

## **4**

### **SERVICE DELIVERY AND COST IMPLICATIONS TO YORK REGION OF THE FINAL LAKE SIMCOE PROTECTION PLAN**

**The Environmental Services Committee recommends the adoption of the recommendations contained in the following report dated September 22, 2009, from the Commissioner of Environmental Services.**

#### **1. RECOMMENDATIONS**

It is recommended that:

1. Regional Council formally notify the Province of implications of the Lake Simcoe Protection Plan to servicing approved growth in York Region. This notification will reference the need to provide York Region with cost effective targets for sewage plants discharging to Lake Simcoe and for the Province to target reduction of other sources of phosphorus to Lake Simcoe, where reduction efforts and greater environmental benefits may be realized.
2. Regional Council support a grant application to the Federation of Canadian Municipalities' Green Municipal Fund for funding to support the development of a York Region corporate phosphorus management strategy to achieve and sustain reductions in phosphorus loadings, since funding requests for this project have been denied by the Lake Simcoe Clean Up Fund.

#### **2. PURPOSE**

The purpose of this report is to advise Regional Council of the contents of the final version of the Lake Simcoe Protection Plan, outline the implications to York Region and its local municipalities from a servicing delivery and cost standpoint, and discuss outstanding concerns. This report may form the basis for Regional Council to further engage the Province on this matter.

#### **3. BACKGROUND**

##### **Province finalizes plan to protect Lake Simcoe water quality and ecological integrity**

In 2006, the Province of Ontario announced they would introduce legislation to protect Lake Simcoe. Bill 99 – *the Proposed Lake Simcoe Protection Act* was introduced into the Legislature on June 17, 2007. In December 2008 the *Lake Simcoe Protection Act, 2008* was passed and received Royal Assent on December 10, 2008.

In January 2009, the Province released a draft Lake Simcoe Protection Plan. A previous report (April 23, 2009, Report No. 4 of the Transportation and Works Committee) provided comments to the Province on the EBR Registry posting related to the draft plan.

The Lake Simcoe Protection Plan (the “Plan”) was established and came into effect on June 2, 2009 pursuant to the *Lake Simcoe Protection Act, 2008*.

### **York Region has demonstrated a commitment to successfully protecting Lake Simcoe through the Lake Simcoe Protection Plan**

Environmental Services and Planning and Development Services staff have continued to engage with the Province on a regular basis to reinforce the need for a jurisdictional phosphorous limit for York Region. A jurisdictional limit would provide the Region with a single total permissible loading from all five regional water pollution control plants (WPCPs) on Lake Simcoe rather than impose limits on individual facilities. This type of approval would provide flexibility needed to operate wastewater treatment facilities within compliance as well as certainty for future approved growth.

The Commissioner of Environmental Services appeared before the Standing Committee on General Government in November 2008 to provide a municipal perspective on implications of Bill 99 – *the Proposed Lake Simcoe Protection Act*. York Region, being the only municipal deputation, highlighted the need to consider requirements of Ontario’s existing regulatory framework for growth management, the value of supporting the Lake Simcoe Region Conservation Authority as the lead agency in protection of Lake Simcoe, and the necessity to allow innovative solutions through flexible legislation, plans and regulations.

### **York Region Official Plan policies have been developed to conform to the Lake Simcoe Protection Plan**

Policies to bring the Draft York Region Official Plan – June 2009 into conformity with the Lake Simcoe Protection Plan have been developed in consultation with Regional staff, the Lake Simcoe Conservation Authority and the Province and have been included in information provided for the Plan’s public and stakeholder consultation during the fall of 2009. A report was presented to the Planning and Economic Development Committee on the proposed draft Lake Simcoe Policies on September 9, 2009 (Report No. 6, Clause 4 of the Planning and Economic Development Committee Regional Council Meeting of September 24, 2009)

The Draft Regional Official Plan policies include:

- Requirements for vegetative buffers and development setbacks.
- Minor rounding out of shoreline communities and hamlets.
- Protection of key natural heritage and key hydrological features.
- Careful monitoring of STP effluent.

There are additional requirements for local municipalities including development and site alteration, stormwater management, vegetative buffers and habitat protection and restoration.

The Draft Official Plan, including the Lake Simcoe policies, will be brought forward to Regional Council in November for final adoption.

#### **4. ANALYSIS AND OPTIONS**

##### **The Plan effectively ignores other opportunities for significant phosphorus reduction at lower costs**

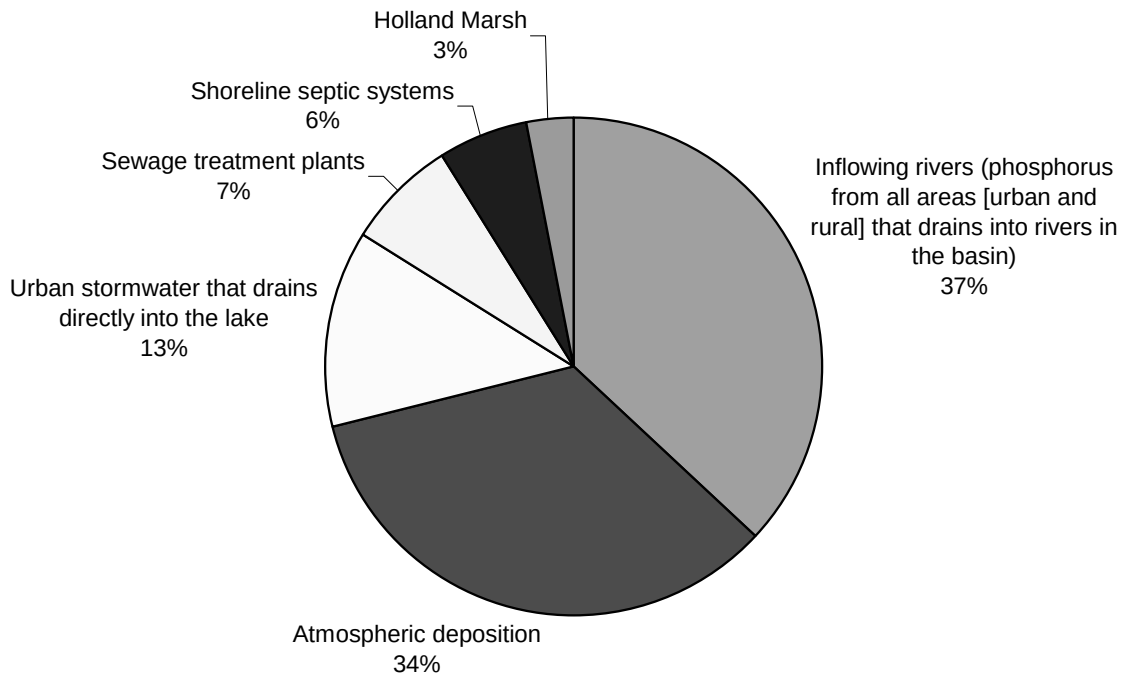
The 'Water Quality' section of the final Plan continues to suggest *more stringent controls* on water pollution control plants (WPCPs), stormwater management, septic systems, and construction activities; yet *encourages* best management practice for agricultural, rural, and urban communities. Unfortunately, by continuing to target phosphorus reductions through WPCPs as the main focus for phosphorus reduction, the Plan effectively ignores opportunities which will have a more significant phosphorus reduction at a lower cost.

##### **Lake Simcoe Protection Plan 'Water Quality' initiatives target sewage treatment plants and stormwater management**

Within one year of the Plan's effective date, the Ministry of the Environment (MOE) will review and amend all approvals for WPCPs within the watershed to demonstrate compliance with the average concentration limit for phosphorus on a monthly basis. Sewage treatment plant owners and/or operators will need to complete an effluent characterization within five years of approval amendments and report back to MOE within six months of completion. Modifications to the permitted annual phosphorus loadings for WPCPs on in the Lake Simcoe basin have been made through an interim regulation, Ontario Regulation 60/08, under the *Ontario Water Resources Act*.

Staff continues to support the philosophy that stronger regulatory controls should be placed on other larger sources of phosphorus in the Lake Simcoe basin. Figure 1 illustrates that sewage treatment plants represent approximately 7% of phosphorus loadings to Lake Simcoe with inflowing rivers and atmospheric deposition combining to contribute approximately 71% of the phosphorus. From the beginning of discussions on this Plan, Regional staff has advocated that the reduction of phosphorus to the Lake must be aggressively pursued through a variety of means, not just more stringent controls on WPCPs, which account for very limited inputs at extremely high costs. Not only does the current framework fail to achieve this, it severely limits the ability of communities serviced by Lake Simcoe in York Region to meet their approved and planned growth anticipated by Places to Grow – The Growth Plan for the Greater Golden Horseshoe.

**Figure 1**  
**Lake Simcoe Phosphorus Sources**  
(Source: MOE Backgrounder)



### **Interim Regulation on phosphorus limits for sewage treatment plants extended to March 31, 2010**

The initial Interim Regulation (Ontario Regulation 60/08) was set to expire on March 31, 2009. This regulation was amended to extend the expiration date to March 31, 2010. There were no other changes in the amendment to the Interim Regulation for annual phosphorus loading limits for York Region's affected wastewater treatment systems (Holland Landing, Keswick, Mount Albert, Schomberg and Sutton). Under the Interim Regulation, reporting on the annual phosphorus loading for each WPCP was required and submitted prior to June 30th, 2009 for the period January 1, 2008 to December 31, 2008 for each facility.

Under this Interim Regulation, a phosphorus limit is separately established for each WPCP, which prevents reassignment of phosphorus limits between WPCPs should plants be decommissioned.

Regional staff continues to support a jurisdictional phosphorus loading limit for York Region facilities to satisfy servicing needs up to the year 2031. While short-term concerns regarding planning approvals or system servicing capacity (until March 31, 2010) are not foreseen with meeting phosphorus limits under the Interim Regulation, the

extension does pose an issue with respect to providing certainty for future approved and planned development. A jurisdictional limit would allow the Region operational flexibility, while still realizing the intent of the principles behind the Lake Simcoe Protection Plan.

**Despite first-class performance of York Region WPCPs, and continued commitment to protect Lake Simcoe, York Region's facilities continue to be targeted**

Through close partnerships with local municipalities, the Lake Simcoe Region Conservation Authority (LSRCA), and by working with Provincial and Federal governments, York Region has consistently demonstrated a commitment to protecting Lake Simcoe by:

- Committing to utilizing “drinking water quality” membrane treatment technology at the Region’s Keswick Water Pollution Control Plant (WPCP) in addition to the use of best available technology at the most recent expansions of the remaining York Region WPCPs in the Lake Simcoe watershed;
- Continuously operating our WPCPs at or beyond compliance to ensure enhanced protection of the Lake;
- Developing necessary background and scientific information through the Lake Simcoe Environmental Management Study (LSEMS); and
- Submitting a funding request to the Lake Simcoe Clean-Up Fund to develop a Regional Phosphorus Management Strategy to evaluate and address the cumulative impacts of phosphorus loadings from within York Region boundaries.

Information on phosphorus loadings from municipal sewage treatment plants as reported to the MOE was obtained through *Freedom of Information and Protection of Privacy Act* requests. York Region’s phosphorus concentration for the years 2005-2007 averaged 0.08 mg/L. Durham Region also had an average concentration of 0.08 mg/L while Simcoe County averaged 0.14 mg/L. Table 1 shows total phosphorus loadings to Lake Simcoe by municipality for the years 2004 to 2007 calculated using actual phosphorus concentrations and flows reported to the MOE. York Region has reduced phosphorus loadings by over 100 kg from 2004 levels.

Infrastructure improvements through minor and major capital projects as well as improvements to the existing ISO 14001 Environmental Management System have aided in significantly reducing phosphorus concentrations and improving the overall quality of effluent discharged into Lake Simcoe. York Region has demonstrated a pattern of continual improvement with effluent phosphorus concentrations which cannot be said for all contributors in the Lake Simcoe watershed.

**Table 1**  
Total Phosphorus Loadings (kg/yr) to Lake Simcoe by Municipality

| <b>Municipality</b>        | <b>2004</b> | <b>2005</b> | <b>2006</b> | <b>2007</b> |
|----------------------------|-------------|-------------|-------------|-------------|
| York Region <sup>1</sup>   | 615         | 487         | 593         | 503         |
| Durham Region <sup>2</sup> | 332         | 269         | 248         | 238         |
| Simcoe County <sup>3</sup> | 4,292       | 5,809       | 5,367       | 4,079       |

\*Based on actual effluent concentrations and flows reported to MOE

<sup>1</sup>York Region includes Holland Landing Lagoons, Keswick WWTP, Mount Albert WWTP, Schomberg Lagoons, Sutton WWTP

<sup>2</sup>Durham Region includes Beaverton River #1 WPCP, Beaverton River #2 WPCP, Lake Simcoe WPCP, Uxbridge Brook WPCP

<sup>3</sup>Simcoe County includes Barrie WPCP, Bradford WPCP, Innisfil WPCP, Lagoon City STP, Orillia WWTC

In 2007, York Region's total permitted phosphorus loading as per individual Certificate of Approvals (CofAs) from all five sewage treatment plants was 1,895 kg. Permitted phosphorus loadings are calculated using average day flows as per maximum plant capacity and permitted concentration limits in the plant CofA. Loading shown in Table 1 are relative to actual plant flow and therefore below permitted loadings.

With existing technologies in place at the Region's WPCPs in the watershed, the Region has approached a level of diminishing returns on investment in the area of sewage treatment technology for the specific removal of phosphorus. At this point, very little can be done at York Region WPCPs to contribute significantly to the objectives of phosphorus reduction within the Plan.

### **Further Phosphorus Reductions contradict Guiding Principles in the Plan**

Principles to guide efforts – both individual and collective – to protect and restore the ecological health of the Lake Simcoe watershed are provided in the Plan. The cost-effectiveness principle states that:

*The Plan must be implemented in a cost-effective manner which delivers the maximum benefits to the watershed, while recognizing the fiscal realities of those who may share in the implementation.*

The MOE has applied new phosphorus limits for effluent criteria on several recent projects including those at Keswick WPCP, Sutton WPCP, and Kleinburg WPCP. A financial analysis of costs to meet new criteria has been conducted and is summarized below in Table 2. It is important to note that the costs in Table 2 are quite conservative since they include Capital costs only. Annual operating costs for premium wastewater treatment systems are significantly more than conventional treatment systems.

While the Kleinburg WPCP is not within the Lake Simcoe watershed and therefore not subject to the Plan, the MOE has implemented stringent phosphorus limits on this facility due to its discharge into a Policy 2 receiver. The Region was required to reduce phosphorus loadings by 50 kg at Kleinburg WPCP. The capital cost to meet the new phosphorus limits is estimated to be \$200,000 per kilogram of phosphorus reduced.

**Table 2**  
Costs to meet new phosphorus criteria

| <b>Project</b> | <b>Phosphorus Reduction<sup>1</sup><br/>(kg/year)</b> | <b>Cost<br/>(\$/kg)</b> |
|----------------|-------------------------------------------------------|-------------------------|
| Schomberg WPCP | 150                                                   | \$17,000                |
| Keswick WPCP   | 446                                                   | \$45,000                |
| Sutton WPCP    | 43 (proposed)                                         | \$233,000               |

<sup>1</sup>Phosphorus reduction figures derived from difference between permitted loadings based on original CofAs and new CofAs or proposed limits through EAs; calculations in Attachment

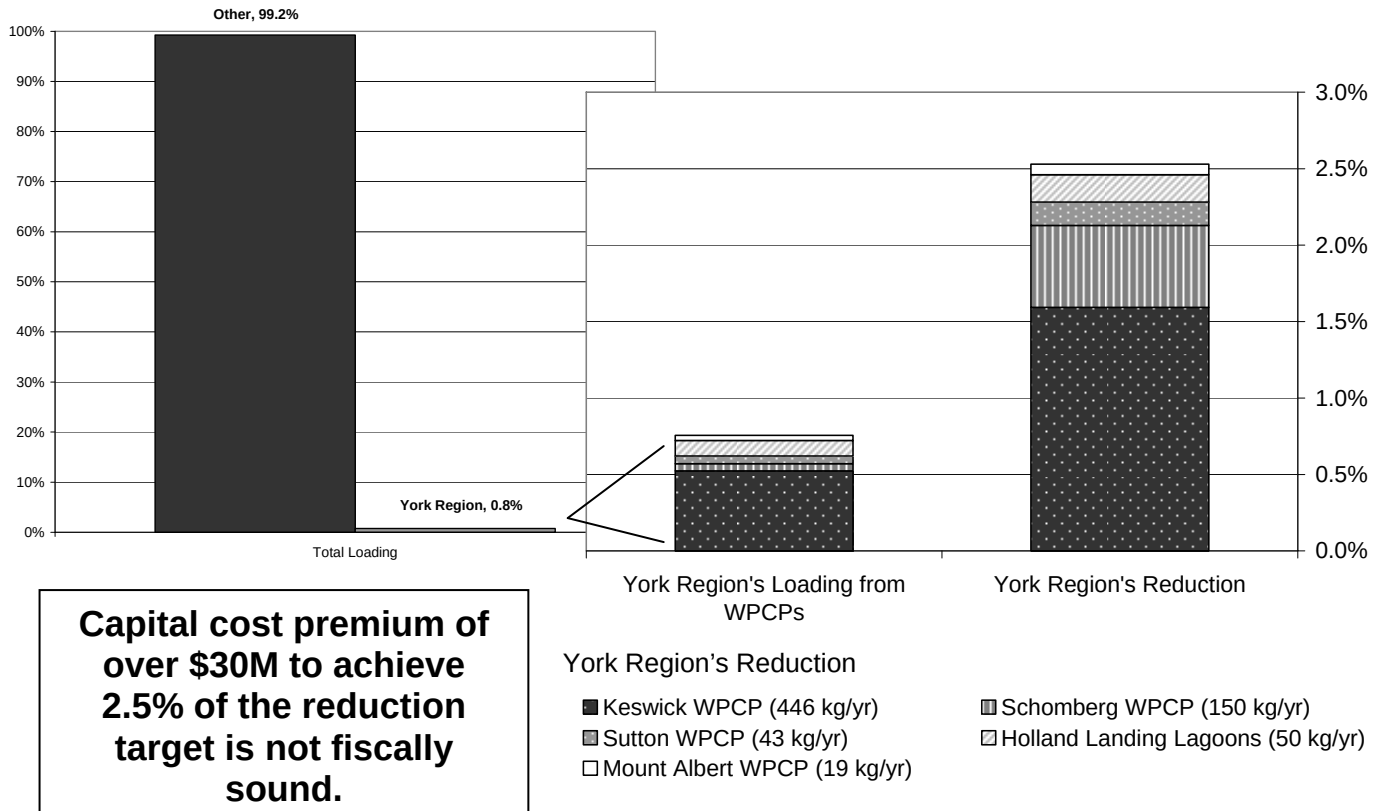
It is clearly demonstrated that capital costs required to meet recently imposed phosphorus limits are not fiscally sound. In addition to premiums associated with capital construction costs, it is estimated that increased operations and maintenance costs (including energy) are equal to or greater than the Capital Cost premium and would be applied over the service life of these facilities. These costs are disproportional to environmental benefits and contradict the Plan's guiding principle on cost-effectiveness.

### **Funding required to reduce phosphorus loadings from sewage treatment plants could be more sustainably directed towards larger sources**

Funds needed to meet recently imposed phosphorus limits could be better utilized towards targeting high sources of phosphorus, such as inflowing rivers and atmospheric deposition (Figure 1). The Region had little choice but to agree to premiums paid for the current Keswick expansion due to the urgency of additional capacity requirements. Staff continue to advocate that costs to reduce phosphorus at York Region's WPCPs, particularly with the current Sutton Expansion EA, are disproportional to environmental benefits and may be directed toward initiatives with greater benefits.

The Plan indicated that the average phosphorus loading, over the last five reporting years (2002-2007), to Lake Simcoe was 72 tonnes per year, with an annual range of 67 to 77 tonnes per year. On average over the years 2003-2007, York Region's WPCPs contributed 0.544 tonne per year, totalling 0.8% of all loadings into Lake Simcoe (Figure 3).

**Figure 3**  
York Region's contribution to Phosphorus Loading  
and Reduction to Lake Simcoe



\*Calculations in Attachment 1

Reduction at Keswick WPCP and Schomberg WPCP is difference between original CofA and final CofA  
Reduction at Sutton WPCP difference between original CofA and proposed limits  
Reduction at Holland Landing Lagoons and Mount Albert WPCP is difference between original CofA and Interim Regulation (no future expansions planned for these sites)

York Region's reduction in phosphorus loadings of 708 kg/yr as outlined in Figure 3 will contribute to 2.5% of the Plan's reduction target of 28 tonnes per year, which is disproportionate to the Region's inputs. In addition, estimated capital costs of over \$30 million to achieve 2.5% of the reduction target is not fiscally sound.

Regional staff continue to strongly support and emphasize the viability of water quality trading to reduce phosphorus loadings throughout the Lake Simcoe watershed. The practice of water quality trading would focus reduction efforts and finances towards the largest sources of phosphorus and have a greater impact on lowering phosphorus levels to protect Lake Simcoe, at a more reasonable cost than capital investment.



### **Stringent phosphorus limits have affected the Region's ability to provide certainty of future servicing**

There will be more people living in the Lake Simcoe watershed by 2031 and proper servicing is a necessity that may be compromised. In the absence of a jurisdictional phosphorus loading limit, ultimate phosphorus loadings at individual water pollution control plants will have to increase beyond the interim limits set out in O. Reg. 60/08 to fairly account for the fact that further reductions from Regional facilities are not economically or practically feasible. Maintaining the existing limits in O. Reg. 60/08 do not realistically factor in Provincially approved growth.

Case in point is the completed Sutton Expansion Class EA; staff have deferred submitting the Environmental Study Report due to uncertainty with comments from the MOE. The current serviceable population in Sutton is approximately 4,200 persons and the current plant capacity is 7,500 persons. The approved Sutton Secondary Plan designates lands to accommodate and service a population of 13,500 persons. The plant, therefore, needs to be expanded, which will result in a total estimated annual phosphorus loading of 181 kg/yr. MOE staff, however, has communicated reluctance to comment on the Sutton WPCP Expansion EA since the total estimated annual phosphorus loading required is greater than the Interim Regulation limit of 148 kg/yr for Sutton WPCP. MOE staff has cited the need to resolve the phosphorus management plan for Lake Simcoe before a decision on the total estimated annual phosphorus loading can be provided. Further uncertainty without setting realistic and fair limits for municipal phosphorus loadings will compromise proper planning and effective servicing and the ability of the Town of Georgina and the Region to achieve Growth Plan forecasts and the objective of building complete and sustainable communities.

### **Relationship to Vision 2026**

The Lake Simcoe Protection Plan supports the strong tradition that York Region has demonstrated in support of programs that protect the health of Lake Simcoe. More specifically, in Vision 2026, Goal 2 'Enhanced Environment, Heritage and Culture – Securing A Green York Region' commits to the protection of sensitive features including Lake Simcoe. However, Vision 2026 also encourages fiscal responsibility and cost effective service delivery which is also a Guiding principle of the Lake Simcoe Protection Plan. By continuing to require WPCPs to bear the burden of phosphorus reduction, the mutual goal and principles of both the Region and the Province through the Plan cannot be realized.

## **5. FINANCIAL IMPLICATIONS**

### **Implementation of the Lake Simcoe Protection Plan is based on funding partnerships**

The Plan recognizes opportunities within existing programs, which already have committed funding and resources to support actions. Infrastructure requirements may be funded through cost-shared programs.

The Province indicates that the majority of their funding will be directed towards supporting the operational requirements of the Plan's implementation including assisting farmers and rural landowners in managing non-point source phosphorus, supporting scientific research and monitoring, and coordinating Plan implementation.

The Federal government has established the 'Lake Simcoe Clean-up Fund' to provide support for priority projects in the watershed. York Region submitted an application for the development of a York Region corporate phosphorus management strategy to sustain gains in phosphorus loading reduction. This strategy would allow the Region to focus efforts to reduce phosphorus from larger sources and form the foundation for water quality trading. The proposal included the following:

- Phosphorus source identification program through business survey and specific location sampling;
- Environmental and economic impact assessment on cumulative phosphorus loadings to water pollution control plants;
- Community influent phosphorus target setting through sample monitoring and phosphorus loading assessment;
- Public outreach and education development to strategize the best marketing tools to educate residents and industries on phosphorus reduction strategies; and,
- Sewer use by-law amendment as a result of program and strategy implementation.

This proposal was rejected as a candidate for the Lake Simcoe Clean-up Fund. Recognizing the importance of this program to sustain phosphorus reductions throughout the Region, staff is proceeding to submit this proposal for funding from the Federation of Canadian Municipalities' Green Municipal Fund.

## **6. LOCAL MUNICIPAL IMPACT**

### **Local Municipal Community Plans cannot be finalized due to lack of definitive decision**

Uncertainty with phosphorus limits at water pollution control plants, such as the Sutton WPCP, has resulted in communities at present being precluded from proceeding to plan for the accommodation of anticipated growth and complete communities in accordance with the Provincial Growth Plan.

### **Stormwater Management and Septic System requirements present some concern for affected local municipalities**

Significant requirements for stormwater management programs include:

- specific amendments to Official Plans (OP) related to reducing stormwater runoff volume and pollutant loadings from major development and existing settlement areas;
- retrofit, inspection and maintenance activities;
- achievement of “Enhanced Protection level” standards for new development; and
- the development of stormwater management master plans.

Within one year of the Plan’s effective date, regulations will be proposed for re-inspections of septic systems within 100 metres of the shoreline. New standards will be considered for septic systems with respect to reduction of pathogens and nutrients.

The Province indicates that the majority of their funding will be directed towards supporting the operational requirements of the Plan’s implementation but has not suggested a long-term, sustainable program funding formula.

## **7. CONCLUSION**

Staff continue to advocate to the MOE that more emphasis should be placed on larger contributions of phosphorus to the Lake Simcoe basin, such as atmospheric disposition and urban and rural inflow drainage. In addition to Staff’s efforts, formal notification to the Province by Regional Council is recommended to demonstrate the magnitude of this issue and the fiscal burden being placed on York Region sewage treatment plants, and ultimately tax payers and rate payers, which will have little effect on reducing phosphorous levels in Lake Simcoe.

Costs to reduce phosphorus at York Region’s WPCPs are disproportional to environmental benefits and contradict the Plan’s guiding principle on cost-effectiveness. The support of Regional Council is needed to advocate on this issue so that funds may be better directed towards more tangible impacts on improving the health of Lake Simcoe.

The amended interim regulation does not affect the annual phosphorus loading limits for the York Region WPCPs on Lake Simcoe. Staff support a jurisdictional limit for phosphorus loading, rather than an individual plant loading, for the future to allow for operational flexibility. Furthermore, results from a corporate phosphorus management strategy to sustain gains in phosphorus loading reduction will complement water quality trading efforts by identifying the best projects for maximum phosphorus reduction in York Region.

While there has been a large portfolio of programs suggested within the first 10 years of the Plan, there has been insufficient funding provided outside of partnerships. In particular, there has been little or no promise of financing to assist in the development of some of the larger initiatives related to stormwater management and septic systems, which will fall under the jurisdiction and responsibility of the area municipalities.

For more information on this report, please contact Laura McDowell, Director, Environmental Promotion and Protection Branch, Environmental Services at ext. 5077

The Senior Management Group has reviewed this report.

*(The attachment referred to in this clause is attached to this report).*

### York Region's Phosphorus Reduction and Associated Capital Costs

|                                      | ①                                                | ②                                    | ③                                | ④ = ① - ②<br>or ① - ③ | ⑤                                                                     | ⑥                                                   | ⑦ = ⑥ - ⑤                 | ⑧ = ⑦ / ④                                         |
|--------------------------------------|--------------------------------------------------|--------------------------------------|----------------------------------|-----------------------|-----------------------------------------------------------------------|-----------------------------------------------------|---------------------------|---------------------------------------------------|
| Sewage Treatment Plant               | Original CofA<br>Permitted<br>Loading<br>(kg/yr) | New CofA<br>Loading Limit<br>(kg/yr) | Interim<br>Regulation<br>(kg/yr) | Reduction<br>(kg/yr)  | Estimated<br>Capital Cost -<br>Conventional<br>Treatment <sup>5</sup> | Estimated<br>Capital Cost -<br>Premium<br>Treatment | Estimated<br>Premium Cost | Estimated<br>Capital Cost per<br>Kilogram (\$/kg) |
| Keswick WPCP                         | 1322                                             | 876                                  |                                  | 446                   | \$ 35,000,000                                                         | \$ 55,000,000 <sup>4</sup>                          | \$ 20,000,000             | \$ 45,000                                         |
| Schomberg WPCP                       | 225 <sup>1</sup>                                 | 75                                   |                                  | 150                   | \$ 14,500,000                                                         | \$ 17,000,000 <sup>4</sup>                          | \$ 2,500,000              | \$ 17,000                                         |
| Sutton WPCP                          | 224                                              | 181<br>(proposed <sup>2</sup> )      |                                  | 43                    | \$ 22,000,000                                                         | \$ 32,000,000 <sup>5</sup>                          | \$ 10,000,000             | \$ 233,000                                        |
| Holland Landing Lagoons <sup>3</sup> | 199                                              |                                      | 149                              | 50                    |                                                                       |                                                     |                           |                                                   |
| Mount Albert WPCP <sup>3</sup>       | 75                                               |                                      | 56                               | 19                    |                                                                       |                                                     |                           |                                                   |

Notes:

<sup>1</sup>Based on concentration in original Certificate of Approval and projected flows for expansion

<sup>2</sup>Based on current Expansion Environmental Assessment draft

<sup>3</sup>No expansions planned for these facilities within 2010 10-Year Capital Plan

<sup>4</sup>Tender Price

<sup>5</sup>Based on Engineering Estimates