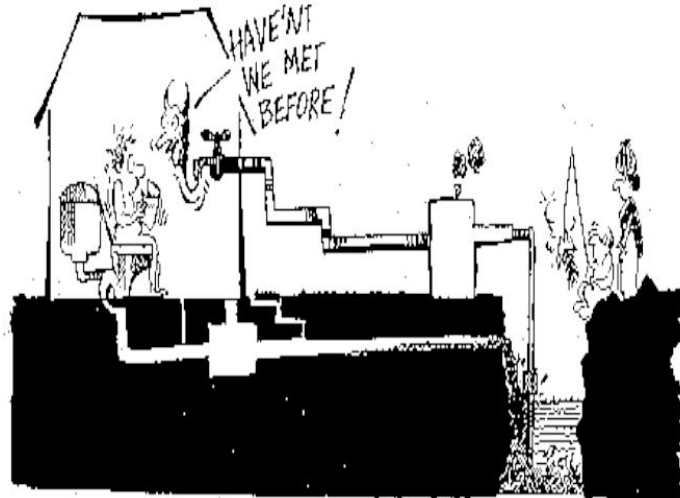
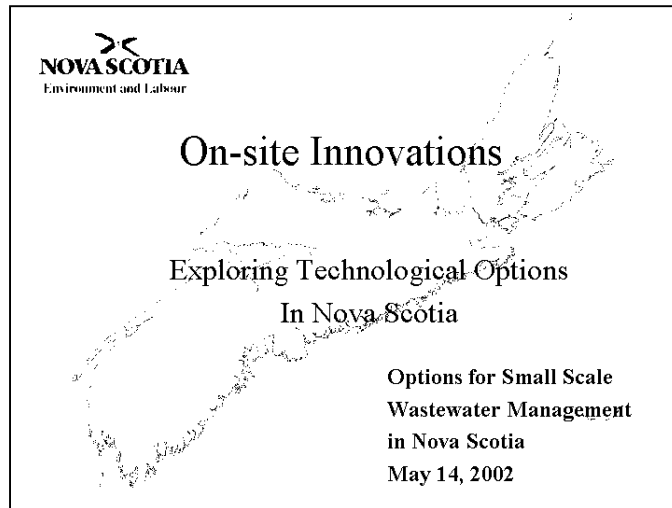


## **Technological Options**

Robert Anderson, Environmental Innovations, Department of Environment and Labour presented the process by which technological options are considered in N.S. (pages 23-27).

David Cotton, Wastewater Technologies Inc., Vermont, gave an overview of the advances occurring in the United States (not available).



## Innovative Technologies

- Regulations
  - Policy
  - Case history
- In Real Life
  - What's involved
- Where do we go from here?
  - Technology Issues

## On-site Sewage Disposal Systems

### Regulations - Innovative Systems

- Technology developer must apply to DEL
- (2) Subject to a review by the Department, approval to install an experimental or prototype system may be granted.
- Conditions of approval may include:
  - (a) design specifications;
  - (b) installation requirements;
  - (c) compliance monitoring;
  - (d) possible system replacement; and
  - (e) financial or other security.

## On-site Sewage Disposal Interpretation Bulletin

- Purpose:
  - “. . . A procedure to be followed when review is conducted of products for on-site sewage disposal systems in NS”.
- Legislation:
  - Regulations Respecting On-Site Sewage Disposal Systems

## Procedure

1. Proponent applies to DEL to receive decision as to whether the Department will permit the use of the product.
2. Coordinating engineer plus two regional engineers review each product.
3. Coordinating engineer supplies report and recommendation to Regional manager.
4. Letter to proponent
5. Appeal process in accordance with Part XIV of Environment Act.

## Case History

- Gravel less trench
  - Proponent submits supporting documentation for review by ‘product review team.’ April 1996.
  - Completed review submitted to RM August 1997 with recommendation to “. . . proceed with trials to determine applicability in NS . . .”
  - Conditional approval letter sent to proponent October 1997.

## Management Dependency

- Many vendors and developers promote individual, maintenance intensive, systems.
- DEL reluctant to accept ‘package plants’ for residential applications due to O&M requirements.
  - DEL policy states . . . <2000 gpd must use on-site systems.
- Performance-based regulations under management plan may be alternative.

## Challenges to Alternatives

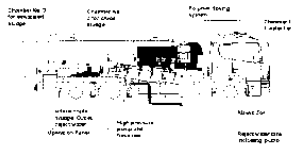
- Use of scrap tire chips in septic systems accepted in 10 US states.
- Two NS pilot tests give positive feedback from installers and scientific community.
- Alternatives to construction materials not promoted in technical guidelines.
- Tire crumb more valuable than R-gravel.

## In Real Life

- Peat Treatment Technology:
  - Pioneer of peat treatment system and local concrete pre-caster partner to develop NS version of US technology, October 1998.
  - DEL secures first of three pilot sites, Pomquet, Antigonish County, May 1999.
  - Proponent contracts CWRS to perform independent performance evaluation, 3 sites.
  - Interim evaluation report (letter) issued April 2000.
  - Conditional approval granted June 2000.
  - Draft final Report Issued 2002.
  - Technology Status???

## Other Management Related Technologies

- Septic Tank Sludge Dewatering
  - Municipal requirement in Norway to dewater septic tank sludge – filtrate back to tank.
  - May address septage handling issues.



## Opportunities for Resource Material Management



## Management Considerations

- Performance-based Guidelines
- Septic system insurance
- Mandatory pumping
- Mandatory inspections
- Financing
- Education

All relate to acceptance of new technology

## Where To From Here?

- Priority to protect environment and public health.
- New technology needed but not easily accepted by industry or regulators.
- On-site septic system management will promote research and innovation.



## **Management Alternatives**

Grant Cooke, Service Nova Scotia and Municipal Relations, gave a brief presentation on the management alternatives currently available in Nova Scotia (pages 29-30).

Peter Casey, National Small Flows Clearinghouse, West Virginia, provided an overview of the management alternatives developed in the U.S.. Both the management of individual on-site systems as well as small-scale cluster systems were covered (page 31).

Grant Cooke, Service Nova Scotia and Municipal Relations.

**Authority for the establishment of a municipal by-law requiring maintenance of private on-site sewage disposal systems**

**Section 336 of the *Municipal Government Act***

“A municipality may, by by-law, require owners of private on-site sewage disposal systems to have the systems pumped, emptied, cleaned, checked and maintained in accordance with the standards set out in the by-law.”

**Authority for the establishment of a Wastewater Management District**

**Section 342 of the *Municipal Government Act***

“(1) A council may, by by-law, establish wastewater management districts.”

Change from former Municipal Act which required

Approval by secret ballot at a public meeting,  
or  
Approved by a plebiscite

Council may still hold a plebiscite pursuant to subsection 53(1) of *the Municipal Government Act* or may undertake other methods of determining public support.

“(2) A by-law establishing a wastewater management district shall include:  
(a) the boundaries of the wastewater management district;  
(b) the system of wastewater management to be used in the district; and  
(c) the extent to which the municipality is responsible for the repair, upgrading or replacement of private and municipal sewer systems.”

“(3) Where the council has established a wastewater management district, the municipality, its servants and agents may enter on any property within the wastewater management district to repair, upgrade or replace a public or private wastewater system and may, in accordance with the by-law, charge any or all of the costs to the owners of the property served by the system.”

**Authority for Cost Recovery**

**Subsection 81(1) of the *Municipal Government Act***

“(1) The council may make by-laws imposing, fixing and providing methods of enforcing payment of charges for:  
(a) wastewater facilities or storm water systems, the use of wastewater facilities or storm water systems and connecting to wastewater facilities or storm water systems;

- (b) expenditures incurred for the wastewater management system in a wastewater management district.”

### **Nova Scotia Model By-law Manual for Municipalities**

The manual is updated periodically to include more model by-laws as they are prepared. A request has been made to include a model wastewater management by-law in the next update, scheduled for later this year.

### **Other Options**

- Condominium Act

Department of Environment and Labour may approve a system managed by a Condominium Corporation

- Private

Department of Environment and Labour may require a guarantee from the municipality and a sewage management program from the operator

Peter Casey, National Small Flows Clearinghouse, West Virginia.

Mr. Casey briefly outlined the purpose, organization, and services provided by the National Small Flows Clearinghouse. Contact information was also provided - ph. 304-293-4191, fax 304-293-3161, web site [www.nsfcwvu.edu](http://www.nsfcwvu.edu).

He then described the history of the US Environmental Protection Agency's involvement with on-site and decentralized wastewater systems which culminated in the "Response to Congress on Use of Decentralized Wastewater Treatment Systems" document. This document basically changed the US Environmental Protection Agency's policy in regard to on-site and decentralized wastewater systems from one of indifference to accepting such systems as legitimate alternatives to the already accepted central collection and treatment systems. As the first sentence of the Executive Summary states "Adequately managed decentralized wastewater systems are a cost-effective and long-term option for meeting public health and water quality goals, particularly in less densely populated areas." The document was a reply to Congress, who had requested alternatives to the accepted centralized collection and treatment systems. Such systems were too costly in small communities, especially less dense semi-rural areas. The remaining treatment needs in the US were in such communities but the per capita costs were proving to be beyond the capacity of the existing funding. Thus Congress requested the US Environmental Protection Agency (EPA) to investigate alternatives. The result was the referenced response. In their reply the Agency identified five barriers that inhibit the expanded use of decentralized wastewater systems. These were (and still are):

Lack of knowledge and misperception

Statutory and regulatory constraints at the state and local level

- Lack of enabling legislation
- Legislative authority split between agencies
- Prescriptive regulatory codes

Lack of adequate management in most areas

Liability and engineering fee issues

### **Financial Limitations**

It might be noted that management is identified as both a barrier and a necessity for long term acceptance and viability of such systems. As part of the implementation of the recommendations in the Response document the US EPA has produced an Onsite Wastewater Treatment Systems Design Manual and is working on a Management Guidance Manual which will be an expanded version of Chapter 2 of the Design Manual.