HALIFAX
REGIONAL MUNICIPALITY

Item No. 11.4.1

Councillor Request for Information

X Included on Agenda
(Submitted to Municipal Clerk's Office by Noon Thursday)

9 Added Item
(Submitted to Municipal Clerk's Office by Noon Monday)

Date of Council Meeting: March 18, 2008

Subject: Water Quality Notification Information Report

Request:

To add the February 26, 2008 staff information report entitled "Water Quality Notification" added to the March 18, 2008 Regional Council agenda for discussion.

I would like this response as: Not Applicable.

☐ Email to Mayor, Council and Municipal Clerk's Office
☐ Memo to Mayor, Council and Municipal Clerk's Office
☐ Information Report to ☐ Community Council ☐ Regional Council
☐ Recommendation Report to ☐ Community Council ☐ Regional Council

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Councillor Karsten
District 7, Portland - East Woodlawn

HALIFAX
REGIONAL MUNICIPALITY

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Halifax Regional Council
February 26, 2008

TO: Mayor Kelly and Members of Halifax Regional Council

SUBMITTED BY: Cathie O'Toole

Cathie O'Toole, Director, Infrastructure & Asset Management

DATE: February 13, 2008

SUBJECT: **Water Quality Notification**

INFORMATION REPORT

ORIGIN

Motion of Council, January 8, 2008:
"To request a staff report that a change be made to HRM's policy regarding water quality notification. HRM currently has a Lakes Quality Sampling Program and Baseline Sampling Program in various lakes within the Municipality. The results of these tests are on line. However, currently HRM does not notify the public of Public Health concerns unless it is an HRM supervised swim area. I propose that Regional Council request a staff report regarding the possibility of staff notifying the public of poor water quality, particularly when high counts of faecal coliform are detected within the lakes tested. This would apply whether it is an HRM supervised swim area or not."

BACKGROUND

Regional Plan Policy E-18 requires establishment of a Water Quality Functional Plan "to establish a comprehensive water quality monitoring program for the Municipality", including "an on-going monitoring program for selected lakes and rivers to determine the state of water resources and to detect changes over time". As a municipality, HRM conducts one type of activity which may affect water quality: approval of land development. Halifax Regional Water Commission (HRWC) conducts the operation of municipal stormwater and wastewater infrastructure which may affect water quality.

Through the approvals process, HRM requires developers to implement stormwater and wastewater management plans including mitigative measures and infrastructure to reduce water quality impacts. In operating municipal infrastructure, HRWC may affect water quality through overflows and accidental releases, leaks, cross-connections, etc. HRM historically has not had any performance measures in place to assess the adequacy of mitigative measures, or to detect water quality impacts. The water quality monitoring program provides such performance measurement for receiving waters. Sampling has occasionally been required under development agreements for major subdivisions, but has been limited in time and space. The provincial and federal governments do not conduct any regular comprehensive water quality monitoring, although it would more closely align with their mandates than with municipal mandates in Nova Scotia.

DISCUSSION

HRM Water Quality Program

The Water Quality Functional Plan is currently in development. The Water Quality Sampling Program was initiated in 2006 with 50 lakes, sampled twice that year for a range of water quality parameters. Lakes were chosen based on criteria established in consultation with staff and the HRM Watershed Boards, including degree of risk from development, municipal infrastructure, water uses and stakeholder interest. The field sampling is conducted by HRM staff, and sample analysis is contracted to a local commercial laboratory. A new approved FTE was hired in 2007. The program was expanded in 2007 to include lakes which had been sampled since 2001, for bacteria only, by the Environmental Engineering Services (EES) branch of HRM. The HRM program has also included fecal coliform (FC) bacteria since 2006 for 70 lakes.

In 2007, the 70 lakes were sampled three times (spring, summer, fall). The intention is to continue this as an ongoing operational program, with annual review of the list of lakes and parameters sampled. Current parameters include temperature, oxygen, pH, conductivity, nutrients (phosphorus & nitrogen), turbidity, colour, suspended solids, dissolved metals, chlorophyll and fecal coliform (FC) bacteria. Results for 2006 were reported to Council on March 27, 2007. It should be noted that with 70 lakes currently included in the program, many lakes in and around the urban/suburban core are not presently sampled.

Water quality data is on the HRM web site at http://www.halifax.ca/environment/lakesandrivers.html Data is made available within 1-2 months of collection as a service to the public, allowing for lab reporting time and data compilation. At the January 8, 2008 Council meeting some concerns were raised regarding difficulty accessing water quality data through HRM's web site. Subsequent to that discussion, access has been improved through provision of a direct link from the HRM main page Quicklinks menu.

Annual projected program cost for 08/09 is $160K. Under the Regional Planning budget, $72K was allocated in 2006 in support of the new FTE to assist in operating the water quality program. $125K of capital funds were also allocated to initiate the program. Since 2006, some of the capital funds have been used to purchase field equipment, a boat and motor. Operating funds have been used to support laboratory costs, and to fill the new position of Environmental Performance Officer. On a go-forward basis, the $72K operating funds will be used for the FTE and support/benefits. Field work is conducted during a one-month period, three times per year, using a rented truck. The balance of capital funds will be converted to operating for FY08/09 to support ongoing lab analysis costs. These funds should have been originally budgeted as operating in FY06/07 rather than as capital. Closing out the capital account to operating is a solution in FY08/09 only. Additional ongoing operating budget of approximately $90K will be required for FY09/10 and beyond to sustain the program. It is hoped sustainable funding for FY09/10 and beyond will be negotiated with other levels of government and Halifax Water, or found within existing HRM resources.

Public Notification

Fecal coliforms, while not pathogens themselves, are an indicator of the possible presence of disease-causing organisms, and may arise from many possible sources, including human waste, animal waste and waterfowl. National guidelines for contact recreation (including swimming) recommend no more than 200FC/100ml of water (minimum 5 samples averaged over 30 days). The province of NS, through NSDEL, samples HRM beaches weekly where HRM provides lifeguarding services. If a sample exceeds 200FC, the site is immediately re-sampled. If the re-sample exceeds 200FC, or if any sample exceeds 400FC, then NSDEL recommends that the beach be immediately closed, and HRM issues an advisory to the public. **The position of NSDEL, and the NS Department of Health, is that any lake with a developed watershed may be subject to contamination sources, that it is not necessary or appropriate to issue public advisories for unsupervised lakes, and that the public should only swim at supervised beaches.**

NSDEL samples bacteria at 24 supervised beaches, of which 17 are on lakes also sampled by HRM for water quality. As advisories are already issued for these 17 lakes if FC bacteria exceed guidelines, HRM would need to be prepared to issue additional advisories for the 53 unsupervised lakes in the current sampling program.

If HRM decides to issue advisories for unsupervised lakes when FC bacteria exceed guidelines, then additional resources will be required to conduct follow-up monitoring to establish when and if FC numbers return below guideline limits. Any changes to scope of the present program would incur additional costs which would have to be assessed by staff. Advisories should only be issued during

the season for aquatic recreation (June-September). Public advisories would require immediate reporting of FC data and issuance of an appropriate press release. As per the amended Council motion, NS Department of Health would also be notified directly. The advisory would remain in effect until such time as repeat sampling detected levels below guidelines (if resources for re-sampling are available), or until the normal sampling program sampled the lake(s) in question again - normally a three-month period. Ideally, and for due diligence, lakes should be re-sampled weekly for FC bacteria until levels fall below guidelines. Additional sampling at multiple locations may allow detection of the FC bacteria source(s). If sources are identified, then action by either HRM/Halifax Water (for municipal infrastructure) or the province (for other sources such as agriculture) may be warranted.

If advisories were issued when a single lake sample exceeds the FC guideline of 400FC/100ml (confirmed by NSDEL as the appropriate limit), then during 2007 HRM would have issued advisories for 23 lakes for at least one date in the spring-summer period, and 2 of those would have been for at least two dates. Of these 23, 4 are lakes with supervised beaches sampled by NSDEL, for which separate advisories would not have been necessary. From 2001 to 2006, HRM would have issued between 5 and 30 advisories annually for levels above 400FC/100ml. An additional advisory would be issued when/if the lake(s) returned to levels below the guideline.

The wording of advisories would need to be carefully crafted. Issuance of advisories does not guarantee safety, and can only be based upon the data available for specific dates and locations. Tests showing FC bacteria levels below guidelines also do not guarantee safety, and only reflect the level on the date and at the site tested.

Additional resources would be required to conduct follow-up monitoring after detecting FC levels above guidelines (for those lakes not monitored by NSDEL). Assuming weekly monitoring for FC until levels return below the guideline maximum, the following shows a possible range of additional annual lab costs for FC analysis @ $22/sample. Bacterial source tracking (BST) methodology can establish the origin of FC bacteria - human, animal or bird. This is useful in identifying likely source(s). This method could optionally be employed for a single sample per lake @ $500 per sample.

Lakes	Dates	Investigated Sites	FC Cost	BST Cost (1 per lake)	Total/FY
10	3	2	$ 1,320	$ 5,000	$ 6,320
20	5	3	$ 6,600	$ 10,000	$ 16,600
30	7	4	$ 18,480	$ 15,000	$ 33,480

Additionally, purchase of a truck would be required to perform ongoing monitoring, as the current periodic rental arrangement would not suffice. Capital cost of a suitable truck is estimated at $30,000 (4-wheel, king cab for transport of boat, motor, equipment). Additional annual operational costs (fuel, maintenance, equipment, travel expenses, etc.) are estimated at $5000/yr.

BUDGET IMPLICATIONS

There are no budget implications at this time, as no additional resources are required to carry out the current Water Quality Monitoring Program for 2008/09.

FINANCIAL MANAGEMENT POLICIES / BUSINESS PLAN

This report complies with the Municipality's Multi-Year Financial Strategy, the approved Operating, Capital and Reserve budgets, policies and procedures regarding withdrawals from the utilization of Capital and Operating reserves, as well as any relevant legislation.

ATTACHMENTS

None.

A copy of this report can be obtained online at http://www.halifax.ca/council/agendasc/cagenda.html then choose the appropriate meeting date, or by contacting the Office of the Municipal Clerk at 490-4210, or Fax 490-4208.

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