



# The Canal and Mitchell Lakes, Talbot River, and Whites Creek Subwatershed Plan

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Implementation Plan: 2016 - 2021

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## **Background**

Working in partnership with the Ministry of Environment and Climate Change (MOECC), Ministry of Natural Resources and Forestry (MNR), Ministry of Agriculture, Food and Rural Affairs (OMAFRA), the County of Simcoe, Region of Durham, Township of Ramara, City of Kawartha Lakes, Township of Brock, Simcoe County Federation of Agriculture, Trent Matters, and the Couchiching Conservancy, the Lake Simcoe Region Conservation Authority and Kawartha Conservation have developed a subwatershed plan for the Canal and Mitchell Lakes, Talbot River, and Whites Creek subwatershed. This subwatershed plan includes an assessment of the current state of the environment in its lakes and watercourses, the stressors upon their health, and the current management framework to address those stressors. As a result of that assessment, the subwatershed plan developed a list of 105 recommended actions which, if implemented, would provide additional support for the protection and restoration of the subwatershed. For a full list of recommendations, see Chapter 8 in the Canal and Mitchell Lakes, Talbot River, and Whites Creek Subwatershed Plan.

In reality though, it may not be practical to implement all of the 105 recommendations within a short time frame. Furthermore, some stresses upon the health of the subwatershed may be more critical than others, requiring a more timely response. Recognizing these realities, the Lake Simcoe Region Conservation Authority, Kawartha Conservation and their partners have developed this implementation plan to guide and focus effort on the implementation of a short-list of priority recommendations.

## **Prioritizing the recommendations**

The first stage in developing an implementation plan was to short-list the full list of 105 recommendations to focus effort on those that address priority threats. The short-listing process followed The Nature Conservancy's Conservation Action Planning framework, which is a two-stage process: a threat assessment, and a cost-benefit assessment.

The threat assessment evaluated the scope and severity of each of the threats identified in the subwatershed plan on the targets and indicators of watershed health as articulated in the Lake Simcoe Protection Plan. Threats were ranked from low to very high for both scope (how extensive the threat is across the subwatershed) and severity (how severe the impact of the threat would be to each individual target), and summed across all watershed health targets.

Recommendations which addressed threats ranked as High or Very High were subjected to the cost – benefit assessment.

Each candidate recommendation was scored from 1 (low) to 4 (high) in terms of the benefits if it were implemented (i.e. scale, contribution, and duration of outcomes, as well as indirect benefits to other actions) and the costs to implement (in both staff time and dollars, as well as the length of time anticipated to achieve the recommendation). Short-listed recommendations were those which had above average benefit in addressing High or Very High threats, at below average cost.

## **Canal Lake and Mitchell Lake, including their connecting waterways, as a unique management area**

Canal Lake and Mitchell Lake, located within the Talbot River subwatershed, face more unique management challenges than in other areas within the planning area. Within these lakes and their connecting waterways, there is overwhelming community support for more aggressive/intrusive control of aquatic plants. As such, the recommendations in this plan have been categorized as those that apply specifically to Canal Lake and Mitchell Lake including their connecting waterways and those that apply to all areas of the Talbot River subwatershed, including Canal Lake and Mitchell Lake, and the Whites Creek subwatershed. Recommendations have been further characterized as those that *directly* apply to controlling aquatic plants in Canal Lake and Mitchell Lake, and those that *contribute* to controlling aquatic plants in the lakes.

### **Details within each recommendation**

Working in collaboration with the Subwatershed Plan Working Group, a table was developed for each of the selected short-list recommendations to provide further detail on its implementation, including:

- One or more **Activities** which must be undertaken to accomplish the recommendation.
- An output, or **Measure of Success**, to identify intended end goals for each activity. These measures provide an important metric against which agencies responsible for watershed management can hold themselves accountable to the public and other stakeholders
- A **Lead Agency** which will be tasked with ensuring the activity is completed. The role of the lead agency may include project management, identifying and securing funding, and reporting on progress to the Subwatershed Working Group. Some activities also include a list of collaborating agencies (provided in brackets). In cases where unanticipated budget constraints limit the ability of the designated lead agency to project manage one or more activities, they will be responsible for soliciting other partners to lead on their behalf.
- A **Target Deadline** to identify the date by when the activity should be completed. This target deadline plays an important role in ensuring accountability of lead agencies to the public and other stakeholders, and is particularly important in the case of activities upon which other activities or other recommendations depend.

## **List of agency acronyms**

Department of Fisheries and Oceans – DFO

Federation of Ontario Cottagers' Associations – FOCA

Kawartha Conservation – KC

Kawartha Lakes Stewards Association – KLSA

Lake Simcoe Region Conservation Authority – LSRCA

Ontario Federation of Anglers and Hunters – OFAH

Ontario Invasive Plant Council – OIPC

Ontario Ministry of Agriculture, Food and Rural Affairs – OMAFRA

Ontario Ministry of Environment and Climate Change – MOECC

Ontario Ministry of Municipal Affairs and Housing – MMAH

Ontario Ministry of Natural Resources and Forestry – MNRF

Ontario Ministry of Transportation – MTO

Parks Canada-Trent Severn Waterway – PC-TSW

Subwatershed Municipalities – Simcoe County, Durham Region, City of Kawartha Lakes, Township of Ramara, Township of Brock

## **Recommendations specific to Canal Lake and Mitchell Lake, and their connecting waterways**

Canal Lake and Mitchell Lake are lake ecosystems that exist within the Talbot River subwatershed and therefore require unique management approaches. Numerous lake-specific pressures have been identified within the Subwatershed Plan as important management priorities including aquatic plant proliferation, impacts associated with shoreline development, nutrient and sediment accumulation, invasive species, and climate change, among others. Of particular importance to local shoreline residents along both lakes is the need for immediate aquatic plant management to address their concerns that prolific aquatic plants are deteriorating the quality of their lakes with respect to lake recreation, personal enjoyment, and other key values.

There are many reasons why aquatic plants are prolific in both lakes, two of which are particularly significant: natural ecological processes that exist within lakes, and invasive species. The location, type, and abundance of aquatic plants in a lake is a function primarily of natural lake ecology, whereby lakes such as Canal Lake and Mitchell Lake that are man-made, shallow, having nutrient rich sediments and clear water columns, have ideal conditions for aquatic plant growth. Invasive plants such as Eurasian watermilfoil are another key reason for plant proliferation, as they often experience population booms due to their more-aggressive growth patterns which can out-compete native vegetation and form dense monoculture-like stands. Land use practices (e.g., nutrients from septic systems), direct seeding (e.g., First Nations cultivating wild rice) and climate change (e.g., longer growing seasons) are also likely contributors to prolific aquatic plants in Canal Lake and Mitchell Lake.

It is important to note that aquatic plants, particularly native plants, are of significant ecological value for providing habitat for aquatic life such as fish, and improving water quality by absorbing nutrients, stabilizing sediments, cleansing the water column, among other important functions. Furthermore, wild rice (an aquatic plant present in both lakes), is especially significant to First Nations for dietary and traditional purposes. The ecological values provided by aquatic plants must be given careful consideration within the context of the local residents' desire to more aggressively control aquatic plants.

In recognizing that aquatic plant management is a key issue for both lakes, recommendations specific to Canal Lake and Mitchell Lake are presented below within two themes: **recommendations that *directly apply to controlling aquatic plants***, and **recommendations that *contribute to controlling aquatic plants***.

## Recommendations that directly apply to controlling aquatic plants in Canal Lake and Mitchell Lake, and their connecting waterways

**Recommendation 7-7 – That shoreline residents, with support from Parks Canada and other regulatory agencies, consider various direct in-lake approaches that would provide immediate control of aquatic plants in areas where lake use has been significantly impacted by prolific aquatic plants.**

Activity	Measure of success	Lead (collaborating) agency	Target deadline
Undertake various approaches at the individual- or community-level that would reduce aquatic plant abundance in targeted areas. <b>Table A</b> provides a non-exhaustive list of plant control methods for consideration.	Reduction in plant abundance within targeted areas.	Shoreline residents (Trent Matters, PC-TSW, First Nations, City of Kawartha Lakes)	2017 - ongoing
Consider the feasibility of undertaking a coordinated approach to reducing aquatic vegetation to improve access for shoreline residents, which may include dredging , taking into consideration factors listed in <b>Table B</b>	Reduction in plant abundance within targeted areas.	Shoreline residents, Trent Matters (PC-TSW, First Nations, various other approval authorities)	2017 - ongoing
Remove accumulated aquatic vegetation that has washed-up along shoreline and dispose of as compost either on private properties or at municipal landfills free of charge.	Removal of washed up aquatic plants in targeted areas.  Waived aquatic plant disposal fees at municipal landfills.	Shoreline residents (City of Kawartha Lakes)	Ongoing

**Table A: Various aquatic plant control methods and related information as published by the [Kawartha Lakes Stewards Association's Aquatic Plants Guide \(2009\)](#). Text in dark grey indicates additional information added to table to be more applicable to Canal Lake and Mitchell Lake.**

Method	Size of area managed	Cost	Cost sharing? Cost frequency	Frequency	Reduces plants?	Change to plant community	Algae (if already present)	Permit requirements
Raking or home-made dredge	Small – swimming or docking area	Rakes: \$20 to \$100. Dredges \$0 to \$100 + boat/gas	Yes – can be shared among neighbours. Buy once.	Weekly or as needed. Raking after windy conditions.	Yes	Moderate	Removes algae	Homemade dredges/draws are not allowed on the TSW, however Parks Canada has permitted dredging in some cases; they may harm fish habitat; raking is OK in small areas if plants removed from lake.
Benthic mat or sand on the lake bed	Small – swimming or dock area	Depends on size, \$200 to \$700.	No – cannot be shared. Buy once.	Once – mat removed in the fall.	Yes	High	Increases algae	Not permitted in TSW. Sand below high water mark is not permitted in Ontario.
Cutters – mounted on a boat or thrown	Large – swimming and/or boat channel	Up to about \$2,200 to buy.	Yes – can be shared among neighbours. Buy once.	Biweekly or as needed.	Yes, but mainly near the surface	Low	Unknown	Consult local agencies for size restrictions on cut area; permit required on TSW.
Herbicide – Reward©	Medium – swimming and/or boat channel	\$80 minimum if self-applied. Cost of commercial application is estimated on a case-by-case basis.	Yes – can be shared among neighbours. Every year.	Once.	Depends on the site.	Variable – both very high and very low.	Unknown.	Purchasing and applying require permit; permit specifies timing.
Corn to attract carp	Small – swimming or dock area.	Minimal.	No – cannot be shared. Every year.	Weekly or as needed.	Yes, more so in early summer.	Moderate.	Unknown.	No permit required.
Mechanical harvester	Large – swimming, dock, boat channel.	Depends on the area, \$650 - \$1500.	Yes – can be shared among neighbours. Every year.	Once, or twice throughout growing season.	Yes.	High.	Increases algae.	Consult local agencies for size restrictions on cut area; permit required on TSW.
Turbulent water, bubbler	Small – swimming or dock area	Generally \$100-1500, depending on model.	No – cannot be shared. Buy once.	Continuous operation, or as needed.	Not tested in Aquatic Plants Guide.	Not tested in Aquatic Plants Guide.	Not tested in Aquatic Plants Guide.	Has not been permitted by the TSW. Consult TSW for more information.



**Table B: Key considerations when considering large-scale lake dredging to control aquatic plants.**

<b>Key considerations when considering large-scale dredging project</b>
<ul style="list-style-type: none"><li>• Considering the feasibility of undertaking a large-scale dredging project requires a thorough evaluation of all advantages and disadvantages of this project in terms of its potential impacts and changes to the ecological, socio-economic, and cultural state of the lake.</li><li>• Application and approval process may be lengthy and difficult (includes multi-tier government agency permitting – Parks Canada – Trent-Severn Waterway - Ministry of Natural Resource and Forestry, Fisheries and Oceans Canada, etc.).</li><li>• Environmental and geological studies of site location (including fish, species at risk, vegetation, bathymetry and geomorphology surveys).</li><li>• Consultations with First Nations, specifically Williams Treaty First Nations.</li><li>• Disposal of sediments, especially if they contain heavy metals and other contaminants.</li><li>• Sediment analysis for contaminants (current/historic- heavy metals, etc.).</li><li>• Location of any subsurface structures, but not limited to pipes, tanks, and utilities.</li><li>• Complexity and cost of dredging technique (hydraulic or non-hydraulic).</li><li>• Local public concerns about dredging (dewatering, staging areas &amp; truck traffic if hauled away).</li></ul>
<b>Potential funding sources</b>
<ul style="list-style-type: none"><li>• Federal/provincial funds.</li><li>• Regional and municipal funding.</li><li>• Private businesses.</li><li>• Community fundraising.</li></ul>

**Recommendation 7-9 – That local communities, with support from agencies and/or academic institutions, undertake small-scale pilot projects to test the effectiveness of practical, affordable, and/or innovative approaches to aquatic plant control through scientific studies and quantitative reporting.**

<b>Activity</b>	<b>Measure of success</b>	<b>Lead (collaborating agency)</b>	<b>Target deadline</b>
Pilot several small-scale techniques for aquatic plant control.	Installing and/or undertaking various techniques (e.g., bubbler, aerator, etc.)	Trent Matters (PC-TSW)	2017-2018
Monitor the effectiveness of techniques, including cost vs. benefit.	Routine science-based data collection and anecdotal observations.	Trent Matters (Academia, LSRCA, KC)	2017-2018
Develop and distribute a report that summarizes results and provide recommendations.	Report completion and distribution.	Trent Matters (Academia, LSRCA, KC)	2019

## Recommendations that contribute to controlling aquatic plants in Canal Lake and Mitchell Lake, and their connecting waterways

### Protecting and Restoring Fish Habitat

Recommendation 6-15 – That the MNRF, LSRCA, Kawartha Conservation, and the Trent Severn Waterway, in partnership with organizations such as the Ontario Federation of Anglers and Hunters (through its invading species awareness program) continue to implement strategies to prevent the introduction and spread of invasive species through the study area subwatersheds. This could include, but would not be limited to, the continuation of education and outreach works, and the development and distribution of additional materials as new species of concern arise; implementing measures such as boat and equipment sanitization, conducting research on how the ecosystem responds to the introduction of invasive species.

Activity	Measure of success	Lead (collaborating) agency	Target deadline
Continue to deliver invasive species awareness program	Program delivered	MNRF (OIPC, OFAH)	Ongoing
Provide information on the danger of using invasive plants in ornamental gardens to the groups listed above	Information provided to garden centres	MNRF	Ongoing
Engage local citizens in monitoring terrestrial and aquatic invasive species, using a Citizen Science model	Community workshop held  Citizen science program developed and volunteers engaged	OFAH, OIPC, Trent Matters (Couchiching Conservancy, LSRCA, KC)	Ongoing
Continue to monitor publicly-owned natural areas for the presence of invasive species, and remove highly invasive species in a timely fashion	Annual monitoring occurs, removal as appropriate	City of Kawartha Lakes, Couchiching Conservancy, OFAH	Ongoing

**Recommendation 6-16 – That the MNRF, LSRCA, Kawartha Conservation, DFO and the Trent Severn Waterway, examine ways of preventing the spread of novel invasive species between the Lake Huron and Lake Ontario basins via the Trent Severn Waterway.**

<b>Activity</b>	<b>Measure of success</b>	<b>Lead (collaborating) agency</b>	<b>Target deadline</b>
Host workshop of staff from TSW, MNRF, KC, LSRCA, DFO, and members of the Lake Simcoe Science Committee to discuss the role of the Trent Severn Waterway as a vector of invasive species, and methods to limit their spread	Workshop held	LSRCA (KC, PC-TSW, MNRF, DFO)	2017
Develop action plan, based on results of workshop	Action plan developed	PC-TSW	2017
Implement action plan	Implementation activities completed	PC-TSW	Ongoing

**Recommendation 7-5 – That the LSRCA and Kawartha Conservation, in partnership with the Trent Severn Waterway and Trent Matters, develop and profile communication materials that describe the natural processes of aquatic plants in Canal Lake and Mitchell Lake, for shoreline residents and lake users.**

<b>Activity</b>	<b>Measure of success</b>	<b>Lead (collaborating) agency</b>	<b>Target deadline</b>
Identify shoreline residents and groups to target with communications materials	List of residents and groups compiled	LSRCA, KC (PC-TSW, Trent Matters, MNRF)	2017
Develop communications materials that describe the natural processes of aquatic plants in shallow lakes	Materials (e.g., factsheets, web content, pamphlets, etc.) developed	LSRCA, KC (PC-TSW, Trent Matters, MNRF)	2017
Profile and distribute materials at events and workshops (e.g., presentations, handouts, display boards, web content etc.)	Materials profiled at various events within the Kawartha Lakes region	LSRCA, KC (PC-TSW, Trent Matters, MNRF, local First Nations)	2018
Deliver communication materials to targeted shoreline residents, lake users and other interested groups	Materials delivered around the lakes	LSRCA, KC (PC-TSW, Trent Matters, MNRF)	ongoing

**Recommendation 7-6 – That Trent Matters and the Trent Severn Waterway work to ensure that more information is made available and accessible to shoreline residents and lake users regarding aquatic plant control options that are permissible within the lakes, and that current aquatic plant management policies be reviewed.**

<b>Activity</b>	<b>Measure of success</b>	<b>Lead (collaborating agency)</b>	<b>Target deadline</b>
Update Parks Canada’s website to provide information on aquatic plant control options and guidelines within the regulatory context of Trent-Severn Waterway policies.	Clear and concise aquatic plant control options and policy posted to TSW website.	PC-TSW (MNRF, MOECC, First Nations)	2017
Distribute copies and profile online the 2009 Kawartha Lake Stewards Association publication “Aquatic Plants Guide”. Make information accessible through websites and other community forums.	Distribution of copies to several communities and groups.  Link to publication on various lake-related websites.	Trent Matters (KLSA, LSRCA, KC, FOCA, shoreline communities)	Ongoing
Host workshop on recommended approaches to aquatic plant management, based on research led by Kawartha Lake Stewards Association	Workshop provided	Trent Matters (KLSA, KC, LSRCA)	2017
Approach the Kawartha Lake Stewards Association to update the “Aquatic Plants Guide”.	Guide updated	KC (LSRCA, Trent Matters)	2018
Open a dialogue between Trent-Severn Waterway and Trent Matters to review current aquatic plant management policies and best management practices in light of the most recent scientific studies	Meeting between TSW and Trent Matters held	Trent Matters, TSW (KC, LSRCA, MNRF, DFO)	2017 - ongoing
Request for more equity between the TSW and the Rideau Canal in regards to access of aquatic plant management equipment and strategies	A comparative analysis to determine gaps in service and resources completed	Trent Matters, TSW, LSRCA, KC	2018

**Recommendation 7-2 – That the LSRCA, Kawartha Conservation, and the subwatershed municipalities work with property owners to implement a natural landscaping approach along shoreline properties, with particular focus on decommissioning hardened shorelines and addressing severely eroded/ice-damaged sections.**

**Recommendation 8-23 – That, given the amount of shoreline area on Lake Simcoe, Canal Lake, and Mitchell Lake, and the level of development adjacent to these shoreline areas, that part of LSRCA and Kawartha Conservation’s stewardship efforts be targeted to addressing shoreline stewardship practices, including implementing natural landscaping and decommissioning hardened shorelines.**

<b>Activity</b>	<b>Measure of success</b>	<b>Lead (collaborating) agency</b>	<b>Target deadline</b>
Utilize the SPOT to identify potential shoreline restoration projects and property owners to work with	List of projects and property owners created	LSRCA, KC (subwatershed municipalities)	2018
Create landowner guides that are consistent with current TSW policies, and with other existing guidance documents	Landowner guides created	KC (LSRCA, subwatershed municipalities, PC-TSW, Trent Matters)	2019
Hold workshops to educate property owners and to promote LSRCA’s and KC’s stewardship programs to assist with restoration projects (eg. LEAP, Rain/Blue-scaping, Blue Canoe)	Workshops held	LSRCA, KC (PC-TSW, subwatershed municipalities)	2019
Assist landowners in naturalizing their shorelines (funding, technical advice, etc.)	Shoreline naturalization projects completed	LSRCA, KC (subwatershed municipalities, PC-TSW)	Ongoing
Identify shoreline naturalization opportunities on federal lands along the Trent-Severn Waterway, and undertake projects wherever practical.	Several naturalization project opportunities identified  Naturalization projects undertaken	PC-TSW (community volunteers, LSRCA, KC)	Ongoing

**Protecting groundwater recharge**

**Recommendation 4-2 - That the LSRCA assist subwatershed municipalities in developing a funding model to support the construction and maintenance of Low Impact Development approaches to stormwater management.**

<b>Activity</b>	<b>Measure of success</b>	<b>Lead (collaborating) agency</b>	<b>Target deadline</b>
Review current funds to assess what might be available to support LID	Review complete	Subwatershed municipalities (LSRCA, KC)	2017
Investigate other potential sources of funding	List of sources compiled	Subwatershed municipalities (LSRCA, KC)	2018
Create funding model to support LID projects	Funding model developed	Subwatershed municipalities (LSRCA, KC)	2019



**Recommendation 4-5 - That the Townships of Brock and Ramara and the City of Kawartha Lakes promote Low Impact Development (LID) approaches to stormwater management for private landowners within their jurisdictions, where sites are suitable.**

<b>Activity</b>	<b>Measure of success</b>	<b>Lead (collaborating) agency</b>	<b>Target deadline</b>
Develop information and educational materials for landowners detailing how they can promote infiltration and reduce the volume of stormwater runoff on their own properties	Education materials developed and provided to municipality for distribution	LSRCA/KC (Subwatershed municipalities)	2017
Promote education and funding available for private landowners to implement LID projects (eg. through websites, workshops, events, etc.)	Promotional activities completed	Subwatershed municipalities (LSRCA, KC)	Ongoing

## Improving Construction and Maintenance Practices

**Recommendation 7-8 - That the subwatershed municipalities, OMAFRA, conservation authorities, and the construction industry work to implement effective sediment and erosion control measures and other practices to prevent contaminants from reaching local watercourses during road work, agricultural drainage, and other construction projects.**

<b>Activity</b>	<b>Measure of success</b>	<b>Lead (collaborating) agency</b>	<b>Target deadline</b>
Review findings from the 2016 LSRCA Erosion and Sediment Control Research Study to identify barriers and drivers to uptake of E&SC measures for construction practices	Findings reviewed and summarized	LSRCA	2016
Develop a strategy to address the findings of the research study to increase uptake of E&SC measures in the study area subwatersheds	Strategy developed	LSRCA (KC, MOECC)	2018
Implement initiatives to increase uptake of E&SC measures in the study area subwatersheds (eg. Educational materials, workshops, training, policy development, etc.)	Initiatives implemented in subwatersheds	LSRCA (KC, MOECC, Stormwater Technical Working Group, subwatershed municipalities)	Ongoing

## Recommendations that apply to all areas of the Talbot River Watershed (including Canal Lake and Mitchell Lake), and Whites Creek Watershed

### Protection and policy

#### The adaptive watershed planning process

Recommendation 10-1 – That the LSRCA, Kawartha Conservation and other relevant and interested stakeholders establish an implementation working group to assist in coordinating the implementation of priority recommendations to address the most significant threats in these subwatersheds.

Recommendation 10-2 – That the LSRCA and Kawartha Conservation, with the assistance of the other government agencies and stakeholder groups involved in implementing the recommendations of this subwatershed plan, report on the progress of this implementation annually

Activity	Measure of success	Lead (collaborating) agency	Target deadline
Develop strategy to approach LSRCA and KC BODs to have plan approved	Strategy developed	LSRCA/KC	2016
Have subwatershed plan approved by the LSRCA and Kawartha Conservation Boards of Directors	Plans approved	LSRCA/KC	2016
Meet periodically to report on status of implementation of subwatershed plan recommendations, including the number of stewardship projects completed	Meetings held and report completed	LSRCA/KC (implementation partners)	Ongoing
Share annual reports with watershed municipal councils and CAOs, MPPs, MPs, Lake Simcoe Stewardship Network, Lake Simcoe Science Committee, Lake Simcoe Coordinating Committee, and other interested stakeholders	Report shared. Partners aware of work being done and accomplishments achieved to improve the health of the Talbot River and Whites Creek subwatershed	LSRCA/KC (implementation partners)	Ongoing

**Recommendation 10-3 – Within five years of the completion of this subwatershed plan, that the LSRCA and Kawartha Conservation, in collaboration with MOECC, MNRF, subwatershed municipalities, and other interested and relevant stakeholders, review progress on achieving its recommendations and update the subwatershed plan accordingly.**

<b>Activity</b>	<b>Measure of success</b>	<b>Lead (collaborating) agency</b>	<b>Target deadline</b>
Review monitoring data on the state of the subwatershed, and implementation reporting. Revise subwatershed plans using “state-pressure-response” model, in context of that review	Subwatershed plans updated	LSRCA/KC (MOECC, MNRF, subwatershed municipalities)	2021
Conduct gap analysis of policies and programs in place to address watershed stressors. Review existing / outstanding recommendations and develop recommendations to address policy gaps	Suite of subwatershed recommendations developed, as necessary	LSRCA/KC (MOECC, MNRF, subwatershed municipalities)	2022
Develop implementation plan to implement priority recommendations	Implementation plan developed and approved by LSRCA Board	LSRCA/KC (MOECC, MNRF, subwatershed municipalities)	2022

## Official Plan consistency

Recommendation 8-1 - That the LSRCA, Kawartha Conservation, and relevant provincial agencies assist the City of Kawartha Lakes and the Townships of Brock and Ramara in ensuring their official plans are consistent with the recommendations presented in the Talbot River, Whites Creek, Canal and Mitchell Lakes Subwatershed Plan, as approved by the LSRCA Board of Directors. This approval will be subsequent to consultation with the City of Kawartha Lakes, the Townships of Brock and Ramara, the subwatershed plan working group, and the general public, as outlined in the *Guidelines for developing subwatershed plans for the Lake Simcoe watershed* (May, 2011).

Activity	Measure of success	Lead (collaborating) agency	Target deadline
Provide guidance to municipalities on incorporating recommendations and objectives of subwatershed plan into Official Plan and Secondary Plan policies	Guidance provided, as necessary	LSRCA/KC (MOE, MMAH)	As part of the Municipal Official Plan Review process, or development of Secondary Plans
Develop Official Plan and Secondary Plan policies to ensure consistency with the Talbot River, Whites Creek, Canal and Mitchell Lakes subwatershed plan's compiled recommendations	Policies completed and endorsed by County, Region, City and Townships. Municipal Official Plans, and Secondary Plans are consistent with subwatershed plans	Subwatershed municipalities (LSRCA, KC, MMAH)	As part of the Municipal Official Plan Review process, or development of Secondary Plans

**Recommendation 5-3 – That the subwatershed municipalities, in the context of LSPP Policy 6.37-SA, adopt the ‘Guidance for the protection and restoration of significant groundwater recharge areas in Lake Simcoe’ document. Further, that the municipalities utilize this document to incorporate policies around significant groundwater recharge areas into their official plans, as per LSPP Policy 6.38-DP.**

<b>Activity</b>	<b>Measure of success</b>	<b>Lead (collaborating) agency</b>	<b>Target deadline</b>
Adopt draft policies included in the Guidance document in Municipal Official Plans	Policies adopted, protection for significant recharge areas included in Official Plans	Subwatershed municipalities (LSRCA, KC, MMAH)	As part of the Municipal Official Plan Review process, or development of Secondary Plans
Provide training for municipal staff on groundwater recharge, and implementation of proposed policies	Training provided, municipal staff have greater understanding of their role in protecting groundwater recharge function	LSRCA/KC (Subwatershed municipalities)	Upon request of municipalities

**Recommendation 5-4 – That the LSRCA provide updated mapping of significant groundwater recharge areas to the subwatershed municipalities and ensure they are updated periodically, at a minimum of every five years.**

<b>Activity</b>	<b>Measure of success</b>	<b>Lead (collaborating) agency</b>	<b>Target deadline</b>
Review any updates to groundwater models and their potential impact on current mapping	Current models reviewed and potential changes to maps identified	LSRCA	2021
Update maps of SGRAs	Maps created	LSRCA	As necessary
Distribute updated maps to subwatershed municipalities	Maps sent to municipalities	LSRCA	As necessary

Recommendation 8-3 – That Kawartha Conservation develop policies be developed around the *Kawarthas, Naturally Connected Natural Heritage Systems Strategy* in order to achieve its implementation. Wherever possible, these policies should be consistent with those of the Lake Simcoe Natural Heritage System to ensure ease of implementation for municipalities.

Recommendation 8-4 – That the City of Kawartha Lakes, Region of Durham, and Townships of Brock and Ramara incorporate the protection and restoration of areas of critical ecological significance identified through the *Lake Simcoe Natural Heritage System* and/or the *Kawarthas, Naturally Connected Natural Heritage Systems Strategy* into their official plans. Further, that the LSRCA and Kawartha Conservation partner to facilitate this implementation by determining how to mesh the features protected under the two systems, for municipalities that fall within multiple conservation authority jurisdictions.

Activity	Measure of success	Lead (collaborating) agency	Target deadline
Strike policy development working group	Working group struck	KC (LSRCA)	2016
Develop draft policies for municipal official plans	Policies drafted	KC (working group)	2017
Incorporate policies into municipal official plans	Official plan updated	City of Kawartha Lakes (working group)	Upon next scheduled update



**Recommendation 8-6 - That the LSRCA and Kawartha Conservation, in partnership with subwatershed municipalities and other interested stakeholders, develop policies for municipal official plans that would provide mitigation and restoration for development and site alteration within natural heritage features that are not defined as “key” by the Lake Simcoe Protection Plan or as “significant” under municipal official plans, to ensure no net loss in overall natural vegetative cover as a result of development.**

<b>Activity</b>	<b>Measure of success</b>	<b>Lead (collaborating) agency</b>	<b>Target deadline</b>
Strike policy development working group	Working group struck	LSRCA	2016
Develop draft policies for municipal official plans	Policies drafted	LSRCA (working group)	2017
Incorporate policies into municipal official plans	Official plan updated	Subwatershed municipalities (working group)	Upon next scheduled update

### Protecting groundwater recharge

Recommendation 5-6 - That the MOECC amend the Environmental Compliance Approvals application form and Guide to recognize the importance of protecting Significant Groundwater Recharge Areas.

Activity	Measure of success	Lead (collaborating) agency	Target deadline
Amend ECA approvals application and Guide to recognize SGRAs	Application form and Guide amended	MOECC (LSRCA, KC)	2018

## Restoration and remediation

### Managing watercourses in an agricultural landscape

**Recommendation 4-12 - That the LSRCA and Kawartha Conservation continue to participate in the Kawartha Farm Stewardship Collaborative, and continue to pursue new and innovative ways of engaging the agricultural community in undertaking voluntary projects focused on protecting and enhancing watershed health**

Activity	Measure of success	Lead (collaborating) agency	Target deadline
Hold workshop(s) as necessary to share information and coordinate efforts on issues such as best practices for phosphorus reduction on agricultural land, achieving in-stream flow targets, implementation of stewardship programs, and methods of increasing public awareness	Workshops held, as necessary. Participants feel that workshops are a good use of their time	LSRCA, KC (subwatershed municipalities, OMAFRA, MOECC, MNRF, interested environmental groups, others as identified)	Ongoing

**Recommendation 6-18 – That LSRCA and Kawartha Conservation work with the subwatershed municipalities, OMAFRA, and landowners to examine innovative forms of municipal drain maintenance, or opportunities to create new drains using principles of natural channel design.**

<b>Activity</b>	<b>Measure of success</b>	<b>Lead (collaborating) agency</b>	<b>Target deadline</b>
Host workshop for conservation authority staff, farm community, drainage superintendents, and drainage contractors on managing ecosystem function in municipal drains	Workshop held	LSRCA, KC, (OMAFRA, MNRF, interested members of agricultural roundtable)	2017
Establish a pilot project to focus efforts on modifying an existing drain to promote ecological function.	Pilot study established	LSRCA, KC	2018
Promote use of features such as grassed buffers, two stage channels, or weirs on headwater wetlands to manage drains, while minimizing impacts on agricultural drainage	A combination of grassed buffers, two stage channels, and weirs on headwater wetlands established in the Talbot River and Whites Creek subwatershed, as appropriate	LSRCA, KC	Ongoing
Assess savings in reduced drain maintenance achieved through such measures, and additional costs to the municipality and landowners in establishing them	Assessment of relative costs and savings of alternative drain management measures completed	LSRCA, KC, subwatershed municipalities, (OMAFRA)	2021
Examine funding models to offset any financial impact to benefiting landowners	Funding models reviewed, programs developed as appropriate	LSRCA, KC, subwatershed municipalities, (OMAFRA)	2021

### Increasing uptake of stewardship programs

**Recommendation 6-1 – That the LSRCA and Kawartha Conservation, along with interested stakeholders and stewardship groups, develop an adaptive stewardship strategy to identify, implement and track stewardship projects in the study area subwatersheds. The development of this strategy should incorporate recommendations 6-2 through 6-12 as well as recommendations 8-16 through 8-21.**

<b>Activity</b>	<b>Measure of success</b>	<b>Lead (collaborating) agency</b>	<b>Target deadline</b>
Create working group of interested stewardship community groups, government agencies and stakeholders within the study area	Working group meeting held	LSRCA, KC (Lake Simcoe Stewardship Network, Couchiching Conservancy, Trent Matters, MNR)	2017
Develop stewardship strategy, which should include plans and actions to improve coordination of programs, identify partners and funding opportunities, identify public outreach initiatives, and increase uptake of existing programs, among others	Strategy developed	LSRCA, KC (Stewardship Working Group)	2019
Implement initiatives identified in the stewardship strategy	Initiatives implemented	LSRCA, KC (Stewardship Working Group)	ongoing

## Protecting and Restoring Fish Habitat

**Recommendation 6-14 – That the LSRCA, Kawartha Conservation, MNRF, and the Trent-Severn Waterway investigate the impacts of the Trent-Severn locks and other major barriers located in the study area to the movement of fish. Further that the partners explore the feasibility of mitigating these impacts, perhaps through the installation of fishways. Any potential mitigation activity would consider, at a minimum, the potential for the introduction and/or spread of invasive species.**

<b>Activity</b>	<b>Measure of success</b>	<b>Lead (collaborating agency)</b>	<b>Target deadline</b>
Compile a list of barriers along the TSW, along with relevant details for each (eg. age, purpose, construction details, impacts etc.)	List of all barriers completed	LSRCA/KC (MNRF, PC-TSW)	2017
Prioritize the barriers according to their impacts and potential for mitigation	Barriers prioritized for removal	LSRCA/KC (MNRF, PC-TSW)	2018
Investigate potential mitigation strategies for the barriers	Potential strategies identified	LSRCA/KC (MNRF, PC-TSW, MNRF)	2019
Identify fish species, especially invasive species with potential to expand their range following mitigation	Fish species identified	LSRCA/KC (MNRF, PC-TSW, DFO)	2020
Share research findings with members of the Lake Simcoe Stewardship Network	Presentation provided	LSRCA/KC (PC-TSW )	2021

## Reducing salt use

**Recommendation 4-9 – The LSRCA has recently undertaken an exercise to identify areas in the Lake Simcoe watershed, including watercourses within the Whites Creek and Talbot River subwatersheds, which are vulnerable to road salt (as outlined by Environment Canada). This assessment may be refined through further examination of relative salt tolerance of local biota. As outlined in Environment Canada’s Code of Practice for the Environmental Management of Road Salt, municipalities should examine alternate methods of protecting public safety while reducing environmental impacts in these areas. These methods should be utilized in the salt vulnerable areas identified through the LSRCA exercise in addition to those areas identified in the municipalities’ Salt Management Plans.**

<b>Activity</b>	<b>Measure of success</b>	<b>Lead (collaborating) agency</b>	<b>Target deadline</b>
Undertake research to examine the relative salt tolerance of local biota to further refine salt vulnerable areas	Map of salt vulnerable areas refined	LSRCA/KC	2017
Assist the subwatershed municipalities in investigating alternate winter maintenance methods to implement in salt vulnerable areas	Alternate methods identified and analyzed for feasibility	Subwatershed municipalities (LSRCA, KC)	2018
Assist the subwatershed municipalities in updating their salt management plans to incorporate new methods where feasible	Salt management plans updated	Subwatershed municipalities (LSRCA, KC)	2019
Encourage municipalities to participate in the salt working group to exchange ideas and new research	Municipal representatives attend meetings	LSRCA	Ongoing

**Recommendation 8-5 – That the City of Kawartha Lakes develop a tree cutting bylaw, in order to address the removal of important features such as hedgerows and trees used as windbreaks.**

<b>Activity</b>	<b>Measure of success</b>	<b>Lead (collaborating) agency</b>	<b>Target deadline</b>
Review current municipal bylaws regarding tree removal and the protection of forest resources	Review completed	LSRCA/KC (subwatershed municipalities)	2016
Draft tree cutting bylaws	Bylaws drafted	Subwatershed municipalities (LSRCA, KC)	2017
Incorporate tree cutting bylaws into municipal documents	Bylaw approved by councils and incorporated into municipal documents	Subwatershed municipalities (LSRCA, KC)	2018



**Recommendation 8-27 – That the Ministry of Transportation, City of Kawartha Lakes, Townships of Brock and Ramara, Region of Durham and the County of Simcoe, in partnership with the Simcoe County Federation of Agriculture, LSRCA, Kawartha Conservation and MNRF, promote and implement, where appropriate, the use of treed windbreaks and/or ‘living snowfences’ along roadsides to prevent impacts from wind and blowing snow. The creation of a ‘living snowfence’ involves selectively harvesting crops in order to leave a specified amount of plant material standing along a roadway to facilitate snow accumulation.**

<b>Activity</b>	<b>Measure of success</b>	<b>Lead (collaborating) agency</b>	<b>Target deadline</b>
Review success of living snow fence pilot projects in other municipalities	Review of pilots complete	Subwatershed municipalities (LSRCA, KC)	2017
Develop map of priority areas for windbreak establishment, to manage blowing snow and dust	Priority area map developed	LSRCA/KC	2017
Promote the adoption of farm windbreaks and living snow fences through education programs, stewardship opportunities, etc.	Windbreaks established in priority areas	MTO, subwatershed municipalities, (Simcoe County Federation of Agriculture, LSRCA, KC, MNRF, OMAFRA)	Ongoing

## Science and research

### Increasing our understanding of climate change

Recommendation 4-16 – That the LSRCA and Kawartha Conservation work with their federal, provincial and municipal 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. Emphasis at this time should be placed on building ecological resilience in vulnerable subwatersheds through stream rehabilitation, streambank planting, barrier removal, and the implementation of other BMPs, in conjunction with the protection of current hydrologic functions.

Recommendation 5-15 – That the LSRCA and Kawartha Conservation, in partnership with the province and municipalities, develop management strategies to address the predicted impacts of climate change. Emphasis at this time should be placed on building ecological resilience in the Whites Creek and Talbot River subwatersheds through promoting recharge by increasing natural cover in the SGRAs/ESGRAs.

Activity	Measure of success	Lead (collaborating) agency	Target deadline
Undertake research into the anticipated impacts of climate change in the study area subwatersheds	Research completed	LSRCA/KC (MOECC, Environment Canada)	2018
Develop a climate change adaptation strategy	Strategy developed	LSRCA/KC	2019
Share the strategy with watershed municipalities and partner organizations	Presentations provided	LSRCA/KC (MOECC, MNRF, subwatershed municipalities)	2019

**Recommendation 8-22 – That the members of the Lake Simcoe Stewardship Network be encouraged to build into their projects relevant provisions for the anticipated impacts of climate change, such as the need to recommend native species which will be tolerant of future climate conditions, and the likelihood of an increase in invasive plants, pests, and diseases which may further limit the success of traditional stewardship approaches.**

<b>Activity</b>	<b>Measure of success</b>	<b>Lead (collaborating) agency</b>	<b>Target deadline</b>
Modify existing recommended tree planting lists for reforestation, based on expected changes to climate in southern Ontario	Recommended planting list developed	LSRCA, KC (MNRF)	2017
Share recommended tree planting list with members of the Lake Simcoe Stewardship Network, and watershed municipalities	Presentation provided	LSRCA, KC (MNRF)	2017
Share recommended tree planting list with garden centres, nurseries, landscaping companies, and horticultural societies in the subwatersheds.	Information provided	LSRCA, KC (MNRF, subwatershed municipalities, interested members of the Lake Simcoe Stewardship Network)	2018
Incorporate a percentage of species from the recommended climate change planting list as planting stock used on an annual basis in stewardship projects	Planting prescriptions transition toward species mix relevant for future climate scenarios	LSRCA, KC (MNRF, subwatershed municipalities, interested members of the Lake Simcoe Stewardship Network)	2018
Establish timeline for review and update of recommended tree planting lists, based on actual climate trajectories and pest and disease occurrences	Timeline for review established, and responsibility delegated	LSRCA, KC (MNRF)	2017

**Promoting Native Species**

<b>Recommendation 8-26 - That the study area municipalities give preference to native species when selecting trees to be planted in boulevards, parks, and other municipal lands.</b>			
<b>Activity</b>	<b>Measure of success</b>	<b>Lead (collaborating) agency</b>	<b>Target deadline</b>
Provide subwatershed municipalities a list of recommended native tree species, including those resistant to road salt	List provided	LSRCA, KC	2016
Update relevant plans, policies, and procedures as necessary	Plans, policies, and procedures updated as necessary	Subwatershed municipalities	Upon next scheduled update
Modify relevant plans, policies, and procedures as necessary to incorporate recommendations for addressing climate change (Recommendation 8-22), as they become available	Plans, policies, and procedures modified as necessary	Subwatershed municipalities	2019

## Monitoring and Assessment

Recommendation 4-17- That the LSRCA and Kawartha Conservation develop an environmental monitoring strategy for Canal Lake, Mitchell Lake and the Talbot River subwatershed. This strategy should identify parameters of watershed health to be monitored, frequency of monitoring, lead agencies, and potential funding sources. The strategy should also address identified limitations and gaps of the current monitoring program, which could include:

- Undertaking periodic monitoring of toxicants such as pesticides and pharmaceuticals;
- Spatial coverage of monitoring stations relative to addressing key monitoring questions such as the relationship between changes in land use cover and changes in water quality and quantity;
- Monitoring additional parameters that are key indicators of ecosystem health and restoration progress;
- Monitoring the Carden Alvar; and
- Monitoring additional lakes within the subwatersheds, including Talbot and Raven Lakes.

Activity	Measure of success	Lead (collaborating) agency	Target deadline
Create a working group of LSRCA and KC staff, as well as interested community organizations, and government agencies within the study area	Working group struck	LSRCA, KC	2017
Review current and past monitoring completed for the area to identify data gaps and new areas of research	Data gaps and research topics identified	LSRCA, KC (Couchiching Conservancy, Trent Matters, Trent University, MOECC, MNRF, DFO)	2018
Develop an environmental monitoring strategy	Strategy developed	LSRCA, KC (Couchiching Conservancy, Trent Matters, Trent University, MOECC, MNRF, DFO)	2020

## Improving Data Management

**Recommendation 6-23 – That LSRCA and its partners work to create a centralized location for reports and resources pertaining to Lake Simcoe and its watershed such that information can be accessed by all interested stakeholders**

<b>Activity</b>	<b>Measure of success</b>	<b>Lead (collaborating) agency</b>	<b>Target deadline</b>
Identify a centralized location to store the documents	Location selected	LSRCA	2017
Identify all reports and resources to be stored, and obtain copies of all documents	List of documents compiled	LSRCA	2019
Transfer documents to centralized storage location	Documents transferred	LSRCA	2020
Publicize the link to the centralized location	Link publicized	LSRCA	2020
Ensure all future reports and resources are stored in the centralized location moving forward	Documents stored	LSRCA	Ongoing