On-site Wastewater Treatment Systems and Source Water Protection

David Kurz, P.E.
Lead Wastewater Engineer
Water Quality Control Division
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Wastewater Continuum

- Wastewater Treatment Is a Continuum
- There are places for Big Pipes/Big Plants and places for On-site Wastewater Treatment Systems
- Both can have “unit processes” that provide needed treatment
- The Important Thing = Get a Good System for Each Location
Either (big plant or OWTS) Will Work, If . . .

- Well Designed
- Well Constructed
- Well Maintained
Conventional OWTS

A Conventional Septic System

Soil Treatment Area

Absorption field or "fingers"

Septic Tank
Septic Tank = Anaerobic Treatment

Septic Tank Sectional View

- Access Hatch
- Sanitary Sewer In
- Baffle or T-Connection
- Scum Layer
- Sludge
- Effluent Out
- Riser
- Tee, possibly effluent filter
Soil Treatment Area =

Aerobic Treatment

Well

Groundwater

Aerobic soil
Conventional Soil Treatment Area

A Conventional Septic System

Absorption field or "fingers"

Soil Treatment Area

Septic Tank
Alternate Layout

Soil Treatment Area
Keys to Good Soil Treatment Areas

- Shallow
- Narrow
- Level
- Dry
- Protected Soil
Basic System Plus

- Additional (Higher Level) Treatment
  - Organic (BOD$_5$) Reduction
  - Nitrogen Reduction
Higher Level Treatment Systems

Bio-Microbics
FAST

Hoot

Orenco Advantex
Achilles Heels:

- Reliance on Clueless, Uninterested, Busy Owners
- Systems that are **Not**:  
  - Well-Designed,  
  - Well-Installed, and  
  - Well-Maintained
- Potential Process Limitations
Potential Process Limitations:

- **Nitrogen**
  - Removal Depends on Denitrification
    - Slow and Temperature Dependent
    - Requires Carbon

- **Phosphorus**
  - Removal Depends on Soil Adsorption, or another unit process
    - Adsorption Depends on the Soil Type
    - Many Colorado Soils Are Not Good “Adsorpers”
Tools for Water Protection

- Better Performance
- Separation to Water, etc.
- Higher Level Treatment

- Practitioner Training
- Maintenance
- Inspection
LESS THAN 2,000 GPD

- Local Public Health Agency
- OWTS Act, Regulation 43
- Local Regulations (based on former ISDS regulation until new adopted before June 30, 2014).
- Local Permits

EQUAL TO OR MORE THAN 2,000 GPD

- Water Quality Control Division
- Other State Regulations for Domestic Wastewater Treatment Works
- Site Location & Design Approval
  - LPHA Approval, too
- OWTS Act, Regulation 43
- Discharge Permit
Regulation Revisions – 2013/2014

1. Build on the Good Practices
2. Incorporate Research, Experience, Technology
3. Emphasize Site and Soil Evaluation
4. Long Term Acceptance Rate
   1. STA Area = Flow ÷ LTAR
   2. LTAR Based on Soil Type
5. Local Option: Reductions Based on More Treatment PLUS Maintenance Oversight
6. Local Option: Transfer of Title Inspections
Questions?

Chuck Cousino, REHS
On-site Wastewater Treatment Systems Coordinator
Water Quality Control Division
303-692-2366
chuck.cousino@state.co.us

David Kurz, P.E.
Lead Wastewater Engineer
Water Quality Control Division
303-692-3552
david.kurz@state.co.us
You Are Being Deputized:

Spread the Word About Maintenance and Care