

REGIONAL MUNICIPALITY OF OTTAWA CARLETON  

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MUNICIPALITÉ RÉGIONALE D'OTTAWA CARLETON

REPORT  
RAPPORT

Our File/N/Réf.  
Your File/V/Réf.

DATE 23 August 1996

TO/DEST. Co-ordinator  
Planning and Environment Committee

FROM/EXP. Director, Water Environment Protection Division  
Environment and Transportation Department

SUBJECT/OBJET **RIDEAU RIVER STUDY UPDATE - 1996**

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### DEPARTMENTAL RECOMMENDATION

**That the Planning and Environment Committee recommend that Council authorize the Environment and Transportation Commissioner to proceed with discussions with the Ministry of the Environment and Energy, in consultation with the local area municipalities, on the re-evaluation of the present Rideau River Stormwater discharge criteria.**

### PURPOSE

The purpose of this report is to provide Regional Council with an update on efforts to re-evaluate the Rideau River Stormwater bacteriological discharge criteria. The report provides rationale supported by the Surface Water Quality (SWQ) Programme's recent findings regarding water quality along the Rideau River and within Mooney's Bay. The Environment and Transportation Department has examined the current river status, its ability to handle urban stormwater and examined the cost implications of current urban stormwater control policy.

### BACKGROUND

The previous Rideau River Stormwater Management Studies (RRSWMS) (1983 and 1992) supported the Ministry of the Environment & Energy's (MOEE) stormwater discharge criteria of 100 FC/100 ml and 25 mg/100 ml downstream of Hog's Back and "non-degradation" upstream of Hog's Back. Given this requirement, all new stormwater management facilities require disinfection technologies in order to achieve this criteria.

The SWQ Programme identifies trends, and assesses the health of the river through baseline monitoring programmes. The Region, has been coordinating the RRSWMS implementation of stormwater management infrastructure recommended in that Study. This coordination includes various monitoring projects to support the planning, design, construction and operating initiatives undertaken by local municipalities.

Since 1992, the Region has adopted an ecosystem approach to its monitoring activities resulting in a better understanding of the health of the river as an ecological unit rather than relying on a singular parameter (bacteria). The Region's approach integrates water environment data to determine an adequate and cost effective level of protection of the river. In keeping with this approach, the SWQ Programme's review of this information led to conclusions inconsistent with some of the original assumptions made in the RRSWMS (1992).

In the Fall of 1995, acting on the SWQ Programme's recommendations, the Cities of Ottawa, Nepean and Gloucester agreed to participate with the Region on a RRSWMS Update (Update) which would summarize the recent bacteriological information collected by the Region. The Update's Executive Summary completed by CH2M Gore and Storrie Limited, is attached. The Update focused on the part of the river immediately upstream of Hog's Back. This study area was identified as the highest priority for protection in the RRSWMS - 1992. Also, the criteria for this area is the most restrictive regarding discharge criteria hence, the most costly.

The objective of this Update was the following:

1. Provide an updated overview of the current river status;
2. Examine the implications of the MOEE's stormwater management policy for the Rideau River.

## DISCUSSION

The RRSWMS Update confirmed the SWQ Programme's original assessment of the current state of the Rideau River.

Analysis of the most recent river data (1992 to 1994) concluded the following:

- bacteriological conditions upstream of Hog's Back have not degraded since 1989;
- under existing land use the Rideau River is capable of assimilating loads associated with small to medium stormwater runoff events;
- conditions upstream of Hog's Back (to Manotick) are acceptable based on present violations of the 100 E. coli per 100 ml criteria.

The present discharge criteria was based on the assumptions that the river was unable to assimilate the existing stormwater inputs and that the Rideau River violated the Provincial bacteriological water quality objectives.

The above findings raised definite questions with respect to the accuracy of these assumptions. There are considerable costs associated with achieving current regulatory requirements.

It is estimated that approximately \$10,000,000 capital investment would be required as the disinfection component of stormwater management facilities identified in the RRSWMS immediately upstream of Hog's Back, which represents approximately 20 percent of the total capital cost for the same facilities. In addition, annual operating and maintenance costs are estimated at \$7,000,000 in 1996 dollars. This includes facilities required as part of the development of the South Urban Community. The RMOC, based on the Update findings, is questioning the value of this level of expenditure.

The study findings pose important issues that should be considered at this time:

- Are the current regulatory requirements (bacteria) relevant?
- Do present controls result in unnecessary over control?
- Is active disinfection technology such as ultra-violet radiation necessary?
- Are the present controls from a cost benefit perspective of best value?
- What is the appropriate bacteriological criteria while still maintaining present river quality objectives?
- How best to integrate bacteriological objectives with aquatic ecosystem approaches?

Given the high projected costs of meeting the current requirement it is recommended that consideration be given to the appropriateness of the current discharge criteria. It is recommended that the Regional Municipality of Ottawa-Carleton, conduct discussions with the regulatory agency, namely, the MOEE, in consultation with the area municipalities, to establish relevant and integrated bacteriological control targets.

## CONSULTATION

For the purpose of this report public consultation is not applicable, however, should discussions with the MOEE result in a potential change to the discharge criteria, appropriate public consultation will be undertaken.

The RMOC's partners, the cities of Gloucester, Ottawa, and Nepean are in agreement with this report and are prepared to proceed with this initiative. A preliminary discussion with the MOEE took place on August 22, 1996. The MOEE has expressed support for further investigation and discussion to occur with agreement to develop a joint workplan.

*Approved by*  
*N.B. Schepers, P. Eng.*

FP:mlb  
Attach. (1)

**ANNEX 1**  
**RIDEAU RIVER STATUS REVIEW**

**DRAFT REPORT**  
April 1996

**EXECUTIVE SUMMARY**

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**INTRODUCTION**

This report provides an update on the bacteriological status of the Rideau River through the RMOC urban area, based on data collected in the summers of 1992, 1993 and 1994 by the RMOC's Surface Water Quality Branch. The results are put in context by providing a brief review of the previous Rideau River Stormwater Management Studies, review of the status of RRSMS recommendations, and by review of the projected costs of achieving the current stormwater treatment requirement upstream of Hog's Back.

**ANALYSIS OF 1992-1994 RIVER DATA**

Data acquired by the RMOC's Surface Water Quality Branch (SWQB) in the summers of 1992, 1993 and 1994 has been consolidated and analyzed. Over 5,900 bacteria observations were included.

- "Wet" and "dry" profiles of geometric mean fecal coliform levels for 1992-1994 have been compared to those for 1989-90 and 1978-79. There has been no significant change in bacteriological conditions in recent years upstream of Hog's Back. Based on limited data there has apparently been some improvement in both wet and dry conditions since 1990 downstream of Hog's Back.
- Between Hog's Back and Manotick, *E.coli* levels increase significantly only when antecedent rain is 20 mm or more. This indicates that under existing land use, the river is capable of assimilating loads associated with storm runoff, for events up to about the 20 mm level.
- The change to *E.coli* as the indicator improves the perceived state of the river, since it results in a significant reduction in the frequency with which the threshold level of 100 per 100 ml is exceeded. Since the overall perception of river quality is greatly affected by the frequency of beach postings, the change to *E.coli* effectively means a perceived improvement in river status, even though conditions may not have actually changed.
- Conditions at Mooney's Bay Beach, within the Bay, and upstream to Manotick appear acceptable, based on current frequency with which 100 *E.coli* per 100 ml is exceeded.

## ***IMPLICATIONS FOR STORMWATER CONTROL POLICY***

To provide the basis for discussions on the implications of current policy, capital and annual operating costs have been compiled for recently-built facilities and facilities that are now being planned or designed. There are considerable costs associated with achieving the current regulatory requirement via active effluent disinfection (e.g. UV treatment). Upstream of Hog's Back, the total capital cost is estimated to be between \$10 million and \$11 million, and the total present value of 20 to 25 years of annual operating & maintenance costs represents roughly \$7 million to \$10 million. Therefore, there are important issues that should be considered at this time:

- Upstream of Hog's Back, if future bacteria loadings can be controlled to the existing levels (in terms of both the size and timing of the bacteria loads) then river water quality should remain acceptable. The question is will the current regulatory requirement ultimately control bacteria inputs to the river to existing levels, or might it result in unnecessary over-control that does not take advantage of the apparent ability of the river to assimilate existing loads? Is active disinfection using technology such as UV needed?
- The long-term goal is to protect the entire river. However, in the interim, does it make more sense from a cost/benefit perspective to protect only those areas of the river that are used for water-contact recreation? What level of bacteria load control would be needed in the interim if we were to focus on protecting only those recreational areas that are presently of concern or interest? Where would available resources best be spent?

These questions and uncertainties cannot necessarily be resolved easily or in a short time frame. For instance, to determine existing loadings upstream of Hog's Back would require substantial monitoring of the river and various catchments, and the net outcome in terms of stormwater control targets is not certain.

However, given the high projected costs of meeting the current requirement, it is recommended that consideration be given to a more gradual approach to achieving strict compliance with the current "end-of-pipe" stormwater quality target. The rationale is to provide further opportunity to monitor river status and river response to rain, examine the performance of newer stormwater management facilities (such as Longfields-Davidson, the Monahan Drain Wetland, and soon-to-be-built facilities) to gain a better understanding of the costs and complexities of facility operation, and obtain more information on what is achievable with new stormwater management techniques that do not involve active disinfection (e.g. constructed wetlands, source-control management practices, etc.).

Various projects are in the planning or design stages, and this affords the opportunity to examine the performance of innovative techniques to achieve not only bacteria control, but also meet objectives related to aquatic habitat protection/enhancement, stream channel erosion control, and greenspace protection.

It is recommended that the RMOC have discussions with regulatory agencies such as the Ontario Ministry of Environment & Energy to review the long-term and short-term implementation of the current bacteria control target. These discussions should examine the feasibility of developing an interim strategy that will result in lower overall cost for stormwater treatment and provide the time and opportunity to conduct the various investigations listed above. While the long-term goal should continue to be protection of recreational water quality all along the river, an interim strategy should be considered as a means of achieving the best level of stormwater control and environmental protection within the limits of available resources.