MISSISSIPPI-RIDEAU SOURCE PROTECTION REGION

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MINUTES

Mississippi-Rideau
Source Protection Committee March 3, 2011 #3/11

Meeting Location:	Rideau Valley Conservation Authority 3889 Rideau Valley Drive, Manotick, Ontario	
Present:	Scott Berquist	George Braithwaite
	Scott Bryce	Richard Fraser
	Patricia Larkin	Pieter Leenhouts
	Randy Malcolm	Peter McLaren
	Beverly Millar	Eleanor Renaud
	Janet Stavinga (Chair)	
	Jean-Guy Albert	(Medical Officer of Health Liaison)
	Mary Wooding	(Ministry of the Environment Liaison)
Staff:	Sommer Casgrain-Robertson	Allison Gibbons
	Michelle Paton	Brian Stratton
	Derek Matheson	
Guests:	Terry Davidson	Derek Matheson
	John Temple	
Regrets:	Carol Dillon	Paul Knowles
	Drew Lampman	Tammy Rose
	Ken Graham	(Source Protection Authority Liaison)

1.0 Welcome and Introductions

Chair Stavinga introduced Pieter Leenhouts, the newest member of the Mississippi-Rideau Source Protection Committee. Mr. Leenhouts, a retired Coast Guard engineer, will be representing the general public.

Chair Stavinga then welcomed everyone to the meeting and asked all participants to introduce themselves.

a) Agenda Review

Chair Stavinga reviewed the purpose of the meeting and the Agenda.

b) Notice of Proxies None

c) Adoption of the Agenda

Motion 1-3/11

That the Agenda be approved as presented.

Carried

d) Declarations of Interest None

e) Approval of Minutes

Motion 2-3/11

That the minutes of the Mississippi-Rideau Source Protection Committee meeting of February 3, 2011 be approved as presented.

Carried

f) Status of Action Items

Member Action Items:

1.0 Peter McLaren advised that the proposed changes to the *Drainage Act* were administrative in nature and confirmed that this item is now complete.

Motion 3-3/11

That the Mississippi-Rideau Source Protection Committee receive the Status of Action Items Report for information.

Carried

g) Correspondence

Motion 4-3/11

That the Mississippi-Rideau Source Protection Committee receive the correspondence for information.

Carried

2.0 On-Site Sewage (Septic) System Presentation

Sommer Casgrain-Robertson introduced Terry Davidson, Director of

Regulations at the Rideau Valley Conservation Authority. Mr. Davidson oversees both the Ottawa Septic System Office and the Mississippi-Rideau Septic System Office.

Mr. Davidson gave a presentation about On-site Wastewater Treatment "Septic Systems 101" (presentation slides are attached).

Mr. Davidson informed members that Eastern Ontario is running out of clean sand and stone appropriate for use in septic system construction. This is driving up the price of a conventional septic system.

Filter bed systems, introduced in the early 1980s, require less space and are therefore more economical, however Mr. Davidson emphasized the importance of using the right sand which meets the approved gradiation curves. In the past there have been system failures in the province because gradiation curves were not adhered to.

Alternative technologies can now provide tertiary treatment which results in a much smaller footprint. They are proving very popular with homeowners as they allow for maximum usable property.

Mr. Davidson stressed the importance of establishing temporary benchmarks so final grades can be determined once the septic system and lot grading is completed. He confirmed that there are required in Ottawa.

Mr. Davidson reviewed some of the septic system construction and inspection requirements under the Ontario Building Code. He also gave an overview of the new mandatory maintenance inspection program that was just created and the ability of principal authorities (municipalities, health units, conservation authorities) to establish discretionary programs within their jurisdictions.

In response to a question from a member, Mr. Davidson stated that the Ontario Ministry of the Environment reviews and approves septic systems in excess of 10,000 litres per day (L/day). Mr. Davidson confirmed that the capacity limit is 10,000L/day per physical property so an applicant could not install multiple systems all under 10,000 L/day to avoid needing approval from the MOE.

Chair Stavinga thanked Mr. Davidson for his presentation.

3.0 Draft Policy Ideas: On-Site Sewage (Septic) Systems

Sommer Casgrain-Robertson gave an overview of the staff report on Draft Policy Ideas: On-Site Sewage (Septic) Systems.

Ms. Casgrain-Robertson confirmed that the background information on pages 9 and 10 is generic to the source protection process and confirmed that this

information will be included each time staff brings a draft policy to the Committee for consideration.

Ms. Casgrain-Robertson informed the Committee that they were being asked to consider draft policy ideas regarding septic systems approved under the Ontario Building Code (those that are less than 10,000L/day). Policy ideas for larger systems will be considered at a later date.

A member cautioned that appropriate and consistent language be used to facilitate understanding especially during the consultative phases. Another member expressed concern with releasing draft policy concepts with the Implementer identified as “to be determined”. Ms. Casgrain-Robertson confirmed that all Implementers have to be identified in the draft Source Protection Plan but she has reservations about creating prescriptive Education and Outreach policies because it seems more effective to determine during implementation (2013 and beyond) what the most efficient way to deliver such a program would be (who, when, what, how). Ms. Casgrain-Robertson intends to raise this concern at the next Chairs’ meeting and report back to the Committee.

Ms. Casgrain-Robertson reviewed the location and circumstances where septic systems (including holding tanks) are significant drinking water threats. She confirmed that the new mandatory maintenance inspection program only applies in vulnerable areas where septic systems are significant drinking water threats (WHPAs scored 10 and IPZs scored 10). She reminded Committee members that principal authorities can also choose to establish their own discretionary maintenance programs in larger areas. Ms. Casgrain-Robertson outlined the timelines associated with the new inspection program.

Members discussed the responsibilities of regulators under the new mandatory maintenance inspection program and any consequences that could be imposed upon regulators for inaction. Members also discussed monitoring mechanisms, annual reporting procedures, and the responsibilities and liabilities of principal authorities. In response to a question from a member on lot grading plans and benchmark establishment, Terry Davidson advised that the Canadian Standards Association is currently working on septic standards for Canada. He agreed to research the issue and report his findings back to staff for inclusion in the draft policy concepts.

Members reviewed the Draft Policy Ideas for On-Site Sewage (Septic) Systems Regulated under the Ontario Building Code.

Members discussed the challenges associated with identifying Education and Outreach details inside a policy and decided to remove the Education and Outreach policies and insert a blanket statement at the beginning of the policy document that informs readers that education and outreach will be undertaken.

Existing Significant Drinking Water Threats

Situation #1:
Derek Matheson recommended that the three specify actions called for under Situation #3 be applied to Situation #1 in the event of a failure of an existing on-site sewage system.

Situation #2
Chair Stavinga confirmed that the municipalities will notify the Source Protection Committee once a by-law has been established. She asked that the monitoring policy be expanded to include a report from the municipality on the number of municipal sewer connections that had been made during the year.

Future Significant Drinking Water Threats

Situation #3
Terry Davidson agreed to provide the Canadian Standards Association's wording with respect to lot grading plans.

Situation #4 and #6
Add the expanded annual reporting mechanism (see Situation #2 above) to these monitoring policies.

Situation #5 and #6
Include a question in the pre-consultation with municipalities to determine whether there is value in establishing minimum lot sizes and if there is any other mechanism other than a by-law to establish connection to municipal sewer services.

Sommer Casgrain-Robertson suggested that Situation #5 and #6 be amended and made broader by removing the reference to current zoning. She suggested that a statement could be included that encourages municipalities to maintain current zoning that does not allow new septic systems where they would be a significant threat.

Situation # 7 and #8
Sommer Casgrain-Robertson recommended the elimination of these two situations as the Source Protection Committee is not prohibiting new lot creation.

Situation #9 and #10
Staff recommended moving Situation #9 and #10 from Future Drinking Water Threats to Existing Drinking Water Threats.

Sommer Casgrain-Robertson spoke to the anticipated timeline. She confirmed that any significant comments coming out of pre-consultation with implementers would be brought back to the Committee for direction before being presented to the general public.

Motion 5-3/11

That the Mississippi-Rideau Source Protection Committee approve the Draft Policy Ideas as amended for on-site sewage systems under 10,000 litres per day and direct staff to undertake pre-consultation with potential policy implementers and engage potentially affected persons and bodies.

Carried

4.0 Community Outreach

Chair Stavinga reviewed the community outreach activities.

Past Activities

1. Eastern Regions Meeting
   Sommer Casgrain-Robertson advised that the Eastern Ontario Conservation Authorities met on February 7 to discuss source protection planning issues. These meetings will continue on a monthly basis until June 2011.

2. Ontario Soil and Corp Improvement Association Annual Meeting
   Peter McLaren informed members that the two Motions passed by Saugeen, Grey Sauble, Northern Bruce Peninsula Source Protection Committee (see Agenda Item 1.0 g), were passed at the OSCIA Annual meeting. Peter and the other agricultural members will work with staff to prepare a staff report recommending whether the SPC should or should not endorse the motions.

3. Municipal Working Group Meeting
   George Braithwaite and Bev Millar spoke to the value of these meetings and the value of SPC member participation.

4. One-on-One Meetings with Municipal Staff
   Brian Stratton updated members on his meetings with municipal staff adding that the focus has been discussing potential municipal drinking water threats (waste, snow, salt, sewage).

Upcoming Activities

2. Sommer Casgrain-Robertson confirmed the following change in topics for upcoming Municipal Working Group meetings. March 24 will focus on municipal issues while April 21 will focus on industrial issues.

Peter McLaren advised that he will be attending Ontario Agri-Food Technologies' upcoming Annual Meetings as well as that of the National Farmers Union of Ontario.

Motion 6-3/11

That the Mississippi-Rideau Source Protection Committee receive the Community Outreach staff report for information

Carried

5.0 Other Business

Resource Binder
Sommer Casgrain-Robertson reviewed the contents of the resource binder provided to members. Members were asked to bring the binders to future meetings and were encouraged to insert any presentation slides and future handouts into the appropriate sections.

Hugh Simpson Survey
Chair Stavinga encouraged Committee members to complete Hugh Simpson's survey and advised that $25 prizes will be awarded to some participants.

Patricia Larkin suggested that a provincial review of the regulatory framework associated with well construction repair and decommissioning would be beneficial. Ms. Larkin and Chair Stavinga agreed to draft a motion, for presentation to the Committee, recommending the Ministry of Environment and the Ministry of Municipal Affairs and Housing address the issue of jurisdiction over the construction, inspection and decommissioning of wells.

6.0 Member Inquiries None

7.0 Next Meeting

April 7, 2011, 1pm
Rideau Valley Conservation Authority (Monterey Boardroom)
3889 Rideau Valley Drive, Manotick

8.0 Adjournment

The meeting was adjourned at 4:45 pm.

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Janet Stavinga	**Michelle Paton**
Chair	**Recording Secretary**

ONSITE WASTEWATER TREATMENT
"SEPTIC SYSTEMS 101"

Presentation by: Terry K. Davidson, P.Eng
Director of Regulations
Ottawa Septic System Office

March 3, 2011

Introduction

- Treatment of human wastes, either on-site or otherwise, follows the understanding and outbreaks of disease
- The development is one which has not been continuous, it has progressed, regressed and progressed again
- This session outlines in brief how we got to where we are today in the treatment of wastes on-site

Ontario

- No real developments/regulations until 1950's at the County level – County of York recognized as one of first
- Basic system still tank, tile bed, same size for all
- Systems were far apart, water use modest, problems (at least the known ones!) were modest
- Standards highly variable

Ontario

- In 1970's Ministry of Environment Created
- Developed guidelines in 1974 we basically use today
- Typically delivered by local public health officials
- Standards consistent across province

Ontario/Canada

- Work by Brandes in 1970's in Whitby lead to the development of the filter bed – needed a solution for small lots, impermeable soils, high water table, cottage country
- Late 1970's/early 1980's lead to first secondary treatment units
- Aerobic units/RBC's
- These evolved into tertiary treatment units

Ontario/Canada

- 1990's saw the introduction of shallow buried trenches in response to problems in S-W Ontario with poor soils
- Introduced concept of tertiary treatment units
- Introduced tertiary units for use with SBT's
- Homegrown technologies – WBF and Ecoflo

Introduction to Process

- The design of on-site wastewater systems with a total daily sanitary sewage design flow of less than 10,000 L/day is regulated by the Ontario Building Code (OBC).

- Under the Building Code Act (BCA) you must have a building permit to construct an on-site system.

Ontario's Building Regulatory System

Code Development:

- Ontario's Building Code is updated on a regular basis:
  - Current edition dates from 2006; there are is generally 5 years between major Code editions
  - However, interim changes to the Code are frequently made
- Code changes reflect:
  - Government priorities
  - Emergency situations
  - Coroner's jury recommendations
  - Changes in building technology
  - Changes implemented or proposed in other jurisdictions
- Potential Code changes undergo public and technical review, and are recommended based on technical feasibility, impact and enforceability

Building Code Enforcement

- Building Code enforcement is in the hands of “principal authorities” - primarily municipalities
- Enforcement activities include:
  - The issuance of permits
  - Inspection of buildings under construction
  - The issuance of orders and commencement of prosecutions
- Building permits are issued when a permit application complies with the Act, the Building Code and other applicable law
- The Building Code Act, 1992 specifies that the Act and the Code supersede all municipal by-laws respecting the construction of buildings
- Municipal by-laws, therefore, cannot establish technical standards that conflict with or supersede Building Code standards

Mechanisms for Approval of New Technologies

- The first method is the Building Materials Evaluation Commission. BMEC authorizations are not site-specific.
- The alternative is to apply for a Minister's ruling based on the findings of an evaluation of the technology by the Canadian Construction Materials Centre (CCMC). A Minister's rulings may be subject to conditions and restricted geographic areas.
- The third option is to obtain an approval from the Chief Building Official (CBO) as an Alternative Solution.

The Objective-Based Format

- The 2006 Code was re-drafted in an "objective-based" format
- The Code includes underlying objectives as well as prescriptive or performance standards
- The objectives explain the "why" behind Code requirements, thereby enhancing Code understanding and compliance
- The objectives also provide a framework for the evaluation of "alternative solutions", promoting innovation in construction materials, building systems, and building design

CHEMISTRY OF WASTEWATER

- What is in it?
- Everything!
- Human waste, composed of bacteria, organic and inorganic compounds.
- Nutrients- N & P
- Soap and detergent
- Paper and other fibers

CHEMISTRY OF WASTEWATER

What is in it? (cont'd)

- Food waste
- Soil, grit, sand, inorganic matter
- Chemicals from cleaning or industry
- Anything an inventive child might flush down the toilet- from toys to small animals and fish.

What is it?

For most, something to be ignored

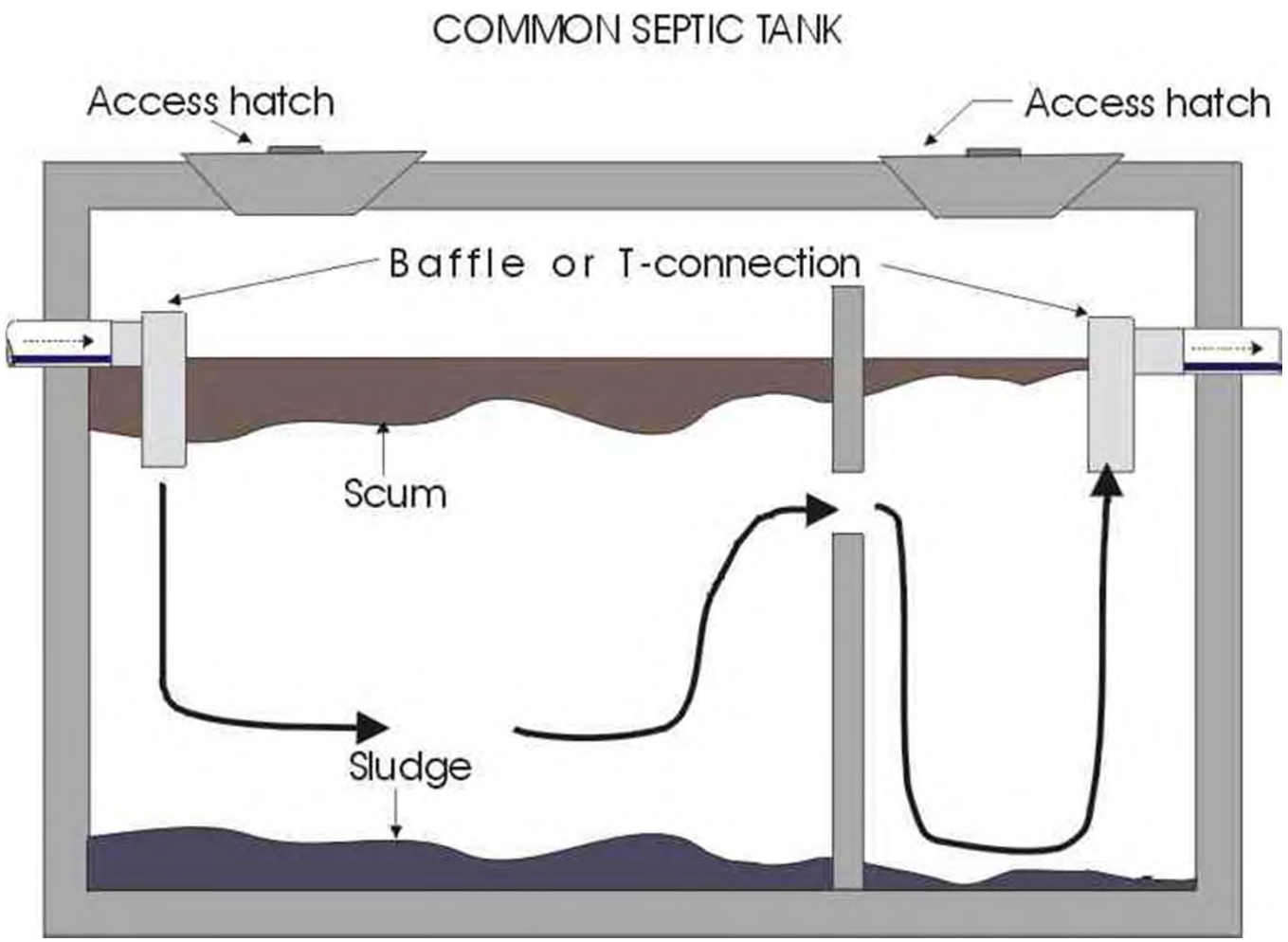
Thought of as thick brown smelly sludge

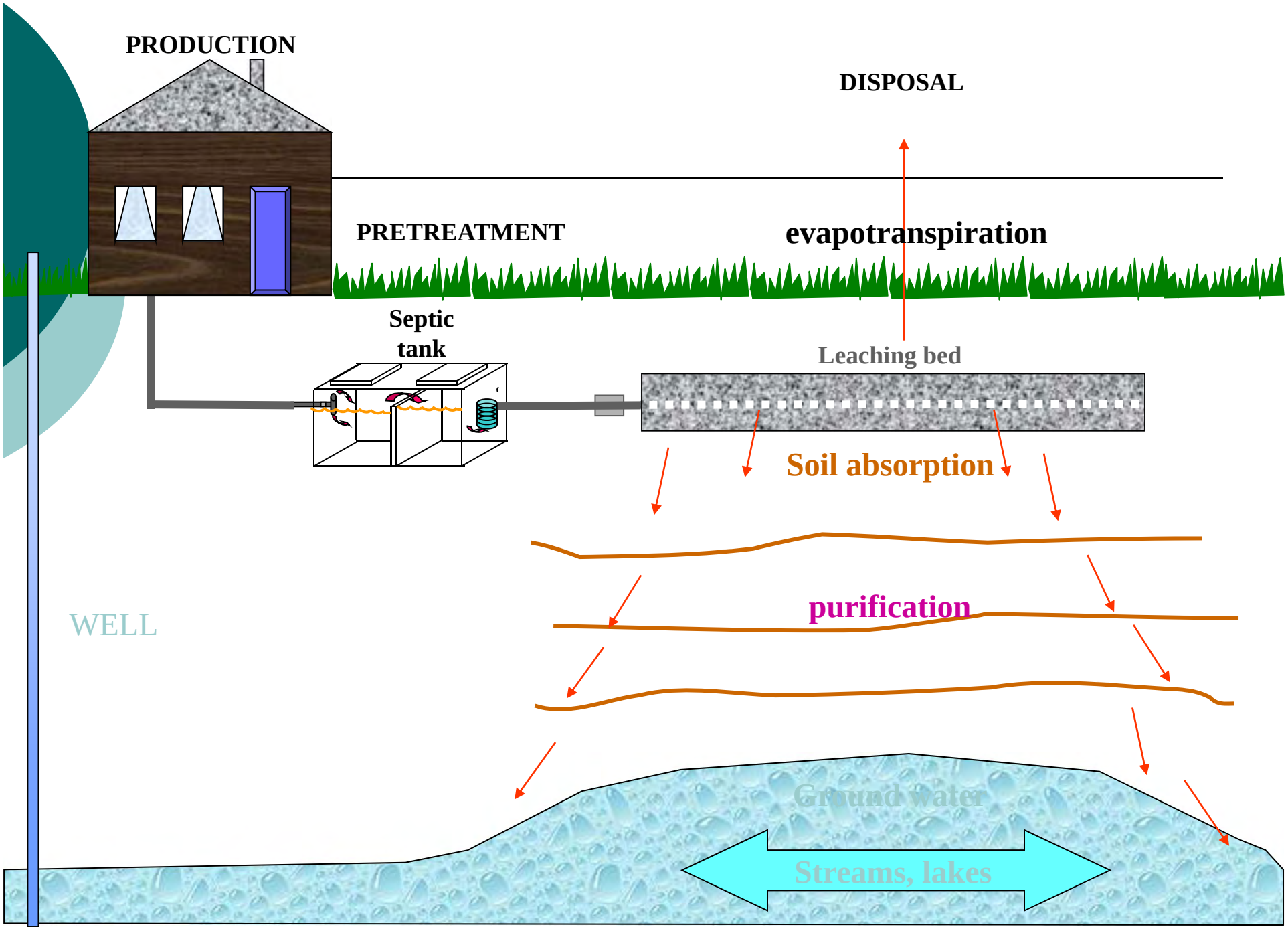
Generally considered distasteful

CHEMISTRY OF WASTEWATER

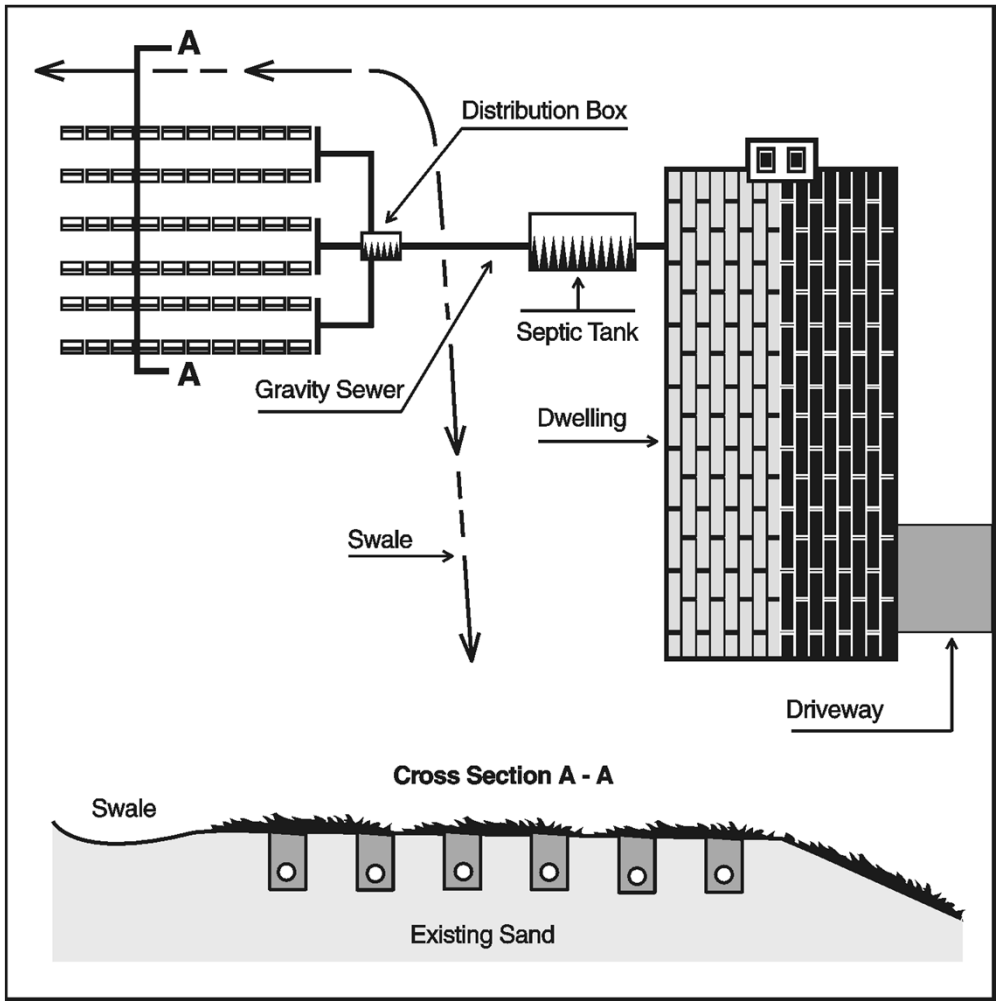
What is it?

For most, something to be ignored
Thought of as thick brown smelly sludge
Generally considered distasteful

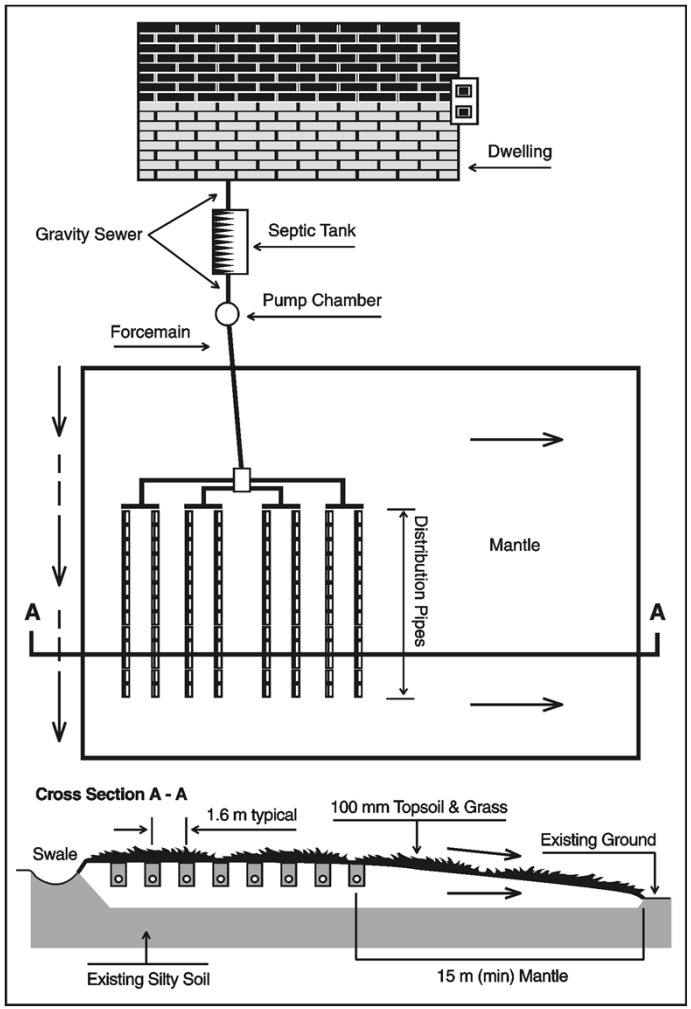

COMMON SEPTIC TANK
Access hatch
Access hatch
Baffle or T-connection
Scum
Sludge


PRODUCTION
DISPOSAL
PRETREATMENT
evapotranspiration
Septic tank
Leaching bed
Soil absorption
purification
WELL
Ground water
Streams, lakes

Conventional In-ground Leaching Bed



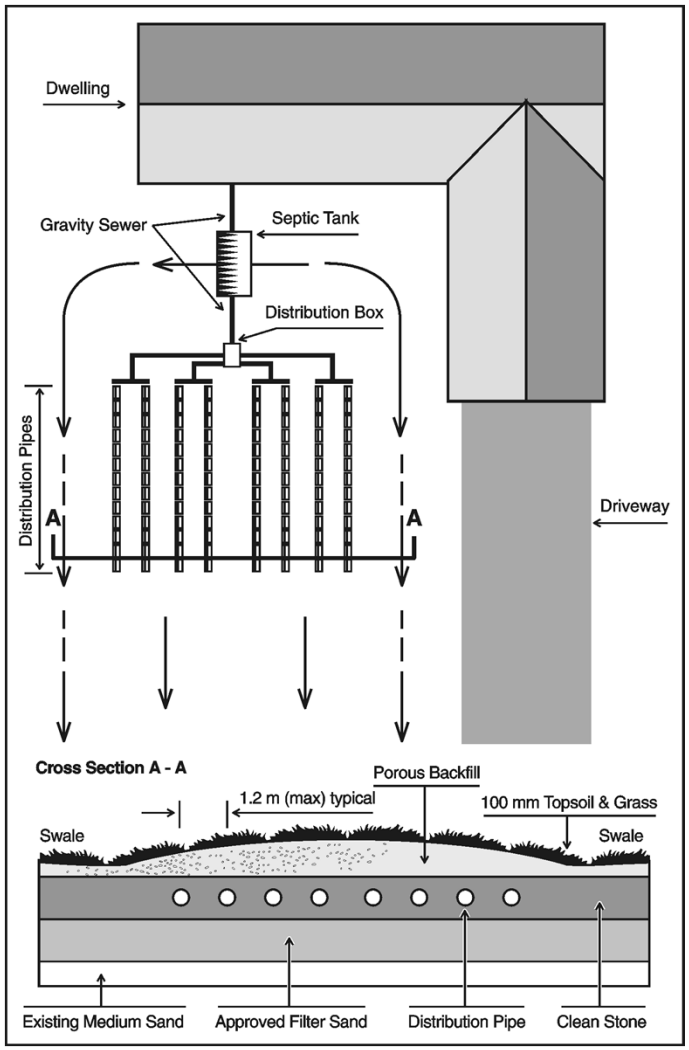
Absorption Trenches in Fill



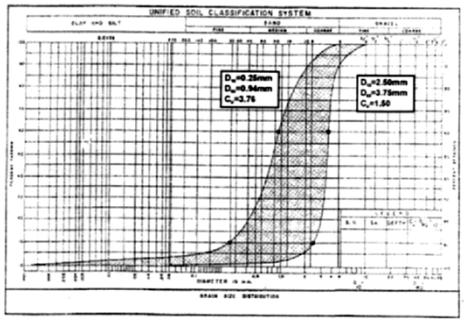
Fill Based (Raised) Leaching Bed

Fill Based (Raised) Leaching Bed

In-ground Filter Bed System



Filter Bed System

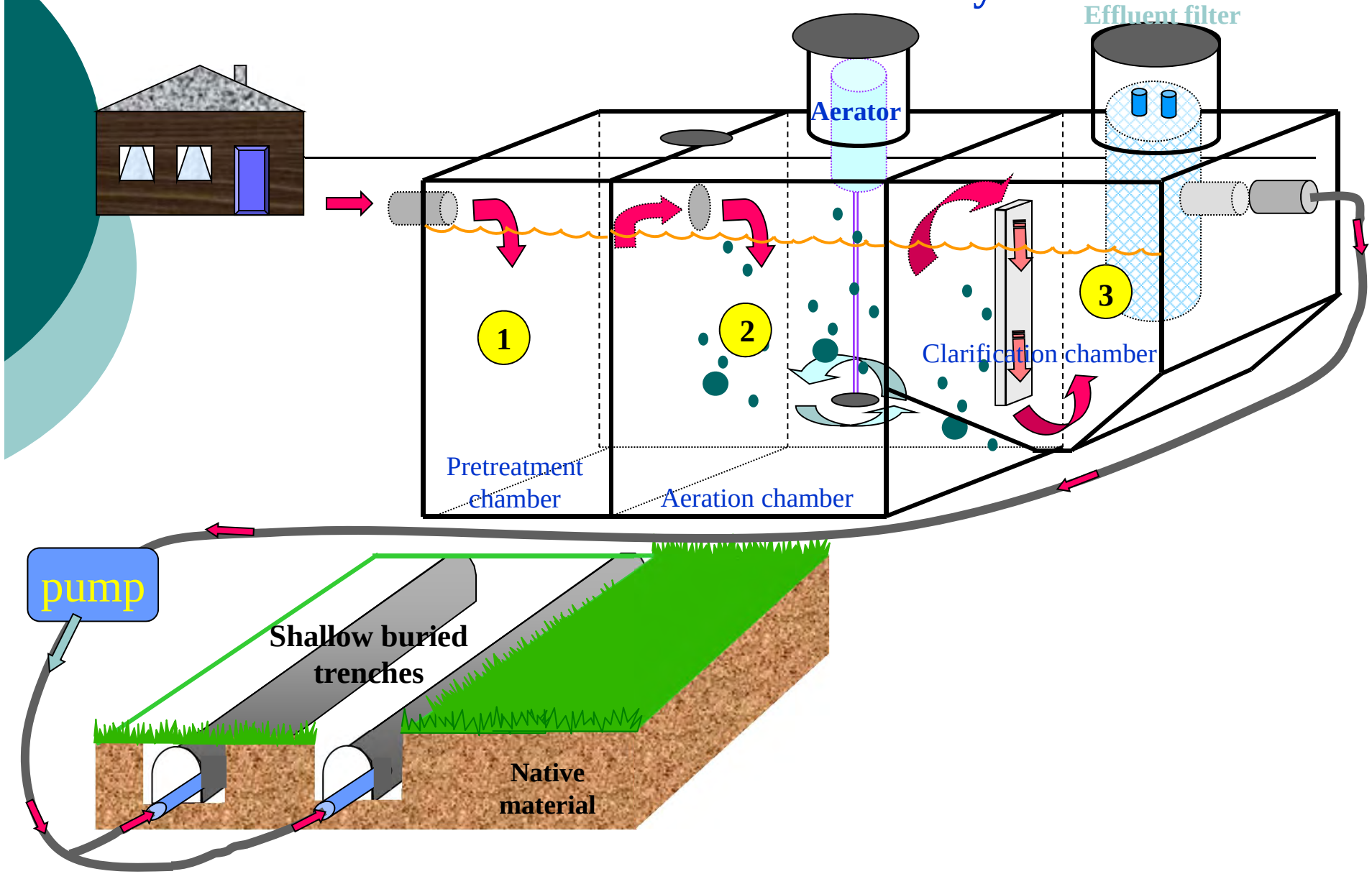


OBC- APPROVED ALTERNATIVE TECHNOLOGIES

- AEROBIC TREATMENT UNITS
  - WHITEWATER ATU
  - NORWECO/SINGULAIRE ATU
  - CLEARSTREAM ATU
  - NORTHERN PURIFICATION SYSTEMS
  - etc

Aeration System with Area Bed

Norweco aeration and filtration system



WATERLOO BIOFILTER

ECOFLO

Alternative Treatment Units (ATU's)

- All ATU's require a service & maintenance agreement
- Maintenance must be performed by a person authorized by the ATU manufacturer
- Maintenance must be performed in accordance with the manufacturer's printed literature

OBC Part 8 Inspections

Initial Site Inspection - The single most important step in ensuring that the right system is chosen for the site, that the environment will be protected (both ground and surface water), and that the minimum requirements of the Ontario Building Code are met or exceeded; surficial soils, groundwater table, topography, proximity to lot lines, water courses, and other features are all reviewed on site, as part of our review of the permit application. **(Division B – 8.2.1.2. (1)).**

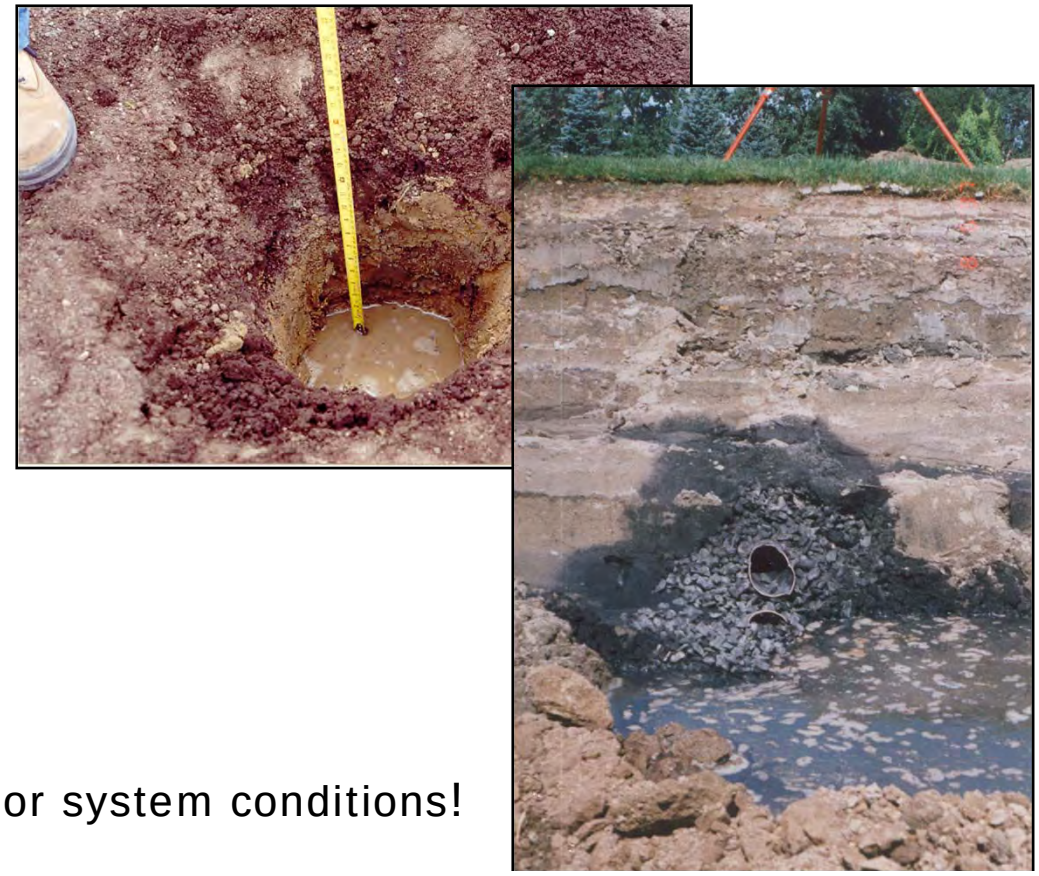
Soil & Site Evaluations

Purpose is to collect soil and site data as a basis for onsite system design.
Soil data is used to determine soil adsorption system type, depth, size, and treatment capability.
Site information is used to ensure proper system orientation, grading, and setback or clearance distances.

Soil & Site Evaluations

VERTICAL SEPARATION

- Separation distance between the bottom of a system and a limitation
- Treatment and dispersal zone
- Determines the minimum bottom elevation of the system



Even the best installation can't fix poor system conditions!

Soil & Site Evaluations

BEDROCK LIMITATIONS

- Treatment and dispersal problems
- Creviced bedrock does little treatment.
- Monolithic bedrock may be slowly permeable to impermeable.
- Fractured/creviced bedrock can also present a risk of contamination of the aquifer.

Soil & Site Evaluations

SITE ELEVATIONS – “TBM’s”

OBC Part 8 Inspections

Scarification Inspection - This construction step is required where clay soils are encountered, to ensure the surface of clay soils are not smeared, thus interfering with hydraulic conductivity at the interface between the engineered leaching bed materials and the underlying native soils. The loading area required for the septic system is checked at this step. **(Division C – 1.3.5.1. (2)(k)).**

OBC Part 8 Inspections

Clay Seal Inspection - This construction step is required where exposed bedrock sites exist, to ensure there is no short circuiting of effluent into groundwater through cracks and seams in the bedrock. The loading area required for the septic system is checked at this step. **(Division C – 1.3.5.1. (2)(k)).**

OBC Part 8 Inspections

Installation Inspection - This step ensures that what was approved in the permit, is actually constructed in the field. **(Division C – 1.3.5.1. (2)(l)).**

OBC Part 8 Inspections

Final Grading Inspection - This step is used to identify lot drainage, grading and landscaping conditions that could affect the future performance of the onsite sewage system and its expected service life. It ensures that the system has not been backfilled with inappropriate materials, and that side slopes meet the code for safety reasons for lawn maintenance. **(Division C – 1.3.5.2.(1)(g)).**

OBC Timelines

Ontario Building Code minimum requirement*		**OSSO Turn-around time Target**	
New Sewage System Permits	**10 days**	New Sewage System Permits	**5 days**
Clay Seal Inspection	**5 days**	Clay Seal Inspection	**48 hours**
Scarification Inspection	**5 days**	Scarification Inspection	**48 hours**
Installation Inspection	**5 days**	Installation Inspection	**48 hours**
Final Grading Inspection	**5 days**	Final Grading Inspection	**48 hours**

Malfunctioning Onsite Wastewater Systems

Malfunctioning Onsite Wastewater Systems

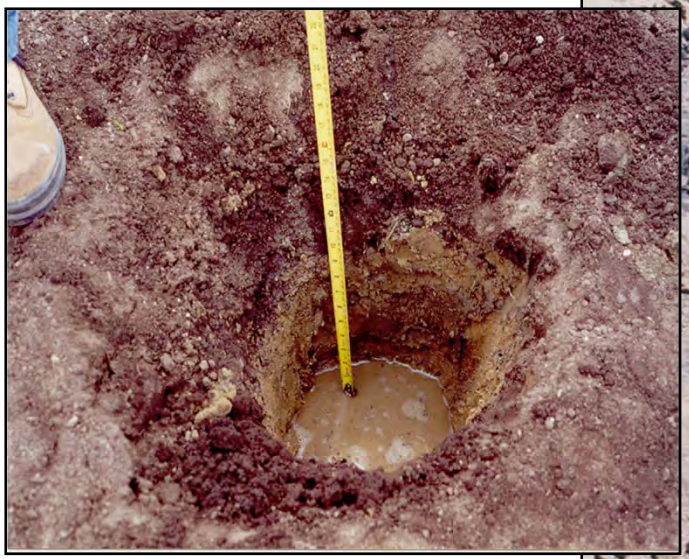
Causes:

- Improper design for the site conditions
- Undersized tank or leaching bed area
- Poor maintenance
- Compacted soils beneath bed during installation
- Saturated leaching bed from poor prediction of a high ground water table
- Poisoning of good bacteria caused by flushing chemicals down the drain

Common Causes of Leaching Bed Malfunction

- High Groundwater Table

Even the best installation can't fix poor system design!



Common Indicators of Onsite System Malfunction

Symptoms

- Soft & Spongy Ground Over Leaching Bed
- Lush Patches of Grass Over Leaching Bed

- Pools of Dark Water Over Leaching Bed
- Weak to Very Strong sewage odour in bed area

Dangers of Improperly Functioning Systems

- **Effects**
- Ground & surface water contamination
- Costly repairs or replacement

Introduction to Troubleshooting

- Troubleshooting an onsite wastewater treatment system offers many challenges to the:
  - Designer
  - Installer
  - Inspector
  - Owner

It is important to be aware that the homeowner will most likely to be quite defensive in most cases- try to include them wherever possible

Assessing the Septic Tank

Have tank pumped during the inspection (after the operating level has been recorded)

- Observations should be noted for the following for septic tanks:
  - Condition of the seals on lids and risers
  - Condition of the baffles
  - Sludge and scum thickness
  - Condition of each chamber

Maintenance Inspections: Overview

- Recent amendments to the Building Code establish and govern mandatory on-site sewage systems inspection programs
- Areas for mandatory programs:
  - Certain “vulnerable areas” identified in assessment reports approved under the *Clean Water Act, 2006*
  - Certain “stressed sub-watersheds” around Lake Simcoe
  - These areas are set out in Article 1.10.2.3 of Division C of the Code)
- Mandatory inspection programs are designed to establish compliance with Section 8.9 of Division B of the Building Code, which addresses the operation and maintenance of on-site sewage systems
- Principal authorities may also choose to establish discretionary maintenance inspection programs within their jurisdictions

In-Force Dates

- Mandatory inspections:
  - Regulation took effect January 1, 2011
  - Inspections to be completed no later than January 1, 2016 (or, where an assessment report is approved after January 1, 2011, no later than 5 years after approval)
  - Certain excluded Lake Simcoe areas:
    - Regulation takes effect January 1, 2016
    - Inspections to be completed as of January 1, 2021
    - Maps of these areas are available on the Ministry website
- Sewage systems constructed on or after January 1, 2011 must be inspected within five years after construction of the system
- Inspections are to be conducted on a re-occurring basis every five years

Design Guidelines for Sewage Works 2008
i.e. Large Subsurface Systems

All *sewage works* with a design *capacity* in excess of 10,000 L/d, including subsurface disposal systems, are subject to the requirements of Section 53 of the *Ontario Water Resources Act* (OWRA) administered by the Ontario Ministry of the Environment1. Subsurface disposal systems with a design capacity in excess of 10,000L/d are referred to as large subsurface sewage disposal systems (LSSDS).

Design Guidelines for Sewage Works 2008
i.e. Large Subsurface Systems

Depending on the location of the site, the *Clean Water Act*, associated regulations and source water planning may apply. If the proposed system is to be sited in a location within a source water protection “vulnerable area” as defined under the *Clean Water Act*, the designer is advised to consider and address the requirements of the *Clean Water Act* prior to proceeding with an OWRA application for approval. Consultation with the local Conservation Authority or Source Water Protection Authority is recommended to determine if this is a concern and if so what specific requirements need to be addressed.

Septic Re-Inspection Program

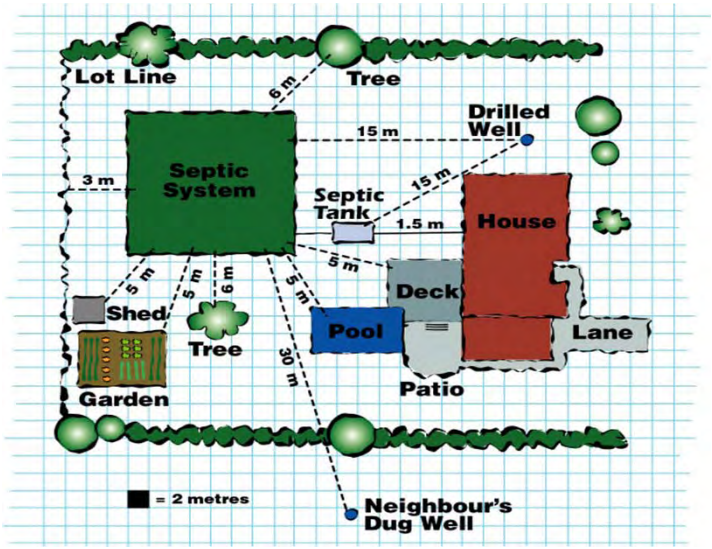
MississippiRideau
SEPTIC SYSTEM OFFICE

- **A properly functioning septic system is an integral part of a healthy shoreline environment.**
- **Improperly maintained systems can be a significant contributor of nutrient and bacteriological pollution to ground and surface water.**
- **The Septic Re-inspection Program's goal is to educate, inform and create a better understanding of system function, maintenance, and operation to ensure a properly functioning septic system.**
- **The implications of poor maintenance are costly to the owner, to the community, and the environment.**

Program Procedure

The inspection of the septic system will include the following:

- **measurement of separation distances to key lot features**
- **determining location of privies/greywater pits/tanks/distribution field/holding tank**
- **visual inspection of system structure**
- **measurement of septic tank contents – sludge and scum accumulation**
- **visual inspection of bed**
- **briefing the homeowner on proper system maintenance and operation**



Common Issues

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Inadequate Privies

Greywater Discharged to Surface

Common Issues

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Concrete Corrosion

Tank Corrosion

Common Issues

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Lush Vegetation on Bed

Root Penetration

Less Common Issues

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Effluent Pooling Over Bed

Homemade Non-Permitted Systems

THE END

WEB SITES

www.oowa.org

www.orwc.uoguelph.ca

Ottawa Septic System Office

Bureau des systèmes septiques d'Ottawa

Ontario Rural Wastewater Centre

Ontario Onsite Wastewater Association