Buying & Selling Wastewater Systems & Water Wells in Vermont

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Septic Seminar

- 1. Septic systems 101
- 2. Wastewater System & Water Supply Rules
- 3. Potential issues at the time of sale
- **Questions and discussion**





Part 1 - SEPTIC 101: How do Soil-Based Wastewater Treatment Systems Work?



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Anerobic = No Oxygen

1. Digestion



Anerobic bacteria break down biosolids into basic components and biogas. Biogas is CO2 and Methane.



Biogas = "stink"



Part 1 - SEPTIC 101: How do Soil-Based Wastewater Treatment Systems Work?



Aerobic = Oxygen

Aerobic bacteria present in soil break down Carbon and other nutrients, recycling the nutrients for plant use and leaving behind clean water.



Why care about wastewater treatment? Human Health



Why care about wastewater treatment? Environment



Soil-Based Treatment Systems How they work, and how they fail.



High Water Table

Oxidized Soil Rust Covered (aerobic)

Reduced Soil Rust Washed Off (anaerobic) Where do the wastewater treating microbes live?

*Look for the rust covered (red-brown) soil! (Is there Fe everywhere?)

*Grey soil indicates the rust has been dissolved & washed off below the seasonal high water table (SHWT).

How much wastewater per house?



Design Flow

- 70 gallons per person per day
- Based on number of bedrooms (min. 2-bedrooms)
- 2 people in first three bedrooms
- 1 person in further bedrooms

Five Bedroom House: (3br(2pplx70gpd)+(2br(1psn×70gpd) = 560 gpd

Soil-Based Innovative and Alternative (I/A) Dispersal Systems

large diameter aeration/infiltration chambers replacing traditional stone and pipe, may require regular inspections by licensed

professional









Innovative/Alternative Treatment Systems

1. Aerobic Treatment Units



b) Trickle down through synthetic media



2. Media Filters

a) Bubbles up through synthetic media



c) Trickle down through organic media



Part 2: The Wastewater System and Potable Water Supply Rules

- 1. Scope and Purpose
- 2. Municipal Delegation
- 3. Designer Licensing



- 4. Permits (site-specific) for Wastewater & Water Supply
- 5. Approval (technology-specific) for Innovative/Alternative Systems

Scope of the Rules

- Regulate soil-based disposal systems with design flow less than 6,500 gallons per day and municipal connections to water & sewerage
- Construction, modification, or replacement of building, structure, campground, and associated wastewater systems and potable water supplies

Purpose of the Rules

1. Protect human health & the environment

- 2. Regulate design, construction, modification, operation, & maintenance of wastewater systems
- 3. Increase accountability of designers & installers
- 4. Ensure **owners** know **responsibilities** & have **knowledge** of system's design, operation & maintenance
- 5. Establish performance criteria:
 - I. wastewater not exposed to air or backed-up in building
 - II. no direct discharge to surface waters (streams, lakes etc.)
 - III. does not contaminate potable water supply
- 6. Encourage innovation & flexibility of design



Municipal Delegation

- From July 1, 2007, all Vermont land under the State's "Wastewater System and Potable Water Supply Rules"
- Municipalities may elect to receive delegation to issue State permits for:
 - 1. on-site wastewater systems
 - 2. potable water supplies, and
 - 3. connections to municipal water distribution
 - 4. connections to municipal wastewater collection systems
- Municipalities that have delegation are Colchester and Charlotte.



Designer Licensing

 Class 1 (Professional Engineers) – authorized to do all aspects of design, applications, certifications, and review for delegated municipalities.



- Class A authorized to design inground and at-grade systems
- **Class B** authorized to design inground, at-grade, mound, bottomless sand filters, with or without the inclusion of I/A Technology
- Class BW- same authorization as Class B, but may design a water supply system that serves more than one structure

Finding a Designer

- Office of Professional Regulation (OPR) Administer applications, renewals, complaints, and disciplinary action.
- Official lists can be found here:

https://www.sec.state.vt.us/professional-regulation.aspx

- DWGWPD (ANR) Set exams and provide or endorse continuing education and training. Cannot recommend designers.
- Unofficial lists with contact information can be found here: http://dec.vermont.gov/water/licensed-designers



Permit Application Requirements

- 1. Design Flow gallons per day
- 2. Soil Descriptions Where is water table? What is soil absorption capacity? Where is ledge?
- **3. Wastewater System Design** Loading rates (gallons per square foot per day), system type, system size calculations, and component details

4. Plans and Detailed Drawings -

a) contours; b) water features; c) flood plain;
d) engineered features; e) existing/approved wells & wastewater systems; f) easements or rights of way; g) test pit & well locations; h) construction details; i) isolation distances & presumptive zones.



Permit Requirements for Landowners

- 1. Project shall be completed as shown in Permit Application plans
- 2. Permit runs with land. Enforceable against Landowner & Successors
- 3. Landowner shall record Permit in local town records with 30 days
- 4. No permit is valid for completed project <u>until Installation Certificate</u> is received by DWGWP from the Licensed Designer
- 5. Permit is only valid for conditions described in the Application

6. Purchaser shall be shown the Permit & I/A Approval if applicable

- 7. Landowner agrees to allow State representative to access property to ascertain compliance with Statutes, Rules, and Permit
- 8. Wastewater System shall be operated to prevent surface discharge and Water Supply shall be operated to prevent its contamination

I/A Approval Requirements for Landowners

- 1. Comply with Permit requirements
- 2. Get installation inspection & certification by Licensed Designer
- 3. <u>Have maintenance and inspections performed by authorized</u> <u>Service Provider</u>
- 4. <u>Service Providers submit inspection reports (initial, annual,</u> <u>biannual as required) to DWGWP</u>
- 5. Operate and maintain as per manual and report problems to the Service Provider to record problems & repairs in inspection report
- 6. Landowner will have 'cloud on title' if technology fails or landowner does not meet requirements of the I/A System Approval.

http://dec.vermont.gov/water/programs/ww-systems/innovative-alternative

Part 3: Potential Septic System and Water Supply Issues at the Time of Sale Some of the questions we will address:

- 1. Where do I find answers to my questions?
- 2. What can be checked at time of sale?
- 3. When is a Permit required and how to find out if a Permit exists for an existing system?
- 4. When is a new Permit required?
- 5. When a wastewater system has failed and what to do?
- On-Site Loan Program and Replacement Private Wells

When is Permit required for **Existing System**?

• January 1st, 2007 – "Clean Slate"

 Wastewater systems & potable water supplies associated buildings and campgrounds built before this date are exempt from Permit requirements provided there have been no modifications that alter flow ("you get what you got, but you don't get more without meeting the Rules")

• July 1st, 2007 – Introduction of Universal Jurisdiction

- After this date all Permits issued are by the State, unless authority delegated to municipality (Colchester & Charlotte)
- Prior to this date, some Towns had their own regulatory requirements.
 Contact Town authority or Regional Engineer. It may still legally apply to the older systems.

How do I find out if valid Permit exists?

- Permits go with the property
- Permits do not "expire"
 - If Permit issued but wastewater system or potable water supply not installed, it may be built exactly as Permitted
 - Permits for failed systems and seasonal conversions do "time out" if not installed
 - Installation Certifications must be on file to make a Permit valid
- Find State issued WW Permits with on-line search: <u>http://dec.vermont.gov/water/forms/ww-systems-permits</u>
- Find out if a pre-2007 Town Permit exists by contacting the Town
- Permit may include easements.
- Find Innovative / Alternative Technology Approvals for inspection and maintenance requirements

When is a <u>new</u> Permit required?

- **1.** Subdivision of a lot or lots
- 2. Construction, Modification, or Replacement of <u>wastewater</u> <u>system</u> or potable water supply
- **3.** Construction, Modification, or Change in Use of <u>building or</u> <u>structure</u> that changes Design Flow, or seasonal to year-round
- **4. Connection** of existing wastewater system or potable water supply to new or modified building of structure
- 5. New campground, or modification that changes Design Flow
- 6. Failed wastewater system or potable water supply
- 7. "If water is going to flow in, water is going to need to flow out, and you will need a permit"

When has a wastewater system failed?

A wastewater system is failed when:

- 1. Exposed on ground surface
- 2. Discharged to surface water
- 3. Backed up in building
- * May qualify as a minor repair







A wastewater system has not failed if...

- It can be remedied by minor repair or replacement of physical component (replace pipe)
- Effects lasted for a brief period, system has recovered, and cause of failure was an unusual and non-recurring event (Hurricane-caused flooding)





What to do if a wastewater system has failed?

- Contact a VT Licensed Designer to act on property
 owner's behalf
- **Designer** will assess site and submit permit application
 - It is a Permit violation if replacement system not installed
 - Immediate temporary remediation is required
 - Timescale to replace depends on circumstances
- When is a new Permit not required?
 - Is there an existing permit for the property?
 - Was the Permit issued for a 'replacement area' (new Permit required) or a 'replacement system' (covered by existing Permit)

What can be checked before a sale?

- Age and design of wastewater system (longevity depends on design, flow, waste strength etc.)
- Gather documents together (Permit, Design, I/A Approval, easements, presumptive zones etc.)
- Pump sludge from septic tank and check for filter
- Check for visual and olfactory signs of failure
- Should you consider a scope or stone check?

Dye tests are an extreme measure that can damage a functioning system



Potable Water Supply – Private Wells

- Permit not required to replace a water supply for a single-family residence
 - Includes installing well to disconnect from municipal or shared supply
 - Exemption forms must be placed in land records to qualify
- Landowners to provide prospective purchasers with educational material on benefits of water testing



http://www.healthvermont.gov/sites/default/files/documents/ pdf/ENV DW testing wells factsheet.pdf

 Water from private wells shall be tested prior to new use. If out of compliance, test prior to conveyance.

Regional Office Program

http://dec.vermont.gov/ water/ww-systems

http://dec.vermont.gov/ water/contacts



VERMONT OFFICIAL STATE WEBSITE

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Department of Environmental Conservation

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PROGRAM EDUCATION, OUTREACH AND RESOURCES

This is a simplified overview of how a septic system works.

Water runs out of your house from one main drainage pipe into a septic tank.

The septic tank is a buried, water-tight container usually made of concrete, fiberglass or polyethylene. Its job is to hold the wastewater long enough to allow solids to settle down to the bottom (forming sludge), while the oil and grease floats to the top (as scum). Compartments and a T-shaped outlet prevent the sludge and scum from leaving the tank and traveling into the drainfield area.

The liquid wastewater then exits the tank into the drainfield. If the drainfield is overloaded with too much liquid, it will flood, causing sewage to flow to the ground surface or create backups in toilets and sinks.

Finally, the wastewater percolates into the soil, naturally removing harmful bacteria, viruses and nutrients.

The Regional Office Program issues <u>water/wastewater permits</u> (WW Permits) for soil based wastewater systems with flows of less than 6500 gallons per day, for potable water supplies (water supplies that are not public water supplies), and for municipal water and sewer connections. Permitting staff are located in five Regional Offices. Staff also administers the licensed designer program and reviews innovative and alternative systems for potential use in VT.

The regional offices map provides office, program and contact information for each region.

Licensed Designer Program information

WHAT'S NEW?

LEARN MORE, DO MORE

Be Septic Smart!

Over half the households in Vermont depend on septic systems or other types of onsite systems to treat their wastewater. Failure to maintain a septic system can lead to backups and overflows, which can result in costly repairs.

Even if you do not own an on-site septic system you are likely to use one at a friend's house or camp, a business or a park facility. During Septic Smart Week, EPA provides septic system use and maintenance tips, including:

- Keep it clean! Maintain your septic system to protect the cleanliness of your water well.
- Don't Strain Your Drain: Use water efficiently and stagger use of water-based appliances. This can improve
 septic system operation and reduce risk of failure.
- Think at the sink! What goes down the drain has a big impact on your septic system.
- Don't overload the commode! A toilet is not a trash can. Disposable diapers and wipes, feminine hygiene
 products, cigarette butts and cat litter can damage septic systems.
- Protect it and inspect it! Regular septic maintenance can save homeowners thousands of dollars.

Where do I find answers to questions?

Digging deep into the DEC web site

http://dec.vermont.gov /water/programs/wwsystems/programeducation



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Where do I find answers to my questions?

- 1. The Designer may be able to answer questions http://dec.vermont.gov/water/licensed-designers
- 2. For general questions contact your Permit Specialist: http://dec.vermont.gov/environmental-assistance/permits
- 3. For WW Permit questions contact Regional Engineer: http://dec.vermont.gov/environmental-assistance/permits
- 4. For compliance questions contact compliance manager: Cristin Ashmankas – Cristin.Ashmankas@vermont.gov (802) 522-3257
- 5. If still unsure or unhappy, contact Acting Program Manager:

Carl Fuller – Carl.Fuller@vermont.gov (802) 585 4884

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