

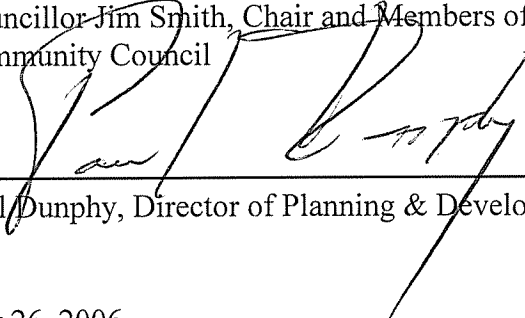
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Harbour East Community Council
August 3, 2006

TO: Councillor Jim Smith, Chair and Members of the Harbour East
Community Council

SUBMITTED BY: 
Paul Dunphy, Director of Planning & Development Services

DATE: July 26, 2006

SUBJECT: Phosphorous Thresholds for Morris and Russell Lakes

ORIGIN

Report prepared in response to the recommendations of the Dartmouth Lakes Advisory Board (DLAB) to Harbour East Community Council, dated July 14, 2006, pertaining to establishment of phosphorous threshold levels on Morris and Russell Lakes.

RECOMMENDATION

That Harbour East Community Council set ecosystem goals of maintaining the current mesotrophic status for Russell and Morris Lakes, and set phosphorus threshold limits of 15 micrograms per liter of total phosphorus for both lakes.

BACKGROUND

- Last year, Regional Council adopted the Morris-Russell Lake Secondary Planning Strategy under the Community Planning Strategies for Dartmouth, Cole Harbour/Westphal, and Eastern Passage/Cow Bay.
- The Secondary Planning Strategy requires that a water quality monitoring program be established for Morris and Russell Lakes with specifics of the program to be negotiated under the terms of a development agreement in consultation with the Dartmouth Lakes Advisory Board (DLAB).
- The monitoring program is specifically required to establish eutrophication threshold levels for these lakes. Municipal policy specifies that the monitoring program is to be undertaken by qualified persons financed in whole or in part by developers within the watershed. The agreement requires that the Community Council establish the threshold level upon receiving advice from staff and DLAB.
- In the event that threshold levels are exceeded, the Municipality is committed to “immediately undertake a review of existing plan policies contained herein and determine an appropriate course of action respecting watershed management and future land use development in the area¹”.
- Clayton Developments entered into a development agreement for the development of Russell Lake West under the provisions of the Secondary Planning Strategy, and retained Jacques Whitford to prepare a monitoring program in accordance with municipal policy.
- Jacques Whitford prepared a report which was presented at the May 31, 2006 meeting of DLAB. A staff report was also presented at this time which recommended a phosphorous threshold of 15 micrograms per litre for Russell Lake. The Board deferred a decision.
- At the July 12, 2006 meeting of DLAB, a further staff report was received which recommended that a 15 micrograms per litre phosphorous threshold also be established for Morris Lake on an average annual basis. The Board recommended a threshold level of 12 micrograms per litre be established for both lakes. DLAB also recommended that the Municipality “expediently remediate the sewage issues which are presently impacting the phosphorous levels”.

DISCUSSION

CCME Guidelines

The Canadian Council of Ministers of Environment (CCME) have established a guideline for

¹ Excerpt from policy ML-31 of the Dartmouth Community Planning Strategy.

phosphorus as part of the Canadian Environmental Quality Guidelines. The CCME guideline is based upon a background document by Environment Canada (EC 2004): Canadian Guidance Framework for the Management of Phosphorus in Freshwater Systems. The steps in the CCME Framework for setting a phosphorus threshold are as follows:

- Set Ecosystem Goals and Objectives
- Define Reference Conditions
- Select Trigger Ranges
- Determine Current Phosphorus Concentration
- Compare Current or Predicted Concentration to Trigger Range
- Compare Current or Predicted Concentration to Baseline Condition
- Management Decisions

The final step in the CCME process is to make a management decision once existing total phosphorus levels are compared to the threshold level set, and determine an appropriate course of action if the threshold is exceeded. Further background on the CCME guideline is provided in the staff report to the Dartmouth Lakes Advisory Board (DLAB), Russell Lake Phosphorus Threshold (May 31, 2006).

Application of the CCME Guidelines

The staff reports to DLAB have made it clear that setting a threshold based only on strict reliance on the reference condition for Russell and Morris Lakes would result in a threshold level of 10 micrograms of total phosphorus per liter (ug TP/L). The reference condition refers to the trophic state of the lake prior to any development of the watershed, the pristine state of the lake before settlement. However, the first step in the CCME process is to set ecosystem goals and objectives. The CCME approach is a flexible process, as indicated in the Environment Canada report. For example, Section 5.3 (EC 2004), A Cautionary Note states: "Although many of these methods are applicable to different areas, care must be taken in selecting a method that is both applicable to specific water type and realistic to the users needs." The CCME Guideline and Environment Canada (2004) documents use "enhance, protect, or restore" as examples of ecosystem goals. The documents do not prescribe that these are the only possible goals, they are simply examples.

As Russell and Morris Lakes are both urbanised lakes with extensive development in their watersheds, and a varied history of surrounding land uses, the recommended objective for both lakes is to maintain their current mesotrophic status. Setting this as the ecosystem objective leads to the suggested threshold level of 15, as the mid-point of the mesotrophic range. Staff recommended a threshold level for Russell Lake of 15 ug TP/L, based on setting an ecosystem goal of maintaining the lake in its current mesotrophic status (10-20 ug TP/L). The mid-point of the range was chosen as the threshold. A similar recommendation was made regarding Morris Lake in the staff report to DLAB, June 28, 2006.

of a highly specific, pre-defined ecosystem goal which is used to define the baseline condition and hence the threshold. The ecosystem goal was defined as maintenance of a cold-water fishery.

Community stakeholders have provided a consulting report done for the District Municipality of Muskoka. The report provided appears to be a good study for the environment in question - the Muskoka Lakes area of Ontario. This is a primarily rural, recreational area with mostly seasonal residences served by on-site septic systems, with some small towns and agricultural/forestry development. If Russell and Morris lakes were comparable in their surrounding land use and history to the Muskoka lakes, then use of a 50% increment over the baseline condition to set a TP threshold could be an appropriate approach for them. However, the resulting low threshold levels (below 10 ug TP/L) would not be appropriate for these urbanised HRM lakes. The ecosystem goal of maintaining the mesotrophic status, and phosphorus threshold of 15 recommended by staff, are consistent with the CCME Guideline and the Environment Canada Framework documents, based upon the first step of setting an ecosystem goal. HRM will continue to pursue stormwater management initiatives through the Regional Plan. Any decision to develop and implement phosphorus reduction strategies beyond these watersheds will require decisions at the Regional Council level.

Potential phosphorus sources

Many sources of phosphorus are presently beyond HRM's control. Examples are use of fertiliser, pet wastes, and road runoff. Past land uses have contributed phosphorus which has collected in the bog at the south end of Russell Lake which may be flushed into the lake during storm events. Runoff from construction sites may also contribute phosphorus. Approval of stormwater designs is provincially regulated, and installation/management during construction is provincially inspected and enforced.

Stopping storm water runoff from entering the lake, as advocated by public correspondence, is not physically possible unless all storm water was to be pumped to Halifax Harbour, and the cost of this would not be feasible. All stormwater management systems typically use natural water bodies as part of the collection and conveyance system. Diverting stormwater from lakes would require a much more extensive and expensive collection and pumping system comparable to the sanitary sewer collection system because of the much larger flows involved.

One of the identified sources of phosphorus entering the bog which drains to Russell Lake is the Gaston Road Pumping Station. This is one of about 40 pumping stations in HRM that experience wet weather overflows. There may be cross-connections of sewer laterals from homes discharging sanitary sewage to the stormwater collection system. There may also be other unknown sources of sanitary sewage into the storm sewer system. HRM is currently investigating the sewershed with respect to these issues. Preliminary work has not revealed any specific sources of these problems but sampling and onsite investigations will continue. Any remedial action resulting from these investigations will be carried out on a priority basis.

Priority rating system for capital projects

Stormwater and wastewater capital works projects in HRM are prioritized based on a Priority Rating Process approved by Regional Council. The Gaston Road Pumping Station is a Priority 2, meaning that it is out of regulatory compliance. However, there are no immediate plans to upgrade this particular pumping station, as there are many other sewer capital projects (valued at greater than \$100 million) that currently are higher priorities than this project. The priority rating for this pumping station will be reviewed as land development in the area proceeds.

BUDGET IMPLICATIONS

Budget implications are unknown at this time. Until the source or sources of phosphorus are identified, municipal expenditure requirements cannot be estimated. Expenditures must be assessed according to the priority rating system approved by Council.

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.

ALTERNATIVES

1) Staff recommendation of an ecosystem goal of maintaining mesotrophic status with a threshold level of 15 ug TP/L for Russell and Morris Lakes. This approach is recommended as consistent with the CCME Guidelines and the urban state of the watersheds.

2) HECC could approve the DLAB recommendation of 12 ug TP/L. This approach is not recommended as staff do not feel this approach is consistent with the recommended goal and CCME Guidelines.

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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