3
OAK RIDGES MORAINE CONSERVATION PLAN
FINAL LSRCA WATERSHED PLANS

The Planning and Economic Development Committee recommends the adoption of the recommendations contained in the following report dated June 9, 2010, from the Commissioner of Planning and Development Services and the Commissioner of Environmental Services.

1. RECOMMENDATIONS

It is recommended that:

1. Regional Council endorse in principle the East Holland and West Holland, Maskinonge and Black River Sub-Watershed Plans prepared by the Lake Simcoe Region Conservation Authority as required by the Oak Ridges Moraine Conservation Plan and the Lake Simcoe Protection Plan.

2. Regional Council request the Province play a leadership role in innovative solutions, funding and resourcing implementation of watershed plans to support ongoing protection of Lake Simcoe.

3. The Regional Clerk circulate this report to local municipalities and the Ministers of Municipal Affairs and Housing, and Environment for information.

2. PURPOSE

This report provides Council with an overview of findings and recommendations of the completed Sub-Watershed Plans in the Lake Simcoe watershed and completes the requirements for watershed planning under the Oak Ridges Moraine Conservation Plan.

3. BACKGROUND

The *Oak Ridges Moraine Conservation Act, 2001* requires York Region and local municipalities bring their Official Plans and zoning bylaws (in the case of local municipalities) into conformity with the Oak Ridges Moraine Conservation Plan (ORMCP) by April 22, 2003 and October 22, 2003 respectively. This conformity date was achieved by the Region and has been achieved by the majority of local municipalities within the Region.

Both the Lake Simcoe Region Conservation Authority and the Toronto and Region Conservation Authority have been active in developing and maintaining watershed plans

in York Region for many years. With the introduction of the ORMCP, Regional staff and staff of the conservation authorities together developed a comprehensive five-year work plan, from 2003 to 2007, to fulfill the ORMCP watershed planning requirements.

4. ANALYSIS AND OPTIONS

The Oak Ridges Moraine Conservation Plan required that watershed plans be prepared and completed by April 2007

Plans have already been completed and endorsed by Council for the Toronto and Region Conservation Authority watersheds

Sections 24 and 25 of the ORMCP require that the Region prepare watershed plans as well as water conservation and water budgets.

Section 24(5) in particular indicated that after April 23, 2007, *major development* (on the Oak Ridges Moraine) was prohibited unless watershed plans were completed, and that the development conformed to the watershed plans. Further, the ORMCP provisions required that a water budget and conservation plan be completed.

Watershed plans in the TRCA jurisdiction were completed and endorsed in principle by Council as follows:

- The Duffins-Carruthers Watershed Plan - Completed in 2003, endorsement in principle by Regional Council in September 2005.
- Rouge and Humber Watershed Plans – Completed in the spring of 2008, endorsement in principle by Regional Council in September 2008.
- Don Watershed Plan - Preliminary report prepared in 2006 for analysis for the ORMCP requirements. An ORMCP conformity assessment was completed in April 2007. The Don Watershed Plan update was completed in September 2009.

Watershed Implementation Guides have also been prepared by the TRCA in an effort to bridge the gap between technical information contained in the watershed reports, and development of policies needed to act on this information. Further work is ongoing to refine these Guides in partnership with municipalities and other stakeholders.

Watershed Plans for the Lake Simcoe Region Conservation Authority watersheds are now complete

Finalization of the watershed plans for the Lake Simcoe subwatersheds was delayed by a number of competing Provincial initiatives not originally contemplated when the ORMCP was released. These initiatives include:

- *Lake Simcoe Protection Act*

- Lake Simcoe Protection Plan
- Lake Simcoe Basin Wide Report
- Assimilative Capacity study for Lake Simcoe
- Federal and Provincial funding through the Lake Simcoe Clean Up Fund
- Lake Simcoe Clean Up Fund and associated projects
- Research on innovative technologies to reduce phosphorus loading to the Lake (e.g. Phoslock™)

The delays have allowed the LSRCA to include the results of these initiatives in the finalized watershed plans.

Watershed Plans in the four York Region Lake Simcoe watersheds in the ORMCP area have now been completed and meet the requirements to finalize conformity with the ORMCP. The executive summary of each sub-watershed report as well as the recommendation is appended as *Attachments 2 to 7.*

All of the watershed plans acknowledge the Provincial Growth Plan requirements for growth in the watershed and identify that critical municipal infrastructure, including roads, sewer and water supply systems must be built, maintained and expanded to service the anticipated population and employment growth.

The following sections provide an overview of each sub-watershed report.

East Holland subwatershed is showing impacts of urbanization and to a lesser degree, agriculture

The East Holland is showing effects of urbanization, and to some extent, agriculture which include:

- Impacts to water quality (phosphorus, total suspended solids, chlorides)
- Reduced baseflow (impervious surfaces)
- Some site level fluvial geomorphology issues
- Impacts to aquatic community in some areas (online ponds, habitat alteration)
- Low levels of forest cover and interior forest

West Holland subwatershed primarily impacted by agricultural activity

The West Holland is primarily experiencing issues from agriculture along with some urban impacts including:

- High levels of phosphorus (Holland Marsh, other agricultural lands, urban areas)
- Low levels of riparian buffer
- Water quantity/hydrology issues (Holland Marsh, other agricultural areas – polder systems, water takings, tile drainage)
- Expanding urban areas (Bradford)
- Fish and benthic community issues outside of headwater areas

- Impacts from 400 series highways (chloride, total suspended solids)

Maskinonge experiencing impacts from agriculture and sod farming and some urban impacts

The Maskinonge is experiencing impacts from high levels of agriculture/sod farming along with some urban impacts including:

- Naturally low water levels exacerbated by takings for sod farming/market gardens
- Water quality issues (phosphorus - fertilizer use; high levels of some pesticides in recent samples)
- Very low levels of forest cover and forest interior
- An "impaired" benthic community, with the fish community showing impacts in some areas (e.g. areas with coldwater conditions that do not support coldwater species)

Black River is the healthiest watershed however is experiencing some issues related to agriculture and urban land uses

The healthiest of 4 subwatersheds has a healthy fish community and high levels of natural features, however, the Black River has some issues associated with agriculture and urban land uses including:

- Significant peat farming and emerging sod farming
- Exceedence of Provincial Water Quality Objectives for phosphorus in 80% of water samples
- Uncontrolled stormwater in many urban areas
- Signs of benthic community impairment, mainly in agricultural areas

Each sub-watershed report includes two sets of recommendations: a high level set of recommendations found in the introductory chapter and throughout the plan where necessary, and a detailed set of recommendations found in the final chapter. Recommendations are meant to address stressors, gaps and limitations identified in each chapter of the subwatershed plans, most of which are already underway. These recommendations will form the basis of the implementation plan.
Draft recommendations categories are:

- Use of better management practices
- Changing the way things are done "on the ground"
- Applied research and science
- Monitoring (reporting and compliance)
- Management, rehabilitation and restoration
- Adaptive response (climate, social, political)
- Communications

Key topic areas within these categories include stormwater management, water quality, construction practices, agriculture, natural heritage, aquatic and terrestrial habitat, climate change, rehabilitation opportunities, and community and partnership outreach. Recommendations focus on protection, restoration and enhancement wherever possible, and encourage cooperative and collaborative approaches. Implementation of the recommendations are already underway through existing programs, these recommendations support the policies and objectives of the Regional Official Plan (as adopted by Council December 2009).

Implementation Guides will be prepared in collaboration with both the Region and local municipalities over the balance of the year to assist municipalities and developers in carrying out the watershed plan recommendations.

Lake Simcoe Watershed Plans also meet requirements under the Lake Simcoe Protection Plan

Under the implementation chapter of the Lake Simcoe Protection Plan, subwatershed evaluations are required within five years of the Plan. The current format of the watershed plans conform to these Lake Simcoe Protection Plan requirements. They also provide sufficient flexibility to adapt and integration new directions as the Province moves ahead in implementation of the Lake Simcoe Protection Plan.

Watershed Plans for both Conservation Authorities are implemented through the Regional Official Plan and local official plans and development control activities

Regional staff has worked in partnership with both conservation authorities to develop Regional Official Plan policies that support the directions of the watershed plans as well as the TRCA's Targeted Terrestrial Natural Heritage System Strategy (TTNHS), the LSRCA's Natural Heritage Strategy, the Lake Simcoe Environmental Management Strategy (LSEMS), and the Assimilative Capacity Study for Lake Simcoe (ACS).

Both the TTNHS and LSRCA's Natural Heritage Strategies provided key inputs to the Region's Growth Management, Sustainability Initiatives and Regional Official Plan policies. These strategies provide a significant opportunity in the whitebelt to accomplish goals of creating a linked natural heritage system, compact transit supportive liveable communities, and the necessary infrastructure systems through a balanced and flexible approach to accommodate population growth and city building as required through the Places to Grow Provincial Growth Plan.

In addition, policies to implement the Lake Simcoe Protection Plan as well as interim source water protection policies were included in the Council adopted Regional Official Plan, December 2009.

Finally, to enable translation of watershed plan recommendations into land use policy consistently across the Oak Ridges Moraine, the Conservation Authorities Moraine Coalition representing nine conservation authorities across the Moraine, and the Regional Municipalities of York, Peel, Durham and the City of Toronto prepared a guidance document titled *Watershed Planning, from Recommendations to Municipal Policies: A Guidance Document, in 2005*. The model policies deal with ground and surface water, terrestrial and aquatic natural heritage, landforms and infrastructure and are GTA specific.

Local official plans will be expected to incorporate appropriate watershed official plan policies when they are updated. As the Region is the approval authority for local plans, part of the review will be directed to ensuing that appropriate policies and strategies are in place for the watershed plans. Local municipalities were consulted on the sub-watershed plan recommendations.

Monitoring is underway in the Lake Simcoe Basin

One of the most critical components in any subwatershed planning activity is availability of data derived and collected as part of a monitoring program. Monitoring, as it relates to watershed planning, is targeted towards information required to analyze whether recommendations and/or implementation activities are effective after the completion of respective subwatershed plans.

Monitoring and subsequent analysis is important in evaluating growth management and identifying areas of concern or success in a timely manner. In essence, detailed monitoring is a key aspect of the adaptive management process. The monitoring requirements included with respect to watershed planning programs are intended to complement existing monitoring activities and fill gaps that may exist in the core LSRCA monitoring program and are typically targeted to specific aspects of each individual subwatershed.

The LSRCA currently undertakes monitoring work at sites on the Oak Ridges Moraine as part of its routine monitoring program, this includes ongoing water quality monitoring, fisheries and benthic monitoring, baseflow measurements and temperature logging. A formalized monitoring plan specific to the Moraine for the York Region subwatersheds will be developed and integrated into the Implementation Guidelines as part of the final product.

Additional watershed initiatives are ongoing, including stakeholder consultation

In addition to the watershed plans, a number of related watershed initiatives have taken place or are ongoing that have included extensive public and stakeholder consultation in partnership with both members of Regional Council and staff.

These initiatives include the TRCA's Terrestrial Natural Heritage System Strategy, the LSRCA's Natural Heritage Strategy, the Lake Simcoe Environmental Management Strategy (LSEMS), the Intergovernmental Action Plan for Barrie, Simcoe and Orillia (IGAP), and the Assimilative Capacity Study for Lake Simcoe (ACS).

More recent initiatives include the Federal Lake Simcoe Clean Up Fund, administered by Environment Canada with advisory input from the **"**Protect and Preserve the Environment of Lake Simcoe Committee" (PROPEL). The program provides financial and technical support to:

- Implement high-impact, priority projects to reduce phosphorus inputs
- Rehabilitate habitats to achieve nutrient reductions
- Restore the cold-water fishery in Lake Simcoe
- Enhance research and monitoring capacity deemed essential for the restoration of Lake Simcoe and its watershed.

In addition, both the recently appointed Lake Simcoe Protection Plan - Science Advisory Committee and the Coordinating Committee have been established under the authority of the *Lake Simcoe Protection Act, 2008.* The Lake Simcoe Science Advisory Committee will review the conditions of the watershed and provide advice to the Minister of the Environment on its health, threats and strategies to deal with threats, and any scientific research needs. At the request of the Minister of the Environment, the Science Committee will provide advice on monitoring programs, amendments to the Plan or any regulations made under the Lake Simcoe Protection Act. The Lake Simcoe Coordinating Committee will discuss the implementation of the Plan and any issues that may arise. Additionally, the Coordinating Committee can provide advice to the Minister of the Environment on issues similar to advice provided by the Scientific Committee.

The LSRCA has also produced the *Integrated Watershed Management Plan* in June of 2008 as well as the 2009 updated *Watershed Report Card: A Summary of Lake Simcoe and Watershed Ecosystem Health.* Specific examples of recommended watershed initiatives that are currently underway include:

- Lake Simcoe Basin Best Management Practices Inventory
- Natural Heritage System for the Lake Simcoe Watershed – Phase 1: Components and Policy Template
- Lake Simcoe Basin Stormwater Management and Retrofit Opportunities (2007)
- LSRCA Draft Technical Guidelines for Stormwater Management Submissions
- Phoslock^{TM} testing
- Water Reuse Concept Analysis
- Lake Simcoe Low Impact Development draft study report

Next steps include watershed plan implementation guidelines

The watershed plans emphasise the importance of managing both ground and surface water systems in a more comprehensive and sustainable way especially in new and

intensifying areas of growth, and encourage better water infiltration through green building technologies, on site storm water infiltration and treatment.

Regional staff will continue to work with the Conservation Authorities to develop implementation guidelines that support the directions of the watershed plans. In addition Lake Simcoe Conservation Authority is also working with the Province to align and integrate needs identified under the Lake Simcoe Protection Plan to build on key next steps for each of the four watersheds, which are shown in *Attachment 1*.

5. FINANCIAL IMPLICATIONS

Beginning in 2003 for a five year period, funding was allocated to the Conservation Authorities to a total of $3.79 millions for watershed planning directly required by the ORMCP. All funds have been spent and no further allocation was made for watershed plan preparation beyond 2007. Watershed implementation will be undertaken in partnership with local municipalities and within existing funds, including annual Regional allocation of conservation authority budgets.

6. LOCAL MUNICIPAL IMPACT

Local municipalities have participated in the watershed planning process through watershed plan advisory committees and during formulation of policies and recommendations. Ultimately, implementation of the objectives and principles of watershed plans will be implemented through Regional and local planning documents and development control activities. Regional staff have met with staff of the local municipalities in regard to the high level and detailed recommendations.

Local municipalities will have further opportunities for input throughout the development of the implementation plans, including participation in stakeholder workshops and sitting on subwatershed working groups that may arise through the implementation of the plan recommendations.

7. CONCLUSION

Sections 24 and 25 of the ORMCP required that the Region prepare watershed plans as well as water conservation and water budgets.

Section 24(5) in particular indicated that after April 23, 2007, *major development* was prohibited unless watershed plans were completed, that the development conformed to the watershed plans and that a water budget and conservation plan was completed.

All watershed plans in the TRCA watershed were finalized and endorsed in principle by Regional Council by September 2009.

Watershed plans in the Lake Simcoe Region Conservation Authority area were delayed by competing provincial initiatives; however, the Lake Simcoe Conservation Authority has now finalized the East Holland, West Holland, Maskinonge and Black River Sub Watershed Plans and is moving forward to develop implementation guidelines which are required under the Oak Ridges Moraine Conservation Plan (ORMCP). Regional staff will continue to work closely with both the LSRCA and area municipalities to develop this tool.

Regional staff now considers the work undertaken by the Region and the Conservation Authorities satisfies the ORMCP requirements relating to watershed planning as well as preparation of water conservation and water budgets. In addition, the watershed plans also satisfies conditions in the Lake Simcoe Protection Plan, well advanced of the requirements stipulated in the Plan.

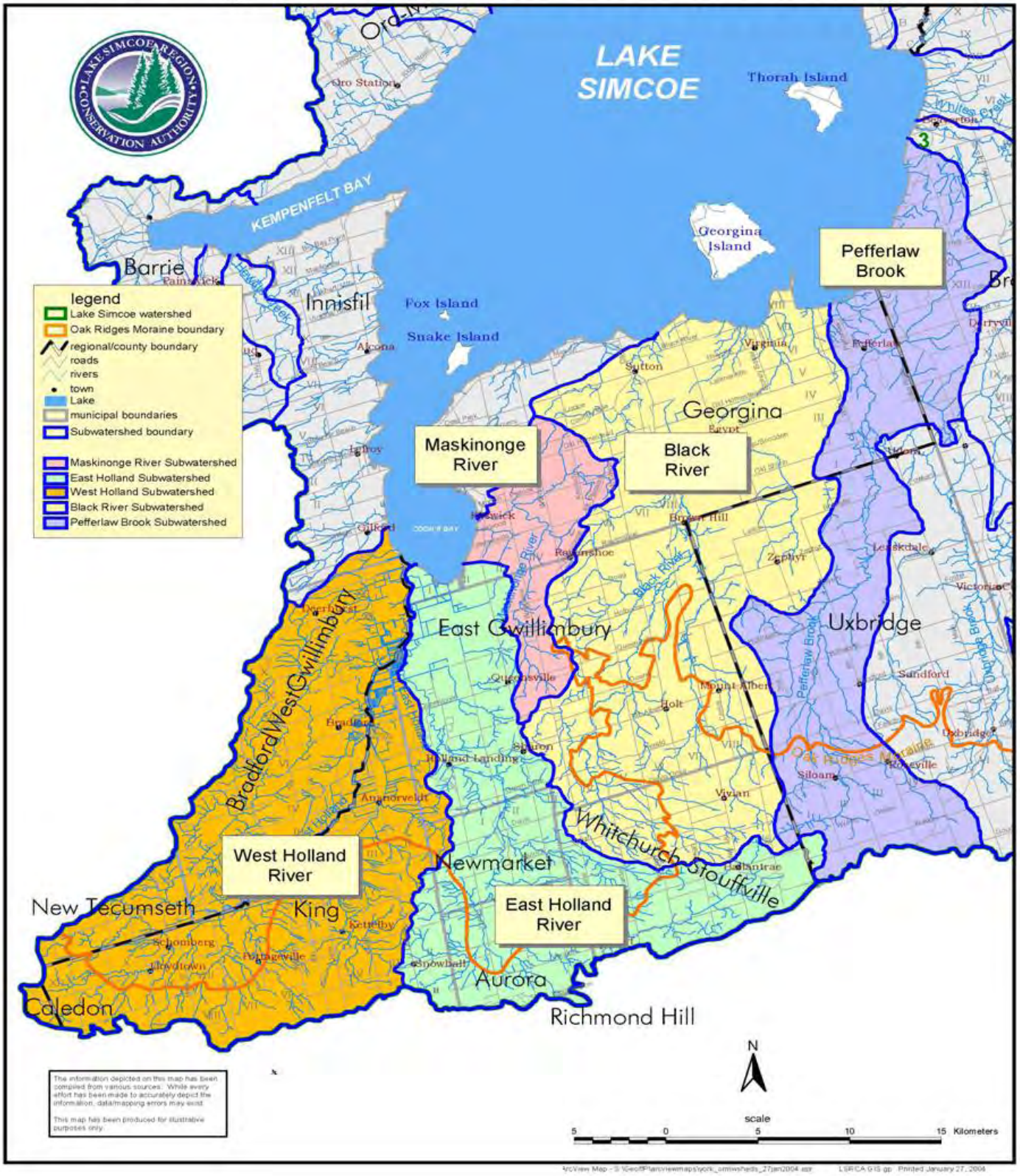
Many of the recommendations are already underway through existing programs, and in terms of York Region, support the policies and objectives of the Regional Official Plan (as adopted by Council Dec 2009). Regional staff will continue to work with the local municipalities, Conservation Authorities and the Province to ensure that Regional Official Plan policies support the directions of the watershed plans.

For more information on this report, please contact Laura Atkins-Paul, Senior Planner at (905) 830-4444, Ext. 1534 or John Waller, Director Long Range and Strategic Planning at Ext. 1508.

The Senior Management Group has reviewed this report.

(The seven attachments referred to in this clause are attached to this report.)

Oak Ridges Moraine Watersheds in York Region



Executive Summary

The East Holland River, one of the Lake Simcoe basin's most populated subwatersheds, occupies 247 km^2, from its headwaters on the Oak Ridges Moraine to the confluence with the West Holland River and the mouth at Lake Simcoe's Cook's Bay. It contains some of the most urban areas in the watershed, as well as some of the most popular recreation areas and a large area in agriculture, including two vegetable polders. Over 99% of the subwatershed lies within York Region, with a very small portion in the southeast in Durham Region. The municipalities found in the subwatershed are the Towns of Aurora, King, Newmarket, East Gwillimbury, Georgina, Whitchurch-Stouffville, and Uxbridge.

The land within the East Holland River subwatershed provides a number of benefits to the river, to Lake Simcoe, and to its residents and visitors. The 31% of subwatershed area that is occupied by natural areas absorb rain and snow melt, maintaining groundwater levels and baseflow, helping to prevent flooding and erosion, and improving water quality. These areas also provide habitat for a wide variety of species, as well as numerous nature-based recreation opportunities. In addition, the East Holland's agricultural areas provide a close-to-market supply of fresh vegetables, as well as opportunities for infiltration. The East Holland's natural features and greenspaces provide its urban residents with the connection with nature that so many of them value. In a study undertaken to estimate the value of the services provided by the subwatershed's ecosystem, it was found that it would cost upwards of $60 million to replace these natural services with man-made solutions. Given the immense intrinsic and monetary value of the subwatershed's features, the development of this subwatershed plan is an important step in ensuring that these services continue to be performed economically, while balancing the other demands on the subwatershed such as urban growth, agriculture, industrial, and recreational uses in a truly integrated fashion.

In spite of the benefits provided by its natural areas, the East Holland River is under considerable stress from anthropogenic land uses. According to the 2008 Watershed Report Card, the East Holland River was second only to the Barrie Creeks subwatershed in terms of impervious surfaces in the Lake Simcoe watershed. There are numerous impacts from the high level of impervious surfaces in the East Holland's urban areas, including decreased infiltration of rain and melt water, which can result in low groundwater levels and reduced baseflow in area watercourses; impacts to water quality as contaminants are carried with stormwater runoff; instability and erosion of streambanks; effects on stream habitat such as sediment deposition or disruption of natural riffle-pool sequences, resulting in changes to the composition of aquatic communities; and impacts on biodiversity. These impacts can be particularly detrimental in those areas of the subwatershed that lack stormwater controls. In the East Holland's agricultural areas, common stressors on subwatershed health include the removal of streambank vegetation, the input of nutrient laden sediment eroding from fields and unstable banks, the use of large volumes of water for irrigation, and the conveyance of stormwater directly to watercourses via tile drainage. In addition, there are issues associated with other activities in the subwatershed such as recreation and industrial uses, including water consumption, the introduction of invasive species, and the input of nutrients and other contaminants into area watercourses. The cumulative effects of these activities have caused the East Holland to become one of the most stressed subwatersheds in the Lake Simcoe watershed, and one of the largest contributors to Lake Simcoe's phosphorus loads.

There have been numerous successes in improving the conditions in the East Holland River subwatershed. Recent initiatives such as the completion of streambank erosion control projects, tree plantings and stormwater retrofits will help to improve conditions with respect to bank stability, water quality and quantity, and aquatic and terrestrial natural heritage in the subwatershed. Specific examples include tree plantings and a stormwater retrofit at Bayview

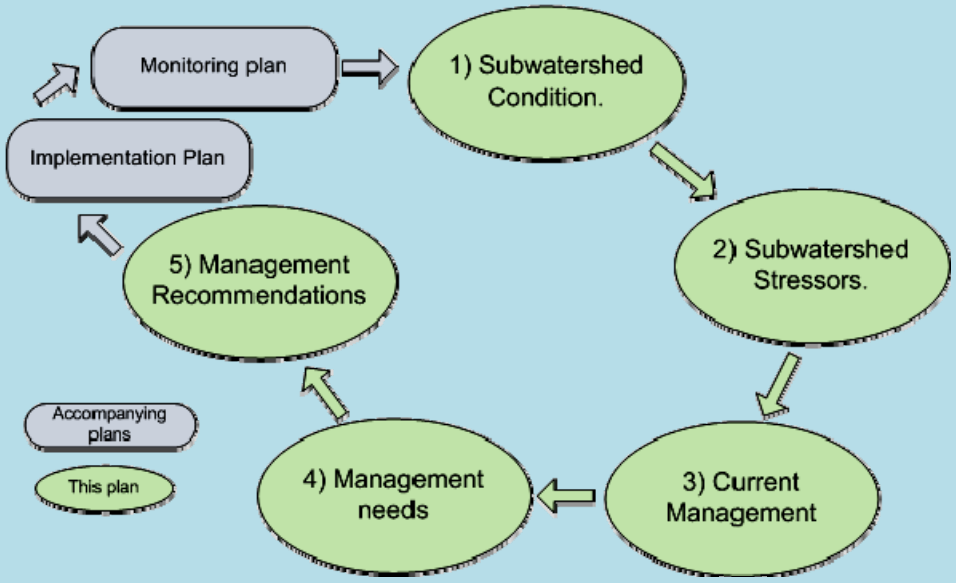
Park, restoration and naturalization of Eastern Creek at the Southlake Regional Health Centre, the use of innovative phosphorus removal techniques at the Cane Parkway stormwater pond, and bank stabilization works downstream of Fairy Lake.

The East Holland subwatershed will experience a great deal of growth in the coming years. The Provincial Places to Grow Plan identifies that population and employment growth will occur in the Lake Simcoe watershed. Provincial growth forecasts have been allocated to all municipalities in the Region. According to York Region's Official Plan (draft, 2009) Aurora and Newmarket will continue to grow, reaching populations of 70,000 and 97,000, respectively, while the population of East Gwillimbury will increase four-fold to 88,000.

Along with the housing that will have to be built to accommodate these new subwatershed residents, new employment lands, shopping centres, and schools, will also be required to meet their needs. In addition to the above, in order to service these increases in population and employment, critical municipal infrastructure projects, including roads, municipal sewers and treatment facilities and water supply systems will also need to be built, maintained and expanded in the subwatershed

This will result in increased levels of impervious surfaces and its associated impacts, combined with a reduction in the natural features that help to mitigate these impacts. These changes, as well as the unknown impacts that climate change may bring to the subwatershed, will have a significant effect on the health of the subwatershed if measures are not taken to mitigate them.

To build on the successes of the projects initiated so far, and to mitigate impacts of the changes that are to come, a comprehensive, integrated subwatershed plan is needed for the East Holland River subwatershed. The plan that follows is intended to provide the blueprint for the conservation authority, the municipalities, and subwatershed stakeholders to move forward and continue the important work that has been completed in order to mitigate the impacts of land use changes and improve conditions in the subwatershed. It includes chapters dedicated to each of five subwatershed parameters, these being water quality, water quantity, aquatic habitat, fluvial geomorphology and terrestrial natural heritage, although it is acknowledged that all of these parameters are related and certainly interact with each other. Each chapter is loosely structured around a state-pressure- response framework, in that each chapter firstly describes the current condition (state), secondly describes the stressors likely leading to the current condition(pressure), and finally recommends management responses in the context of the current management framework (response) (See text box below).



Plan section:

1) ***Subwatershed Condition:*** Describes and analyzes the current state or condition of the subwatershed feature based on the best available data and information. This assessment is based on monitoring data, model output, surveys etc.
2) ***Subwatershed Stressors:*** Uses the best available information to identify and quantify the factors affecting the current condition of the watershed. For example, describing phosphorus loads from different land use activities.
3) ***Current Management:*** Establishes the relationship of the subwatershed plan to other legislation and planning documents;
4) ***Management needs:*** Identifies areas within the current management framework where improvements within this plan may be able to have greatest impact i.e. gaps or opportunities for the subwatershed plan to act upon.
5) ***Management recommendations:*** outlines resource management goals and objectives; as well as options for protection, rehabilitation, and enhancement of conditions in the subwatershed.

The management responses (high level recommendations) fall into eight broad categories, these being:

A. Planning and Policy
B. Use of Better Management Practices
C. Changing the Way Things Are Done 'On the Ground'
D. Applied Research and Science
E. Monitoring (Surveillance, Compliance, and Reporting)
F. Management, Rehabilitation, and Restoration
G. Adaptive Response (Climate, Social, Political)
H. Communications

From these recommendations fall a number of detailed recommendations, the implementation of which will help to meet the plan's goals and objectives. These detailed recommendations will form the implementation plan, a document which will assign responsibilities, develop timelines, estimate costs, and set priorities for undertaking the actions that will need to be taken in the East Holland subwatershed. Input from the subwatershed municipalities, conservation authority staff, stakeholders and members of the public will be incorporated through the process of developing the implementation plan. Undertaking the recommended actions of is plan is a huge undertaking with respect to both the funding and human resources that will be needed, and will require assistance from all of these subwatershed partners.

Undertaking the actions outlined in the implementation plan will help to protect the existing natural resources, facilitate informed planning decisions, and improve the efficiency of the development review process. An over-arching concept to keep in mind throughout the subwatershed planning process is that it is far more beneficial, both financially and ecologically, to protect resources from degradation than to rehabilitate them once they have been damaged. These plans support this concept, and provide alternatives for instances where it may not be possible to maintain the East Holland's resources in their natural state.

The implementation plan will identify actions to be undertaken in both the short and the long term. However, the subwatershed plan will be reviewed on a regular basis as part of the adaptive management framework to ensure the effectiveness of the actions being undertaken. Depending on the state of the subwatershed the subwatershed and implementation plan may be updated at that point in order to incorporate the most up to date information on the subwatershed state and to incorporate any new tools and practices that may be used. By undertaking these regular evaluations and updates, the partners can ensure that all of the necessary steps are being taken in order to achieve the goal of a healthy East Holland River subwatershed.

Executive Summary

The West Holland River occupies 354 km^2 of lands immediately to the southwest of the tip of Lake Simcoe's Cook's Bay. Originating on the Oak Ridges Moraine, the headwaters of the subwatershed flow through mainly forested and agricultural areas before entering the Holland Marsh. The system then flows past the Town of Bradford, and then past forested and agricultural areas before discharging into the lake. The subwatershed supports some of Ontario's most productive vegetable farming operations, which are contained in the Holland Marsh polder, a former wetland area that has been drained, with water levels that are carefully controlled by a series of canals and pumping stations. The subwatershed jurisdiction is shared by York Region and Simcoe County. The municipalities that fall within its boundaries are King (including the communities of Schomberg, Lloydtown, Kettleby, and Snowball), Caledon, New Tecumseth, Bradford West Gwillimbury, and Newmarket.

The land within the West Holland River subwatershed provides a number of benefits to the river, to Lake Simcoe, and to its residents and visitors. The 31% of subwatershed area that is occupied by natural areas absorb rain and snow melt, maintaining groundwater levels and baseflow, helping to prevent flooding and erosion, and improving water quality. These areas also provide habitat for a wide variety of species, as well as numerous nature-based recreation opportunities. In addition, the West Holland's agricultural areas, which occupy 57% of the subwatershed, provide a close-to-market supply of fresh vegetables, as well as opportunities for infiltration. The West Holland's natural features and greenspaces provide its urban residents with the connection with nature that so many of them value. In a study undertaken to estimate the value of the services provided by the subwatershed's ecosystem, it was found that it would cost over $90 million to replace these natural services with man-made solutions. Given the immense intrinsic and monetary value of the subwatershed's features, the development of this subwatershed plan is an important step in ensuring that these services continue to be performed economically, while balancing the other demands on the subwatershed such as urban growth, agriculture, industrial, and recreational uses in a truly integrated fashion.

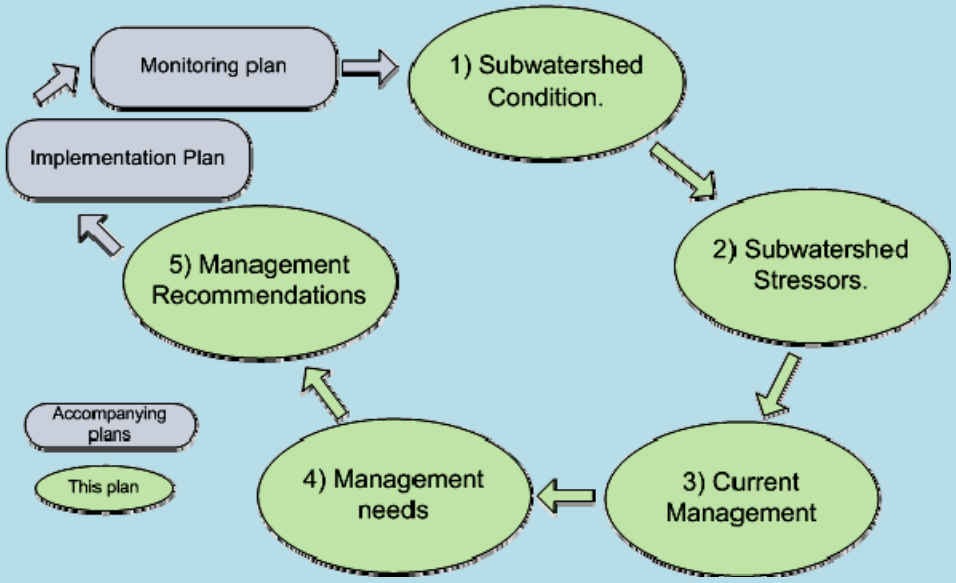
In spite of the benefits provided by its natural areas, the West Holland River is showing signs of stress from anthropogenic land uses. For example, in both the 2008 Watershed Report Card and 2009 Report Card Update, the West Holland River received the lowest grade for phosphorus concentration in the Lake Simcoe watershed, of those systems where monitoring occurs. Levels of forest cover, interior habitat and riparian buffers are also lower than what would be expected in a healthy system, and the fish and benthic invertebrate communities are also showing signs of stress. Much of this state can be attributed to the very large extent of agricultural land use in the subwatershed, as well as several urban areas located throughout the system. Impacts from the agricultural areas include the removal of riparian vegetation; the input of sediment-laden sediment which impacts both water quality and the habitat of fish and benthic invertebrates; the use of large volumes of water for irrigation, or changes the changes to the hydrology of the system by the artificially maintained polder system; channelization; and the rapid conveyance of stormwater directly to area watercourses by tile drainage. In the West Holland's urban areas, impacts from the high level of impervious surfaces include decreased infiltration of rain and melt water, which can result in low groundwater levels and reduced baseflow in area watercourses; impacts to water quality as contaminants are carried with stormwater runoff; instability and erosion of streambanks; effects on stream habitat such as sediment deposition or disruption of natural riffle-pool sequences, resulting in changes to the composition of aquatic communities; and impacts on biodiversity. These impacts can be particularly detrimental in those areas of the subwatershed that lack stormwater controls. In addition, there are issues associated with other activities in the subwatershed such as recreation and industrial uses, including water consumption, the introduction of invasive

species, and the input of nutrients and other contaminants into area watercourses. The cumulative effects of these activities have caused the West Holland to become one of the most stressed subwatersheds in the Lake Simcoe watershed, and one of the largest contributors to Lake Simcoe's phosphorus loads.

There have been numerous successes in improving the conditions in the West Holland River subwatershed. Initiatives such as the completion of streambank erosion control projects, tree plantings, establishment of riparian vegetation, and other BMPs will help to improve conditions with respect to bank stability, water quality and quantity, and aquatic and terrestrial natural heritage in the subwatershed.

The West Holland subwatershed is scheduled to experience some growth in the coming years. The Provincial Places to Grow Plan identifies that population and employment growth will occur in the Lake Simcoe watershed. Provincial growth forecasts have been allocated to all municipalities in York Region, as well as to a number of municipalities in Simcoe County. According to the Town of Bradford West Gwillimbury Official Plan (2002 consolidation) the population is expected to increased from 24,000 residents (2006 census) to close to 48,000 by 2026. The population of King Township is also expected to grow by approximately 15,000 residents (York Region draft OP, 2009). Along with the housing that will have to be built to accommodate these new subwatershed residents, new employment lands, shopping centres, and schools will also be required to meet their needs. In addition to the above, in order to service these increases in population and employment, critical municipal infrastructure projects, including roads, municipal sewers and treatment facilities and water supply systems will also need to be built, maintained, and expanded in the subwatershed. This will result in increased levels of impervious surfaces and its associated impacts, combined with a reduction in the natural features that help to mitigate these impacts. These changes, as well as the unknown impacts that climate change may bring to the subwatershed, will have a significant effect on the health of the subwatershed if measures are not taken to mitigate them.

To build on the successes of the projects initiated so far, and to mitigate impacts of the changes that are to come, a comprehensive, integrated subwatershed plan is needed for the West Holland River subwatershed. The plan that follows is intended to provide the blueprint for the conservation authority, the municipalities, and subwatershed stakeholders to move forward and continue the important work that has been completed in order to mitigate the impacts of land use changes and improve conditions in the subwatershed. It includes chapters dedicated to each of five subwatershed parameters, these being water quality, water quantity, aquatic habitat, fluvial geomorphology and terrestrial natural heritage, although it is acknowledged that all of these parameters are related and certainly interact with each other. Each chapter is loosely structured around a state-pressure- response framework, in that each chapter firstly describes the current condition (state), secondly describes the stressors likely leading to the current condition(pressure), and finally recommends management responses in the context of the current management framework (response) (See text box below).



Plan section:

1) ***Subwatershed Condition:*** Describes and analyzes the current state or condition of the subwatershed feature based on the best available data and information. This assessment is based on monitoring data, model output, surveys etc.
2) ***Subwatershed Stressors:*** Uses the best available information to identify and quantify the factors affecting the current condition of the watershed. For example, describing phosphorus loads from different land use activities.
3) ***Current Management:*** Establishes the relationship of the subwatershed plan to other legislation and planning documents;
4) ***Management needs:*** Identifies areas within the current management framework where improvements within this plan may be able to have greatest impact i.e. gaps or opportunities for the subwatershed plan to act upon.
5) ***Management recommendations:*** outlines resource management goals and objectives; as well as options for protection, rehabilitation, and enhancement of conditions in the subwatershed.

The management responses (high level recommendations) fall into eight broad categories, these being:

A. Planning and Policy
B. Use of Better Management Practices
C. Changing the Way Things Are Done 'On the Ground'
D. Applied Research and Science
E. Monitoring (Surveillance, Compliance, and Reporting)
F. Management, Rehabilitation, and Restoration
G. Adaptive Response (Climate, Social, Political)
H. Communications

From these recommendations fall a number of detailed recommendations, the implementation of which will help to meet the plan's goals and objectives. These detailed recommendations will form the implementation plan, a document which will assign responsibilities, develop timelines, estimate costs, and set priorities for undertaking the actions that will need to be taken in the West Holland subwatershed. Input from the subwatershed municipalities, conservation authority staff, stakeholders and members of the public will be incorporated through the process of developing the implementation plan. Undertaking the recommended actions of is plan is a huge undertaking with respect to both the funding and human resources that will be needed, and will require assistance from all of these subwatershed partners.

Undertaking the actions outlined in the implementation plan will help to protect the existing natural resources, facilitate informed planning decisions, and improve the efficiency of the development review process. An over-arching concept to keep in mind throughout the subwatershed planning process is that it is far more beneficial, both financially and ecologically, to protect resources from degradation than to rehabilitate them once they have been damaged. These plans support this concept, and provide alternatives for instances where it may not be possible to maintain the West Holland's resources in their natural state.

The implementation plan will identify actions to be undertaken in both the short and the long term. However, the subwatershed plan will be reviewed on a regular basis as part of the adaptive management framework to ensure the effectiveness of the actions being undertaken. Depending on the state of the subwatershed the subwatershed and implementation plan may be updated at that point in order to incorporate the most up to date information on the subwatershed state and to incorporate any new tools and practices that may be used. By undertaking these regular evaluations and updates, the partners can ensure that all of the necessary steps are being taken in order to achieve the goal of a healthy West Holland River subwatershed.

Executive Summary

The Maskinonge River occupies 63.5 km^2 of lands to the east of the tip of Lake Simcoe's Cook's Bay. There are three main branches to the subwatershed, with the southern branch extending past the community of Queensville, and a small portion in the southeast of the subwatershed (2%) falling on the Oak Ridges Moraine. The majority of the subwatershed flows through mainly agricultural areas with some pockets of wetland and forest, before reaching the community of Keswick and its outlet into Lake Simcoe. The subwatershed falls entirely within York Region, and includes portions of the municipalities of East Gwillimbury and Georgina.

The land within the Maskinonge River subwatershed provides a number of benefits to the river, to Lake Simcoe, and to its residents and visitors. Although they occupy a relatively low percentage of the subwatershed area (21%), the Maskinonge's natural areas help to absorb rain and snow melt, aiding in preventing flooding and erosion, as well as helping to improve water quality. These areas also provide habitat for a wide variety of plant and animal species. The river also supports recreation opportunities, such as boating, snowmobiling, and fishing. In addition, some of the Maskinonge's agricultural areas, which occupy 70% of the subwatershed, provide a close-to-market supply of fresh vegetables, as well as opportunities for infiltration. In a study undertaken to estimate the value of the services provided by the subwatershed's ecosystem, it was found that it would cost over $12.5 million to replace these natural services with man-made solutions. Given the intrinsic and monetary value of the subwatershed's features, the development of this subwatershed plan is an important step in ensuring that these services continue to be performed economically, while balancing the other demands on the subwatershed such as urban growth, agriculture, industrial, and recreational uses in a truly integrated fashion.

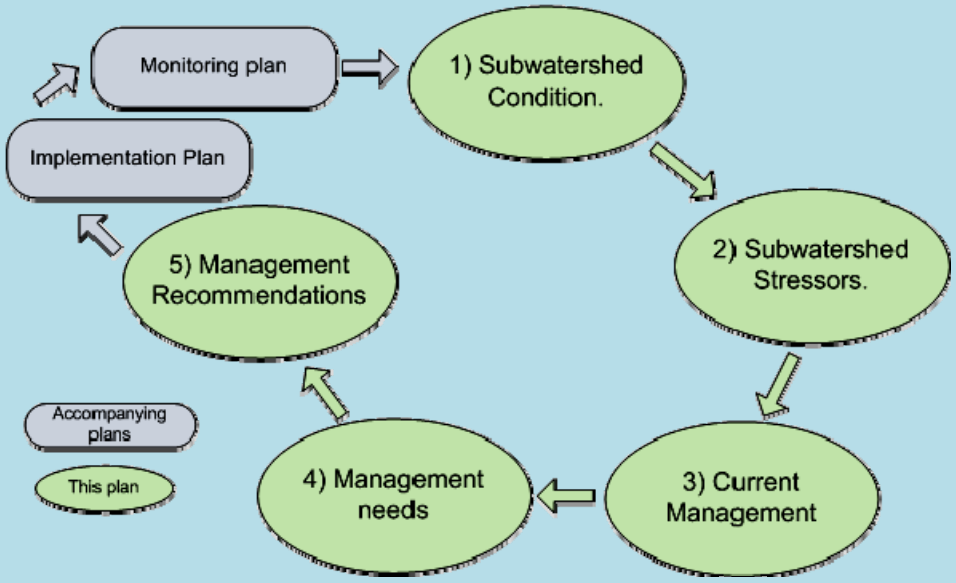
In spite of the benefits provided by its natural areas, the Maskinonge River is showing signs of stress from anthropogenic land uses. For example, in both the 2008 Watershed Report Card, the Maskinonge subwatershed received the lowest grades in the Lake Simcoe basin for both forest cover and forest interior, and in both the 2008 Report Card and 2009 Report Card Update, the subwatershed displayed low levels of riparian vegetation as well as low grades for both the fish and benthic invertebrate communities. Much of this state can be attributed to the very large extent of agricultural land use in the subwatershed. Impacts from the agricultural areas include the removal of riparian vegetation, the input of sediment-laden sediment which impacts both water quality and the habitat of fish and benthic invertebrates, the use of large volumes of water for irrigation, channelization, and the rapid conveyance of stormwater directly to area watercourses by tile drainage. Some of these impacts, such as low water levels, are more acutely felt in the Maskinonge subwatershed because it lacks the groundwater influence of the Oak Ridges Moraine in its headwater areas, given the very small portion of the subwatershed that falls on the moraine. Although located mainly in the community of Keswick near the mouth of the subwatershed, the urban areas are likely impacting conditions in the subwatershed as well. Impervious surfaces cause decreased infiltration of rain and melt water, which can result in low groundwater levels and reduced baseflow in area watercourses; impacts to water quality as contaminants are carried with stormwater runoff; instability and erosion of streambanks; effects on stream habitat such as sediment deposition or disruption of natural riffle-pool sequences, resulting in changes to the composition of aquatic communities; and impacts on biodiversity. These impacts can be particularly detrimental in those areas of the subwatershed that lack stormwater controls. Additional issues in this subwatershed include habitat alteration, and the introduction of invasive species. The cumulative effects of these activities have caused considerable stress in the Maskinonge River subwatershed.

There have been numerous successes in improving the conditions in the Maskinonge River subwatershed. Initiatives such as the completion of streambank erosion control projects, tree

plantings, establishment of riparian vegetation, and other best management practices (BMPs) will help to improve conditions with respect to bank stability, water quality and quantity, and aquatic and terrestrial natural heritage in the subwatershed. The recently introduced Maskinonge River Recovery Program is a community stewardship program designed to undertake on the ground environmental improvement projects within the subwatershed. This is being accomplished through education and outreach, the development of communication materials, and the implementation of BMP projects.

The Maskinonge subwatershed is scheduled to experience some growth in the coming years. The Provincial Places to Grow Plan identifies that population and employment growth will occur in the Lake Simcoe watershed. Provincial growth forecasts have been allocated to all municipalities in the Region. In the Maskinonge River subwatershed, this growth is mainly focused around the community of Keswick. The population of Keswick is estimated to grow from approximately 20,000 residents to close to 40,000 by 2026. Along with the housing that will have to be built to accommodate these new subwatershed residents, new employment lands, shopping centres, and schools will also be required to meet their needs. In addition to the above, in order to services these increases in population and employment, critical municipal infrastructure projects, including roads, municipal sewers and treatment facilities and water supply systems will also need to be built, maintained and expanded in the subwatershed. This will result in increased levels of impervious surfaces and its associated impacts, combined with a reduction in the natural features that help to mitigate these impacts. These changes, as well as the unknown impacts that climate change may bring to the subwatershed, could have a significant effect on the health of the subwatershed if measures are not taken to mitigate them.

To build on the successes of the projects initiated so far, and to mitigate impacts of the changes that are to come, a comprehensive, integrated subwatershed plan is needed for the Maskinonge River subwatershed. The plan that follows is intended to provide the blueprint for the conservation authority, the municipalities, and subwatershed stakeholders to move forward and continue the important work that has been completed in order to mitigate the impacts of land use changes and improve conditions in the subwatershed. It includes chapters dedicated to each of five subwatershed parameters, these being water quality, water quantity, aquatic habitat, fluvial geomorphology and terrestrial natural heritage, although it is acknowledged that all of these parameters are related and certainly interact with each other. Each chapter is loosely structured around a state-pressure- response framework, in that each chapter firstly describes the current condition (state), secondly describes the stressors likely leading to the current condition(pressure), and finally recommends management responses in the context of the current management framework (response) (See text box below).



Plan section:

1) ***Subwatershed Condition:*** Describes and analyzes the current state or condition of the subwatershed feature based on the best available data and information. This assessment is based on monitoring data, model output, surveys etc.
2) ***Subwatershed Stressors:*** Uses the best available information to identify and quantify the factors affecting the current condition of the watershed. For example, describing phosphorus loads from different land use activities.
3) ***Current Management:*** Establishes the relationship of the subwatershed plan to other legislation and planning documents;
4) ***Management needs:*** Identifies areas within the current management framework where improvements within this plan may be able to have greatest impact i.e. gaps or opportunities for the subwatershed plan to act upon.
5) ***Management recommendations:*** outlines resource management goals and objectives; as well as options for protection, rehabilitation, and enhancement of conditions in the subwatershed.

The management responses (high level recommendations) fall into eight broad categories, these being:

A. Planning and Policy
B. Use of Better Management Practices
C. Changing the Way Things Are Done 'On the Ground'
D. Applied Research and Science
E. Monitoring (Surveillance, Compliance, and Reporting)
F. Management, Rehabilitation, and Restoration
G. Adaptive Response (Climate, Social, Political)
H. Communications

From these recommendations fall a number of detailed recommendations, the implementation of which will help to meet the plan's goals and objectives. These detailed recommendations will form the implementation plan, a document which will assign responsibilities, develop timelines, estimate costs, and set priorities for undertaking the actions that will need to be taken in the Maskinonge subwatershed. Input from the subwatershed municipalities, conservation authority staff, stakeholders and members of the public will be incorporated through the process of developing the implementation plan. Undertaking the recommended actions of is plan is a huge undertaking with respect to both the funding and human resources that will be needed, and will require assistance from all of these subwatershed partners.

Undertaking the actions outlined in the implementation plan will help to protect the existing natural resources, facilitate informed planning decisions, and improve the efficiency of the development review process. An over-arching concept to keep in mind throughout the subwatershed planning process is that it is far more beneficial, both financially and ecologically, to protect resources from degradation than to rehabilitate them once they have been damaged. These plans support this concept, and provide alternatives for instances where it may not be possible to maintain the Maskinonge's remaining resources in their natural state.

The implementation plan will identify actions to be undertaken in both the short and the long term. However, the subwatershed plan will be reviewed on a regular basis as part of the adaptive management framework to ensure the effectiveness of the actions being undertaken. Depending on the state of the subwatershed the subwatershed and implementation plan may be updated at that point in order to incorporate the most up to date information on the subwatershed state and to incorporate any new tools and practices that may be used. By undertaking these regular evaluations and updates, the partners can ensure that all of the necessary steps are being taken in order to achieve the goal of a healthy Maskinonge River subwatershed.

Executive Summary

The Black River subwatershed occupies 375 km^2 of lands south of the eastern portion of Lake Simcoe. With the headwaters originating on the Oak Ridges Moraine, the Black's watercourses flow mainly through natural features and agricultural areas throughout much of the system before reaching the community of Sutton and the outlet into Lake Simcoe. The subwatershed supports a high level of natural features, as well as a good deal of agriculture. The subwatershed jurisdiction is mainly within York Region, with a small portion falling within Durham Region. The municipalities that fall within its boundaries are Georgina, East Gwillimbury, Whitchurch-Stouffville, and Uxbridge.

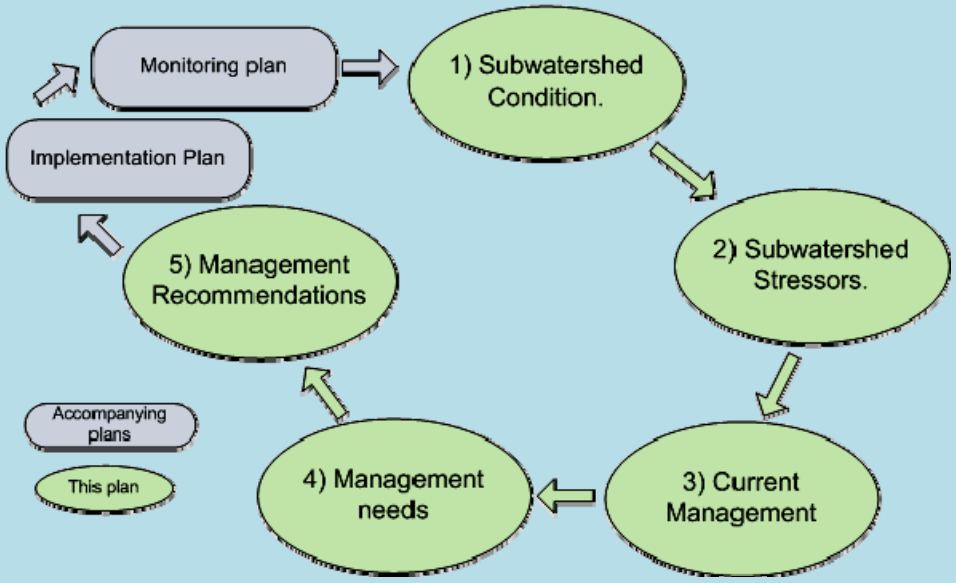
The land within the Black River subwatershed provides a number of benefits to the river, to Lake Simcoe, and to its residents and visitors. The 50% of subwatershed area that is occupied by natural areas, including a high percentage of wetland, absorb rain and snow melt, maintaining groundwater levels and baseflow, helping to prevent flooding and erosion, and improving water quality. These areas also provide habitat for a wide variety of species, as well as numerous nature-based recreation opportunities. In addition, the Black's agricultural areas, which occupy close to 40% of the subwatershed, provide a close-to-market supply of fresh vegetables, as well as opportunities for infiltration. The Black's natural features and greenspaces provide its urban residents with the connection with nature that so many of them value. In a study undertaken to estimate the value of the services provided by the subwatershed's ecosystem, it was found that it would cost close to $180 million to replace these natural services with man-made solutions. Given the immense intrinsic and monetary value of the subwatershed's features, the development of this subwatershed plan is an important step in ensuring that these services continue to be performed economically, while balancing the other demands on the subwatershed such as urban growth, agriculture, industrial, and recreational uses in a truly integrated fashion.

In spite of the benefits provided by its natural areas, the Black River is showing some signs of stress from anthropogenic land uses. For example, in the 2008 Watershed Report Card, the Black River received low grades for the amount of urban area with stormwater controls, and the fish community received a 'C' grade. In addition, phosphorus concentrations in the subwatershed regularly exceed the provincial water quality objective. Much of the stress in the subwatershed can be attributed to the very large extent of agricultural land use in the subwatershed, as well as several urban areas located throughout the system, such as Mount Albert and Sutton. Impacts from the agricultural areas include the removal of riparian vegetation, the input of sediment-laden sediment which impacts both water quality and the habitat of fish and benthic invertebrates, the use of large volumes of water for irrigation, channelization, and the rapid conveyance of stormwater directly to area watercourses by tile drainage. In the Black's urban areas, impacts from the high level of impervious surfaces include decreased infiltration of rain and melt water, which can result in low groundwater levels and reduced baseflow in area watercourses; impacts to water quality as contaminants are carried with stormwater runoff; instability and erosion of streambanks and other geomorphological impacts; effects on stream habitat such as sediment deposition or disruption of natural riffle-pool sequences, resulting in changes to the composition of aquatic communities; and impacts on biodiversity. These impacts can be particularly detrimental in those areas of the subwatershed that lack stormwater controls, which are prevalent in this subwatershed. In addition, there are issues associated with other activities in the subwatershed such as recreation and industrial uses, including water consumption, the introduction of invasive species, and the input of nutrients and other contaminants into area watercourses. Another source of stress in the subwatershed is the removal of wetlands for peat extraction. The cumulative effects of these activities have caused some impacts in this fairly healthy subwatershed.

There have been some successes in addressing some of the concerns in the Black River subwatershed. Initiatives such as the completion of streambank erosion control projects, tree plantings, establishment of riparian vegetation, and other BMPs will help to improve conditions with respect to bank stability, water quality and quantity, and aquatic and terrestrial natural heritage in the subwatershed.

The Black River subwatershed is scheduled to experience some growth in the coming years; the Provincial Places to Grow Plan identifies that population and employment growth will occur in the Lake Simcoe watershed. Provincial growth forecasts have been allocated to all municipalities in the Region. In the Black River subwatershed, boththe communities of Sutton and Mount Albert are expected to grow, though the population is not expected to increase as dramatically as in other subwatersheds in York Region. However, along with the housing that will have to be built to accommodate these new subwatershed residents, new employment lands, shopping centres, and schools will also be required to meet their needs. In addition to the above, in order to service these increases in population and employment, critical municipal infrastructure projects, including roads, municipal sewers and treatment facilities and water supply systems will also need to be built, maintained and expanded in the subwatershed. This will result in increased levels of impervious surfaces and its associated impacts, combined with a reduction in the natural features that help to mitigate these impacts. These changes, as well as the unknown impacts that climate change may bring to the subwatershed, will have a significant effect on the health of the subwatershed if measures are not taken to mitigate them.

To build on the successes of the projects initiated so far, and to mitigate impacts of the changes that are to come, a comprehensive, integrated subwatershed plan is needed for the Black River subwatershed. The plan that follows is intended to provide the blueprint for the conservation authority, the municipalities, and subwatershed stakeholders to move forward and continue the important work that has been completed in order to mitigate the impacts of land use changes and improve conditions in the subwatershed. It includes chapters dedicated to each of five subwatershed parameters, these being water quality, water quantity, aquatic habitat, fluvial geomorphology and terrestrial natural heritage, although it is acknowledged that all of these parameters are related and certainly interact with each other. Each chapter is loosely structured around a state-pressure- response framework, in that each chapter firstly describes the current condition (state), secondly describes the stressors likely leading to the current condition(pressure), and finally recommends management responses in the context of the current management framework (response) (See text box below).



Plan section:

1) ***Subwatershed Condition:*** Describes and analyzes the current state or condition of the subwatershed feature based on the best available data and information. This assessment is based on monitoring data, model output, surveys etc.
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3) ***Current Management:*** Establishes the relationship of the subwatershed plan to other legislation and planning documents;
4) ***Management needs:*** Identifies areas within the current management framework where improvements within this plan may be able to have greatest impact i.e. gaps or opportunities for the subwatershed plan to act upon.
5) ***Management recommendations:*** outlines resource management goals and objectives; as well as options for protection, rehabilitation, and enhancement of conditions in the subwatershed.

The management responses (high level recommendations) fall into eight broad categories, these being:

A. Planning and Policy
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H. Communications

From these recommendations fall a number of detailed recommendations, the implementation of which will help to meet the plan's goals and objectives. These detailed recommendations will form the implementation plan, a document which will assign responsibilities, develop timelines, estimate costs, and set priorities for undertaking the actions that will need to be taken in the Black River subwatershed. Input from the subwatershed municipalities, conservation authority staff, stakeholders and members of the public will be incorporated through the process of developing the implementation plan. Undertaking the recommended actions of is plan is a huge undertaking with respect to both the funding and human resources that will be needed, and will require assistance from all of these subwatershed partners.

Undertaking the actions outlined in the implementation plan will help to protect the existing natural resources, facilitate informed planning decisions, and improve the efficiency of the development review process. An over-arching concept to keep in mind throughout the subwatershed planning process is that it is far more beneficial, both financially and ecologically, to protect resources from degradation than to rehabilitate them once they have been damaged. These plans support this concept, and provide alternatives for instances where it may not be possible to maintain the Black's resources in their natural state.

The implementation plan will identify actions to be undertaken in both the short and the long term. However, the subwatershed plan will be reviewed on a regular basis as part of the adaptive management framework to ensure the effectiveness of the actions being undertaken. Depending on the state of the subwatershed the subwatershed and implementation plan may be updated at that point in order to incorporate the most up to date information on the subwatershed state and to incorporate any new tools and practices that may be used. By undertaking these regular evaluations and updates, the partners can ensure that all of the necessary steps are being taken in order to achieve the goal of a maintaining a healthy Black River subwatershed.

ORM Plans – High Level Recommendations (Generic)
April 23, 2010

Planning & Policy

1) That the municipal partners and the LSRCA strive to reduce the impacts of stormwater through a number of methods including the implementation of policies and guidelines and enabling the use of new and innovative technologies, retrofitting of existing developments.

   Detailed recommendations: A.1.1 – A.1.3

   Included in: Water Quality, Water Quantity, Fluvial Geomorphology, Aquatic Habitat

2) That the partner municipalities act to improve water quality by implementing measures to prevent and/or mitigate impacts from septic systems, development, and other activities that may cause impairment.

   Detailed recommendations: A.2.1 – A.2.4

   Included in: Water Quality

3) That the municipal partners and the LSRCA strive to maintain natural hydrologic conditions on development sites

   Detailed recommendations: A.3.1 – A.3.2

   Included in: Water Quality, Water Quantity, Fluvial Geomorphology, Aquatic Habitat

4) That the federal, provincial, and municipal governments, as well as the LSRCA, continue to evaluate and implement planning initiatives and practices aimed at reducing the impact of development on the condition of the subwatershed

   Detailed recommendations: A.3.3, A.3.5, C.1.2

   Included in: Water Quality, Water Quantity, Fluvial Geomorphology, Aquatic Habitat

5) That the value of the ecological goods and services (EGS) provided by ecological features be considered in decision making around growth and development

   Detailed recommendation: A.3.6

   Included in: Water Quality, Water Quantity, Fluvial Geomorphology, Aquatic Habitat, Terrestrial Natural Heritage Systems

6) That the municipal partners, the LSRCA, and the Province support a common framework and develop and endorse policies and programs for the protection and enhancement of the subwatershed's natural heritage system and its functions

   Detailed recommendations: A.5.1 – A.5.2, A.5.6 – A.5.7

   Included in: Terrestrial Natural Heritage Systems

7) That the partners, including the municipalities, LSRCA, and the Province, seek to gain an improved understanding of the natural heritage features of the subwatershed

   Detailed recommendations: A.5.4 – A.5.5

   Included in: Terrestrial Natural Heritage Systems

8) That the Province, the municipal partners, and the LSRCA seek to gain an improved understanding of the impacts of climate change in the subwatershed, incorporating this

information into decision making scenarios and developing strategies to mitigate and adapt to its impacts.

Detailed recommendations: A.6.1 – A.6.2, G.1.1 – G.1.2

Included in: Water Quality, Water Quantity, Fluvial Geomorphology, Aquatic Habitat, Terrestrial Natural Heritage Systems

Use of Better Management Practices

9) That the LSRCA and its municipal partners continue working to mitigate the impacts of stormwater to water quality and quantity through tracking its sources, completing stormwater retrofits, promoting methods of minimizing stormwater volume, and continuing to research new and innovative solutions to stormwater control and implementing these solutions where appropriate.

   Detailed recommendations: B.1.1 – B.1.5

   Included in: Water Quality, Water Quantity, Fluvial Geomorphology, Aquatic Habitat

   Status:A

10) That the LSRCA and the partner municipalities encourage the use of natural channel designs and 'soft solutions' where possible for preventing or mitigating streambank erosion and accommodating channel realignments;

    Detailed recommendations: B.3.1 – B.3.4

    Included in: Fluvial Geomorphology, Aquatic Habitat

    Status:A

Changing the way things are done 'on the ground'

11) That the LSRCA and its partner municipalities strive to maximize the infiltration of stormwater where appropriate through development approvals and the use of practices and technologies

    Detailed recommendations: C.1.1, C.2.1 – C.2.2

    Included in: Water Quality, Water Quantity, Fluvial Geomorphology

    Status:A

12) That the partner municipalities, the LSRCA, and the related stakeholders work to reduce the impacts of construction practices on the subwatershed's water quality

    Detailed recommendations: C.3.1 – C.3.2

    Included in: Water Quality, Aquatic Habitat

13) That the partner municipalities continue to work to minimize the environmental impacts of road maintenance activities (e.g. chloride levels, sediment, phosphorus) on local watercourses.

    Detailed recommendations: C.4.1 – C.4.6

    Included in: Water Quality

Applied Research and Science

14) That the Province, LSRCA and the municipal partners continue to work to identify sources of phosphorus within the subwatershed in order to set targets and develop strategies and solutions for reducing loads within the subwatershed

    Detailed recommendations: D.1.1 – D.1.4, D.1.8 – D.1.11, D.1.12

    Included in: Water Quality

15) That all partners study the requirements for environmental flows within the subwatershed, explore innovative solutions, and undertake works and practices where possible in order to ensure adequate baseflow to support ecological function

    Detailed recommendations: D.1.5, D.1.7, D.1.13 – D.1.14, D.2.4

    Included in: Water Quantity, Aquatic Habitat

16) That all partners continue to research techniques that may be undertaken in the subwatershed for improving water quality

    Detailed recommendations: D.1.6 – D.1.7

    Included in: Water Quality

17) That the partners explore the subwatershed to determine where reductions in groundwater discharge, excessive water takings and other impacts to aquatic habitat have occurred and undertake activities to mitigate these impacts

    Detailed recommendations: D.2.1 – D.2.3

    Included in: Water Quantity, Aquatic Habitat

18) That measures be taken at site level to reduce demands on water resources

    Detailed recommendation: D.2.3

    Included in: Water Quantity

19) That LSRCA and its partner municipalities assess the feasibility of increasing and/or enhancing natural cover, and develop strategies to prioritize these undertakings in order to achieve the greatest benefit to the subwatershed

    Detailed recommendations: D.3.2, D.3.5

    Included in: Terrestrial Natural Heritage Systems

20) That all partners cooperate to determine the presence and extent of invasive species in the subwatershed, and work to prevent their establishment and spread

    Detailed recommendations: D.3.7 – D.3.8

    Included in: Aquatic Habitat, Terrestrial Natural Heritage Systems

Monitoring

21) That the LSRCA, partner municipalities, develop a protocol for monitoring the use of on-site construction practices to ensure their continued use and maintenance in order to protect water quality.

    Detailed recommendation: E.3.1

    Included in: Water Quality

22) That the amount of impervious area in the subwatershed be assessed on a regular basis by the LSRCA and its partner municipalities.

Detailed recommendation: C.2.1, E.3.4

Included in: Water Quantity

Management, Rehabilitation and Restoration

23) That the MNR, with the support of LSRCA and the partner municipalities, undertake initiatives aimed at maintaining the health of the subwatershed's fish community. These may include the development of fish community goals and objectives, fisheries management plans, or other plans aimed at protecting the habitat of species at risk in applicable catchments.

Detailed recommendations: F.1.1 – F.1.4, F.1.7

Included in: Aquatic Habitat

24) That that LSRCA, in cooperation with its partner municipalities, prioritize and undertake activities to improve and restore aquatic ecological functions within the subwatershed, including barrier removal, natural channel design, restoring floodplain functions, and wetland creation. This could include undertaking pilot/demonstration projects to assess the feasibility of such works.

Detailed recommendations: F.1.8 – F.1.14

Included in: Fluvial Geomorphology, Aquatic Habitat

25) That the LSRCA and the partner municipalities assess the feasibility of increasing natural cover (e.g. woodland, streambank vegetation, interior forest, grassland) in the subwatershed and set priorities and develop plans to undertake this enhancement, based on overall benefit to the subwatershed.

Detailed recommendations: A.5.3, F.2.2 – F.2.4, F.2.6 – F.2.7

Included in: Water Quality, Water Quantity, Fluvial Geomorphology, Aquatic Habitat, Terrestrial Natural Heritage Systems

26) That the partner municipalities, in cooperation with the LSRCA, look to enhance existing woodland areas through replacing plantation species with appropriate native species through succession in order to provide higher quality habitat while maintaining the functions that plantation areas perform. These include maintaining water quality, providing shelter, encouraging infiltration and stabilizing soils.

Detailed recommendation: F.2.5

Included in: Terrestrial Natural Heritage Systems

27) That the partner municipalities adopt policies to encourage the use of native species, particularly those drought tolerant species, through development approvals and property management programs.

Detailed recommendation: F.3.2

Included in: Water Quantity, Terrestrial Natural Heritage Systems

28) That LSRCA and its municipal partners investigate initiatives to improve the long term benefit and environmental sustainability of public properties and facilities.

Detailed recommendation: F.4.4

Included in: Terrestrial Natural Heritage Systems

29) That the LSRCA, the partner municipalities, and developers work to identify opportunities for undertaking restoration works on development sites, and incorporate these into proposals where appropriate

Detailed recommendation: F.4.5

Adaptive Response

30) That the LSRCA and partner municipalities work to reduce their carbon footprint and to increase ecological resilience in the watershed

Detailed recommendations: G.1.1 - G.1.3

Included in: Water Quality, Water Quantity, Fluvial Geomorphology, Aquatic Habitat, Terrestrial Natural Heritage Systems

31) That the LSRCA and the partner municipalities promote and support water conservation initiatives, such as York Region's 'Water for Tomorrow' program

Detailed recommendation: G.2.1

Included in: Water Quantity

Detailed Recommendations (Generic)

April 23, 2010

This chapter includes the detailed recommendations discussed in the previous chapters of this subwatershed plan. These are the recommendations that will be brought forward in the development of the implementation plan for the four subwatersheds originating on the ORM within York Region, these being the West Holland, East Holland, Maskinonge, and Black Rivers. All subwatershed partners, including the LSRCA, applicable provincial ministries, the municipalities, community groups, citizens, and other stakeholders will be involved in the development of this implementation plan, through which the details regarding these recommendations will be defined. These details may include, but are not limited to, estimating timelines and costs, prioritizing activities, and identifying the partners that will be involved in the implementation of the various activities. When completed, this implementation plan will provide a road map for all partners to follow in order to improve conditions in the West Holland River subwatershed over the coming years.

As in previous chapters, the recommendations have been grouped into eight categories in order to facilitate clarity and consistency. In addition, the separate sections will help focus the development of a comprehensive Implementation Plan in the near future.

The Compendium of Recommendations is made up of the following categories:

A Planning and Policy

B Use of Better Management Practices

C Changing the Way Things Are Done 'On the Ground'

D Applied Research and Science

E Monitoring (Reporting and Compliance)

F Management, Rehabilitation and Restoration

G Adaptive Response (Climate, Social, Political)

H Communications

It is recognized that many of these undertakings are dependent on funding from all levels of government. Should there be financial constraints, it may affect the ability of the partners to achieve these recommendations. These constraints will be addressed through the development of the implementation plan.

A PLANNING AND POLICY

A.1 Stormwater Management

A.1.1 That the [applicable] partner municipalities, in conjunction with the LSRCA, develop stormwater master plans that include maintenance schedules and funding requirements, as per the requirements set out by the LSPP

A.1.2 That the Province of Ontario, through the implementation of the Lake Simcoe Phosphorus Reduction Strategy, provide significant incentive funding to the related municipalities and/or the LSRCA to maintain, construct and /or retrofit stormwater facilities as identified by the LSRCA Stormwater Rehabilitation program

A.1.3 That the partner municipalities, in conjunction with LSRCA, re-evaluate stormwater management techniques and practices to determine whether a standard better than Level 1 can be achieved (e.g. through the implementation of new and innovative technologies)

A.2 Water Quality

A.2.1 That the partner municipalities, through the LSRCA, create a roundtable (or multiple groups, as appropriate) made up of municipalities, OMAFRA, MOE, OFA, BILD and related landowner representatives and other stakeholders, or through existing frameworks such as the Lake Simcoe Phosphorus Reduction Strategy, to determine co-operative ways of implementing phosphorus reduction measures in York Region's subwatersheds within the Lake Simcoe basin (or at another scale that is deemed appropriate) and to develop an 'action plan' for their implementation within the subwatershed's urban and rural areas

A.2.2 That the Province of Ontario and the partner municipalities support the inspection and/or maintenance required for septic systems within 100m of Lake Simcoe and its watercourses as required through the Lake Simcoe Protection Plan. LSRCA, through its stewardship program, will provide technical assistance and funding support as appropriate to complete upgrades and replacement of systems as required.

A.2.3 If required by the Lake Simcoe Protection Plan, the partner municipalities will provide staff in support of conducting mandatory inspections for septic systems within 100 metres of Lake Simcoe and any of its watercourses.

A.2.4 That the Province, through the Ministry of the Ministry of the Environment and the Lake Simcoe Phosphorus Reduction Strategy, develop a Cumulative Effects Strategy for the Lake Simcoe basin.

A.2.5 That the MOE move forward a position statement regarding the Provincial Water Quality Objectives that supports their incorporation as legal requirements under the Lake Simcoe Phosphorus Reduction Strategy or provides phosphorus targets that must be adhered to. Given that the PWQO for phosphorus is an interim target, individual targets should be developed on a catchment basis as part of the Lake Simcoe Phosphorus Reduction Strategy

A.2.6 That the MOE move forward a position statement regarding the Provincial Water Quality Objectives that supports the inclusion of phosphorus, chloride, other than that used for winter road maintenance purposes, total suspended solids targets as values that must be adhered to throughout the Lake Simcoe basin

A.2.7 That the Province of Ontario, through the Lake Simcoe Phosphorus Reduction Strategy, incorporate mandatory criteria that reflect the PWQO targets as part of the effort to address the water quality targets for Lake Simcoe, as outlined in the Lake Simcoe Protection Plan

A.2.8 That the partner municipalities request that the Province of Ontario develop criteria for identifying concerns related to newly emerging contaminants, and further that guidelines be developed as appropriate to address these contaminants as they emerge

A.3 Planning and Policy Development

A.3.1 That the partner municipalities recognize that the objective of maintaining water recharge and minimizing the impact of impervious surfaces. This can be achieved by maintaining the water balance on a development site or improving site conditions. However, this will require the development industry to use innovative solutions for future growth to meet this recommendation. In addition, the municipality, in conjunction with LSRCA, will continue to research methods of maintaining pre- and post-development water balance in the subwatersheds

A.3.2 That where appropriate partner municipalities will ensure that the amount of impervious cover in new developments in the subwatershed is kept to a minimum through the required use of new technologies,

A.3.3 That the partner municipalities adopt Low Impact Development (LID) practices for new developments throughout the Lake Simcoe watershed to further mitigate the impacts of urban development…ongoing

A.3.4 That the LSRCA work with federal, provincial, municipal government, and granting agencies to investigate and implement LIDs aggressively within the Lake Simcoe watershed

A.3.5 That the public agencies promote the Adoption of Smart Growth Urban Design Guidelines and/or LID practices within the watershed

A.3.6 With respect to the value of ecosystem goods and services, the municipalities should: include a system of values of ecosystem goods with respect to policy development; integrate the value of 'ecosystem goods' into their growth strategy development, land use planning and decision-making; and create an integrated 'natural capital' account as a means of establishing a baseline from which planning and development decisions can be compared (i.e. the value of the loss of ecosystem goods)

A.3.7 That, where resources permit, LSRCA undertake enhanced enforcement of existing laws within the subwatershed and simplify review and approval procedure for municipal and private sector development proponents

A.4 Agriculture

A.4.1 That the partner municipalities, through the LSRCA, create a roundtable made up of municipalities, OMAFRA, MOE, OFA, BILD, and related landowner representatives, or through existing frameworks such as the Lake Simcoe Phosphorus Reduction Strategy, to determine co-operative ways of implementing phosphorus reduction measures in York Region's subwatersheds within the Lake Simcoe basin and to develop an 'action plan' for their implementation within the agricultural and rural communities

A.5 Natural Heritage

A.5.1 That a concerted effort be made to identify opportunities to reconnect the natural features of the Oak Ridges Moraine (ORM) to Lake Simcoe, through a 'Natural Heritage System for Lake Simcoe'

A.5.2 That the applicable partner municipalities will encourage the use of a standard framework for the protection of Natural Heritage cover and functions in the Lake Simcoe basin such as the 'Lake Simcoe Natural Heritage System' (LSRCA, 2007) and its related policies, and reflect its guidance in their OPs and other appropriate instruments (EIS guidelines etc) as part of their routine planning process

A.5.3 That the partner municipalities, in conjunction with the LSRCA develop plans to increase the area of natural cover on the landscape to 35%, or a lower percentage as determined through a feasibility study

A.5.4 That the partner municipalities and LSRCA request the Ministry of Natural Resources to undertake targeted wetland evaluations and wetland evaluation updates

A.5.5 That the partner municipalities and LSRCA request the Ministry of Natural Resources to undertake Species at Risk surveys, habitat mapping and monitoring

A.5.6 That the LSRCA utilize its authority through the [Generic Regulation (179/06)] under the Conservation Authorities Act to prevent the conversion of wetlands into other land uses, such as agriculture

A.5.7 As part of the Lake Simcoe Protection Plan (LSPP), that the Province of Ontario develop regulations for shoreline development and a Shoreline Management Plan for Lake Simcoe, in conjunction with the stakeholders

A.6 Climate Change

A.6.1 That the Province of Ontario, in consultation with the partner municipalities and the LSRCA, develop a climate change mitigation and adaptation strategy to deal with future change and to build resilience in the municipal system. This strategy should include targets and a funding strategy to address the required actions.

A.6.2 That the LSRCA, the partner municipalities and the province develop and incorporate climate change scenarios into long-range strategies

B USE OF BETTER MANAGEMENT PRACTICES

B.1 Stormwater Management

B.1.1 That the LSRCA continue to undertake the completion of stormwater retrofit projects in partnership with municipalities, subject to budget allocations. Further that the federal and provincial governments throughout the watershed be requested to share in the cost of undertaking these projects

B.1.2 That the LSRCA and its partners recognize that while the construction and/or retrofit of quality control facilities is extremely important, quantity control is also an important consideration in some areas of the subwatershed; therefore, quantity control facilities should be constructed in those areas where it is deemed appropriate but it is not possible to construct a full quantity/quality control facility.

B.1.3 That the municipalities of the subwatershed are encouraged to work with the LSRCA to promote the increased use of innovative solutions to address stormwater management and retrofits such as requiring enhanced street sweeping and catch basin maintenance, particularly in those areas currently lacking stormwater controls; improving or restoring vegetation in riparian areas; rainwater harvesting; construction of rooftop storage and/or green roofs; the use of bioretention areas and vegetated ditches along roadways; where conditions permit, the use of soakaway pits, infiltration galleries, and permeable pavement; the on-going inventory, installation and proper maintenance of oil grit/hydrodynamic separators combined with the use of technologies to enhance their effectiveness where this is appropriate; and where practical and feasible, enhance measures to control TSS

B.1.4 That the partner municipalities establish a database of oil/grit separators in the subwatershed in order to track the number and location of these structures and to ensure that regular maintenance is being undertaken as per the design specifications of the structures

B.1.5 That LSRCA initiate and monitor a pilot project to evaluate the effectiveness of reducing flooding and improving water quality by creating natural linear wetland facilities and/or reconnecting river floodplains. Should it be found to be effective, that further opportunities for undertaking these practices be explored and the implemented based on a cost/benefit analysis

B.2 Rural Water Quality

B.2.1 That the LSRCA continue to implement programs to address rural non-point sources of pollution by providing landowners with financial and technical assistance from the federal, provincial, municipal governments and the Lake Simcoe Conservation Foundation, to implement best management practices on their lands. Further that a review of the current level of financial incentives and eligible projects be reviewed in partnership with the agricultural and rural communities.

B.2.2 That the LSRCA 'Landowner Environmental Assistance Program' (LEAP) which offers technical advice and financial assistance to the residents of the Lake Simcoe watershed, continue to be supported by the municipalities and various local committees for the subwatershed

B.2.3 That the LSRCA work with federal, provincial, municipal governments, the Lake Simcoe Conservation Foundation and granting agencies to investigate and implement BMPs aggressively within the Lake Simcoe watershed

B.2.4 That aggregate and major recreational uses, particularly in rural areas, be encouraged to utilize BMPs to ensure no runoff and dust control as part of the Lake Simcoe Phosphorus Reduction Strategy

B.2.5 That the LSRCA assist in the creation of water reservoirs on agricultural properties in order to capture water when it is most available and decrease the strain on water resources due to the requirements for irrigation

B.3 In-Channel

B.3.1 That channel alterations and realignments will undertake natural channel design and stream restoration where possible, to mimic to the extent possible, natural conditions, in accordance with the Ontario Regulation 179/06 under the Conservation Authorities Act and LSRCA's Watershed Development policies

B.3.2 That LSRCA encourage the use of natural solutions and work with proponents to develop a balance between engineered solutions and natural solutions with the goal of minimizing erosion potential when structures require replacement

B.3.3 That LSRCA will assist partner municipalities where technically feasible, to reduce the risk in flood-prone areas throughout the implementation of Natural Channel Design and other BMPs

B.3.4 That LSRCA develop programs to provide technical and financial assistance to implement innovative BMPs to reduce flooding

C CHANGING THE WAY THINGS ARE DONE 'ON THE GROUND'

C.1 Land Use Change

C.1.1 That the partner municipalities adopt Low Impact Development (LID) practices for new developments throughout the watershed

C.1.2 That the LSRCA work with federal, provincial, and municipal governments, and granting agencies to investigate and implement LIDs aggressively within the Lake Simcoe watershed

C.2 Increased Infiltration

C.2.1 That the LSRCA and the partner municipalities, as part of the implementation of the Lake Simcoe Phosphorus Reduction Strategy, ensure that the development industry maximizes the infiltration of stormwater where conditions permit, through the use of but not limited to the following: construction of rooftop storage and/or green roofs; the use of cisterns to store water; the use of bioretention areas and vegetated ditches along roadways; the use of soakaway pits, infiltration galleries, and permeable pavement

C.2.2 That member municipalities in consultation with LSRCA review the practice of roadside 'ditch cleanouts' which leave existing vegetation in place to increase water infiltration, reduce ditch maintenance costs and reduce nutrient inputs into Lake Simcoe against the increases in road maintenance costs associated with imperfectly draining road beds and other liabilities; further to develop a strategy to reach a balance between environment and roads maintenance, and construction costs and public liability on adjacent lands.

C.3 Construction Practices

C.3.1 That the LSRCA and partner municipalities promote the adoption of sustainable site alteration and construction practices in the Lake Simcoe watershed, potentially through the use of grading permits

C.3.2 That the partner municipalities work with the LSRCA, the development industry, and contractors to prepare a construction practices code, including a database that will deal with but not be limited to: the phased stripping of land; the use of dust suppressants; the control of runoff and sediment movement across the site; the design and use of temporary sediment basins; the on-site protection of existing natural features; the storage of topsoil and overburden materials; acceptable de-watering techniques; the

populating of the database; and enforcement of these activities. In addition, this system should be monitored at selected sites to ensure its effectiveness.

C.4 Operations

C.4.1 That the partner municipalities and the Province should continue to explore the most environmentally friendly options for maintaining safe winter roads in order to protect the subwatershed's water quality and the aquatic communities residing within its watercourses. These options include ensuring the proper timing and amount of road salt application, as well as exploring the use of alternative de-icing substances, piloting and field testing options and effective salt management plans

C.4.2 That the partner municipalities in the subwatershed adopt the Code of Practice for the Environmental Management of Road Salts (Environment Canada, 2004) as a way of dealing with increasing chloride concentrations in the subwatershed

C.4.3 That the partner municipalities, where feasible, consider secondary treatment (e.g. constructed wetlands) for runoff from snow dumps; and monitor the effectiveness of any such facilities

C.4.4 That the partner municipalities consider options for addressing the application of de-icing agents to private parking lots of a certain size (e.g. shopping malls)

C.4.5 That the federal and provincial governments provide financial incentives to allow municipalities to implement an enhanced street sweeping program targeted to uncontrolled urban areas, and

C.4.6 That the LSRCA work with its member municipalities to enhance efforts to reduce the input of sediments and contaminants into Lake Simcoe and its tributaries through activities including stormwater management, and the protection and enhancement of riparian buffers

D APPLIED RESEARCH AND SCIENCE

D.1 Rehabilitation Opportunities Identification (P reduction / Nutrient Offsetting)

D.1.1 That in order to deal with the predicted [specific # for each subwatershed]% increase in P loading, the LSRCA and its partners need to research innovative methods of P reductions and/or trading

D.1.2 That the LSRCA, Province of Ontario and member municipalities implement policies and actions developed from the results of the Assimilative Capacity Studies (Total Maximum Monthly Loads)

D.1.3 That the LSRCA, its partner municipalities and the Province of Ontario encourage the implementation of the Lake Simcoe Phosphorus Reduction Strategy

D.1.4 That the LSRCA undertake a more detailed catchment level analysis of phosphorus loading as well as that of BMP opportunities

D.1.5 That the LSRCA with support of the partner municipalities, develop a framework for the development of environmental flow targets in the subwatershed

D.1.6 That while the current techniques used to improve water quality will remain important tools to try to meet water quality objectives, all partners (municipalities, Ministry of the

Environment and LSRCA) must explore new and innovative practices being used around the world that can be used in conjunction with current practices, or perhaps where these practices are not feasible or practical to enhance water quality. These new techniques should be thoroughly researched to ensure that they are appropriate for use in the subwatersheds and achieve their stated purpose. Once this is verified, new practices should be used wherever it is appropriate and cost effective in order to achieve improvements in water quality

D.1.7 That the partner municipalities involved in service delivery and the LSRCA, in partnership with the Ministry of the Environment, undertake a study to assess the feasibility of water reuse (e.g. the reuse of STP effluent) within the Lake Simcoe basin

D.1.8 That the results from LSRCA's BMP inventory should be prioritized and fed into the development of a stewardship plan for the subwatershed in order to focus the efforts of the LSRCA and its partners and ensure the greatest possible phosphorus reduction.

D.1.9 That the LSRCA combine the findings of Phases I and II of the Best Management Practices Inventory with the GIS exercise that was undertaken to determine the amount of natural cover within 30 metres of the watercourses in the subwatershed to develop an implementation plan to restore naturally vegetated buffers within the subwatershed

D.1.10 That the LSRCA continue to inventory priority catchments for maximum nutrient reduction opportunities in both urban and rural areas

D.1.11 That the LSRCA, MOE, and watershed municipalities work with the agricultural, development, and aggregate sectors to develop a wind erosion\dust control strategy to reduce phosphorus contributions from atmospheric deposition. Further that additional scientific monitoring and research be conducted to better qualify and quantify potential sources of atmospheric deposition

D.1.12 That the LSRCA undertake work to further evaluate the control options to address the pump-off water from polders other than the Holland Marsh with the Ministry of the Environment and the Ministry of Agriculture, Food and Rural Affairs

D.1.13 That a strategy be developed by MOE in conjunction with LSRCA and the municipalities to enhance infiltration to supplement baseflow in watersheds where baseflow is insufficient to maintain stream health (quantity stressed). Technical and financial assistance should be provided to landowners wishing to implement BMPs, and further consideration should be given to requiring development in areas adjacent to these quantity stressed areas to maintain or improve the water balance in these priority areas

D.1.14 That a strategy be developed by MOE, in conjunction with LSRCA and the municipalities, to protect hydrologic function in gaining reaches of stressed watersheds and enhance infiltration wherever possible to protect baseflow, locations of upwelling in order to maintain thermal stability

D.2 <u>Aquatic</u>

D.2.1 That the LSRCA and its partners identify/review sites where reduction of discharge to streams has occurred and look for opportunities, through development, to potentially re-use, restore/retrofit a source of water for that specific part of the system

D.2.2 That guidelines and policies to complement the Permit To Take Water (PTTW) regulation should be developed by MOE in conjunction with LSRCA, to restrict surface water (stream) takings from losing stream reaches to protect ecological integrity in those streams

D.2.3 That LSRCA, in cooperation with the partner municipalities would support the use of rain water harvesting devices, such as cisterns, as a stormwater management option to be undertaken, and that an incentive program be created for landowners within the watershed willing to construct water harvesting devices

D.3 Terrestrial – Natural Heritage System

D.3.1 That a field-based monitoring program be developed and undertaken by watershed partners (eg. LSRCA, MNR, Natural Resources Canada) to improve the analysis of natural heritage values across the Lake Simcoe watershed

D.3.2 That the LSRCA and the partner municipalities investigate innovative ways and appropriate locations to increase the size of woodland patches in the subwatershed

D.3.3 That the Ministry of Natural Resources ensure that specific Natural Heritage features, such as relict prairie, be managed and protected through the development of Rare Communities Management Plans

D.3.4 That the Ministry of Natural Resources undertake a study to update the status (presence and extent) of the Species at Risk in the subwatershed, the results of which would lead to some level of recognition in the municipal Official Plans and the incorporation of their habitat into the future Natural Heritage System

D.3.5 That the LSRCA complete and implement its Natural Heritage System Phase 2: Restoration, Enhancement and Securement Strategy

D.3.6 That a detailed landscape connectivity assessment be undertaken by LSRCA and the partner municipalities, as part of Phase II of the Natural Heritage System

D.3.7 In conformance with the LSPP, that the LSRCA participate in further research to determine the extent and prevalence of invasive species within the Lake Simcoe watershed

D.3.8 In conformance with the LSPP, that the LSRCA cooperate with partners and universities to research methods for preventing the establishment and spread of invasive species

E MONITORING (Reporting and Compliance)

E.1 Water Quality

E.1.1 That the LSRCA continue to maintain and/or enhance the existing monitoring network. This sampling should be continued into the future to assess the state of water quality in the subwatershed, and determine/monitor any trends (including seasonal trends), emerging contaminants, or new substances of concern that may arise

E.1.2 That expansion of the PWQMN be considered in the Lake Simcoe watershed to capture proposed land use changes that could impact water quality.

E.1.3 That the current LSRCA monitoring network be reviewed annually to ensure it meets the surveillance/compliance goals of the monitoring strategy and as required, allow for special projects to be undertaken to address emerging trends

E.1.4 That the LSRCA expand the sampling programs for toxic substances within the watershed in cooperation with the Ministry of the Environment, the municipalities, and other partners for the purpose of evaluating the potential human health threats and reporting on the results to all watershed stakeholders and the public

E.1.5 That LSRCA expand the water sampling program for pesticides and herbicides within the watershed, in cooperation with the Ministry of the Environment, and other partners

E.1.6 That water quality results are analyzed and reported annually and that the information be used to update the LSRCA Watershed Report Card. Further, that stakeholders be provided access to the water quality data collected via the world wide web to increase distribution

E.2 Aquatic

E.2.1 That the LSRCA develop and support a monitoring plan to expand the benthic sampling network throughout the Lake Simcoe watershed, including the [subwatershed]

E.2.2 That the LSRCA participate on recovery teams and implement local projects to enhance and protect Species and Risk within the Lake Simcoe watershed…as required at the request of the Ministry of Natural Resources

E.3 Development related

E.3.1 That the LSRCA and its partner municipalities develop a protocol for the monitoring and compliance of current and existing facilities and future development sites pre, during and post construction to ensure continued maintenance and operational optimization. Monitoring would include phosphorus, sediment, and dust.

E.3.2 That the LSRCA identify and assess representative fluvial geomorphic sites, and use them for long-term monitoring and assessment of change in stream /channel stability, channel form, sediment delivery, etc as a result of development in the Lake Simcoe watershed and specifically the subwatershed

E.3.4 That the LSRCA, in conjunction with the member municipalities, maintain a role in monitoring and reporting on the status of % impervious area, reporting in 5 year cycles as part of the update of the [Subwatershed] Plan

E.4 Terrestrial

E.4.1 That LSRCA, in conjunction with the partner municipalities, undertake refinements, field verifications and updates of Natural Heritage and Land Use mapping

F Management, Rehabilitation and Restoration

F.1 Aquatic

F.1.1 In conformance with the LSPP, that the Ministry of Natural Resources lead the development of fish community goals and objectives for Lake Simcoe and its tributaries, in conjunction with the LSRCA and partner municipalities

F.1.2 That the LSRCA, in conjunction with the Ministry of Natural Resources, develop the fish community goals and objectives for coldwater and warmwater fish communities in the subwatershed and identify enhancement opportunities for each

F.1.3 That the LSRCA, in conjunction with the Ministry of Natural Resources support the development of a publicly supported, scientifically defensible Fisheries Management Plan for the Lake Simcoe watershed

F.1.4 That LSRCA and the Ministry of Natural Resources continue current co-operative fish community monitoring, assess information gaps and determine activities necessary to fill them

F.1.5 That the Ministry of Natural Resources and LSRCA work together to quantify and assess the quality of critical fish habitats in the lake and its tributaries

F.1.7 That the LSRCA, the Ministry of Natural Resources, and the partner municipalities strive to protect the habitat of Species at Risk in the subwatershed

F.1.7 That the LSRCA evaluate and prioritize specific restoration/enhancement projects within the watershed to improve fish community and aquatic habitats within Lake Simcoe and its tributaries

F.1.8 That the LSRCA, in conjunction with the Ministry of Natural Resources and local partners, investigate opportunities to rehabilitate / restore estuary functions at the mouths of tributaries to Lake Simcoe

F.1.9 That the LSRCA initiate a study to investigate the feasibility of improving the hydrologic structure and restoring floodplain functions to the system of the lower portion of the subwatershed

F.1.10 That LSRCA work with municipal partners to improve in-stream habitat and connectivity through a priority setting exercise specific to barrier/dam removal or retrofitting. Further, that the LSRCA use the LEAP stewardship program to provide technical and financial support to willing participants. Targets for this ‘reconnection’ program may include (as examples): reducing the number of online ponds by 20% by 2015; and, where appropriate and consistent with municipal culvert reconstruction priorities and budgets, fix/replace documented perched culverts as opportunities arise

F.1.11 That as part of the current LSRCA BMP Inventory project, in locations where channel stability is already considered to be 'low', assess those sites, develop priorities, assess the possibility of using 'new'/innovative solutions and then repair

F.1.12 That the LSRCA continue to work with owners of recently documented channelized reaches of stream to develop priority list and implement solutions, such as Natural Channel Design

F.1.12 That LSRCA and its relevant partners support as a Pilot Project, the creation of wetland using tile drainage as the supply of water

F.1.14 That the LSRCA continue to utilize buffer requirements and timing guidelines as part of its protection of coldwater resources and that the LSRCA undertake other programs including stormwater management upgrades and retrofits, riparian tree planting programs, and stewardship in the form of in-stream fish habitat works. These programs should be continued and enhanced into the future, with financial assistance and technical support provided by the LSRCA LEAP Program

F.2 <u>Terrestrial</u>

F.2.1 That the LSRCA undertake a Pilot Project in the Maskinonge River catchment to utilize Community-based Social Marketing as a means of changing behaviour and increasing buy-in for stewardship activities and the use of BMPs – Maskinonge only for pilot

F.2.2 That the LSRCA look for opportunities through development proposals and stewardship initiatives to increase streambank vegetation in the subwatershed

F.2.3 That the lack of woodland cover in the subwatershed be addressed by establishing a goal of increasing woodland cover from [# specific to each subwatershed]% to at least 25% (as is identified as York Region's target in the official plan) with an optimal woodland cover of 30% as identified as ideal by Environment Canada, or to the highest percentage deemed feasible through an analysis of potential reforestation locations, over the next 25-30 years (2040), recognizing that cover may vary between municipalities.

F.2.4 That the LSRCA identify opportunities for restoration, enhancement and securement of priority sites to support the needs of the Natural Heritage System for Lake Simcoe as it relates to the subwatershed; Specific to the catchment, woodlands restoration efforts should focus on enhancing the 'Big Woods' area to enhance its function

F.2.5 That the partner municipalities, in conjunction with the LSRCA, develops a plan to replace plantation species with preferred native species through succession, in a manner that will maintain the water quality, provide habitat, encourage infiltration and soil stability functions of the plantations. Plan implementation will take advantage of both stewardship and private land development opportunities

F.2.6 That the LSRCA and the partner municipalities develop a plan to increase forest interior habitat. A legitimate goal of this plan should be to increase forest interior from 3.8% to

5% in the subwatershed by 2020, or to the highest percentage deemed feasible through an analysis of potential reforestation locations

F.2.7 In that the East Holland River contains 20% of the grasslands in the Lake Simcoe watershed, that the LSRCA in cooperation with the partner municipalities and related partner, develop a plan that will identify (and plan for) opportunities to increase the amount and improve the quality of native grassland communities through development proposals, and restoration and enhancement policies and strategies within the E. Holland R catchment – East Holland only

F.3 Invasive Species

F.3.1 That LSRCA support the work of MNR and the OFAH with respect to Invasive Species and encourage the promotion and distribution of information regarding the status of and management options for their control

F.3.2 That the partner municipalities adopt policies to promote and encourage the planting of native species (particularly drought tolerant species) through development approvals and property management programs.

F.4 Water and Land Management

F.4.1 That the LSRCA continue to undertake Land Securement activities in order to protect target areas. The LSRCA will use a criteria screening tool to determine those lands that are currently not protected and where purchase is the most appropriate protection action. In addition, alternatives to purchase should be considered, eg. Alternative Land Use Services (ALUS) as another means of long term protection

F.4.2 That the LSRCA continue to undertake stewardship initiatives throughout the Lake Simcoe watershed. Priority areas for undertaking stewardship activities maybe identified through Phase 2 of LSRCA's Natural Heritage System

F.4.3 That LSRCA request the Ministry of Natural Resources to undertake the development of watershed rare lists and protection policies for all flora and faunal groups

F.4.4 That the LSRCA work with its municipal partners to investigate efforts that could be made to improve public properties for long term environmental benefit and sustainability

F.4.5 That the LSRCA, the partner municipalities, and developers work to identify opportunities for undertaking restoration works as part of development applications (e.g. re-establishing riparian buffers, naturalizing farmed areas)

G ADAPTIVE RESPONSE (climate, social, political)

G.1 Climate Change

G.1.1 That LSRCA and partners develop mitigation and adaptation strategies for various sectors that incorporate the research of scientists, resource managers and other stakeholders to enhance the ability of our systems to adapt to the changing conditions and increase the resilience of the system

G.1.2 That LSRCA work with its partners to refine the anticipated impacts of climate change in the Lake Simcoe watershed. This information can then be used to develop management strategies to address these impacts

G.1.3 That the LSRCA and the partner municipalities will work with watershed partners to reduce their carbon footprint and to increase the ecological resilience of the Lake Simcoe watershed

G.2 Water Studies

G.2.1 That the LSRCA work with York Region to promote and support their 'Water for Tomorrow' program

G.2.2 That the LSRCA in conjunction with the province (MNR, MOE) undertake the development of environmental flow targets where the East Holland R., West Holland R., and the Maskinonge R. are the priorities

G.2.3 That the Low Water Response program be continued to ensure that water supply and ecosystem integrity can be protected and maintained in low water conditions; further that the Provincial / LSRCA Low Water Response system and municipal lawn watering bans and advisories be better integrated to provide consistent messaging and better adoption of water restrictions during dry or drought periods. Also that the municipal partners consider the utility of enacting a water conservation by-law

G.2.4 That interim targets for water takings should be established by the Ministry of the Environment based on environmental flows

G.2.5 That the LSRCA undertake and update flood control studies within the Lake Simcoe watershed to identify opportunities to reduce the potential for flooding by reducing peak flows, as scheduled in the LSRCA business plan

G.2.6 That the Province of Ontario reinvest in flood warning and flood plain mapping programs within the watershed. Further that the current flood warning network be expanded throughout the watershed including the addition of at least two full meteorological stations

G.2.7 That the LSRCA develop a program to provide technical and financial assistance to landowners wishing to flood-proof their homes in floodplain and prone areas

H COMMUNICATIONS

H.1 Web-based

H.1.1 That the LSRCA will update its website with findings and recommendations of the [Subwatershed] Plan

H.1.2 That the LSRCA investigate the feasibility of using 'Facebook' and other non-conventional means of web-based communication to improve uptake and understanding of the subwatershed plans and their future implementation

H.2 Community / Partnership Outreach

H.2.2 That the LSRCA and the partner municipalities will engage the community of the subwatershed through public information sessions and invite/encourage their participation in developing the future implementation plans

H.2.3 That LSRCA investigate new and innovative ways of reaching target audiences in the local community and engage/involve them in restoration programs and activities eg high school environmental clubs, through Facebook groups, hosting a Lake Simcoe Environment Conference for high schools/science community interaction

H.2.4 That the LSRCA continue to ensure transparency and reasonable access to data, reports, and decisions of the LSRCA related to the subwatershed plans and their implementation

H.2.5 That co-ordinated, widespread education and outreach should be implemented; focused on using best management practices to prevent the spread of invasive species and the destruction of aquatic habitat in order to protect the integrity of the Lake Simcoe watershed. These programs should be targeted to their audiences, from school groups to residents and recreational users to ensure that they are effective… in consultation with Ministry of Natural Resources and the Ontario Federation of Anglers and Hunters

H.2.6 That the LSRCA work with partner agencies (eg. OFAH, MNR) to enhance communications to prevent the introduction and spread of invasive species in the watershed

H.2.7 That the LSRCA promote programs encouraging people to return pet fish to stores, rather than releasing them to area watercourses, in order to prevent the introduction of non-native species to the subwatershed

H.3 Promotion

H.3.1 That the LSRCA promote enhanced relationships between all sectors to work towards the goal of more sustainable development

H.3.2 That LSRCA undertake more widespread promotion of the LEAP and other programs that it undertakes

H.3.3 That LSRCA hold workshops/seminars to educate landowners about key issues and inform them of the programs available to resolve these issues

H.4 Print/Air/TV

H.4.1 That LSRCA expand its media network to enhance the promotion of its stewardship programs and research to a wider audience