



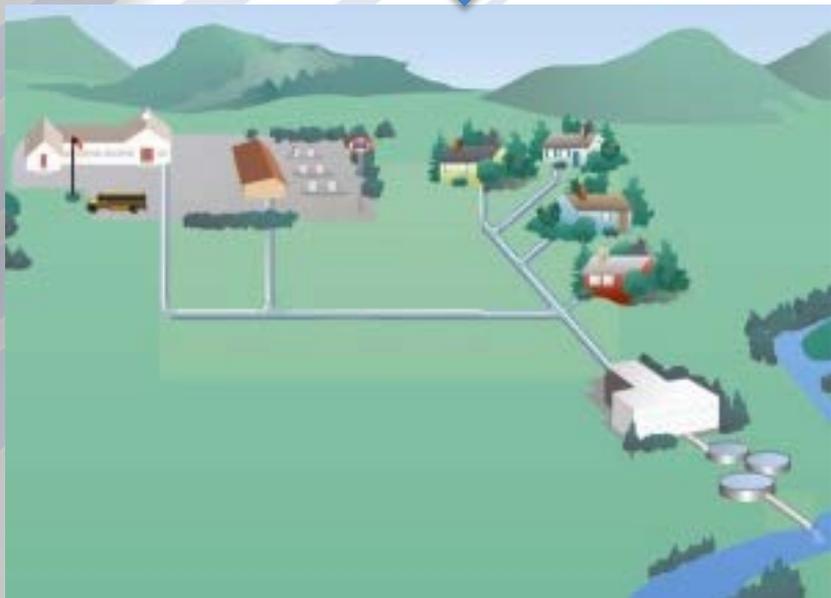
Ohio's Sewage Treatment System Rules

Residential Water and Sewage Program
Bureau of Environmental Health

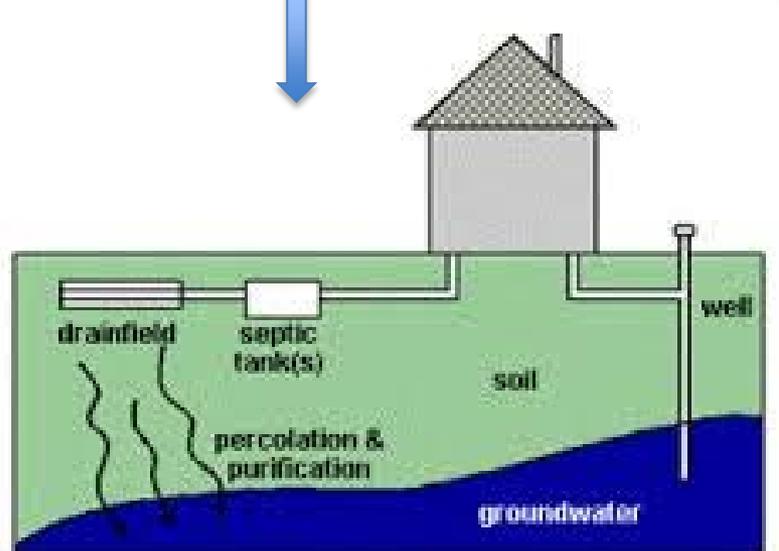


How is sewage treated across the state?

Public sewage system – *permitted by Ohio EPA*



Household and small-flow* sewage treatment system – *regulated by ODH through the local health districts*



*Small-flow systems treat less than 1,000 gallons per day



Legacy Issues in Ohio

- Over 1 million household and small flow sewage systems in use in Ohio, with 6,000 new systems permitted each year
- A 2012 ODH survey of local health districts shows that 31% of sewage systems are reported as failing
- Documented cases of surface and ground water contamination from failing sewage treatment systems
- The cost to Ohio taxpayers – From 1989 to 2007, Ohio has spent nearly 1.3 billion dollars in low interest loans and grants to communities to run sewers to areas of failing septic systems.
- This figure does NOT include the homeowner sewer connection fees (commonly \$5,000 to \$25,000)



Clean Watersheds Needs Survey

Existing Systems and Failures by regions of the state

OEPA District	Central	Northeast	Northwest	Southeast	Southwest	Total
Existing Systems Reported	54,813	236,386	117,819	87,943	131,532	628,493
Failing Systems Reported	20,512	90,380	45,560	13,267	24,269	193,988
Failure Rate	37%	38%	39%	15%	18%	31%



Based on response from 88 health districts, 74 county health districts (84%).

Summary of sewage treatment system types installed in Ohio

- Septic or Pretreatment to Leaching (270,653) – **43%**
- Off-lot discharging systems (178,505) – **28%**
- Unknown system type (202,612) – **22%**
- Dry wells or leaching pits (26,779) – **4%**
- Sand Mound systems (8,962) – **1%**
- Privy/Outhouse (1,855) - **<1%**
- Other (1,036) - **<1%**



Principle Reasons for Sewage System Failure (2012 ODH survey)

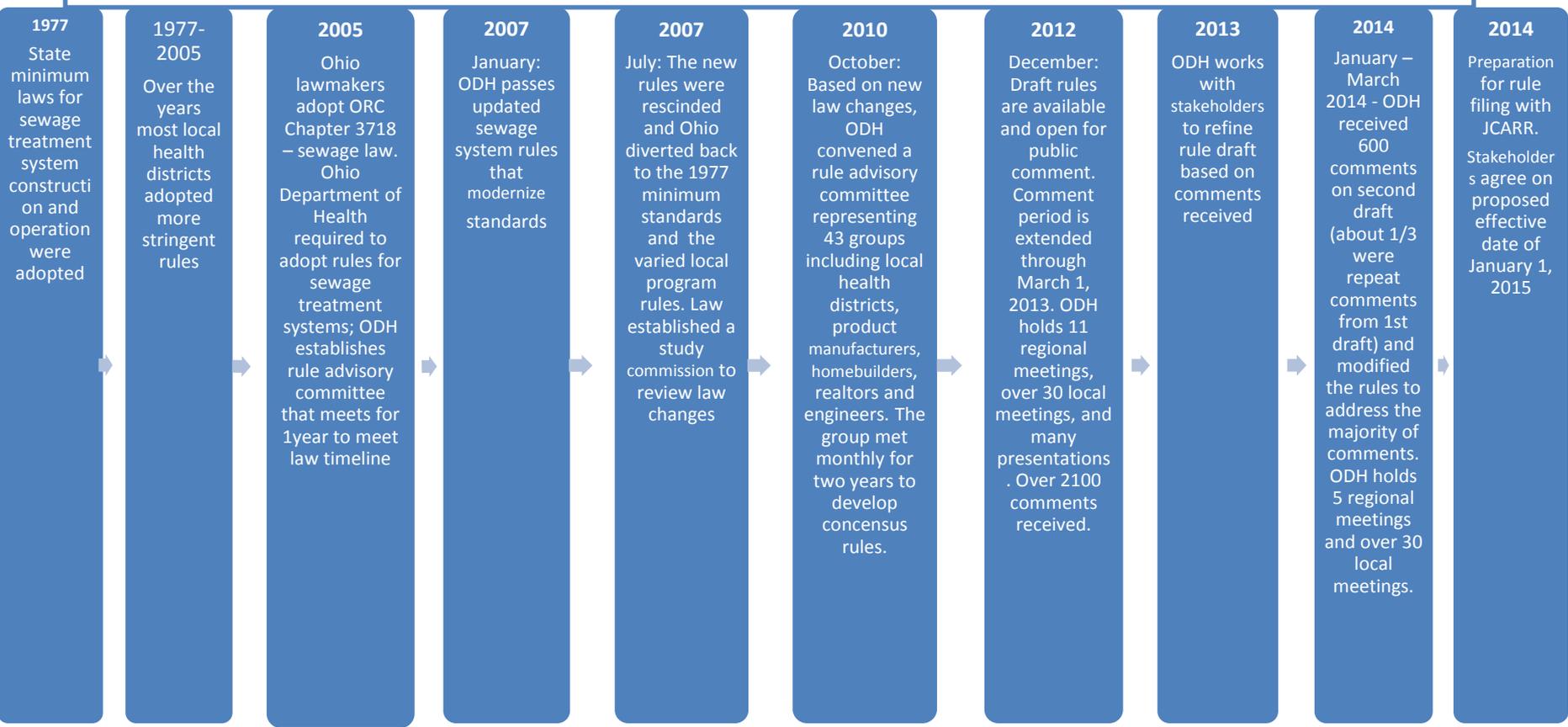
→	Soil Limitations	33%
	Design Issues	14%
→	Site Limitations	25%
	Installation Issues	3%
	No Leach Field	14%
→	Direct discharge exceeds limits	43%
	System Owner Abuse	17%
	Unapproved System	7%
→	Old System (age)	44%
	Other (Specify):	1%





Household Sewage Treatment Systems 2014 Rule Update

The original rules for household sewage treatment systems were put in place in 1977. In 2007, there were updates made to the rules for sewage systems, but those changes were rescinded by the state legislature and Ohio returned to the 1977 minimum state standards. Over the last few decades, some local health departments have adopted updated and more stringent versions of the sewage system rules. While some counties have been very aggressive in modernizing their programs, other counties have not had the resources or training to do so. In the last 37 years, there has been a significant development of new technology that should be approved for use as it can save homeowners money in the long run and also lead to healthier communities. **Law changes in 2010 now require the Ohio Department of Health to adopt rules on topics outlined in the law.**



Rule Advisory Committee Members

- Ohio Environmental Protection Agency
- Ohio Department of Natural Resources
- Assoc. of Ohio Health Commissioners (5)
- Association of Ohio Pedologists
- County Commissioners' Assoc. of Ohio
- County Engineers Association of Ohio
- Ohio Association of Realtors
- Ohio Environmental Council
- Ohio Environmental Health Assoc. (5)
- Ohio Home Builders Association
- Ohio Manufactured Home Association
- Ohio On-site Wastewater Association
- Ohio Precast Concrete Association
- Ohio Public Health Association
- Ohio State University Extension
- Ohio Township Association
- Ohio Waste Haulers Association
- Ohio Farm Bureau Federation
- Local Health Districts – At Large – (5)
- St. Bd. of Reg. for PE And Surveyors
- Academic
- Manufacturers (5)
- Ohio Association of Boards of Health
- Ohio Association of Sanitary Engineers



What impact will new rules have on a homeowner?

- Nothing – The law says nearly all systems are deemed **approved** until they fail and create a public health nuisance – no automatic upgrades required
- The process for repairing or replacing an existing system, or installing a new system (new home) remains exactly the same as it is today.
- When a system does eventually require replacement, system options and costs will be very similar to options and costs today for most areas.



What's wrong with the old state minimum rules?

- Prior rules (1977) were over 35 years old – Ohio had the oldest sewage rules in the U.S.
- They did not authorize the use of new technologies
- They used a standard cookbook design for systems—one design for all soil types (and we know soils are very different across the state)
- Systems were often oversized to make up for the one size fits all approach often costing people more money
- The cookbook design (which does not consider the soil type) has contributed to the 31% failure rate
- The failure rate in Ohio has cost millions of dollars for communities and citizens

Surfacing sewage



Why not keep local rules?

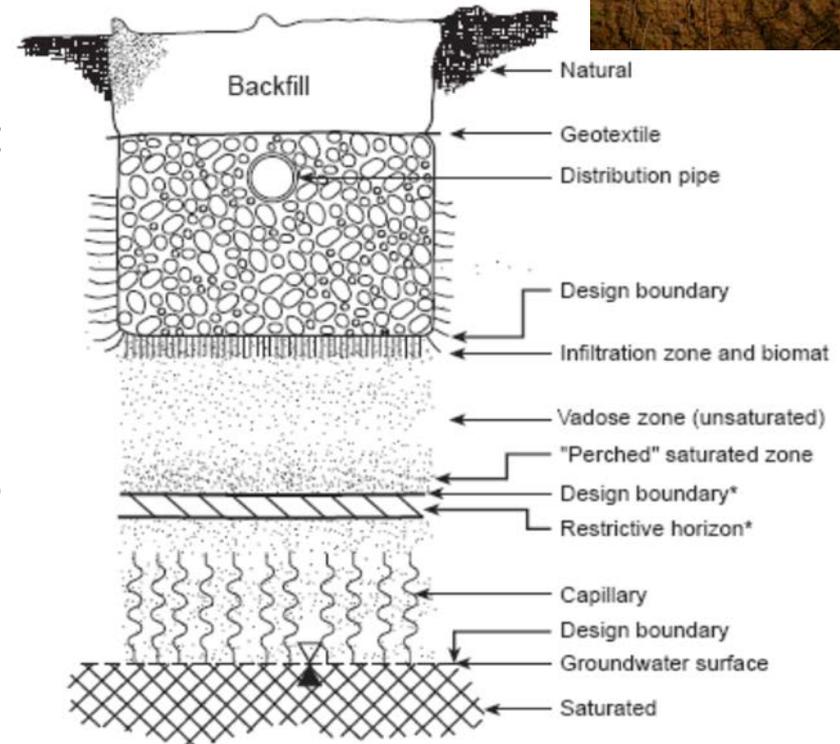


- At least 88 different sets of rules – no consistency and costs industry and homeowner money
- Negative impact on business markets – different requirements in every county and is not supported by industry and Ohio manufacturers
- Some health districts do not have the resources to implement improved designs on their own
- Counties with more stringent rules have very high systems costs
- A system that fails and discharges sewage into the stream on the county line can impact neighbors (*over 84% of assessed streams are impacted*)
- Ground water does not follow political boundaries – a failing system in one county can impact water wells in another county (*Over 15 known areas impacted*)



Soil Absorption – what are we trying to accomplish?

- Goals and requirements
 - No Direct discharge to an aquifer or ground water - prohibited
 - No Direct discharge to surface water without treatment
 - No Direct discharge to ground surface
 - Reasonable treatment of effluent through
 - The natural soil
 - Pretreatment combined with the natural soil
 - Use of sand media with soil
 - Use of even (pressure) distribution across the
 - Movement of treated effluent away in the landscape without surfacing (or discharge somewhere else before complete treatment occurs)

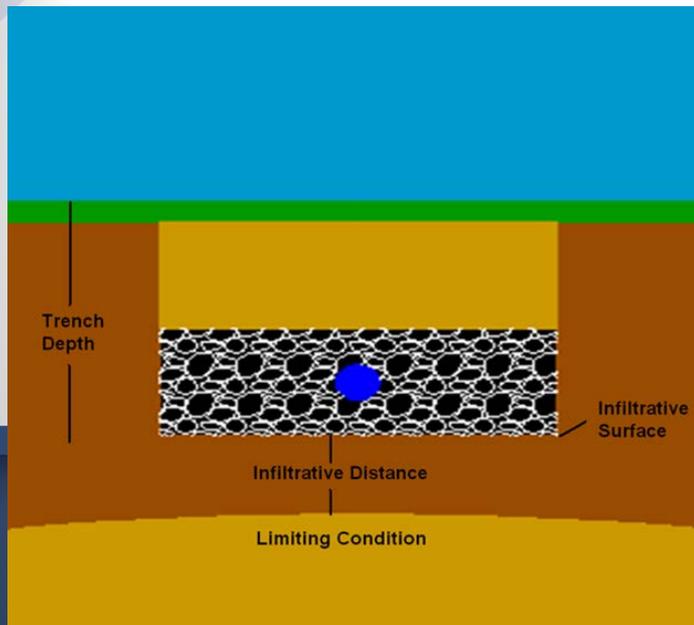


* If present

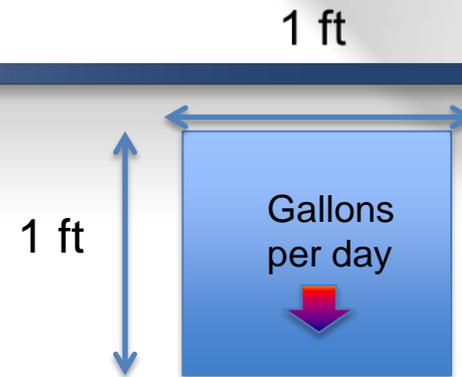


Treatment in the Soil

- The soil is a mechanical and biological filter
 - Removes suspended particles
 - Beneficial soil bacteria remove organic material (carbon, nitrogen, phosphorus)
 - Beneficial bacteria predate (eat) the pathogenic bacteria
 - Beneficial bacteria need both wet and dry conditions to survive
- “**Limiting condition**” means a flow restrictive soil layer, bedrock, a water table, ground water or highly permeable material that limits or precludes the treatment or dispersal of effluent in the soil.
- “**Seasonal water table**” means soil that has water seasonally occupying one hundred percent of the void spaces indicated by greater than or equal to five percent redoximorphic depletions with soil colors of two chroma or less that is not hydraulically connected to an aquifer.
- “**Flow Restrictive Layer**” – an impermeable layer of soil that does not allow water or effluent to move



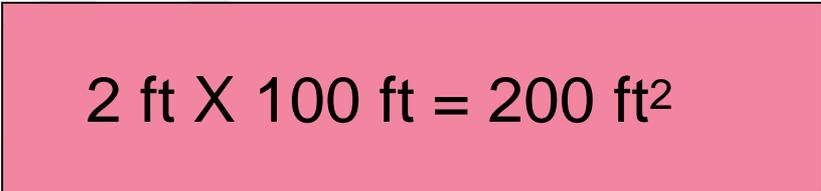
Designing for the Soil

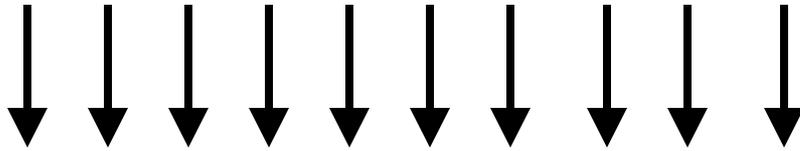


- **"Soil infiltration loading rate"** (SILR) means the daily volume of effluent applied per unit area of in situ soil expressed in gallons per day per square foot. The "soil infiltration loading rate" may also be referred to as the basal loading rate or the infiltration loading rate. The "soil infiltration loading rate" determines the total square footage of the soil absorption area.
- **"Hydraulic linear loading rate"** (HLLR) means the volume of effluent applied daily along the landscape contour expressed in gallons per day per linear foot. The HLLR is used to determine the required length of the distribution system parallel to surface contours.

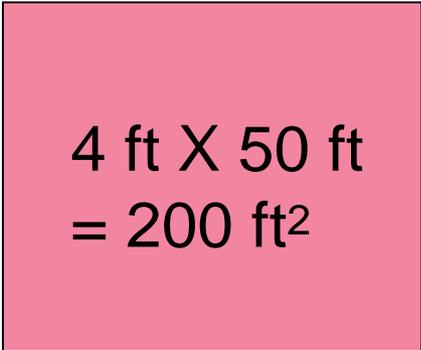
Same Soil Absorption Area – 200 ft²

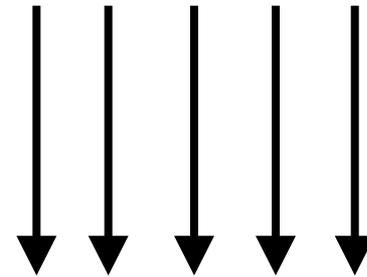
If 100 GPD applied across both areas


$$2 \text{ ft} \times 100 \text{ ft} = 200 \text{ ft}^2$$



Linear Loading Rate (LLR) is
1 gal/day/ft


$$4 \text{ ft} \times 50 \text{ ft} = 200 \text{ ft}^2$$

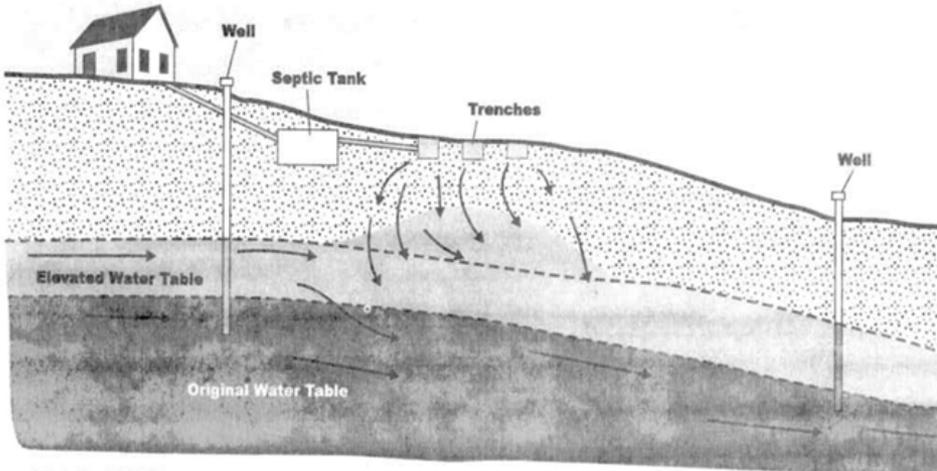


LLR is 2 gal/day/ft

The longer absorption area has ½ of the horizontal flow per foot of length along the trench.

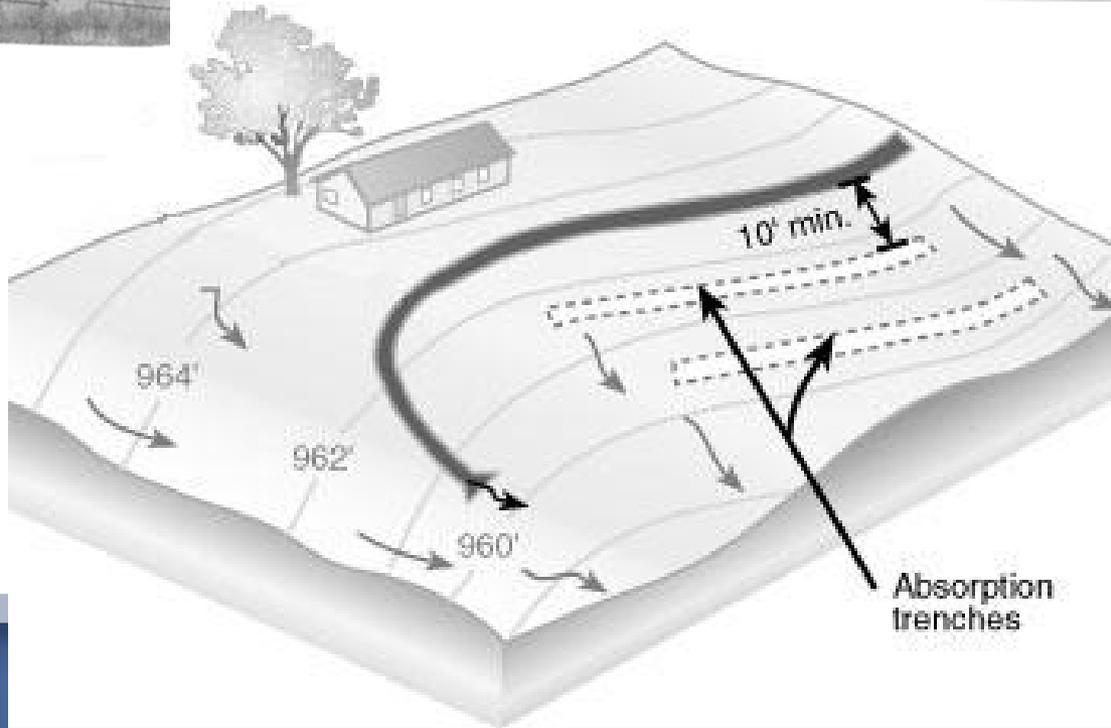


Figure 5-4. Effluent mounding effect above the saturated zone



Source: Adapted from NSFC diagram.

Soil absorption trenches –
Long and narrow to promote treatment and dispersal in the landscape



Benefits of the new rules

Range of system options – controls costs

- Lower cost, low maintenance systems such as septic tanks to leaching trenches that use the natural soils for treatment are the preferred design and will continue to be the primary system installed in Ohio.
- New technologies are available for use where the soils present greater challenges for sewage treatment.

Better designs protect home values

- Systems designed to the soil and lot conditions, water use and treatment needs of the home
- With proper design and maintenance – systems will not fail prematurely
- Protects local property values and system investment– reduces areas of failing systems, odors and discharge – and equals reduced costs to the community and state

Protect public health – Prevent disease

- Prevent discharge of untreated sewage to yards, streams and ditches - reducing exposure to disease and promoting healthy communities
- Reduce the discharge of nutrients to the environment protecting lakes and streams, and reducing growth of algae.
- Prevent contamination of ground water that serves as drinking water for homes in rural and suburban areas

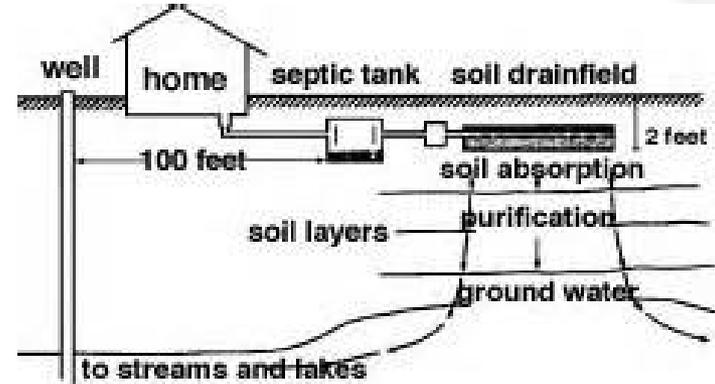
Local decisions and permitting

- Provides local health district design flexibility for common soil conditions to keep system costs as low as possible



Updated Rules with Modern standards

- The rules establish new modern standards that offer cost effective choices and options to homeowners and protects public health
- System choices provide safe and sustainable treatment in the diverse soils and geology of the state .
- The new rules represent the consensus position of industry, local health districts, environmental and governmental stakeholder groups



Trenches will still be the primary systems installed - only using modern design standards!



Cost Concerns - Homeowners

- The state average cost of replacing a sewage system is \$8,200 and has not varied much annually since 2007.
- Lots with challenging site and soil conditions (such as heavy woods or ravines) will be able to use cost-effective new technologies.
- Homeowners are be able to pick from different designs and technologies to find a system that fits their budget, lot conditions and water usage.
- Over the last 5 years, about 75% of local health districts have adopted design standards similar to the new rules under their authority to adopt local more stringent standards – thus systems costs will remain about the same under the new rules.
- Septic tanks to leach lines (the most basic, least expensive system) represents 65-75% of the systems installed for the last 5 years. This is still the preferred design and has not changed in the proposed rules.



Other Issues - System Maintenance

- Just like any other part of a home, sewage systems require maintenance and this is recognized in state law. State law says a homeowner is responsible for maintaining their sewage system.
- State law also says that local health districts are responsible for developing a program to ensure maintenance.
- Operation permits have been required since 1977 are the way a local health district ensures that a homeowner is doing the necessary maintenance and is a way to educate system owners.
- Local health districts are provided flexibility to phase in maintenance tracking for existing systems.



Financial Assistance

- **Incremental repair and replacement options in proposed rules** - this spreads system replacement costs out over time and also allows the owner to try common sense solutions like installing water saving fixtures, reducing water usage or fixing leaks to reduce flow to the system.
- **Financial assistance** - ODH has identified local, state and federal financial assistance sources for low income system owners (fact sheets and website pages)



Contact Information

Gene Phillips, Chief, Bureau of Environmental Health
Rebecca Fugitt, Program Manager
Dusten Gurney
Andy Thomas

BEH@odh.ohio.gov

Phone (614) 644-7551

Fax (614) 466-4556

www.odh.ohio.gov

Sewage Rule Information:

<http://www.odh.ohio.gov/odhprograms/eh/sewage/sewage1.aspx>

