ONSITE
WASTEWATER NEWS
ONTARIO ON-SITE WASTEWATER ASSOCIATION NEWSLETTER

InSide

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Technical Review
Alex Campbell

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Ontario Rural Wastewater Centre: Training and Research in On-Site Technologies

by Chris Kinsley

Rural wastewater differs from its municipal counterpart in many characteristics and offers different challenges in treatment. It often has a low flow volume and high levels of biochemical oxygen demand, nutrients and pathogens. Rural wastewater is typically treated on-site, at the home, farm or industry. Examples include: household sewage (one quarter of all Ontario households are on septic), runoff from feedlots, and abattoir wastewater. By contrast, most cities collect wastewater in sewers, mixed with groundwater infiltration and sometimes stormwater, bringing large flow volumes with lower levels of contamination to centralized treatment facilities.

Training programs in Ontario and throughout Canada have focused almost exclusively on traditional sewered systems suitable for urban areas. But now, a new Ontario Rural Wastewater Centre (ORWC) has been established to address the training and information needs of the vast number of people depending on rural wastewater treatment: farmers, rural industries, rural municipalities, system designers and the installers, inspectors, and homeowners of the 1.2 million septic systems in use in Ontario.

Ontario Rural Wastewater Centre
On-Site Systems • Municipal Systems • Agri-food Systems

Centre a First in Canada

The project is a partnership of the University of Guelph (Alfred College and the School of Engineering), the Rideau Valley Conservation Authority and the Ontario wastewater treatment industry. The Centre has a dual research and education mandate and will provide hands-on training to a wide variety of clientele from installers and building inspectors to cottagers, homeowners and college and university students. Courses will be offered in both English and French to serve all of Ontario. The Centre is a first for Canada. In the United States, 23 such centres have been established.

The philosophy of the Centre will be eco-system management and environmental stewardship. Training and research programs will be developed in partnership with organizations such as conservation authorities, farm organizations, and rural industries and their associations. To this effect an advisory committee has been established drawing from the breadth of the Ontario rural wastewater sector including representatives from industry, farm organizations and government agencies. Courses will be developed in the coming months in the areas of septic systems, agri-food systems, and rural municipal systems, with input from these groups. Industry will donate most of the systems to be used, which will be displayed as working models. The students will be able to disassemble systems, see water flowing through them and troubleshoot problems. "Practical, hands on, training like this is currently unavailable anywhere in Canada" notes Doug Joy, Manager of the ORWC.

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On-site Wastewater Industry Association Underway

In January of 1999, a meeting in Guelph was held between the University of Guelph and stakeholders from the septic industry. The purpose of this meeting was to introduce the industry to the initiative under taken by the University of Guelph to establish On-Site training centres in Ontario (the Ontario Rural Wastewater Centre). At this and previous meetings industry representatives expressed a need for an association that would represent all sectors of the industry. Discussions with the two existing associations in Ontario concluded that the Ontario On-Site Wastewater Association would work to represent the entire industry and would work in close coordination and cooperation with both OASIS and the Concrete Precasters Association of Ontario. To ensure this end, both OASIS and the Precasters are represented on the Board of Directors. The new association will draw its members not only from installers, haulers and precasters but from regulators, government officials, engineers, designers, soil scientists and researchers.

The advantages of one organization representing all stakeholders in the on-site wastewater industry can be far reaching. The January meeting concluded with agreement on the following summary list of association objectives:

- Act as a liaison with the provincial government to affect changes with the regulations governing the on-site wastewater industry.
- Educate the public concerning the value and role of their septic systems.
- Provide a communication forum between all stakeholders concerned with the on-site wastewater industry.
- Establish standards for personnel involved in the installation and maintenance of on-site systems.

An interim board of directors has been established (see side bar). Elections will be held at the Ontario On-Site Association's first general meeting to be held in April 2000 at a conference being organized by the Ontario Rural Wastewater Centre (ORWC).

The membership fee could be used to provide numerous services to its members such as:

Regular Member — This category would make up the largest portion of the association, and would consist of installers, engineers, designers, sewage haulers, soil scientist, manufacturers, etc.

Regulator Member — The member would have to be employed by a municipality, conservation authority, county health unit, or municipal government.

Associate Member — This category would be for existing organizations to actively participate in the umbrella association.

January 6, 1999 meeting of on-site industry members.

- this quarterly newsletter
- annual conference (reduced rate for members)
- government lobbying for changes to the Code
- professional accreditation for the industry
- press releases for public education
- an annual directory of suppliers, manufacturers and installers
- membership in the "National Onsite Wastewater Recycling Association, Inc.", the international organization for the onsite industry.

The membership fee for the association will be used for numerous projects as determined by the Board of Directors.

The development team is proposing that you join free of charge (enclosed application form), until January 1, 2000. Creation of the organization will help everyone involved with the industry. Its success depends on your involvement - please join! If you have any questions, please contact:

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Interim Board of Directors

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Huron County Water Quality Study

by Doug Joy and Shelly Bonte-Gelok

Huron county is typical of many rural areas in Ontario — a productive agricultural area and a popular tourist and vacation destination. Huron county supports some of the most intensive agriculture in the province as well as extensive recreational activities at the beaches, cottages and resorts along the shoreline of Lake Huron.

A problem in recent years has been persistent and high bacterial counts at the beaches which have often led to beach closures. The cause of beach contamination is uncertain, and cottagers and homeowners have been known to accuse the agricultural sector as being the source, due to the increase in manure application and intensification of farming. Likewise, the agricultural sector has pointed to the cottagers with old septic systems, often within metres of the shoreline. Towns with combined sewers, discharges from county lagoons and local industry have also been singled out. To address the problem, the community has taken a proactive approach and a coalition led by the Huron Farm Environmental Coalition in partnership with the University of Guelph has undertaken a study to examine the water quality in the county as a first step to finding solutions. The coalition includes farm and local environmental groups, cottager associations, the county health department and local Conservation Authorities. The study is being conducted by Shelly Bonte-Gelok and Doug Joy of the Ontario Rural Wastewater Centre.

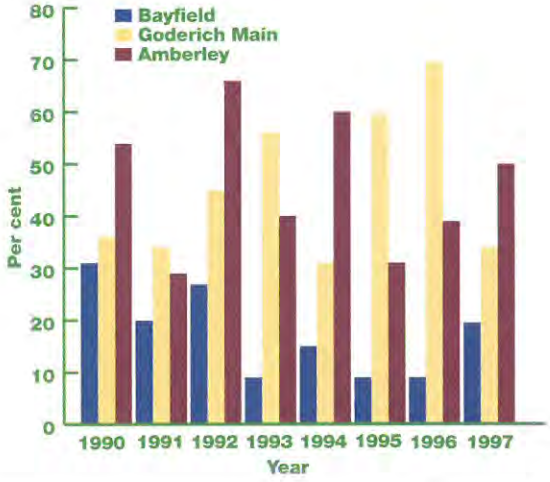
The study focussed on collecting and analysing the past 25 years of water quality data available in the county as well as assessing the current situation. Contrary to some perceptions, local beach quality does not appear to be worsening with time — although some areas are at levels inappropriate for swimming over 50% of the time (see graph). An encouraging sign is that phosphorous levels in streams were generally low and decreasing with time. This was attributed to changing tillage practices and reduced use of detergent phosphorous over the period of record. Nitrogen levels and bacterial counts were both high, with nitrogen levels increasing over time. It was observed that the highest levels of contamination in interior streams were in the areas of highest population density. On the other hand, the shoreline areas with the highest levels of contaminant loadings were near areas with the highest overall animal density. Wastewater treatment plants did not appear to be a significant source of pollution. A rigorous statistical analysis must be completed before any conclusions may be drawn. Factors being considered include: contaminant levels, septic system age, type, location and loading rate, manure spreading practices, fertilizer use, crop type, and soil drainage. What can be concluded is that there is a general lack of good historical data on key waste inputs to the County. For example, although good records are kept of new septic system installations, details on systems older than about 20 years are unavailable.

This project has brought together the diverse stakeholders in Huron County with a common goal of determining the sources of water contamination and in implementing solutions.

For further information on this study, please contact Shelly Bonte-Gelok at (519) 824-4120 ext. 4687.

The study is being funded by the National Soil and Water Conservation Program.

Percent Time Over Provincial Water Quality Guideline for Bathing



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Technology demonstration sites in central Ontario at the University of Guelph and in eastern Ontario at Alfred College and the Baxter Conservation Area of the Rideau Valley Conservation Authority will be the focus of the Centre's activities. An internet outreach will be established to help serve isolated communities with distance education courses, and provide a forum for exchange of information.

Better Treatment Technologies . . . Faster

Research will be incorporated into the education programming. ORWC's research group based at Alfred College is constructing an experimental wetland to treat a portion of the wastewater from the Village of Alfred, which will be used as a demonstration for a course on wetland design. Together with a commercial partner, they have also developed a flocculator for the treatment of dairy milkhouse washwater, which will be one of several alternatives presented in a training course for the dairy industry. "We have an increasing number of requests from the agri-food industry for technologies developed to treat a broad variety of wastewater streams," says Claude Weil, General Manager of ORWC. "For example, the swine industry is looking for cost beneficial systems to deal with manure management and odours near residential areas."

Other research underway includes: the removal of phosphorous from septic wastewater, the effect of biofilm development in septic fields on groundwater contamination, the use of membranes to recycle wastewater in food-processing industries, late-fall manure application and its effect on water quality, the development of a reactor to treat runoff from manure piles, and a study of surface water quality problems in Huron County (see article on left).

"By combining research with education and demonstration opportunities, the Ontario Rural Wastewater Centre will speed the development and adoption of improved wastewater technologies."

photo courtesy Upper Thames Conservation Authority

By combining research with education and demonstration opportunities, the Ontario Rural Wastewater Centre will speed the development and adoption of improved wastewater technologies. With facilities and curriculum set to be in place for fall 1999, the Centre will move quickly to address that most critical of all rural resources — clean water.

Acknowledgments: Initial funding for the Ontario Rural Wastewater Centre is being provided by the National Soil and Water Conservation Program and by a major grant from the Strategic Skills Development Fund of the government of Ontario with matching contributions from industry, the University of Guelph and the Rideau Valley and South Nation Conservation Authorities.

Ontario Rural Wastewater Centre Team

- Claude Weil, M.Eng., P.Eng., General Manager
- Doug Joy, Ph.D., P.Eng., Manager

Coordinators

- Jean-Luc Galand, M.A.Sc., P.Eng., Eastern and Northern Ontario
- Shelly Bonte-Gelok, B.Eng., Central and Southern Ontario
- Terry Davidson, P.Eng., Ottawa Training and Demonstration Site
- Nick Goursky, Education/Marketing

Researchers

- Chris Kinsley, M.Eng., Environmental Engineering
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- Pierre-Alain Blais, M.Sc., Plant Sciences
- Denis Caron, B.Sc. (Agr.), Animal Sciences

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Frequently Asked Questions — About Septics and the Building Code

Q► Why does the OBC require that the mantle area for a raised bed or a filter bed be designed for a specified loading rate?

A► The OBC sets a loading rate to prevent effluent break-out from the sides of the leaching bed or mantle area where difficult soil conditions exist. It has been the experience of enforcement agencies that the construction of raised beds and filter beds under such conditions may require that the mantle area be extended for more than the 15 metre minimum.

Q► I was denied a septic permit. Can I appeal?

A► Yes. If there is a dispute between an applicant for or holder of a building permit or a person to whom an order under the Building Code Act has been given and a sewage system inspector, either party can apply to the Building Code Commission (BCC) for a resolution of the dispute. The BCC deals with matters related to the interpretation of the technical standards in the OBC or the sufficiency of compliance with these technical standards.

Q► How can a sewage system inspector check that a septic tank meets the OBC's requirements?

A► The OBC requires that septic tanks conform with the requirements of CSA Standard CAN3-B66 — Prefabrication Septic Tanks and Sanitary Sewage Holding Tanks.

This standard requires that certain information be marked on the tank. In addition, building officials can request that certain tests be completed or documents provided to satisfy themselves that tanks conform with the OBC requirement and CSA standard.

Further information on septics can be obtained by visiting the Housing Development and Buildings Branch's home page at http://obc.mmah.gov.on.ca

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Up-Coming Events

- North Western Ontario Water and Wastewater Conference (OWWA): Brad Johns (807) 684-2521, October 28th — 29th Thunder Bay.
- 8th Annual NOWRA Conference and Exhibit, Jekyll Island, GA www.nowra.org November 3 — 6, 1999
- Federation of Ontario Cottagers Association (FOCA): (416) 429-0444, Metropolitan Police Association, North York, November 6th
- Ontario Association of Sewage Industry Services (OASIS): Don Kelloway (877) 202-0082, Holiday Inn, Oshawa, November 19th — 21st .
- Concrete Precasters Association of Ontario: Glenn Caverly (613) 472-6039, Sheraton Sudbury, November 21st — 23rd.
- Ontario Rural Wastewater Centre Conference — April 2000.

Interesting Web Sites

Alternative Septic System Info Centre
- http://www.capecod.net/alternativeseptic/

Canadian On-Site Wastewater Disposal Individuals and Organizations
- http://www.tuns.ca/~mooersjd/canlist.html

National Small Flows Clearinghouse
- http://names.nsfc.wvu.edu/nsfc/

National Onsite Wastewater Recycling Association
- http://www.nowra.org

Ontario Building Officials Association
- http://www.oboa.on.ca/

Ontario Ministry of Municipal Housing and Affairs
- http://www.mmah.gov.on.ca/

Ontario Water and Wastewater Association
- http://www.oww.org/

On-site Wastewater Training, Management, Demonstration and Research at Vernon James Centre, North Carolina
- http://plymouth.ces.state.nc.us/septic/jmscntr.html

Small Flows Journal
- http://www.nowra.org/

University of Rhode Island On-Site Wastewater Training Centre
- http://www.edc.uri.edu/cewq/

Water Environment Association of Ontario
- http://www.weao.org/

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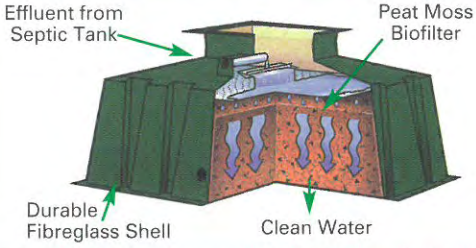

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Don't forget to complete the enclosed questionnaire! Your comments are appreciated!