms and hypoxia events in Lake Erie. Natural heritage features also have numerous other benefits for communities including biodiversity, habitat, flood control, etc. Further rationale for protecting wetlands with respect to phosphorus reduction is included in the International Joint Commission's Lake Erie Ecosystem Priorities (LEEP) report.

Overall, the provincial and federal governments cannot rely on Ontario's proposed Wetland Conservation Strategy for Ontario to protect wetlands in the Lake Erie basin. Given the weak overall targets, the absence of commitment to net gain, the lack of commitment to maintain or enhance protections for Provincially Significant Wetlands, and the failure to earmark areas for government investment, it is highly unlikely that the proposed strategy will be adequate.

Ontario should adopt a comprehensive wetlands policy that improves protection of all of Ontario's wetlands. We recommend a number of changes to Ontario's wetland strategy that are required to reduce or eliminate further wetland loss in the Lake Erie watershed:

- As stated in the LEEP report, Ontario should:
    - "commit to the goal of a 10% increase by 2030 beyond current levels of coastal wetland areas in the western basin of Lake Erie to reduce nutrient pollution and promote biodiversity (an increase of about 1,053 ha or 2,600 acres)."
    - "set a science-based goal for protection and restoration of wetlands inland from the Lake Erie coastal zone and develop appropriate strategies to meet the goal"
- Ontario's policy should ensure protection for all wetlands in the Lake Erie watershed to the fullest extent possible. The western basin has already experienced significant loss of wetlands and the few existing wetlands should be off limits to a mitigation and offsetting framework that would allow for land use change and drainage.
- All provincially significant wetlands in the Lake Erie watershed should be evaluated and strategically mapped (with edges delineated) within one year of the DAP coming into force. In the meantime, all wetlands in the western Lake Erie basin should be considered provincially significant until evaluation indicates otherwise.

- No permits should be given to alter or remove wetlands unless the area has been delineated and evaluated
- Increase funding for restoration and conservation of wetlands

Science, Monitoring and Public Reporting

We are encouraged to see that Ontario recognizes the importance of reporting regularly:

> "Ontario will work with its partners to provide an annual update on Lake Erie through its website, and produce a progress report every three years."

However, consistent with our DAP Expectations document, we recommend reporting annually, including on the status of implementation, and the progress being made towards targets.

Monitoring and tracking

The DAP Expectations document includes a fair amount of detail about what its authors feel is necessary to adequately monitor and track progress.

There is one particular section of the report that deserves emphasis. Monitoring and other efforts to improve cross-jurisdictional understanding of the problem must inform local actions, as well the framework for tracking progress. The binational targets identify phosphorus loading amounts for the mouths of the major tributaries flowing into Lake Erie. **We recommend a sub-allocation approach to implement the targets.** These target amounts should be sub-allocated to the smaller watersheds within each of those tributary systems. A sub-allocation of the targets would provide a nested approach so that loading from upstream watersheds aggregate to meet the downstream target. This framework would make it simpler to identify, quantify and prioritize nutrient sources in smaller areas. In addition, a sub-allocation would provide a framework for tracking progress at a smaller scale, allowing for swifter, more focused intervention when needed. For more information, see DAP Expectations Report, p. 7.

The sub-allocation targets would best be complemented by watershed plans to help achieve the desired loads. Solutions should be developed with a holistic, watershed approach in mind. This approach can build on the existing watershed plans developed by conservation authorities, but could be strengthened by evaluating each subwatershed to identify specific restoration projects and strategies to meet the local sub-allocated targets based on the area's unique geological characteristics and function.

Ontario should also track actions being taken to reduce phosphorus loading in the lake and subwatersheds. Reductions from all phosphorus sources should be tracked including (but not limited to) implementation of agricultural best management practices so that adoption rates can inform the adaptive management process.

- **Create an Ontario-wide agricultural demographics registry** that includes total number of farms, number of animal units, volume of fertilizer purchased, and whether they are subject to creating a nutrient management plan or strategy. All livestock owners and operators should also report numbers of animal units, and the locations and amounts of manure they sell or transfer to other agricultural operations.
- Establish rigorous recordkeeping protocols that include soil and manure nutrient test results, and nutrient application rates at each field. Such records should be publicly available.

Adaptive Management

We appreciate Ontario's recognition of the need to continuously assess the targets using an adaptive management approach:

> Ontario recognizes that these targets will need continual assessment based on best available information. To that end, Ontario will work with its partners and apply an adaptive management framework so that targets and actions could be refined as needed based on monitoring, performance measures, and evolving science and information.

We encourage the province to put emphasis on the need to measure and track the success of the actions being undertaken to reduce phosphorus.

Implementation

Effective and ongoing action will be needed to achieve the targets. In the final Action Plan, Ontario and Canada need to provide enough detail to ensure accountability for implementation of the plans. This includes details regarding roles and responsibilities, funding plans and transparency around reporting.

Similar to Ohio's draft Collaborative Implementation Agreement, Ontario should also commit to:

- Clearly delineating responsibilities and roles among all the agencies tasked with implementation
- Establishing clear timeframes for specific agency actions
- Developing a nutrient reduction BMP implementation, verification, and evaluation process that not only assesses the effectiveness of specific BMPs, but also determines if they are functioning as expected. This should include an inventory of privately implemented practices, which could be accomplished through third party data collection efforts. Capturing water quality improvement from these efforts will be crucial to tracking overall progress toward meeting target reductions.
- Producing a Water Quality Milestones report for each priority watershed to help inform the adaptive management process. We recommend the Milestones also be developed for the subwatershed target allocations recommended in the DAP Expectations Report.

Funding and Resources Allocated

Little is said in the EBR posting about how much the proposed initiatives will cost or how Ontario will fund the initiatives other than to leverage the Ontario Great Lakes Agricultural Stewardship Initiative and Phase 1 & 2 of the Clean Water and Wastewater Fund.

While we agree leveraging funds and resources may help prioritize and redirect limited resources, Ontario's proposal lacks clear direction on what the criteria will be used to determine priority projects. **We recommend Ontario explain how it will adequately leverage these funds for the purpose of protecting Lake Erie, publish criteria for making decisions and prioritize programs and practices.** It is also clear that funds and staff resources in addition to those supplied through existing programs will be required. **Ontario needs to create a long term comprehensive funding plan as an addendum to the final action plan. Funding plans should extend until 2025**, subject to changes according to an adaptive management approach.

Additionally, as stated in the DAP Expectations Report, **the funding plan should explain priorities and describe various scenarios that identify what actions and achievements are possible under different funding levels** (see p. 14). This will demonstrate what is possible with no additional funds, compared with reasonably expected increases as well as to a fully funded plan. The DAP Report also calls for **prioritizing resources to expand monitoring, and invest in technical capacity and support to ensure compliance with plans and rules** (see p. 14).

Ontario should additionally undergo an evaluation of total investments in western Lake Erie watershed since 2008 to determine if past and ongoing investments have actually decreased phosphorus loads, and if they are cost-effective. For example, some of the Ontario Great Lakes Agricultural Stewardship funding provided cost-share assistance for adopting best management practices, including soil erosion control structures, cover crops, residue management, buffer and shelter strips. It remains unclear how well these practices have worked to reduce phosphorus loading at the watershed scale.

Comments on Great Lakes Protection Act Targets

As stated earlier, our organizations are very supportive of setting quantifiable, time bound commitments for phosphorus reductions under the Great Lakes Protection Act as stated. We agree that they should be the same targets as set under other initiatives including the GLWQA, COA, Collaborative Agreement, and the Joint Action Plan with U.S. states.

We appreciate that work on eastern basin targets is ongoing: "At this time, a target for the eastern basin has yet to be established and requires further scientific assessment. Ontario is participating in the development of this eastern basin target." **We recommend that eastern basin targets also be quantifiable and time bound and that, once consulted on and**

finalized, they should be adopted under Part IV subsection 9 (2) of the *Great Lakes Protection Act, 2015.*

We recommend that the targets be stated as total and dissolved phosphorus loads for each tributary. We support the initial approach of using the 40% reduction goal (from 2008 levels) to establish numeric phosphorus reduction targets. The targets under the Act, however, should be defined as metric tons for both total and dissolved phosphorus as defined in the Annex 4 Phosphorus Objectives and Targets. Those targets establish 40% reductions during the spring and early summer months of March through July each year.

Once tributary load targets are established (as they are for the Maumee River) under the Great Lakes Protection Act, the Action Plan should proportion the loads by tributary to establish subwatershed loads. Subwatersheds should be defined at a HUC 10 or 12 level. This process would establish a legal framework that supports meeting the 40% phosphorus reduction commitment in a measurable and accountable way. Establishing loads at a subwatershed level is also easier to communicate to the public. It will be easier for the subwatershed community to understand what they need to do to improve water quality if they have a target at a scale that they understand. They can be held accountable for meeting the targets in their subwatershed, instead of being partially accountable (at an unknown percentage) for meeting in-lake targets or tributary mouth targets.

Sub-allocation Monitoring

We support the ongoing effort to collaborate and coordinate with other jurisdictions to analyze the sufficiency of the existing monitoring network. We understand the emphasis on monitoring at the mouths of priority tributaries but we maintain the need to also develop robust monitoring upstream to align with our recommendations regarding sub-allocation targets. Overall, we anticipate there will be a need for greater investment in monitoring to guide restoration activities and track trends.

Our organizations understand that restoring water quality within the impaired assessment units requires a comprehensive approach that addresses harmful algal blooms throughout the entire western basin and its watershed. It is widely understood phosphorus pollution from the Maumee River is the main driver of western Lake Erie's toxic algae. Therefore, Ontario's efforts to restore the western basin of Lake Erie would likely fail without significant effort to reduce phosphorus loading from the Maumee watershed. For this reason, Ontario should be examining what it can do to encourage action on the US side of the border.

Applying an approach as stated above could remove one of the barriers to important action in the US. One of Ohio's arguments against regional action is that it is not feasible because Canada has a different legislative and policy regime.

Enshrining tributary and subwatershed load targets and the Action Plan under the Great Lakes Protection Act may also serve as a point of encouragement to inspire US states to add legal authority to their targets and action plans.

Conclusion

Our organizations appreciate the opportunity to provide these comments meant to improve Ontario's final Action Plan, and to support the setting of nutrient targets under the GLPA. We urge careful consideration of our comments, in addition to the full DAP Expectations Report. As we initially stated, Ontario's plan needs to provide a clear path forward to achieving the targets and with our recommended improvements it can ensure Lake Erie provides clean drinking water and a safe, healthy environment that supports fishing, boating, swimming and other various uses by millions of Canadians and Americans.