



pennsylvania
DEPARTMENT OF ENVIRONMENTAL PROTECTION



Office of Water Management



Water Wellness Webinar

Sept. 19, 2012

Dial-in number for Audio: 1-877-668-4493

Access code: 649 028 166

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Water Wellness Webinar: Agenda



- **Onlot Sewage Systems**

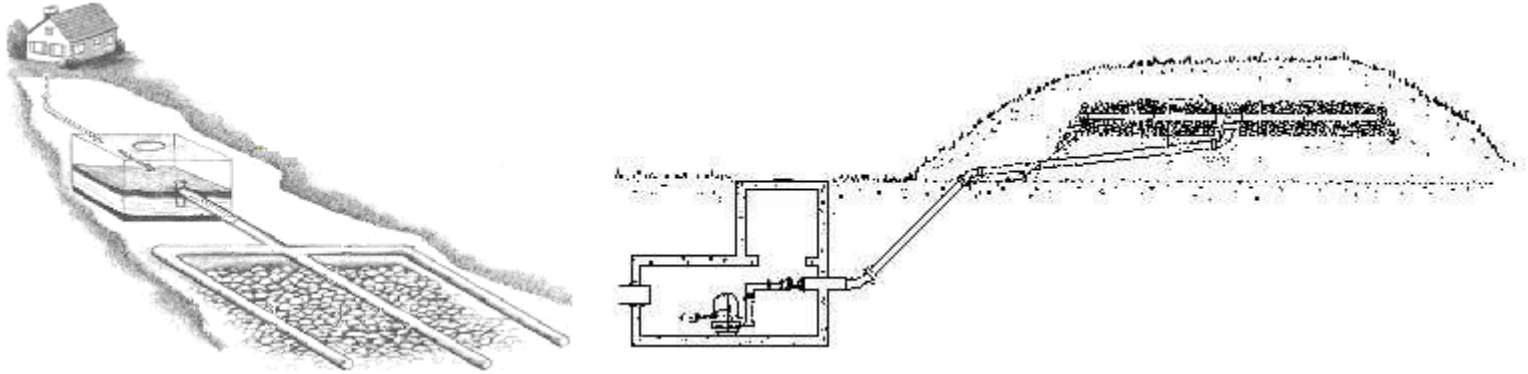
John Diehl, Chief, DEP's Act 537 Program

- **Private Water Well Systems**

*Bryan Swistock, Penn State Cooperative Extension's
Pa. Master Well Owners Network*

- **Questions**

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Onlot Sewage Systems Maintenance and Prevention

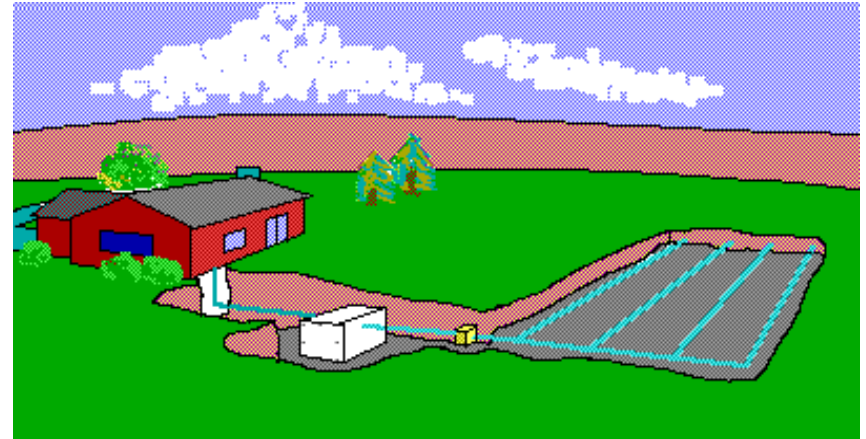


Onlot Sewage Systems



Nationwide...

- 25% of all households
- 33% of all new development
- 4 billion gallons of wastewater daily



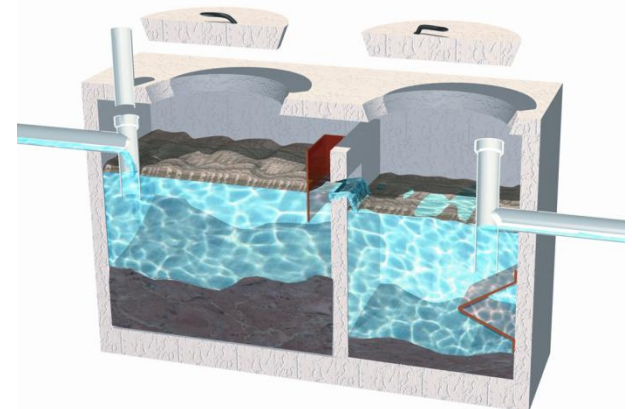
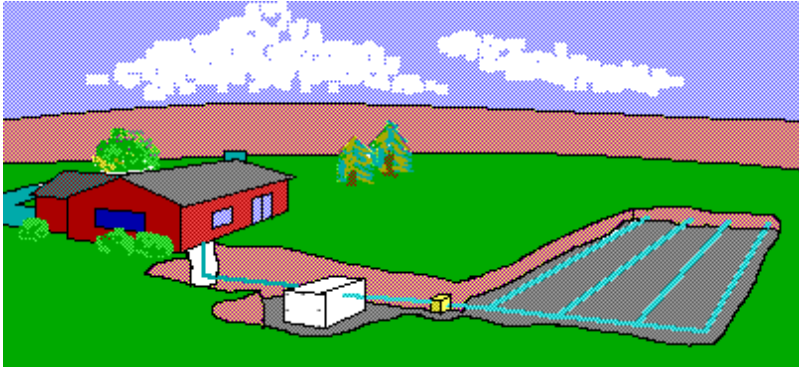
In Pennsylvania...



- Onlot systems account for about one-quarter to one-third of all wastewater treatment.
- Over 1.3 million systems.



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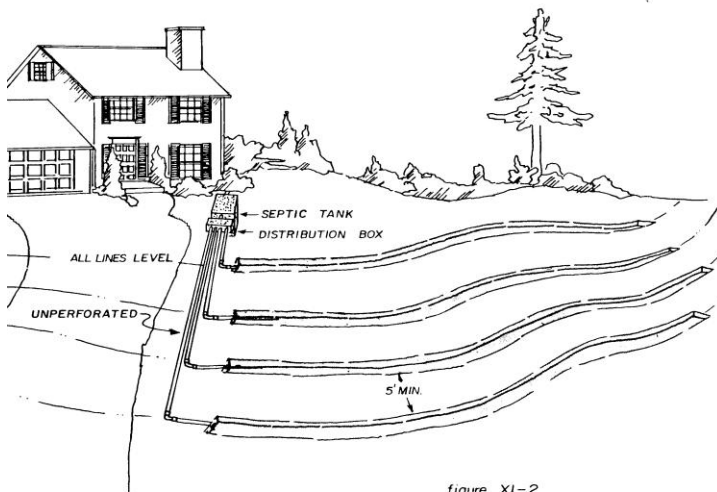
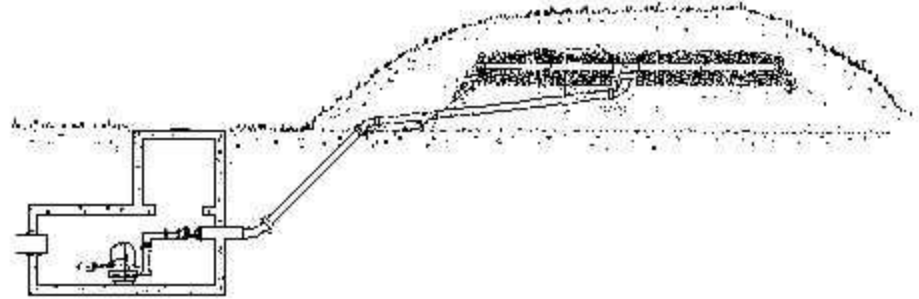


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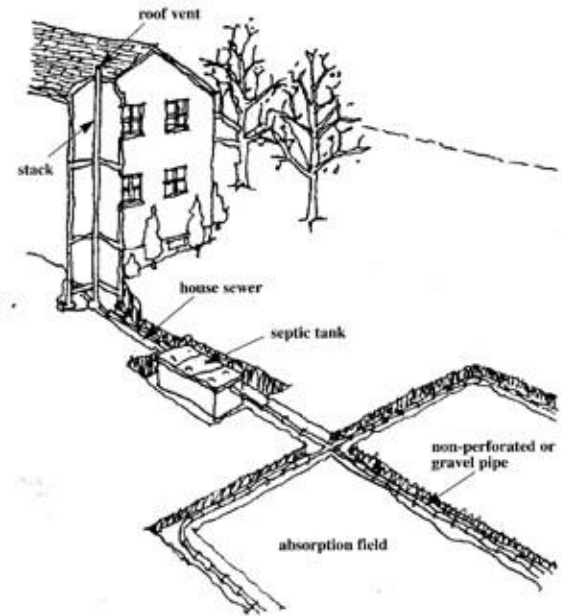
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How Does a Sewage System Work?

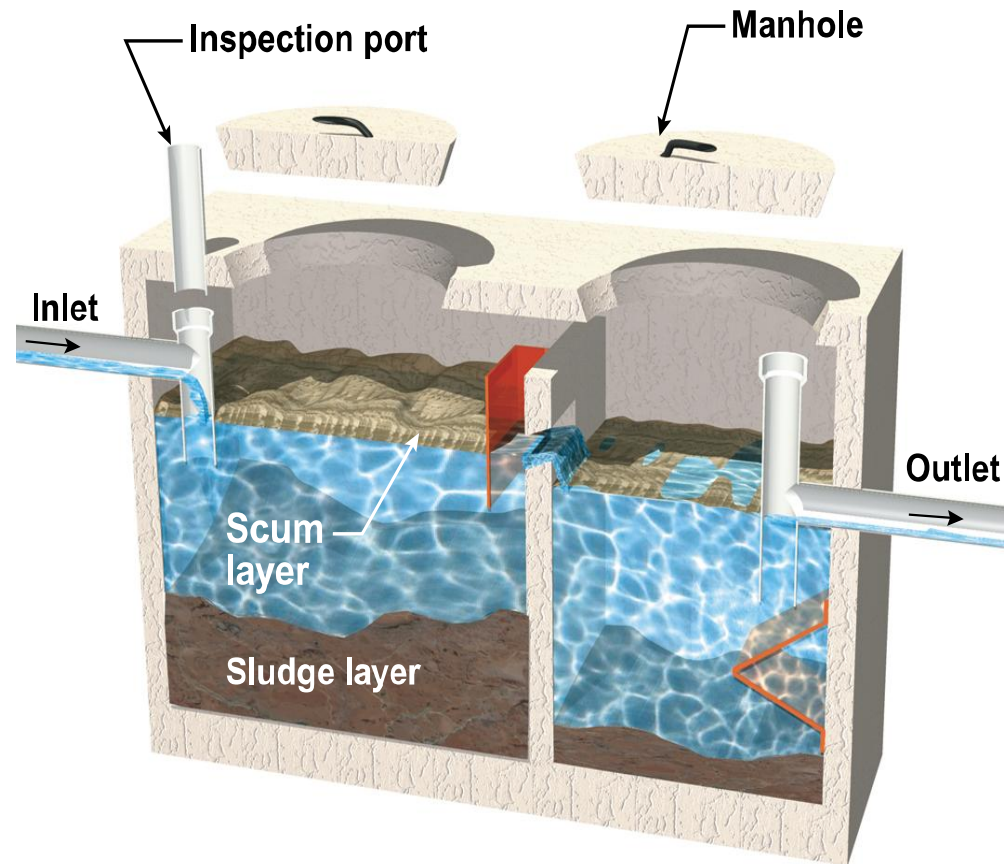


- Building Sewer
- Treatment Tank
 - Anaerobic (septic tank) or Aerobic
- Distribution Box or Dosing Tank & Pump
- Absorption Area



How Does a Sewage System Work?

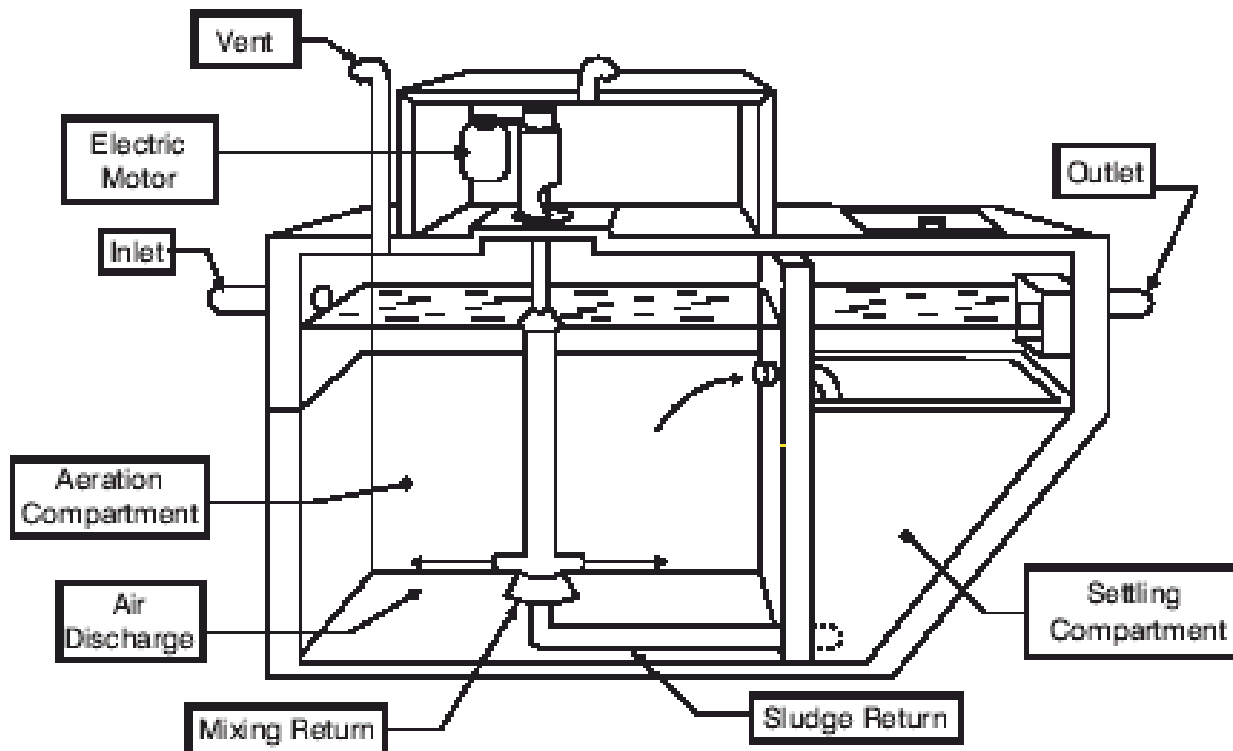
- Septic Tank - First stage of treatment
 - Collects wastewater
 - Separates:
 - Floatable solids (Scum)
 - Settleable solids (Sludge)
 - Liquid effluent
- Sends effluent to the Drainfield - Second stage of treatment



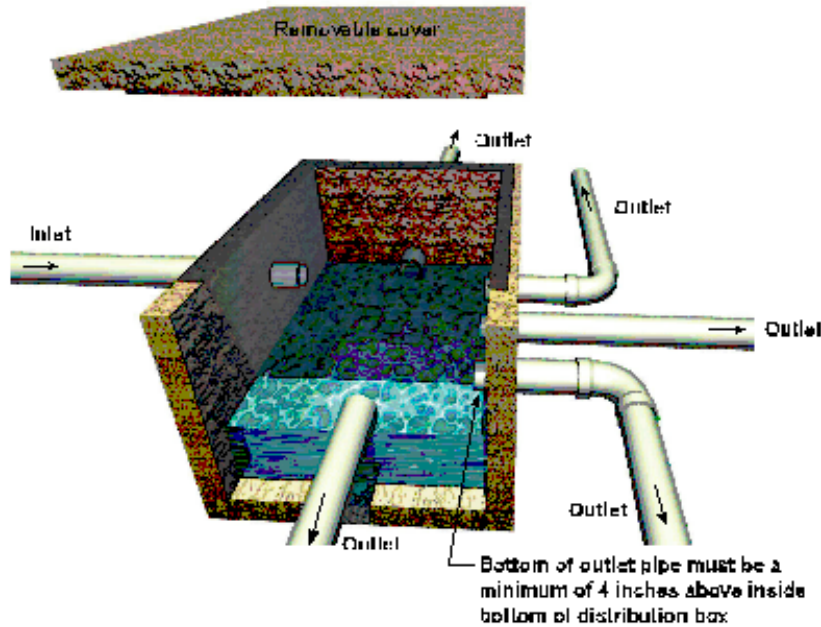
How Does a Sewage System Work?



Aerobic Treatment Tank

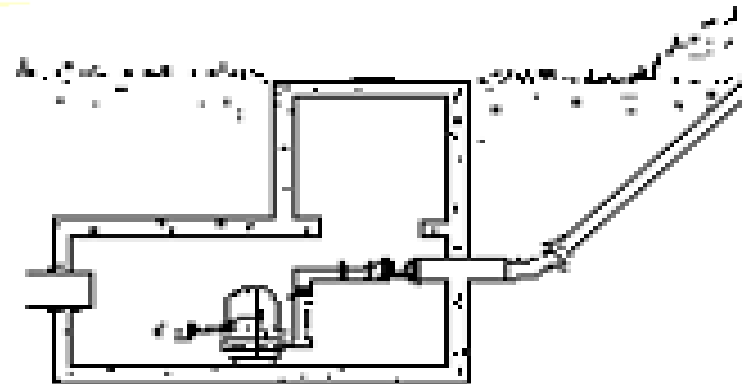


How Does a Sewage System Work?



Distribution Box

Dosing Tank and Pump



How Does a Sewage System Work?

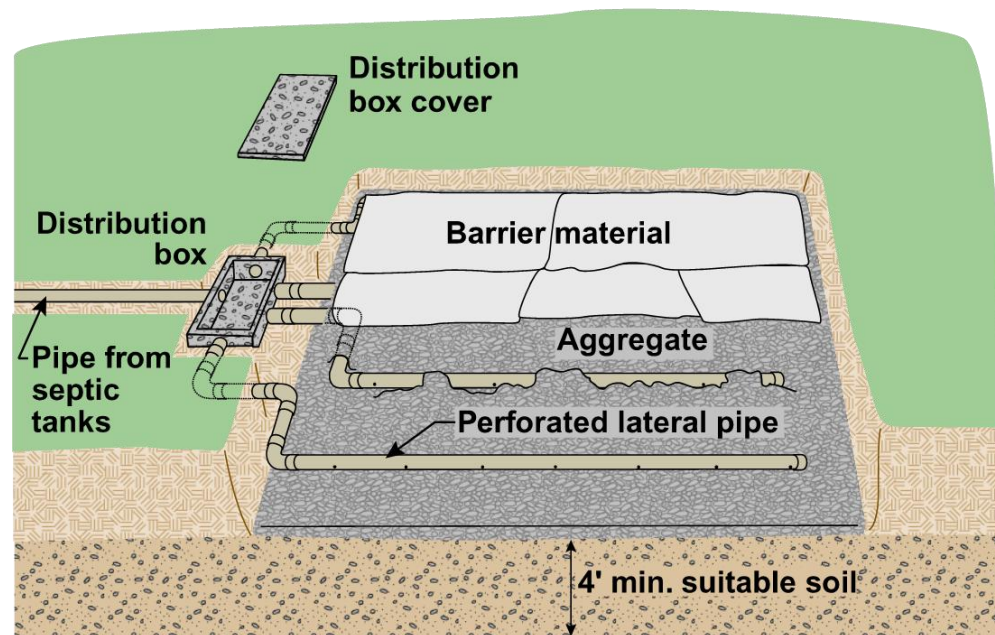


Drain field - Second stage of treatment

Perforated pipes in gravel bedding

Effluent flows out of pipes through gravel and into the soil

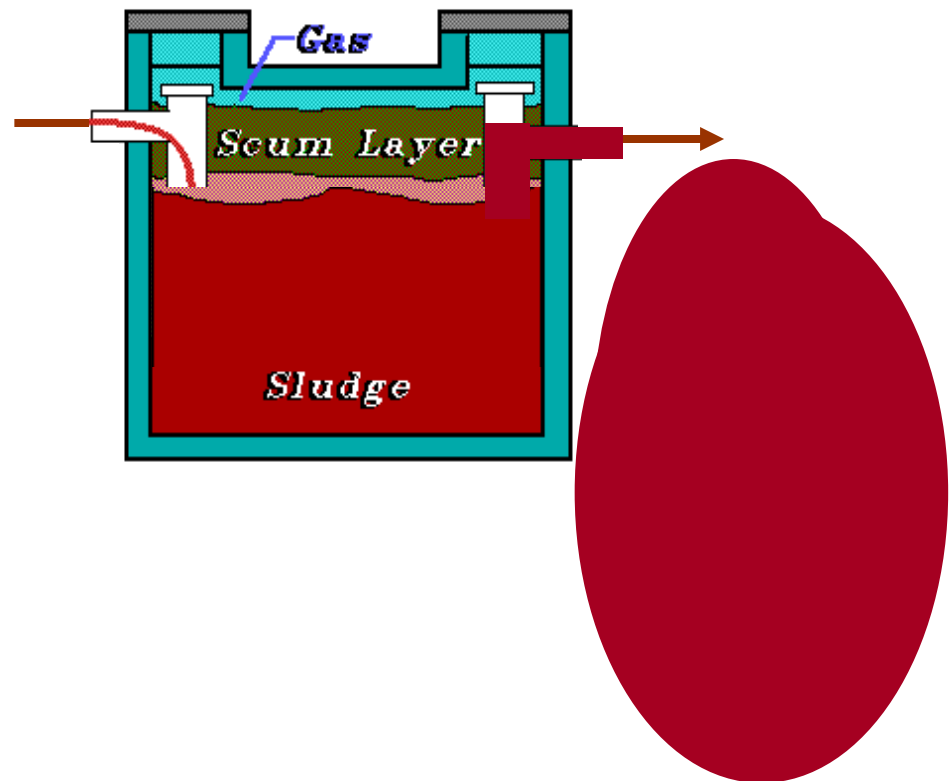
- Filters bacteria
- Adsorbs viruses
- Retains certain chemicals (Phosphorous Nitrogen)



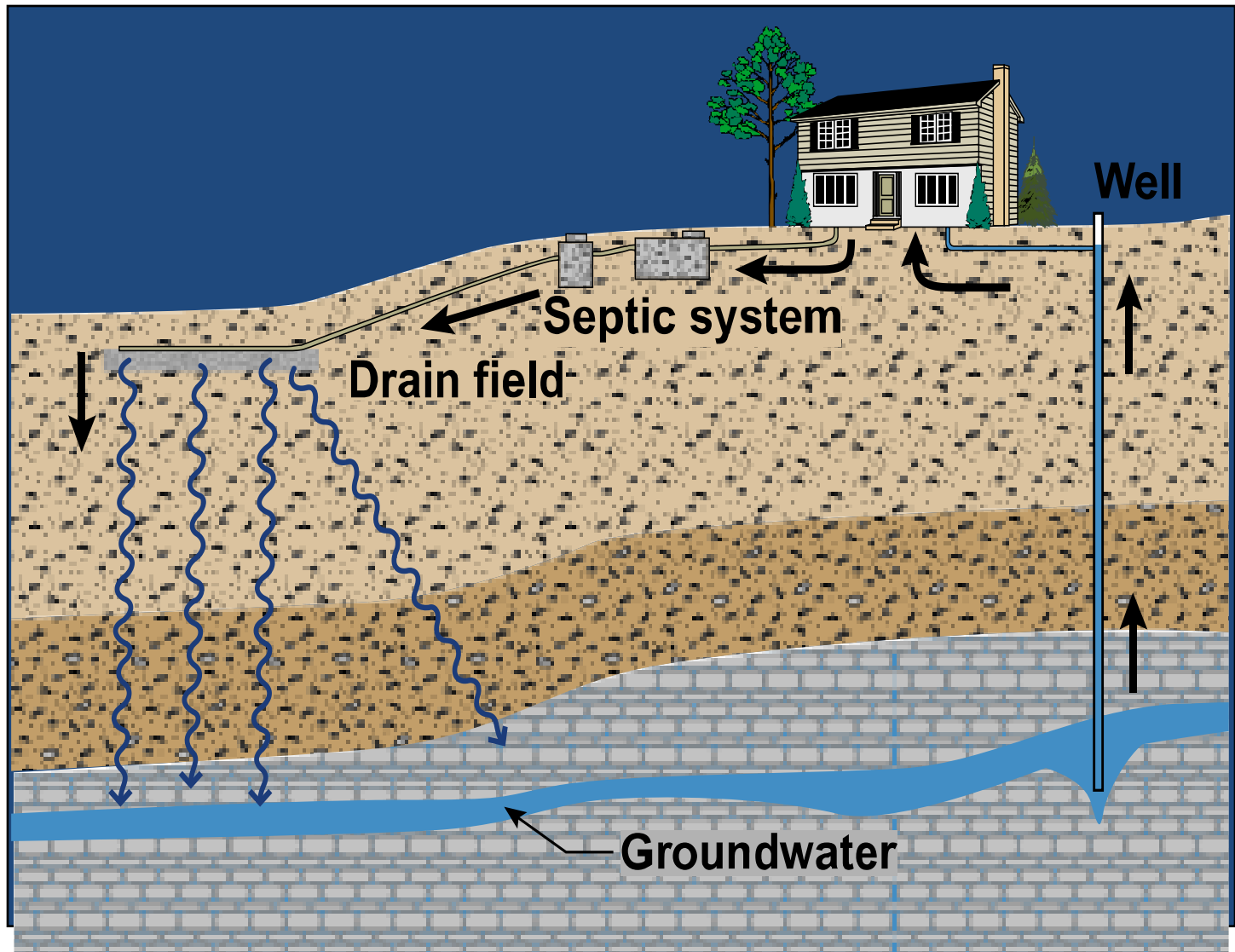
System Maintenance

Without operation and maintenance, systems may fail or function below their capabilities.

Regular maintenance allows all sewage systems to function better and longer.



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Public Health and Safety



When a septic system fails, raw wastewater can pond on individual properties, exposing families and pets to life-threatening pathogens.

System Maintenance



Septic systems are very much like automobiles:

- They need periodic inspections and proper maintenance to continue working properly.
- They must be operated properly and not overtaxed or the owner will suffer consequences such as paying to repair or replace the system.

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Visual Examples of Malfunctions



What is a Malfunction?



When untreated or partially treated sewage is:

- Discharged to waters of Commonwealth.
- Discharged to surface of the ground.
- Backing up into a structure.

System Maintenance



How do I maintain my onlot system?

- Conserve water and reducing waste flow to the treatment tank.
- Inspect the system parts regularly.
- Maintain the treatment tank.
- Utilize proper Stormwater Management to protect the system.

System Maintenance



How do I maintain my onlot system?

- Protect the system area from vehicles, equipment, and livestock.
- Know what not to put down your drain.
- Do not plant trees or shrubs.
- Maintain accurate records of the sewage disposal system.

System Maintenance



Conserve Water and Reduce Waste Flow:

- Conserving water and reducing the amount of waste flow from household activities is an important step.
- The more water-using devices in a household, the greater the burden is on the onlot system.



Water Conservation Tips



- Use dishwasher and laundry washer only when they are loaded to capacity.
 - Top Loading Laundry Washer 35-50 gal./load
 - Front Loading Laundry Washer 22-25 gal./load

Water Conservation Tips



- Install water saving devices on showerheads & other plumbing fixtures. Repair fixtures when leaking.
 - Conventional Showerhead 3-15 gal./min.
 - Water Saving Showerhead 2-3 gal./min
 - Conventional Toilet 4-6 gal./flush
 - Water Saving Toilet 3-1.6 gal./flush .
 - Regular Faucet Aerator 2.5-6 gal./min.
 - Flow regulating Aerator .5-2.5 gal./min.

Water Conservation Tips



Use the garbage disposal sparingly.

These wastes place a greater burden on the septic system. If you have garden space, compost the material instead

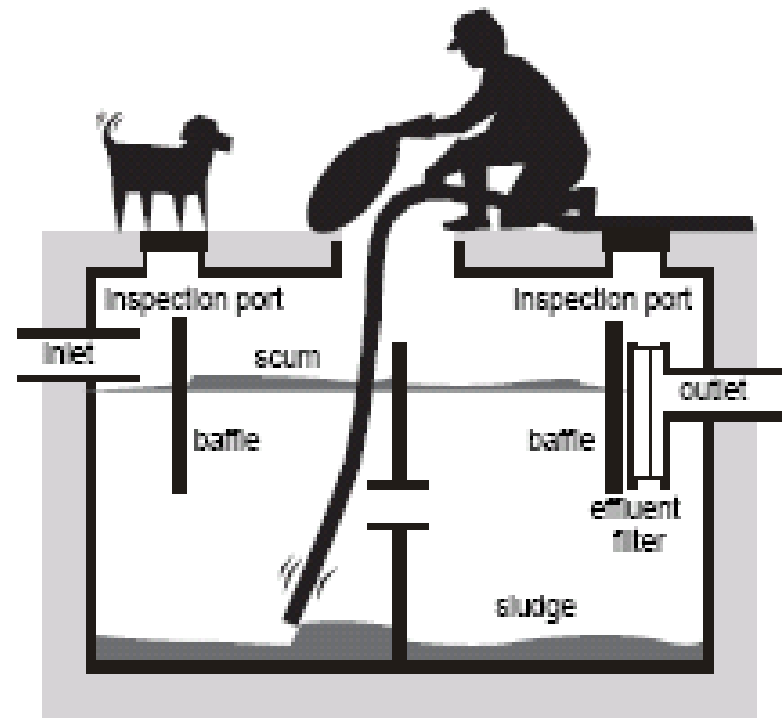
System Maintenance



Regular Inspection of System Parts:

Treatment Tank:

The inspection port should be opened and the baffles (internal slabs or tees) should be checked to ensure that they are in good condition since the last check-up and pump the solids if necessary



Cross-section of a two-compartment septic tank being pumped

System Maintenance



Regular Inspection of System Parts:

- Distribution Box
 - Water tight, level, and effluent is flowing without obstructions
- Dosing Tank and Pump
 - Pump and electrical wires should be checked and serviced if needed
- Absorption Area
 - Visual inspection of the surface of the ground for sponginess and sewage



System Maintenance



Pumping the treatment tank:

- Solids are pumped through the manhole (in the center of the tank) NOT through the inspection ports
 - Pumping through one of the inspection ports could damage the baffles inside the tank.
- Be sure treatment tank is completely emptied
- Treatment tanks should be pumped every three years or when inspection reveals sludge or scum in excess of 1/3 of the tank volume



System Maintenance



Treatment Tank Additives:

- Commercial septic tank additives do not eliminate the need for periodic pumping and may be harmful to the environment and absorption field.
- Biological or chemical additives are not required for successful restart or continuous operation of your septic system, nor should you wash or disinfect the tank after having it pumped.



System Maintenance



Stormwater Management:

- Prevent runoff from downspouts, sump pumps, swales, driveways and the roadway from traveling over or near the absorption area.
- Prevent stormwater from entering the treatment tank, and distribution box/dosing tank.



System Maintenance



Protect the system area from vehicles, equipment and livestock:

- Do not drive vehicles or heavy equipment over, and do not allow livestock to graze on the drainfield.
- Such activities can compact the soil and/or damage system components and so can reduce or destroy the drainfield's ability to treat sewage effluent.

System Maintenance



What not to put down your drain:

- Harmful substances & chemicals include:
 - Fats, oils and greases (FOG)
 - Gasoline
 - Antifreeze
 - Varnishes and paints and solvents
 - Harsh drain and toilet bowl cleaners
 - Laundry detergents with high sudsing elements
 - Bleach and other disinfectants
 - Pesticides

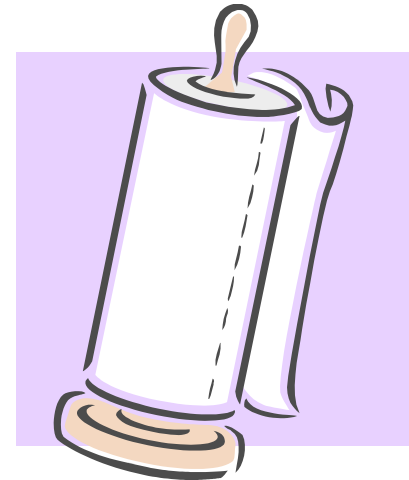


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What not to put down your drain:

Also NEVER flush bulky, hard to decompose items such as sanitary napkins, diapers, paper towels, cigarette filters, plastics, eggshells, bones, cat litter or coffee grounds down the toilet because they can clog your sewage system.



System Maintenance



Do not plant trees or shrubs:

- Woody roots can invade the absorption area, clog, and/or break pipes.
- Trees and shrubs should not be planted in or close to the absorption area.
- Plant only non-woody shallow rooting plants.



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Maintain accurate records of your sewage system:

- Copy of the design
- Copy of the permit
- Know the location of the parts of the system
- Keep records of all inspections, maintenance, pumping, malfunctions, and repairs



Sewage Management



Your municipality should have a Sewage Management Program (SMP):

- Creates municipal oversight of operation and maintenance for onlot and other sewage systems
- Helps ensure operation and maintenance of these systems
- SMPs are required in Pennsylvania
- SMPs have been controversial with municipalities and property owners
- But SMPs are “really” *Insurance*: for your system and property – and – against property impacts from neighboring systems

Funding



PENNVEST Pa. Infrastructure Investment Authority

- Low interest loans for the design, engineering, and construction of privately owned onlot sewage systems.
- For a list of participating lenders, contact the Pa. Housing Finance Authority at: 1-800-822-1174.
- Individual On-Lot Sewage Disposal System Funding Program brochure can be found at:

www.portal.state.pa.us/portal/server.pt/.../on-lot_brochure_2012_pdf

For More Information



Department of Environmental Protection

Division of Planning and Permits

717-787-8184

-- or --

Your local DEP Regional Office

Visit us at www.dep.state.pa.us

(Keyword: "Sewage")



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Private Water Well Systems

Bryan Swistock

Penn State Cooperative Extension's

Pa. Master Well Owners Network



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QUESTIONS?

Please type your questions into
the chat window.