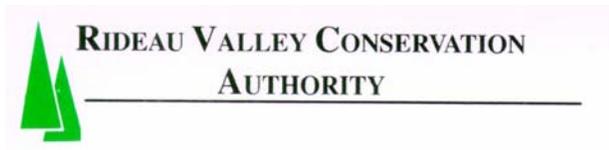




Lower Rideau Watershed Strategy Executive Summary

Prepared For:



Prepared By:

Robinson Consultants Inc.
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Our Project No.02048
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Introduction

Since the 1970s, numerous studies have been undertaken with a view to protecting the Rideau River's value as an important natural and cultural heritage resource in Eastern Ontario and the greater Ottawa area. Early efforts focused on water quality and the impact of urban pollutant sources on swimming beaches, progressing from the treatment of point sources such as combined sewer overflows, to non point sources such as urban runoff. These studies led to the adoption of a non-degradation policy aimed at controlling further runoff-borne bacterial loading, and the construction of stormwater treatment facilities for any new urban developments contributing runoff to the river and its tributaries. A system of interceptor sewers and stormwater treatment facilities was identified as a reliable, but very expensive way to reduce the pollutant loadings to the river from older existing urban areas. The focus of these efforts and proposals was on protecting the recreational beaches at Mooney's Bay and possibly improving water quality in the reaches downstream of Hog's Back Falls.

In more recent years, greater attention has been paid to other aspects of the River's condition. In 2001 the Rideau River Round Table led the publication of a "State of the River Report", and the Canadian Museum of Nature completed its "Rideau River Biodiversity Project" in 2003. These initiatives took a more contemporary, holistic approach to characterizing the state of the river based on a range of ecological indicators as well as physical characteristics including water quality conditions. The Biodiversity Project concluded that the river is generally in relatively good shape but in need of protection. The project identified shoreline development, the invasion of exotic species, and the use of fertilizer as the greatest threats to the sensitive environment of the river.

The Lower Rideau Watershed Strategy initiative began in 2002 out of a realization by the government organizations with responsibilities for various aspects of watershed and river management on the Rideau system, that the time had come to more deliberately adopt an ecosystem approach to their work. Doing so would help to ensure that the resources that are available to managing the system are applied in an effective and responsible manner and to ensure that policies and operations of the various organizations are complementary.

An over-arching Watershed Strategy was seen as a necessary backdrop to choosing how to address several current or emerging issues, including:

- The challenge of optimizing stormwater management solutions for infill developments in the urban area in the absence of a clear policy on the retro-fitting of older existing systems; a City of Ottawa stormwater management strategy is now being prepared to address this, but requires a clearer expression of long range objectives and plans for management of the watershed system
- continued degradation of aquatic habitat and riparian zone quality, due to continuing development pressure and increasing recreational uses on the waterway and despite efforts at conservation using regulatory and land use planning instruments
- continuing excessive aquatic plant and algae growth in the waterway (attributed to nutrient loading from both rural and urban lands), with attendant effects on the ecologic integrity of the system as well as the more visible and tangible impact on aesthetics and recreational uses
- the continuing need for more effective coordination of effort amongst the many government organizations with regulatory or operational responsibilities

Who has been involved?

The Watershed Strategy project was carried out under the management of the Rideau Valley Conservation Authority with active participation by many partners. Participating organizations were represented on a Steering Committee (SC) and a Technical Advisory Committee, and included the following:

City of Ottawa - Development Services
City of Ottawa -Transportation, Utilities and Public Works
Township of North Grenville
Ontario Ministry of the Environment - Ottawa District
Ontario Ministry of Natural Resources – Kemptville District
Ontario Ministry of Agriculture and Food
Parks Canada, Rideau Canal
Fisheries and Oceans Canada
National Capital Commission
Public Works and Government Services Canada
Rideau Valley Conservation Authority

The main consensus-building work happened at the Technical Advisory Committee (TAC) level, where the interests, local knowledge, and regulatory/operational responsibilities of the participating organizations were represented throughout the project by a blend of personnel working at an operational and policy levels, to provide peer review and to actively participate in the study process. The make-up of the TAC was multi-disciplinary and multi-jurisdictional.

The Steering Committee included senior management or executive level personnel of the participating organizations and was briefed at key milestones of the process.

To represent the interests of non-government stakeholders, in particular those representing the stakeholders within the riparian zone of the Lower Rideau River, a Watershed Community Focus Group (WCFG) was established. The WCFG met at key points during the study to provide input to the SC, TAC, and consultants from the citizens' point of view.

Aquafor Beech Ltd. and Robinson Consultants Inc. provided ongoing technical support and facilitation services throughout the project.

How Was The Strategy Developed?

The strategy was developed through consensus building at each step, starting with agreement on the strategy goals, principles and objectives (Table 1). The TAC committee developed the strategy through a series of workshops that provided an opportunity to exchange information, ideas, and opinions in a multi-disciplinary forum. Members of the TAC had the opportunity to provide ongoing input in the process that allowed for increased understanding of the issues.

The concept of Adaptive Environmental Management (AEM) was adopted as a fundamental principle early in the process. Figure 1 illustrates the AEM approach. As shown in the figure, AEM needs to be built in, not only to the overall strategy to ensure that the suite of implementation actions are having the desired environmental benefits, but into each participating agencies' organization and program evaluation, since each agency plays a vital role in the overall strategy.

The current environmental health of the LRW has been described, based on available background information and an assessment of this information by agency staff and consultants with detailed knowledge of the watershed and/or specialist expertise in the areas of water quantity; water quality; groundwater resources; fluvial geomorphology; water level management; aquatic and terrestrial communities and habitats; land and water use management; and land use planning. This analysis of current conditions and environmental trends identified a number of issues that threaten the continued health of the LRW.

What Are The Current Conditions And Major Issues To Be Addressed?

The Lower Rideau Watershed covers an area of approximately 800 km² (the Jock River and Kemptville Creek watersheds add about 1000 km²), the majority of which is located within the City of Ottawa (Map 5). This part of the river is 95 km long and is divided into four reaches by the control structures of the Rideau Canal and Waterway. The four reaches are identified as follows:

Reach 1:	Ottawa Reach	(Rideau Falls to Hog's Back) (Photo 1)
Reach 2:	Mooney's Bay Reach	(Hog's Back to Black Rapids) (Photos 3, 4)
Reach 3:	Eccolands Reach	(Black Rapids to Long Island) (Photos 4, 5)
Reach 4:	Long Reach	(Long Island to Burritt's Rapids) (Photo 6)

Within the study area, the following tributaries are found:

- Reach 1: Sawmill Creek
- Reach 2: Hunt Club Creek, Nepean Creek, Black Rapids Creek
- Reach 3: Mosquito Creek, Jock River
- Reach 4: Mud Creek, Stevens Creek, Cranberry Creek, Kemptville Creek, Doyle Creek

There are also numerous other small tributaries and drainage features that drain into each reach.

Currently the reaches of the LRW exhibit moderately good conditions, based on the following:

- Infrequent beach closures, with the Mooney's Bay beach having one of the best records in Ontario for public beaches
- Healthy fish communities, in numbers sufficient to support a recreational fishery
- Good water quality conditions with levels of trace contaminants, bacteria, suspended sediments all within provincial guidelines
- High biodiversity of plants, wildlife, wetland communities, special status species and aquatic organisms, including fish and mussels
- Support a variety of recreational pursuits including boating, fishing and swimming

In contrast, the tributaries to the reaches in the LRRW exhibit poor environmental conditions based on the following (Map 6):

- Loss of headwater tributaries due to rural and urban drainage practices;
- Channelization, straightening of remaining tributaries
- Removal of natural riparian vegetation
- Excessive nutrient loading from land use activities (agricultural and urban)
- Levels of nutrients and bacteria in tributaries that regularly exceed provincial guidelines
- Altered hydrology causing instream erosion and loss of aquatic habitats

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- Loss of wetland and forest habitats
 - Reduced biodiversity
 - Poor quality fish communities

To some extent, the healthy condition of the environment of the Reaches is sustained by water control operations carried out at the whole Rideau River watershed scale, by the Rideau Canal Office:

- Storage of heavy spring snowmelt and summer rainstorm runoff in headwater reservoirs, and subsequent slow release for augmentation of low summer flows through the navigable lakes and river reaches of the north flowing portion of the Rideau Waterway
- Maintenance of navigation levels in the reaches increases the available habitat for fish communities and other aquatic/terrestrial life that depends on wetlands.

Despite the appearance of healthy environmental conditions, there is a growing list of environmental threats to ecosystem health:

- Moderately high levels of nutrients, including total phosphorus that regularly exceed provincial guidelines
- Invasive species including zebra mussels, Eurasian milfoil changing the biodiversity of reaches, threatening indigenous species, as well as water chemistry by altering clarity
- Increasing biomass of aquatic plants and algae (phytoplankton)
- Evidence that aquatic sediments in the Reaches contain elevated nutrient (phosphorus) levels and that the sediments could become another nutrient source under anoxic conditions
- Recurring anoxic conditions in Mooney's Bay and speculation that shallow aquatic habitats throughout the reaches also suffer from periods of low oxygen
- Continued loading of nutrients from tributaries and direct runoff to the reaches resulting in tributary excessive phosphorus concentrations
- Intensification of shoreline and water-based uses along the reaches: more boating use; loss of natural shoreline/nearshore habitats to docks, shore hardening, redevelopment – increased conflicts between boaters and shareowners
- Continued deterioration of tributaries as a result of past (past activities have not completely manifested themselves) and ongoing land use practices that will continue to affect the reaches in the long term
- Continued loss of streamside and shoreline vegetation (trees and shrubs) that provide a natural buffering of the tributaries and reaches from adjacent land impacts

The conclusion is that these threats are exerting a growing, negative, cumulative effect on the LRW that may be approaching a point where the pace of change in the ecosystem could accelerate and exhibit more dramatic and irreversible changes. There is consensus amongst members of the TAC that without some concerted efforts to change the course of observed trends, conditions in the reaches may deteriorate. While a number of important issues requiring attention were identified, several priority issues were highlighted that require more immediate actions. These are as follows:

- Agency, Landowner, Public Interactions
- Eutrophication Problems
- Tributary and River Corridor Protection
- Water Level and Flow Management Challenges

What Needs To Be Done?

The Adaptive Management Strategy consists of several Action Programs focused on addressing key issues, each with a group of management actions aimed at addressing specific environmental threats:

- Public Education and Community Outreach
- Managing Inputs of Nutrients, Bacteria and other Contaminants
- Revitalizing River and Stream Corridors
- Fine Tuning Controls on Water Levels and Flows
- Integrated Monitoring for Adaptive Management

The protection and management of groundwater resources of the LRW was identified as a concern but it is expected to be addressed through implementation of the recommendations of a recently completed Regional Groundwater Study and City of Ottawa's Groundwater Management Strategy (approved by City Council in February, 2003). The province-wide initiative on Drinking Water Source Protection Planning is also expected to have a focus on the protection of important groundwater resources.

Management actions to address specific threats to the environmental health of the LRW were identified. Based on the degree of uncertainty observed in the environmental data and trends, the experts assessed the level of environmental risk associated with maintaining the status quo versus implementing remedial actions. By adopting an adaptive management approach, the strategy is more proactive by favouring management actions, accompanied by monitoring, that reverse apparent negative environmental trends rather than opting for additional studies or monitoring without action.

Strategically, the agencies have come to consensus that policy and operational shifts need to be pursued in the following directions:

- Move away from stormwater management standards and a non-degradation policy that emphasize bacteria reduction and control of peak runoff rates, to a set of standards that more broadly address nutrient and bacteria reduction, control of runoff volume at source, and protection of natural stream functions and aquatic habitats.
- Approach nutrient loading reduction more strategically on a watershed basis, by placing greater emphasis on applying more cost effective rural best management practices and addressing urban nutrient loading through control of dry weather sources and retrofitting of existing urban areas.
- Consolidate stewardship and regulatory programs that are presently delivered through multiple agencies into a more seamless program to provide sustainable program delivery in terms of staff resources and incentive funding, and to achieve higher degrees of voluntary participation and compliance by citizens
- Educate staff and elected representatives on state-of-the-art technologies for stormwater management and urban development standards, to build support for incorporating these technologies into infrastructure master plans, new development and redevelopment projects.
- Increase the combined efforts of all agencies in the area of public education, community outreach and stewardship of tributaries, shorelines and riparian zones to encourage landowners to develop a conservation ethic in the treatment and rehabilitation of these resources and to improve public and agency relations.
- Encourage agencies to use an adaptive management approach to the protection and rehabilitation of tributary and river corridors and develop a program to maintain these important components of the natural heritage system in the same way as programs are developed to maintain built infrastructure components such as road and sewer networks

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- Continue to place priority on multidisciplinary, environmental monitoring and reporting as a fundamental tool to assess the success of strategy implementation.

The overall intent of the strategy is to improve cooperative, collaborative and coordinated program delivery amongst agencies, by:

- Providing a “common song sheet” that all agencies will use as a basis for prioritizing their respective programs and projects
- Encouraging agencies to pool their resources (staff, funding, communications) for similar or complementary initiatives
- Establishing an Implementation Committee as part of the Implementation Framework, consisting of agencies, stakeholders and public representatives to monitor progress on implementation of the Action Programs
- Implementing management actions that achieve multiple objectives, to encourage agencies to shift their emphasis from implementation based on individual mandates to implementation based on multiple benefits
- Emphasizing an “environment first” philosophy with more emphasis on regular environmental monitoring and reporting, and more open communication with the public
- Following an Adaptive Management philosophy, where environmental monitoring and reporting are used to evaluate the effectiveness of management actions and the need to revise and improve on these strategic actions

Implementation

The organizations are making a commitment to participate in an inter-agency committee structure that is designed with the purpose of **promoting and facilitating cooperative and collaborative action by all public agencies that have a role in river and watershed management** – which is Objective #1 of the Watershed Strategy. **This includes reducing perceived government bureaucracy and streamlining the approval process with respect to permits for activities on private lands.**

Significant resources are required to implement the LRWS, but the necessary expenditures will occur over a planning horizon of many years, and the intent of the Strategy has been to ensure that resources that are already being utilized to management the river and its watershed are being used wisely and are addressing today’s priorities. Accordingly, only generalized cost estimates for the priority management actions were developed. The focus of the strategy is to identify what needs to be done and to provide direction to agencies for prioritizing their existing programs and funding within the context of the Rideau Watershed to better utilize existing resources. The strategy also identifies priorities for new funding should it be available.

A three tier “committee” or “working group” structure is proposed:

- **Lower Rideau Watershed Management Steering Committee**
 - Senior management/Executive Level oversight
 - Meets no more than twice annually
 - Receives and reviews annual report from the LRWS Implementation Committee, before its being published and made available for public consumption
 - Members: Ottawa, North Grenville, Rideau Canal, MNR, MOE, OMAF, RVCA, DFO

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- ***Lower Rideau Watershed Strategy Implementation Committee***
 - Middle/Senior Management level inter-agency liaison, and coordinating of program planning and delivery
 - Meets at least twice annually – once in the fall during budget setting season, to compare notes on what each organization is proposing to incorporate into its program for the next year, and once in the spring after budgets have been set and work plans are being finalized
 - Receives briefings from Subcommittees/Working Groups
 - Coordinates preparation and publication of periodic progress reports on LRWS implementation (frequency to be determined)
 - Members: Ottawa, North Grenville, Rideau Canal, National Capital Commission, MNR, MOE, OMAF, RVCA, DFO

 - ***Lower Rideau Watershed Management Working Groups***
 - each one focuses on one of the other five recommended Action Program of the LRWS which are as follows:
 - Managing Inputs of Nutrients, Bacteria and Other Contaminants
 - Revitalizing River and Stream Corridors
 - Fine-tuning Controls on Water Levels and Flow
 - Public Education and Community Outreach
 - Integrated Monitoring for Adaptive Management
 - technical/operational level of inter-agency coordination occurs in these working groups; core membership of each draws from the ranks of the relevant organizations, and each is expected to build strong, effective working relationships with community-based NGO's that are interested in collaboration (see Table 2)
 - meets at least quarterly, or more often as required

The Working Groups ideally will not necessarily be new committees but rather they will make connections with existing informal and formal forums where inter-agency liaison and coordination on Lower Rideau watershed issues is already occurring.

The Action Plans and Management Actions provide strategic direction on what needs to be done under each Action Plan, who needs to do it, with what urgency progress needs to happen, and what measures of success need to be monitored to gauge performance. Within the Working Groups, each agency will need to identify how it will meet the challenges posed by these Action Plans in terms of:

- identifying what programs, policies, measures are currently underway to address the Action Plans;
- identifying what programs, policies, measures need to be modified to address the Action Plans;
- identifying what programs, policies, measures are in conflict and need to be stopped to address the Action Plans; and
- identifying priorities for new programs, policies, measures necessary to accelerate the Action Plans in order to meet the measures of success within the identified timeframe

It is important to note that many existing policies and programs are already in place to implement these actions. In some cases, the status quo may be sufficient; in others, increased resources, improved implementation mechanisms or inter-agency cooperation may be required.

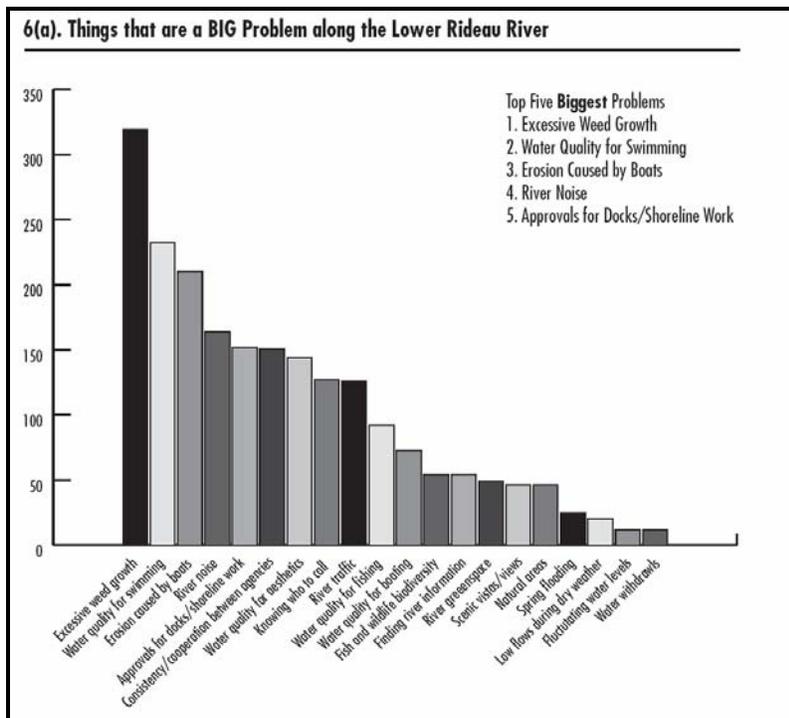
The following is the list of the top priority Management Actions that have been recommended for implementation by each Working Group. For each management action, the Strategy also identifies the following:

- Priorities and Key Steps
- Implementation Responsibilities
- Policy Considerations
- Implementation Mechanisms
- Costs
- Funding Alternatives
- Stewardship/Education

What Are The Priority Management Actions?

Working Group on Public Education and Community Outreach

- | |
|---|
| 1. A comprehensive education and stewardship program directed at shoreline landowners and landowners with tributaries on their properties to promote a conservation ethic and develop a more streamlined approval process. |
| 2. A central Web site devoted to sharing information about the LRRW, particularly riparian/river issues |
| 3. A stewardship/education program to educate landowners on the benefits of stormwater retrofit technology, including lot-level/source measures, conveyance and end-of-pipe measures because of the need to implement source controls on private lands and also because of the significant public cost of implementing other retrofit alternatives. |
| 4. A stewardship/education program targeting farmers to assist with the implementation of rural BMP measures. |
| 5. Develop education programs to promote responsible boating habits |



Landowner Concerns on the Rideau

Working Group on Managing Inputs of Nutrients, Bacteria and Other Contaminants

- | |
|---|
| 1. Replace existing stormwater management standards and the non-degradation policy with the development of new, integrated, City of Ottawa standards for stormwater management for developing areas that address a broader range of water quality and habitat protection objectives |
| 2. Expansion of the existing “search and destroy” program to identify and correct cross-connections between municipal storm and sanitary sewer infrastructure |
| 3. Implement a Stormwater Management Retrofit program to reduce nutrient/bacteria runoff in existing urban areas |
| 4. Implement a Rural Best Management program to reduce nutrient/bacteria runoff on agricultural and other rural lands |
| 5. Continue the existing program of testing new municipal sewer infrastructure for leakage, cross connections, structural integrity |
| 6. Investigate management alternatives for aquatic weed and algae control and possible benefits to fish habitat and eutrophication |



Rural BMP practices including conservation tillage and livestock fencing



Urban Retrofit BMP's including roof downspout disconnection and stormwater management pond

Working Group on River and Stream Corridor Management

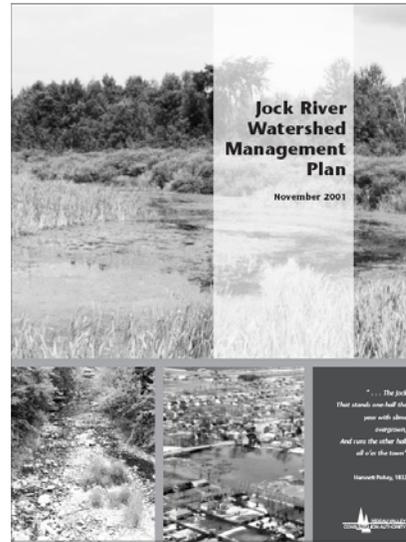
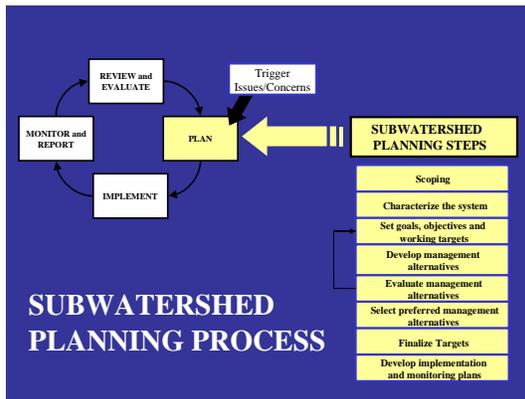
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| 1. prioritize and accelerate the completion of subwatershed studies |
| 2. protect and manage uses and natural functions in the riparian zone |
| 3. develop a rehabilitation program for natural riparian buffers and natural stream channels |
| 4. protect high quality fish habitats/special status species; enhance marginal habitats and prevent further degradation of poor habitats |
| 5. implement environmentally sound municipal drain maintenance |
| 6. Expand navigation regulations, speed restrictions, increase signage and enforcement to reduce wake-induced shoreline erosion |
| 7. study to assess the sensitivity of shorelines to boat wakes |



Stream channel and streamside restoration using natural channel design



Natural shoreline environment (left) versus altered shoreline environment (right)



Subwatershed Planning Process

Working Group on Control of Flows and Water Levels

- | |
|--|
| 1. Continue to improve the management of spring/fall water levels and flows to address fisheries and flood abatement concerns |
| 2. Mapping of critical fish habitat in the reaches in relation to water levels |
| 3. Development of a watershed model to link land uses changes to watershed response – water quality, hydrology, hydrogeology, natural features |



Rideau Falls GS



Black Rapids Control Structure



Manotick Control Structure

Working Group on Integrated Watershed Monitoring and Reporting

1. Formation of a multi-agency committee to oversee and coordinate environmental monitoring and reporting efforts – Lack of regular reporting of environmental conditions to the Public was a key weakness identified in the study
2. Improving the integration of monitoring program components, for example, by ensuring that water quality and quantity databases are complementary, so that instream water quality can be related to loadings from different sources
3. Ensuring that the various monitoring data collected provide a measure of the indicator parameters/targets developed for each of the Objectives of the LRRWS, in particular monitoring of algae (phytoplankton) and aquatic plants
4. Develop a set of environmental “stress” indicators that can be added to the existing program of monitoring condition indicators to help act as early warning signs of environmental stress
5. Develop a volunteer, community-based monitoring program that would encourage and involve the public and other stakeholders in environmental monitoring and reporting efforts (coordinated under the Public Education and Community Outreach Working Group)
6. Work with agencies responsible for implementing the regional groundwater strategy to ensure that the components of the groundwater monitoring program are integrated with the rest of the environmental monitoring programs



Stream Assessment and Monitoring

How Will We Measure Success?

The TAC followed a process to translate the LRWS objectives into a more detailed and technical set of Indicators, Measurable Parameters and Targets for each of the Objectives that could be used to evaluate how successful alternative watershed management strategies were in achieving the stated objectives. These terms may be defined as follows:

Indicators: An indicator is a piece of information, clue or attribute of the ecosystem that describes the current condition of the ecosystem, or one of its components. Examples: temperature, total suspended solids, *E. coli*, aquatic community abundance, instream erosion potential

Measurable Parameter: A measurable parameter is a quantitative or qualitative way to measure progress toward achieving the indicator and several measurable parameters may be used for assessing each indicator. Examples: midsummer maximum temperature, 5 day geometric mean *E. coli* count, biomass/density of fish, cumulative excess stream power (erosion potential)

Target: A target is a specific aim that will be achieved in the future. The targets as developed will serve as a basis for evaluating alternatives. Targets can be set for the short, medium and long term. Targets represent an integrated set of biological, physical and chemical values. A baseline condition needs to be established before targets can be developed. Targets should allow for stepwise improvements to be achieved as interim steps to reaching the ultimate target. Examples: 26 C (for coldwater fish), less than 100 *E. coli*/100 mls, 5,000 g fish/100m² habitat, reduction of cumulative excess stream power to 25% of current values.

The Technical Group was challenged with the task of setting targets that represented the desired healthy state of the LRW Ecosystem. While it was recognized that restoring the river to a historic condition, prior to development of the Canal was both unrealistic and generally undesirable, the current condition was regarded as equally unacceptable.

The primary purpose of developing targets is to help develop and evaluate management actions in terms of their ability to achieve the stated goals, principles and objectives of the study. During the course of target setting, several types of targets were developed. Some targets can be modeled, using various predictive tools, to evaluate the strategies; others can be monitored, to measure the progress of the implemented strategy towards achieving the stated objective; and still others may be assigned a value representing the progress of a program or policy that is being implemented as part of the overall preferred management strategy.

The list of indicators and targets is very lengthy, however many of them are currently achieved, while others lack sufficient information to determine how each reach or tributary measures up. While this list is both technical and cumbersome for the average person to review, the values presented are critical to managers in order to assess how well or poorly their programs and initiatives fare against the goals and objectives of the LRRW strategy. The indicators and targets presented are intended to provide guidance and “measuring sticks” to assess the health of the LRRW and the measure the success of management actions that are implemented.

Referring back to Figure 1, success will be measured as part of the adaptive environmental management approach through the “feedback loop”. This will occur on two scales:

- Results of the integrated environmental monitoring program will be compared to existing conditions and the LRWS targets to identify trends and progress towards achieving a healthy state;
- Agencies will also monitor their progress in implementing each of the management actions through their various policies and programs and report on successful implementation. This program auditing is already in place in many agencies.

Figure 1. Adaptive Environmental Management Process

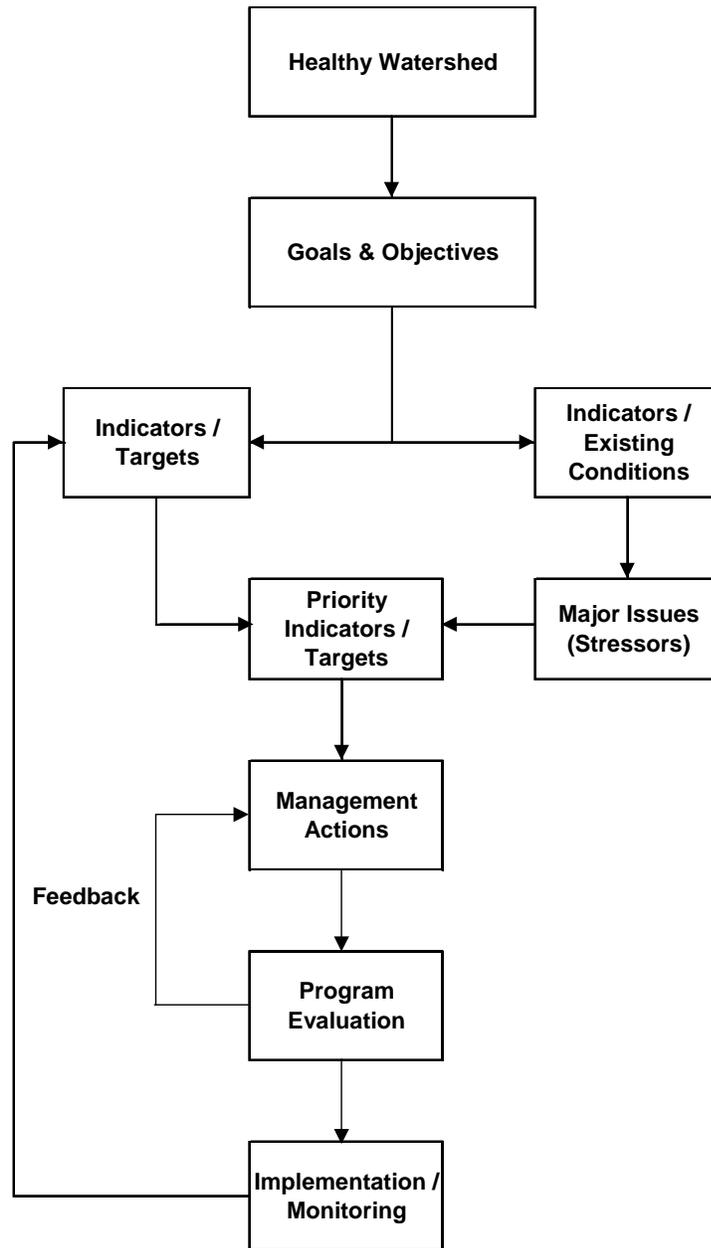


Table 1. LRWS Mission, Goals, Objectives

Mission

Using the eco-system approach, select an optimal set of strategies for achieving multiple objectives in the management of the Lower Rideau River and its corridor, and to review and update the river/corridor/watershed policies and procedures

Goal

To protect the cultural and natural environments of the Lower Rideau River Watershed ecosystem for the benefit of humans and other terrestrial and aquatic life.

Principles

1. The Lower Rideau River Watershed Strategy is a policy and planning document of the participating agencies: the Rideau Valley Conservation Authority, City of Ottawa, Township of North Grenville, Parks Canada, Fisheries & Oceans, Public Works & Government Services Canada, Ministry of the Environment, Ministry of Agriculture & Food, and the Ministry of Natural Resources.
2. Signatory agencies should lead by example to promote ecologically responsible behaviours and practices.
3. Stakeholders include residents, users of the watershed, the business community, non-governmental organizations, and government. Cooperation and collaboration amongst stakeholders is needed to carry out the strategy.
4. Both surface and groundwater resources within the Rideau River basin should be protected.
5. The needs of humans should be balanced with the needs of other species.
6. Natural habitats and systems should be protected from degradation or improved on a priority basis.
7. Each reach is a part of the larger watershed and actions in one reach will impact the others, either directly through changes in habitat/water quality/quantity, or indirectly through the diversion of resources.
8. All decision-making should consider the intrinsic value of the natural environment, and the corresponding cost of redressing harm to the environment.
9. Agency programs and activities should be regularly monitored, assessed, and modified as required to respond to evolving issues and conditions in the watershed.

Objectives

- Communication and Cooperation**
1: To promote and facilitate cooperative and collaborative effort and action by all public agencies that have a role in river and watershed management.
- Surface Water Quantity**
2: Maintain or improve water resources to support natural and human uses of the river.
3: Manage flooding risks to human life and property to within acceptable limits.
4: Maintain or improve natural flows in tributaries to support aquatic habitat functions.
- Surface Water Quality**
5: Manage the quality and quantity of non-point source runoff.
6: Manage surface and groundwater contamination from point source discharges.

<p>Groundwater Quality and Quantity 7: Maintain groundwater levels and discharges. 8: Protect groundwater quality.</p>
<p>Aquatic Communities and Habitats 9: Maintain or improve populations of native aquatic species and communities. 10: Maintain or improve the stability, diversity and linkages between habitats that support aquatic species and communities.</p>
<p>Terrestrial Communities and Habitats 11: Maintain or improve the stability, diversity and linkages between habitats that support terrestrial species and communities. 12: Minimize the impact of land use on terrestrial habitat.</p>
<p>Water and Riparian Uses 13: Manage the Rideau waterway to provide reasonable outdoor recreational/tourist uses, within sustainable limits. 14: Manage the use of surface water and groundwater (including water withdrawals and hydropower) within sustainable limits.</p>

Table 2. Other organizations that may participate on Working Groups

- the Rideau River Round Table
- Friends of the Rideau Canal
- Friends of the Jock River
- The Environmental Committee of Ottawa South
- The Greenspace Alliance of Canada's Capital
- community associations along the Lower Rideau
- the City of Ottawa's Environmental Advisory Committee
- the Ontario Marine Operators Association
- the local Chapter of the Ontario Soil and Crop Association
- the Carleton County Chapter of the Ontario Farm Association
- City Streamwatch Program
- Eastern Ontario Biodiversity Museum
- Canadian Museum of Nature
- Ottawa Field Naturalists
- ECOS
- Muskies Canada
- Ottawa Riverkeeper
- City Streamwatch Program
- Ontario Marine Operators Association
- Ontario Provincial Police/Ottawa Police
- Ottawa Carleton Homebuilders Association
- City of Ottawa Environmental Advisory Committee
- Eastern Ontario Model Forest
- Ottawa Working Group on Wetlands



Photo 1 – Reach 1 – Lower River



Photo 2 – Reach 1 - Canal



Photo 3 – Reach 2 – Mooney's Bay



Photo 4 – Reach 2/3 – Black Rapids



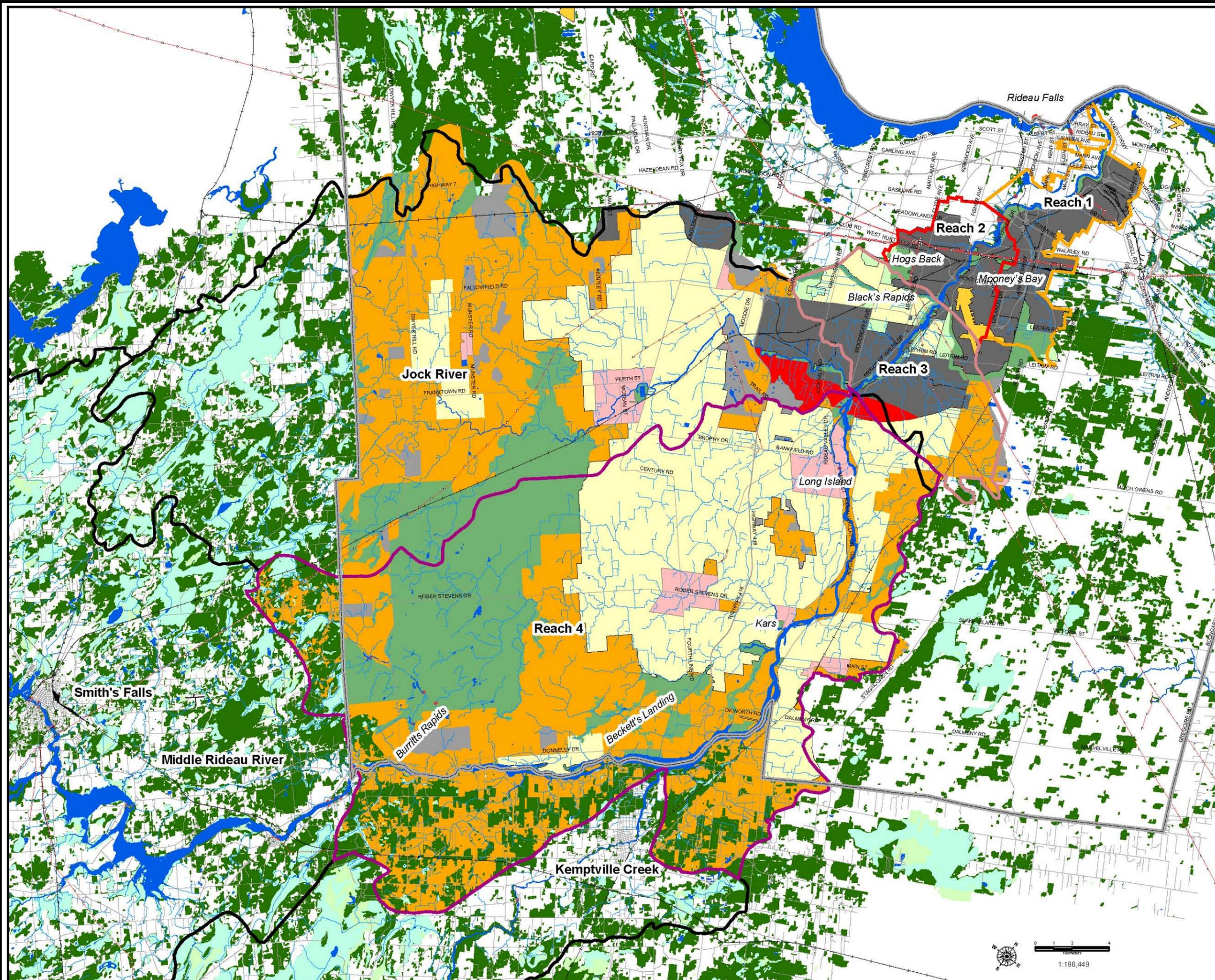
Photo 5 – Reach 3 - Manotick



Photo 6 – Reach 4 - Long Reach

LOWER RIDEAU RIVER WATERSHED STRATEGY

Land Uses
Map 5

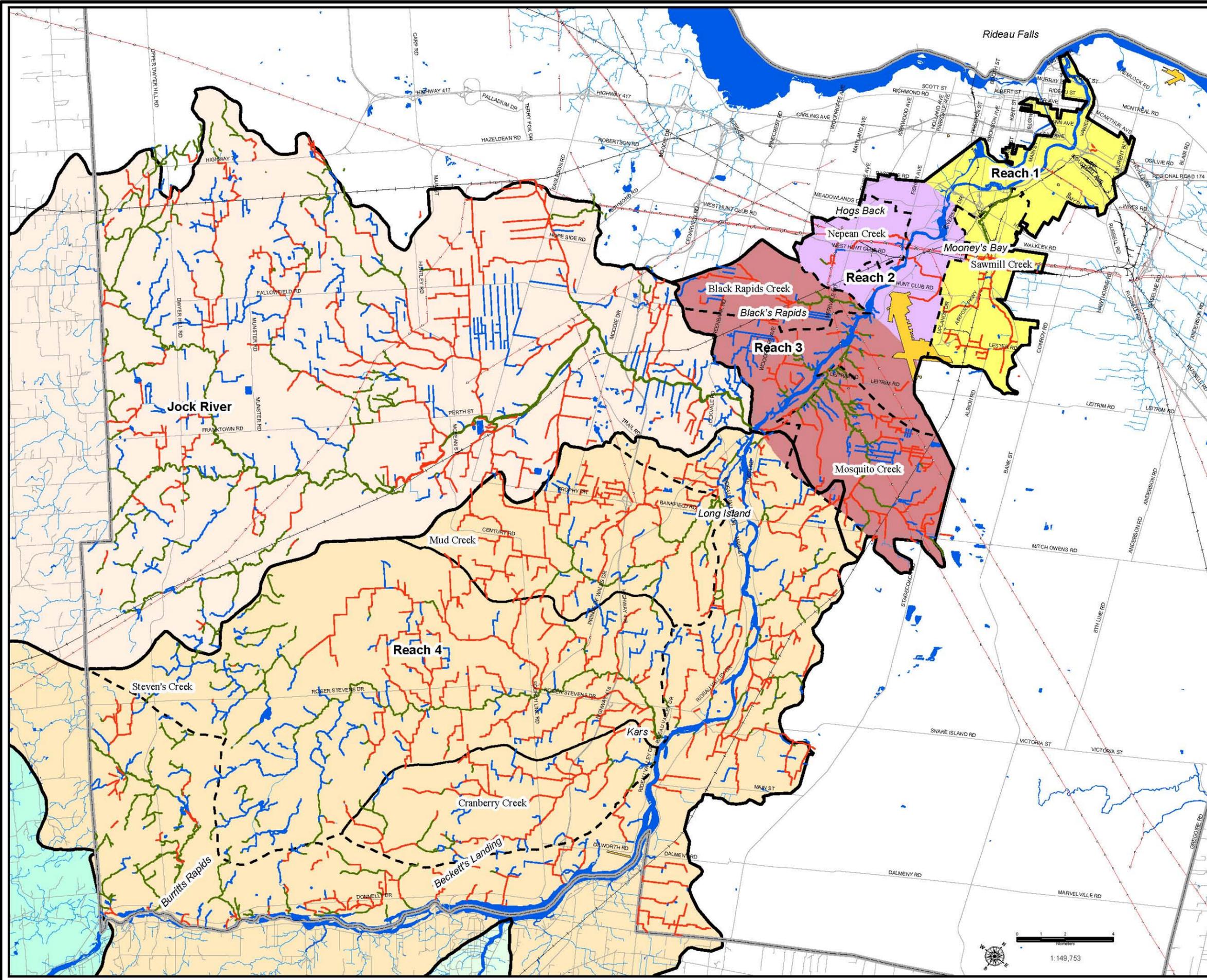


Legend

- Streams
- Water Structures
- Municipal Boundary
- Subwatershed
- Water Bodies
- Natural Areas**
 - Forest
 - Forested Wetland
 - Wetlands
- Future Land Use**
 - Future Development
 - Village
- Existing Land Use**
 - Agriculture
 - Greenbelt
 - Natural Areas
 - Resource Extraction
 - Rural
 - Urban
 - Water
- Unregulated Drainage Areas**
 - Reach 1 Drainage Area
 - Reach 2 Drainage Area
 - Reach 3 Drainage Area
 - Reach 4 Drainage Area

LOWER RIDEAU RIVER WATERSHED STRATEGY

Tributary Characteristics Map 6



Legend

- Streams
- Subwatershed
- City of Ottawa
- Jock River
- Kemptville Creek
- Middle Rideau River
- Reach 1 Drainage Area
- Reach 2 Drainage Area
- Reach 3 Drainage Area
- Reach 4 Drainage Area
- Water Bodies

trib-stream-cat

Stream Condition

- Unclassified
- Disturbed
- Natural



