

Clause 11 in Report No. 15 of Committee of the Whole was adopted, without amendment, by the Council of The Regional Municipality of York at its meeting held on November 16, 2017.

11

Phosphorus Removal Demonstration Partnership with
Lake Simcoe Region Conservation Authority

Committee of the Whole recommends:

1. Receipt of the communication from Mike Walters, Chief Administrative Officer, Lake Simcoe Region Conservation Authority, dated October 4, 2017 regarding 'Lake Simcoe Phosphorus Offsetting Program'.
2. Adoption of the following recommendations contained in the report dated October 13, 2017 from the Commissioner of Environmental Services:
 1. Council authorize the Commissioner of Environmental Services to negotiate and execute a partnership agreement between York Region and Lake Simcoe Region Conservation Authority (LSRCA) to undertake a phosphorus removal demonstration project at two stormwater management facilities for a total cost of \$1,087,400, excluding taxes.
 2. Council authorize the Commissioner of Environmental Services to negotiate and execute agreements between York Region and relevant local municipalities (Towns of Aurora, East Gwillimbury or Newmarket) that permits the Region to retrofit the municipally owned stormwater management facilities in exchange for the transfer of the total phosphorus offset credit realized by the retrofit.

Report dated October 13, 2017 from the commissioner of Environmental Services now follows:

1. Recommendations

It is recommended that:

1. Council authorize the Commissioner of Environmental Services to negotiate and execute a partnership agreement between York Region and Lake Simcoe Region Conservation Authority (LSRCA) to undertake a phosphorus removal demonstration project at two stormwater management facilities for a total cost of \$1,087,400, excluding taxes.
2. Council authorize the Commissioner of Environmental Services to negotiate and execute agreements between York Region and relevant local municipalities (Towns of Aurora, East Gwillimbury or Newmarket) that permits the Region to retrofit the municipally owned stormwater management facilities in exchange for the transfer of the total phosphorus offset credit realized by the retrofit.

2. Purpose

This report seeks Council authorization to enter into an agreement with LSRCA to complete a demonstration project for phosphorus removal by retrofitting two stormwater management facilities in the Towns of Aurora, East Gwillimbury or Newmarket.

The purpose is also to authorize agreements with the Towns of Aurora, East Gwillimbury or Newmarket to retrofit municipally owned stormwater management facilities in exchange for transfer of phosphorus offset.

3. Background

Lake Simcoe Phosphorus Reduction Strategy identified urban stormwater as a significant source of phosphorus to the lake

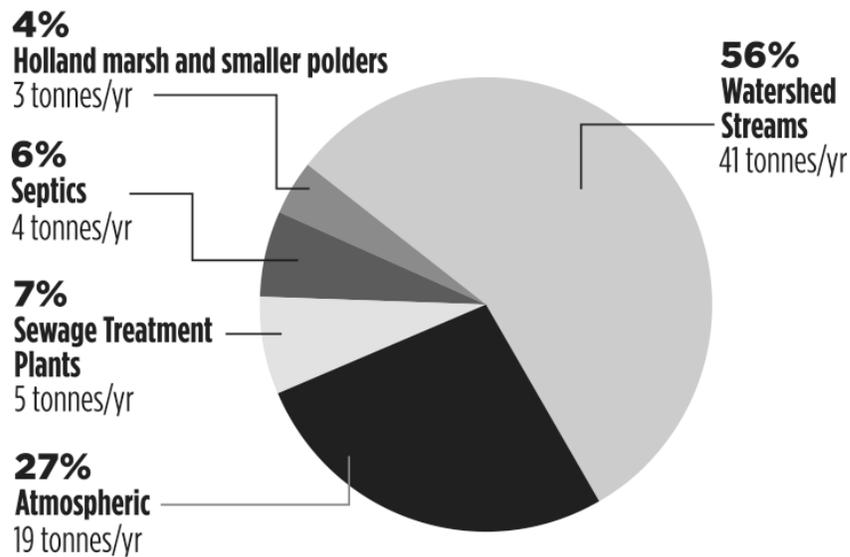
In 2008, the province enacted the *Lake Simcoe Protection Act* followed by the Lake Simcoe Protection Plan in 2009 to protect and restore the ecological health of Lake Simcoe and its watershed.

One of the primary measures to address environmental issues in Lake Simcoe and its watershed is to reduce excessive phosphorus going into the watershed. To achieve the phosphorus reductions needed to restore the lake's water quality and ecological health, the province worked with LSRCA, local stakeholders,

municipalities and others to develop a comprehensive Lake Simcoe Phosphorus Reduction Strategy, which was released in June 2010.

This Phosphorus Reduction Strategy determined the main sources of the estimated 72 tonnes of phosphorus entering Lake Simcoe annually and the average annual load from each source over a five-year period (see Figure 1).

Figure 1
Lake Simcoe Phosphorus Sources
(Source: Lake Simcoe Phosphorus Reduction Strategy, June 2010)



According to the strategy, 41 tonnes of phosphorus per year is discharged to the lake from streams within the watershed. Over half of the phosphorus found in these streams is from urban stormwater runoff. In contrast, the phosphorus loading from all sewage treatment plants discharging to the lake represents only seven per cent of the total loading.

In developing sewage servicing solutions during the Upper York Sewage Solutions Individual Environmental Assessment project, the Region was mandated by the Ministry of the Environment and Climate Change (the Ministry) to maintain a project phosphorus loading limit of 124kg/year, which is the regulatory compliance loading limit for the existing Holland Landing Sewage Lagoons. Working closely with the Ministry, LSRCA and local municipalities, the Region proposed a project-specific total phosphorus offsetting program as part of the Upper York Sewage Solutions to meet the loading limit and ensure net

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phosphorus reduction to the lake by the project, including retrofitting several stormwater management facilities within the watershed.

Upper York Sewage Solutions Individual Environmental Assessment Report submitted to the Ministry of the Environment and Climate Change for approval in July 2014

York Region completed the Upper York Sewage Solutions Individual Environmental Assessment and submitted the final report to the Ministry for approval in July 2014. The Region is currently awaiting *Environmental Assessment Act* approval to implement a proposed sewage servicing solution that will accommodate the provincially approved growth forecasted to occur in the Towns of Aurora, East Gwillimbury and Newmarket in Upper York by 2031.

The Upper York Sewage Solutions project is comprised of three integrated components:

- A Water Reclamation Centre
- Project-specific total phosphorus offsetting program
- Modifications to the existing York Durham Sewage System

The solutions proposed in the Individual Environmental Assessment will use innovative approaches such as the use of advanced treatment technologies including microfiltration, reverse osmosis and ultraviolet disinfection to produce quality treated water at the proposed Water Reclamation Centre.

At its meeting on [June 26, 2014](#), Regional Council authorized the detailed design while waiting for Individual Environmental Assessment approval and awarded the consultant assignment for detailed design, contract administration and site inspection services for the Upper York Sewage Solutions project. The award moved the project forward in anticipation of formal approval of the Individual Environmental Assessment by the Minister of the Environment and Climate Change in 2015, after submission in July 2014.

Phosphorus offsetting program is an integrated component of the Upper York Sewage Solutions project

As the *Lake Simcoe Protection Act*, 2008 and subsequent Lake Simcoe Protection Plan, 2009 stipulate that no new wastewater treatment facilities are to be built in the Lake Simcoe watershed, the Water Reclamation Centre was proposed to replace the existing Holland Landing Sewage Lagoons as committed through the Individual Environmental Assessment.

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Once the Water Reclamation Centre is constructed and operating at its full design capacity, it will discharge 292kg/year of phosphorus into the East Holland River. In order for the Region to stay within the phosphorus limit of 124kg/year, 168kg/year of phosphorus must be removed by a phosphorus offsetting program.

The phosphorus offsetting program will enable the Region to implement the Water Reclamation Centre to accommodate growth while staying within the phosphorus loading limits enforced by the Act.

Phosphorus offsetting program proposes a 3:1 offset ratio

Phosphorus offsetting programs can be used to successfully drive environmental benefits. Based on best management practices, an offset ratio between 2:1 and 4:1 is typically selected. Based on discussions with the Ministry, the Region proposed a phosphorus offset ratio of 3:1 for urban stormwater management facility retrofits to ensure a net benefit from the Upper York Sewage Solutions project to the Lake Simcoe watershed.

A 3:1 offset ratio means that the Region must remove three kilograms of phosphorus from the watershed by retrofitting stormwater management facilities for every one kilogram of additional phosphorus that the Water Reclamation Centre discharges to the watershed.

In order to achieve the 3:1 ratio, the phosphorus offsetting program must remove 504 kg/year of phosphorus from urban stormwater by retrofitting stormwater management facilities. This quantity is three times the 168 kg/year of incremental phosphorus discharged from the sewage treatment plant.

Substantive consultation with local municipalities and regulatory agencies key to successful implementation of the phosphorus offsetting program

Most existing stormwater management facilities within the watershed are owned, operated and maintained by local municipalities, many of which are located in regulated and environmentally sensitive areas.

This proposed phosphorus offsetting program requires significant consultative efforts with local municipalities and regulatory agencies. This effort is required to locate appropriate stormwater management facilities that offer good candidates for monitoring, maintenance, and phosphorus removal potential.

Implementing the phosphorus offsetting program requires phosphorus credit transfer agreements with the Towns of Aurora, East Gwillimbury or Newmarket

The Region intends to consult with each municipality in selecting the facilities that are suitable for retrofits. Once a facility is chosen for the demonstration project, the Region will work closely with that municipality to ensure all aspects of the selected facility's design, construction and maintenance is effectively planned, communicated and in accordance with municipal requirements.

As local municipalities own most of the existing stormwater management facilities within the watershed, the execution of a phosphorus transfer agreement will be required between the Region and the local municipality that owns the facility.

The phosphorus transfer agreement will permit the Region to retrofit the facility in exchange for the Region receiving the credit for the phosphorus reduction realized by the retrofit.

4. Analysis and Implications

A phosphorus removal demonstration project will better prepare the Region to deliver the phosphorus offsetting program upon approval of the Individual Environmental Assessment

The delay in approval of the Individual Environmental Assessment and unknown conditions to be proposed by the Ministry has necessitated the need for a phosphorus removal demonstration project. The demonstration project will better prepare and inform the Region in delivering the proposed phosphorus offsetting program in a timely and efficient manner following the Individual Environmental Assessment approval. The demonstration project will allow the Region to accomplish the following:

- Explore potential opportunities and constraints for retrofitting stormwater management facilities in the Towns of Aurora, East Gwillimbury and Newmarket.
- Demonstrate the effectiveness of phosphorus removal through stormwater management facility retrofit.
- Allow the Region to establish a pre- and post-construction performance monitoring program for stormwater management facility retrofit and long-term maintenance program with the local municipalities.

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Upon approval of the Individual Environmental Assessment, data and information collected through the demonstration project will assist the Region to identify the number and locations of stormwater management facilities suitable for retrofits and better position the Region to finalize the phosphorus offsetting program.

The demonstration project will assist in determining proposed methods to support delivery of the phosphorus offsetting program, such as retrofit technologies (wetland construction, filtration, etc.), performance monitoring data and a long-term maintenance program. These methods will be put forth for the Ministry's review and consideration in accordance with the Individual Environmental Assessment approval conditions prior to implementing the phosphorus program.

Lake Simcoe Region Conservation Authority has extensive knowledge of the Lake Simcoe watershed, stormwater management and phosphorus removal programs

While the traditional design-bid-build project delivery method best serves other components of the Upper York Sewage Solutions project, the project team has been exploring other innovative approaches to deliver the phosphorus removal demonstration project.

LSRCA has comprehensive knowledge of the Lake Simcoe watershed and associated sub-watersheds. They provide guidance and policies for the watershed and deliver numerous initiatives for stormwater management and phosphorus reduction through partnership with local municipalities and other regulatory agencies. Recently, LSRCA developed the Lake Simcoe Phosphorus Offsetting Program along with the phosphorus offsetting policy for the entire watershed in an effort to control phosphorus loads throughout the watershed.

LSRCA was extensively involved in the Upper York Sewage Solutions Individual Environmental Assessment process, particularly the development of the phosphorus offsetting program. They have a thorough understanding of the needs and challenges of the program.

Partnering with Lake Simcoe Region Conservation Authority presents the Region with a practical approach to deliver phosphorus removal demonstration project

Partnering with LSRCA will allow the Region to cost effectively deliver the phosphorus removal demonstration project in an innovative manner for the best interest of the watershed. Further benefits include:

Phosphorus Removal Demonstration Partnership with Lake Simcoe Region Conservation Authority

- Leveraging LSRCA's extensive knowledge and hands-on experience of stormwater system management in the Lake Simcoe watershed.
- Leveraging LSRCA's expertise in phosphorus removal through stormwater management facility retrofit within the watershed, including planning, design and construction inspection, acceptance and performance monitoring.
- Building on the established working relationships and ongoing stormwater management initiatives between LSRCA and local municipalities will facilitate the consultation process required between the Region and local municipalities to permit retrofitting of the municipally owned stormwater management facilities in exchange for the transfer of phosphorus offset credits to the Region.
- Development of maintenance programs suitable for each site through consultation with local municipalities ensures that the long-term maintenance obligations are well understood and will be supported by each municipality.
- Quick adaptation to regulatory changes and industry initiatives in terms of phosphorus removal in the watershed.
- Seamless consultation with LSRCA, Ministry of Natural Resources and Forestry and Department of Fisheries and Oceans for work adjacent to existing watercourses.
- Effective consultation with the Ministry on various aspects of the demonstration project, including performance monitoring requirements, maintenance requirements and Environmental Compliance Approval and conditions.
- Diligent compliance with Ontario Regulation 179/06, Regulation of Development, Interference with Wetlands and Alterations to Shorelines and Watercourses.

York Region invited Lake Simcoe Region Conservation Authority to submit a partnership proposal to deliver the demonstration project

York Region invited LSRCA to submit a partnership proposal to implement the phosphorus removal demonstration project. The scope of LSRCA's services includes:

Phosphorus Removal Demonstration Partnership with Lake Simcoe Region Conservation Authority

- Undertaking preliminary design, detailed design, project management, construction administration and construction inspection services to select and retrofit two stormwater management facilities in the East Holland River Watershed for a phosphorus removal demonstration project.
- Developing and undertaking a monitoring program to evaluate the effectiveness of each retrofit facility in removing phosphorus.
- Developing a long-term maintenance program for each of the selected retrofit facilities.
- Consulting with local municipalities and the Ministry in developing monitoring and maintenance programs in addition to providing the Region with guidance in establishing phosphorus offsetting agreements with each local municipality.
- Retaining external engineering design services through a competitive request for proposal process will ensure the most qualified and value-added service providers are selected.

Lake Simcoe Region Conservation Authority partnership proposal demonstrates unique expertise and experience required for the phosphorus removal demonstration project

LSRCA has submitted a partnership proposal with a dedicated team of experts in science, engineering, quality assurance and control, project management, coordination and agency consultation.

LSRCA has completed five stormwater management facility retrofits in the Towns of Aurora, East Gwillimbury and Newmarket. Through these projects, they have fully demonstrated their unique expertise and experience with stormwater management facility retrofits, including phosphorus reduction and performance monitoring projects within the East Holland River watershed. The proposal also demonstrates their corporate experience and knowledge in addition to the essential blend of project management, technical and scientific expertise required for the demonstration project.

Lake Simcoe Region Conservation Authority partnership proposal offers best value to the Region

LSRCA's team will provide project management, quality assurance and control, contract administration and site inspection for two stormwater management facilities of the demonstration project at a cost of \$210,800 along with a cost of \$366,600 for performance monitoring and evaluation. LSRCA offers excellent

Phosphorus Removal Demonstration Partnership with Lake Simcoe Region Conservation Authority

value for money as their rates are generally lower than the rates typically charged by consulting engineering firms.

The proposal also committed LSRCA to retain an external engineering firm through a competitive request for proposal process. This will ensure the most qualified and value-added service providers are selected to meet the needs of the project. For budgeting purposes, the proposal estimated an upset limit cost of \$510,000 for external engineering services for two stormwater management facilities based on general industry practice.

The proposed cost for project management, design and construction administration and inspection, excluding performance monitoring and evaluation, by LSRCA represents less than 15 per cent of the estimated construction costs of \$5,000,000, which is well within the range of the industry practice considering the complexity of the project. Staff reviewed the partnership proposal and concludes that it offers best value to the Region.

York Region, along with Lake Simcoe Region Conservation Authority, will be monitoring and evaluating the effectiveness of the partnership throughout the demonstration project

The Region and LSRCA will jointly evaluate the effectiveness of the partnership throughout the demonstration project.

Further recommendations to Council regarding continuing the partnership to deliver the Upper York Sewage Solutions phosphorus offsetting program upon approval of the Individual Environmental Assessment will be required.

5. Financial Considerations

LSRCA has estimated the total limit cost to the Region of \$1,087,400, excluding taxes, for services required to deliver the phosphorus removal demonstration project at two stormwater management facilities, the details of which are shown in Table 1 below.

Table 1
Partnership Proposal Cost Break Down

Description of Work	Cost
Project Management, Consultation, Quality Assurance and Control, Contract Administration and Site Inspection	\$210,800
Performance Monitoring and Evaluation	\$366,600
Third-party Engineering Services	\$510,000
Total	\$1,087,400

In preparation for this demonstration project, the project team completed a feasibility study that looked at the available stormwater management retrofit opportunities in the watershed, including an estimate of the retrofit construction costs. Based on the feasibility study, the estimated cost to retrofit two stormwater management facilities would be in the range of \$5,000,000, excluding taxes.

Adequate Capital Spending Authority is included in the approved 2017 budget.

6. Local Municipal Impact

Phosphorus removal demonstration project will benefit local municipalities and the Lake Simcoe watershed

Local municipalities will benefit from the demonstration project as they receive retrofitted stormwater management facilities in both improved quantity and quality of stormwater management, which in turn will benefit the Lake Simcoe watershed.

Performance monitoring and long-term maintenance programs for each stormwater management facility will be developed in close collaboration with each local municipality. Local municipalities will continue to operate and maintain the stormwater management facilities as the owners of the facilities.

Execution of a phosphorus transfer agreement will be required with respective individual local municipalities to allow the Region to retrofit the facilities in exchange for phosphorus removal credit realized by the retrofit.

7. Conclusion

Demonstration project will assist the Region in delivering the proposed phosphorus offsetting program in an efficient manner

A demonstration project will better prepare and inform York Region in delivering the proposed phosphorus offsetting program in a timely and efficient manner following the Upper York Sewage Solutions Individual Environmental Assessment approval.

Partnering with LSRCA will allow the Region to deliver the phosphorus removal demonstration project in an innovative manner for the best interest of the watershed. This partnership will leverage their expertise in phosphorus removal through stormwater management facility retrofits, knowledge of the watershed, and established working relationships with local municipalities.

Additionally, this partnership will help the Region mitigate project risks due to delay of the Individual Environmental Assessment approval and potential conditions.

Partnering with Lake Simcoe Region Conservation Authority to deliver the phosphorus removal demonstration project offers best value to the Region

The partnership proposal submitted by LSRCA presents the best value for the Region and best interest for the watershed. Staff recommends that the Region enter into a partnership agreement with LSRCA to undertake the phosphorus removal demonstration project at two stormwater management facilities for a total upset limit cost of \$1,087,400, excluding taxes.

Staff also recommends that the Region enter into phosphorus credit transfer agreements with local municipalities to retrofit municipally owned stormwater management facilities in exchange for the transfer of phosphorus reduction realized by the retrofit for the Region's benefit.

Phosphorus Removal Demonstration Partnership with Lake Simcoe Region
Conservation Authority

For more information on this report, please contact Mike Rabeau, Director,
Capital Planning and Delivery, Environmental Services at 1-877-464-9675 ext.
75157. The Senior Management Group has reviewed this report.

October 13, 2017

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Accessible formats or communication supports are available upon request



October 4, 2017

Via email only c/o Regional and Municipal Clerks

To: Lake Simcoe Region Conservation Authority Member Municipalities

Dear Chairs, Mayors, Members of Council and staff:

Re: Lake Simcoe Phosphorus Offsetting Program

It is with great pleasure I advise you that on September 22, 2017, the Lake Simcoe Region Conservation Authority (LSRCA) Board of Directors approved the policy document regarding the Lake Simcoe Phosphorus Offset Program (LSPOP) with an effective start date of January 1, 2018. The LSPOP is the product of more than four years' work in collaboration with the Chippewas of Georgina Island First Nation, the Ministry of the Environment and Climate Change (MOECC), LSRCA's municipal partners, the Building Industry and Land Development Association, the Ontario Federation of Agriculture Simcoe Chapter, and the watershed community.

LSPOP requires that all new developments control 100% of the phosphorus from leaving its property. Referred to as the Zero Export Target, a key component of the LSPOP that ensures new development or redevelopment activities do not continue to contribute to phosphorus loading to Lake Simcoe. Under the policy, as new urban growth occurs, phosphorus loads will be controlled to the maximum extent possible using the best available control technology within the development itself in compliance with [MOECC's Stormwater Management Planning and Design Manual](#) and [LSRCA's Watershed Development Guidelines](#), whichever is most stringent. Any remaining stormwater phosphorus load that cannot be controlled would trigger the need for an offset to achieve a net zero target.

Attached is the approved policy outlining the program and its operational requirements. More information on the program can be found on LSRCA's website at [Phosphorus Offsetting Program](#). Additional details will be released over the next couple of months, along with an invitation for representatives for a project review committee to evaluate and select remedial projects.

On behalf of LSRCA, I would like to thank you for your organization's support and participation in the development of this program to protect and improve water quality in Lake Simcoe and its tributaries.

If you have any questions, please do not hesitate to contact us.

Sincerely,

A handwritten signature in black ink, appearing to read "Mike Walters".

Mike Walters
Chief Administrative Officer

Attachment: Phosphorus Offsetting Policy

Phosphorus Offsetting Policy



Lake Simcoe Region
conservation authority

September 2017

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Acknowledgements

This policy could not have been developed without the participation of and collaboration with:

- Ministry of the Environment and Climate Change (MOECC)
- Chippewas of Georgina Island First Nation
- City of Barrie
- City of Kawartha Lakes
- Regional Municipality of Durham
- Township of Brock
- Township of Scugog
- Township of Uxbridge
- Town of Bradford West Gwillimbury
- Town of Innisfil
- Town of New Tecumseth
- Township of Oro-Medonte
- Township of Ramara
- Regional Municipality of York
- Town of Aurora
- Town of East Gwillimbury
- Town of Georgina
- Township of King
- Town of Newmarket
- Town of Whitchurch-Stouffville
- Building Industry and Land Development Association (BILD)
- Ontario Federation of Agriculture (Simcoe Chapter)

The Lake Simcoe Region Conservation Authority would especially like to acknowledge the support of the Minister of Environment and Climate Change, the Hon. Glen Murray.

Conservation Authority Resolution

The LSRCA Board of Directors on September 22, 2017 adopted the Phosphorus Offsetting Policy by resolution as follows:

Moved by: S. Macpherson

Seconded by: P. Ferragine

BOD-131-17 RESOLVED THAT Staff Report No. 38-17-BOD regarding the Lake Simcoe Phosphorus Offsetting Program be received; and

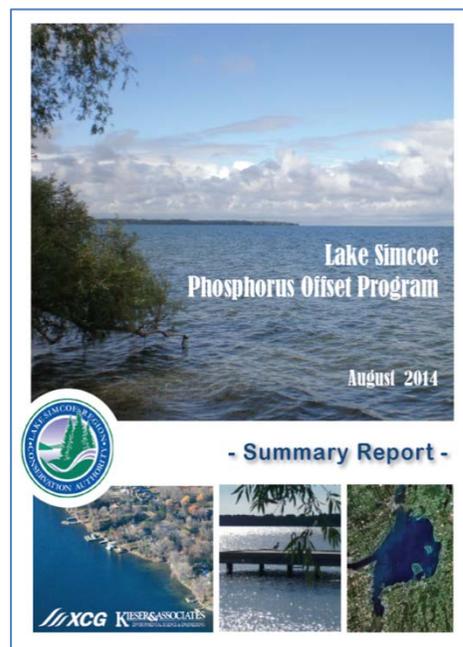
FURTHER THAT the Phosphorus Offsetting policy be approved to take effect January 1, 2018; and

FURTHER THAT LSRCA's member municipalities and the Building Industry and Land Development Association be notified accordingly. CARRIED

1.0 Introduction

The Lake Simcoe Region Conservation Authority (LSRCA) Strategic Plan (2016–2020) sets the groundwork for achieving a healthier watershed by 2041 than we have today. The Strategic Plan provides action items and goals which speak to a thriving environment that inspires and sustains the needs of generations to come. The first goal of the Strategic Plan is to *support a safer, healthier and livable watershed through exceptional integrated watershed management*. The initiation of a Lake Simcoe Phosphorus Offsetting Program (LSPOP) to reduce phosphorus is one of the plan’s key activities and will ultimately protect and improve the water quality in Lake Simcoe and its tributaries.

The LSPOP is the product of more than 4 years of work in collaboration with the First Nations, Chippewas of Georgina, the Ministry of the Environment and Climate Change (MOECC), our municipal partners, the Building Industry and Land Development Association (BILD) and the watershed community. Extensive consultation was held during the study and to develop policy to operationalize the program. The study report and appendices were released in late 2014 and are available on the LSRCA website: www.LSRCA/watershed-health/phosphorus-offsetting-program, along with a summary document. This policy outlines the steps needed to facilitate an offset with the development industry and is intended to aid in operationalizing the program. The effective launch date of January 1, 2018 has been selected in order to provide a transitional period for municipalities and members of the Building Industry and Land Development Association.



It is noted that the Lake Simcoe Phosphorus Offsetting Program will result in many other environmental, social and economic benefits including:

- Reduced peak flows, frequency and severity of flooding, risk to life, property and social disruption,
- Increased resilience of communities to climate change,
- Enhanced groundwater recharge to maintain ground-water drinking supplies and ecological services,
- Creation of green industry - jobs in construction, operation and maintenance,

- Facilities that are aesthetically attractive and provide opportunities for carbon offsetting and climate change mitigation.

2.0 Context

LSPOP requires that all new development must control 100% of the phosphorus from leaving their property. This is referred to as the Zero Export Target, a key component of the LSPOP that ensures new development or redevelopment activities do not continue to contribute to phosphorus loading to Lake Simcoe. Under this Policy, as new urban growth occurs phosphorus loads will be controlled to the maximum extent possible using the best available control technology within the development itself in compliance with the MOECC Stormwater Guidelines and the LSRCA Watershed Development Guidelines, whichever is most stringent. Any remaining stormwater phosphorus load that cannot be controlled would trigger the need for an offset to achieve a net zero target. An offset ratio of 2.5:1 would be applied meaning that 2.5 kg of phosphorus per year would be removed for every 1 kg required to be offset. The offset measures would consist of phosphorus load reduction through the use of Low Impact Development (LID) techniques and the retrofit of existing stormwater discharges elsewhere in a sub-watershed or in adjacent sub-watersheds.

LSPOP is based on the following provincial, regional, and watershed documents in the Lake Simcoe watershed:

Lake Simcoe Environmental Management Strategy	(1990-2007)
Assimilative Capacity Study	(2006)
Lake Simcoe Protection Plan	(2009)
Lake Simcoe Phosphorus Offsetting Program	(2014)
Provincial Policy Statement	(2014)
Growth Plan for the Greater Golden Horseshoe	(2017)
Ontario Water Resources Act	(R.S.O. – 2017)
Subwatershed Plans	(2009 - 2017)

For example, Chapter 4 of the Lake Simcoe Protection Plan identifies that phosphorus loadings should be reduced to achieve a target for dissolved oxygen of 7mg/L in Lake Simcoe, which equates to a long-term goal of 44 tonnes per year. Phosphorus offsetting is a means to help achieve this long-term goal and target.

3.0 Principles

LSPOP is based on the following principles:

<i>Accountable</i>	Mechanisms will be in place to demonstrate that actual phosphorus reductions will result from the offsets and that program implementation and decisions will be transparent.
<i>Beneficial</i>	Offsetting will result in net water quality benefits to Lake Simcoe.
<i>Defensible</i>	Offsetting parameters, such as credits and ratios, will be based on reliable scientific evidence and methods.
<i>Economical</i>	Reductions in phosphorus loadings to Lake Simcoe that result from offsetting should be at an overall lower cost than traditional approaches to water quality improvement.
<i>Enforceable</i>	Offsetting procedures will be simple, consistent and implementable.
<i>Equitable</i>	Offsetting will avoid bias in terms of participation, location of trades, and value of credits.
<i>Adaptable</i>	Information about program operation and water quality improvements will be reviewed from time to time and will be used to adapt offsetting to changing knowledge and technology.



4.0 Policy Approach

4.1 Goals

- To maintain and/or improve the water quality of Lake Simcoe and its tributaries by addressing stormwater, which is defined as waste water and should not be discharged to a receiving water body that is at or as a result of the discharge, would exceed its assimilative capacity,
- To assist in achieving the Lake Simcoe Protection Plan target for dissolved oxygen of 7mg/L in Lake Simcoe with an annual phosphorus load of 44 tonnes per year.

4.2 Objectives

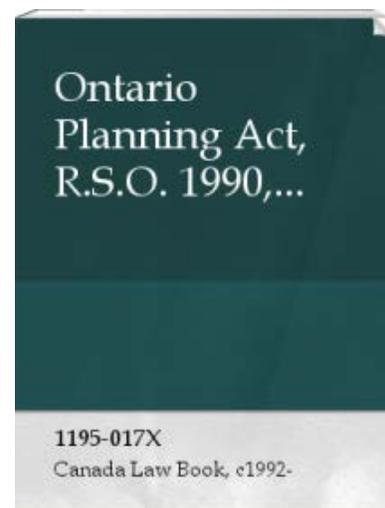
- To reduce stormwater runoff to pre-development conditions as close to the source as possible,
- To ensure that development within the watershed contributes to the protection or enhancement of water quality and quantity through the implementation of LID techniques such as enhanced swales, rain-gardens, and permeable surfaces,
- To prevent increases in phosphorus loads to Lake Simcoe and its tributaries by utilizing LID principles,
- To recognize stormwater retrofit projects on public lands as a means to achieving the overall phosphorus water quality target.

4.3 Definition

Phosphorus offsetting will be applied to the following applications under the *Planning Act* and *Condominium Act*:

- Plans of subdivision
- Plans of condominium
- Site plans involving major development
- Consent applications resulting in the creation of four or more new lots

For the purposes of this Policy, major development is defined as a proposed impervious area that is greater than (>) 500m².



4.4 Phosphorus Offsetting Policies

- 4.4.1** An application as identified in Section 4.3 shall be accompanied by a Preliminary Phosphorus Budget as part of an overall Functional Servicing Report or Preliminary Stormwater Management Report. This evaluation shall be prepared by a qualified professional to the satisfaction of the municipality and local conservation authority prior to any draft plan of subdivision, site plan approval or granting of provisional consent. A Detailed Phosphorus Budget, based on the approved Preliminary Report, will be required as a condition of draft plan of subdivision/condominium or site plan approval or granting of provisional consent.
- 4.4.2** The Phosphorus Budget identified in Section 4.4.1 must demonstrate that the phosphorus load from the development on the property will be zero. The Phosphorus Budget shall be prepared in accordance with the following:
- i. Municipality's Comprehensive Stormwater Management Master Plan prepared under 4.5-SA of the Lake Simcoe Protection Plan (2009)
 - ii. Subwatershed Evaluations under 8.3-SA of the Lake Simcoe Protection Plan
 - iii. Designated Policy 4.8 of the Lake Simcoe Protection Plan
 - iv. Section 2.2 of the Provincial Policy Statement (2014)
 - v. LSRCA's Technical Guidelines for Stormwater Management Submissions
 - vi. Provisions and Regulations of the *Ontario Water Resources Act*
 - vii. Policy 3.2.7 of the Growth Plan for the Greater Golden Horseshoe (2017).
- 4.4.3** In situations where the phosphorus load cannot be met or demonstrated in a post-development scenario to achieve the Zero Phosphorus, the developer or proponent shall be required to provide phosphorus offsetting to the LSRCA. Phosphorus offsetting will include the following:
- Offset Ratio = 2.5:1
 - Offset Value = \$35,000/kg/year
 - Offset Calculation = (ratio (2.5) x P deficit in kg x \$35,000)
- 4.4.4** The revenue generated through phosphorus offsetting will be used to reduce the phosphorus load in other parts of the subwatershed by funding the construction of; stormwater pond retrofits, Low Impact Development best management practices. The

offset shall generally occur in the same catchment as the subject lands, subwatershed, or watershed in order of priority.

4.4.5 Proper agreements shall be established in order to ensure the phosphorus offset will be employed and maintained in perpetuity. The following agreements or legal instruments, where appropriate, shall be required as a condition of approval for any draft plan of subdivision or condominium, site plan under Section 41 of the *Planning Act*, or consent application:

- Subdivision or consent agreement;
- Condominium agreement;
- Site plan agreement;
- Purchase and sale agreements; and,
- Covenants as per the *Conservation Land Act* registered under the *Land Titles Act*.

4.4.6 Council may enact by-laws under the *Municipal Act* to help implement the approved phosphorus offset. Existing fill or site alteration by-laws may be amended or updated to include the offset requirements.

4.4.7 Applications under the *Planning Act* that facilitate permitted agricultural uses or the construction of an accessory structure (e.g. garage) or a single family dwelling on an existing lot of record will not be subject to this Phosphorus Offsetting Policy. In addition, proposals requiring approval under Ontario Regulation 179/06 via the *Conservation Authorities Act* will not be subject to the requirements of this Policy.

5.0 Implementation

This Offsetting Policy will be primarily implemented through Ontario's land use planning process under the *Planning Act*. A phosphorus budget will be required as part of a Stormwater Management Report in accordance with Designated Policy 4.8 of the Lake Simcoe Protection Plan. An example of the application of the zero export target is provided below. Where a development proposal is within the Well Head Protection Area Q2 as defined by the South Georgian Bay Lake Simcoe Source Protection Plan (2015) and has an infiltration deficit, the water budget and phosphorus budget will be integrated to ensure that there will be no duplication offsetting.

EXAMPLE:

- The proposed development will build homes and roads for 176 lots on a 9.2 ha site
- The percentage of impervious cover will increase to 45%
- Estimated annual P load from the new development is 13.8 kg/year.
- The developer must maintain the water balance and reduce the phosphorus load to zero (0).
- Through low impact development and stormwater best practices, the proponent can control 75% of the total phosphorus from the development, or 10.3 kg/yr.
- Given that the post condition total load off the site is 13.8 kg/yr., phosphorus reduction needed to achieve net zero is (13.8 – 10.3 = **3.5 kg/yr**)
- Based on the stormwater offset ratio (2.5:1), the total amount of phosphorus needing to be offset is:

3.5 kg/year X 2.5 (offset ratio) = 8.8 kg/year

Proposed Offset Cost:

8.8 x \$35,000 kg/y = \$ 308,000

Equates to \$1,750 per lot



6.0 Effectiveness Monitoring

6.1 Phosphorus Offsetting Project Monitoring

LSRCA in association with the municipality will be responsible for implementing appropriate offsetting projects. The effectiveness of some these projects where deemed necessary will be monitored over time, and any reporting will be made available to the province, Building Industry and Land Development Association (BILD), watershed municipalities and watershed community on-line.



6.2 Phosphorus Offsetting Revenue Monitoring



To ensure effectiveness and transparency, a record of the collection and allocation of funds received through the revenue generated in 4.4.3 and 4.4.4 will be made available to BILD, watershed municipalities and other interested stakeholders, on an annual basis, and quarterly in a report to LSRCA's Board of Directors. An independent third party audit will be conducted annually and circulated to the province, BILD, watershed municipalities and watershed community on-line.