

Soil & Water Conservation Society of Metro Halifax ('SWCSMH')

(a volunteer scientific stakeholder-group)

Email: limnos@chebucto.ns.ca

Tel: (902) 463-7777

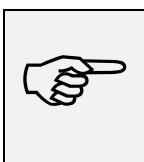
Homepage: <http://www.chebucto.ns.ca/Science/SWCS/SWCS.html>

Ref.: WAB0022 (total=4p.+1 encl.=5 pages)
To: Chairman Dr. Wayne Stobo and Members,
Halifax/Halifax County Watershed Advisory Board (WAB), HRM
From: S. M. Mandaville (Professional Lake Manage.), Chairman & Exec. Director
Date: August 30, 2000
Subject: SANDY LAKE, Sackville River watershed, Hammonds Plains-
Disturbing degradation in the water quality as measured by the
standard trophic status indicators during 1996-99!

We had already submitted the following documents to the Board dealing with the surprising rapid degradation of this lake and they are listed as follows:

1. Ref.#WAB0008 d/March 24, 2000, 6 p. (April 2000 agenda package).
2. Ref.#WAB0009 d/March 27, 2000, 6 p. (April 2000 agenda package).
3. Ref.#WAB0010 d/April 24, 2000, 4p. (May and June 2000 agenda packages).

As stated emphatically in the aforementioned prior submissions as well as in the accompanying submission for the September 2000 meeting, Ref.#WAB0021, d/August 30, 2000 (12 pages), titled "Effects of Golf Course Construction and Operation on the Aquatic Environment", **the HRM did not insist on the `proponent' to adhere to the protocols as set and requested by the WAB during the fateful summer of 1996, and further as recommended by Environment Canada (letter d/July 19, 1996 from Mr. Bill Ernest (pg.-5), and copies submitted by us to the WAB and to the NorthWest Comm. Council).**



We understood back in 1997 that `allegedly' under the advice of the CWRS, DalTech, the proponent selected their own sampling protocol, i.e., just seasonal chemical sampling as opposed to the WAB's recommendation of monthly chemical sampling. Also, the proponent, with the total support of the HRM staff **renege on the biological monitoring although specifically requested by the WAB.**

- The reasons for biological monitoring are many, and some of them have been summarised in the accompanying submission, Ref.#WAB0021.
- Further, monthly sampling is a minimum requirement for lakes undergoing development pressures as clearly stated in the peer consensus world-class 17-year research of the OECD (Organisation for Economic Co-operation and Development) headed by a Canadian scientist, Dr. Richard Vollenweider Ph.D.

of Environment Canada, Burlington. These research efforts culminated with the Final Report (Vollenweider, R.A., and Kerekes, J. 1982).

We are herewith enclosing a summary spreadsheet on page-3 as supplied by the HRM w.r.t. the chemical analyses (this spreadsheet has some handwritten scribbling by us to calculate certain variables for plotting on the OECD composite model). Since the water residence time of Sandy Lake was not available, we utilized a previous model, the Vollenweider 1976 Model, also a part of the OECD research, which does not require the residence time. But we did not use the 1976 trophic categories since they have been superseded by the OECD (1982) categories (pers. comm. Vollenweider, 1990s). We did indeed incorporate the OECD (1982) management categories on the 1976 model as clearly evident. The results have been shown on page-4.

- We found a significant difference in the TSIs (trophic state indices) we calculated for TP (Total Phosphorus) and Cha (Chlorophyll-a), hence we plotted the results for TP and Cha separately, a process which is usually not needed where more detailed sampling is conducted based on our experience. Also please note that no summer sampling was ever conducted for any of the years either.

Nevertheless, based on the plotted results, Sandy Lake has very rapidly undergone a dramatic change in trophic status from ultra-oligotrophy/oligotrophy during 1996/97 to high mesotrophy during 1998-99. Such a process normally takes hundreds to thousands of years in undisturbed lakes. We cannot confidently speculate the causes since no external inputs, i.e. land drainage, were monitored. We doubt that the onsite septic systems were a factor since they are new and may not be contributing via groundwater yet.

And, the suspended solids did not indicate any problems with construction related sedimentation. Whether the golf course is/was the cause of the nutrient enrichment of the lake we do not know. At this time, we can only speculate that the fertilizers may have contributed the nutrients, and/or the pesticides may have been toxic to the zooplankton and/or zoobenthos which in most probability may have lead to elevated levels of phytoplankton (Chlorophyll-a).

Cc: Dr. Wayne Stobo, WAB, HRM; Dr. Tony Blouin, HRM; John Sheppard, HRM; Catriona Moir, ERM, NSDoE; Paul Dunphy, Dir-Planning, HRM.

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08/30/00

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Base= Vollenweider 1976 TP Model + 1982 OECD Management Model trophic categories

