

On-site Wastewater Treatment Systems and Source Water Protection

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Colorado Department
of Public Health
and Environment

Wastewater Continuum

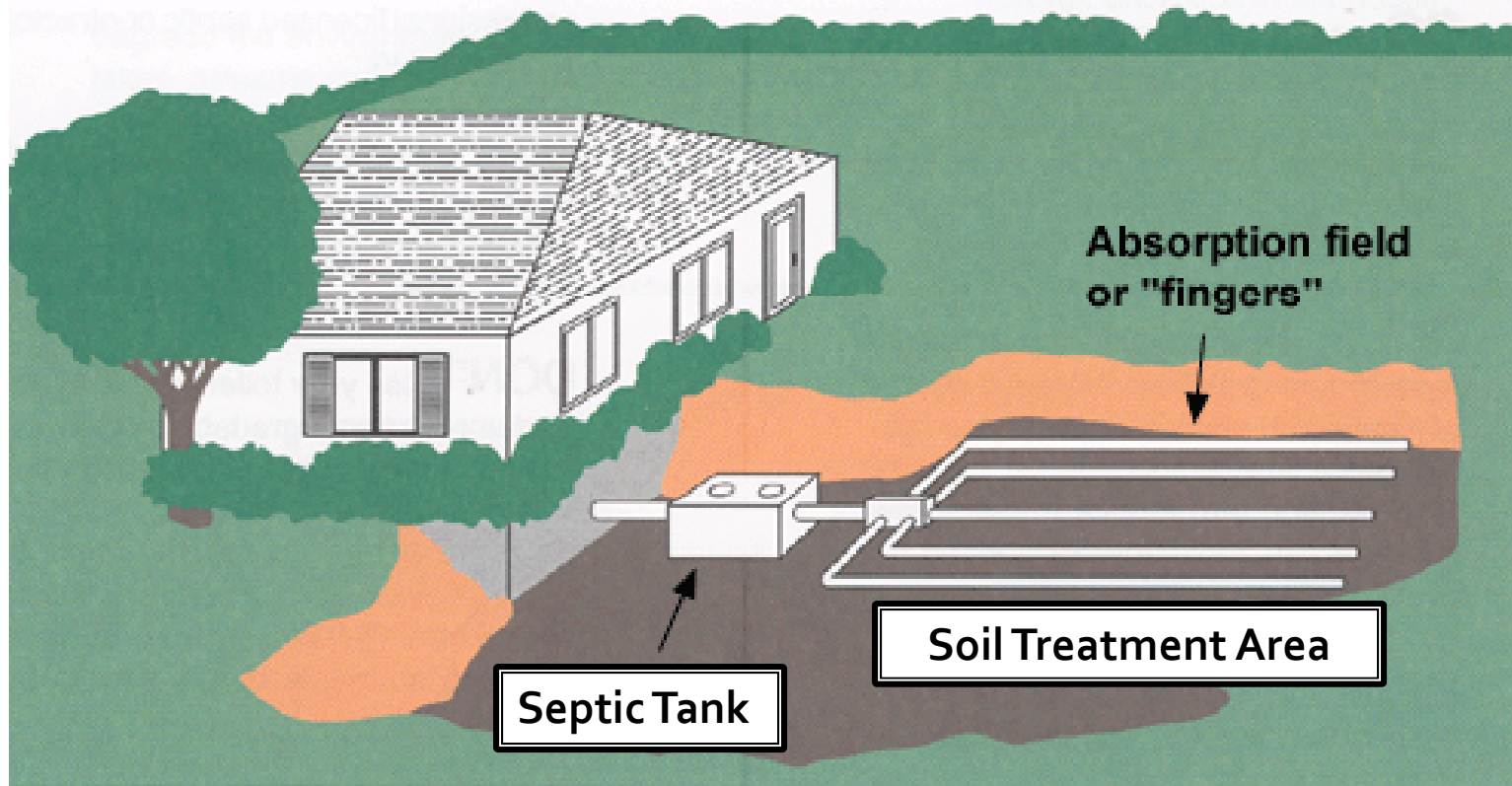
- Wastewater Treatment Is a Continuum
- There are places for Big Pipes/Big Plants and places for On-site Wastewater Treatment Systems
- Both can have “unit processes” that provide needed treatment
- The Important Thing =
 Get a Good System for Each Location

IF:

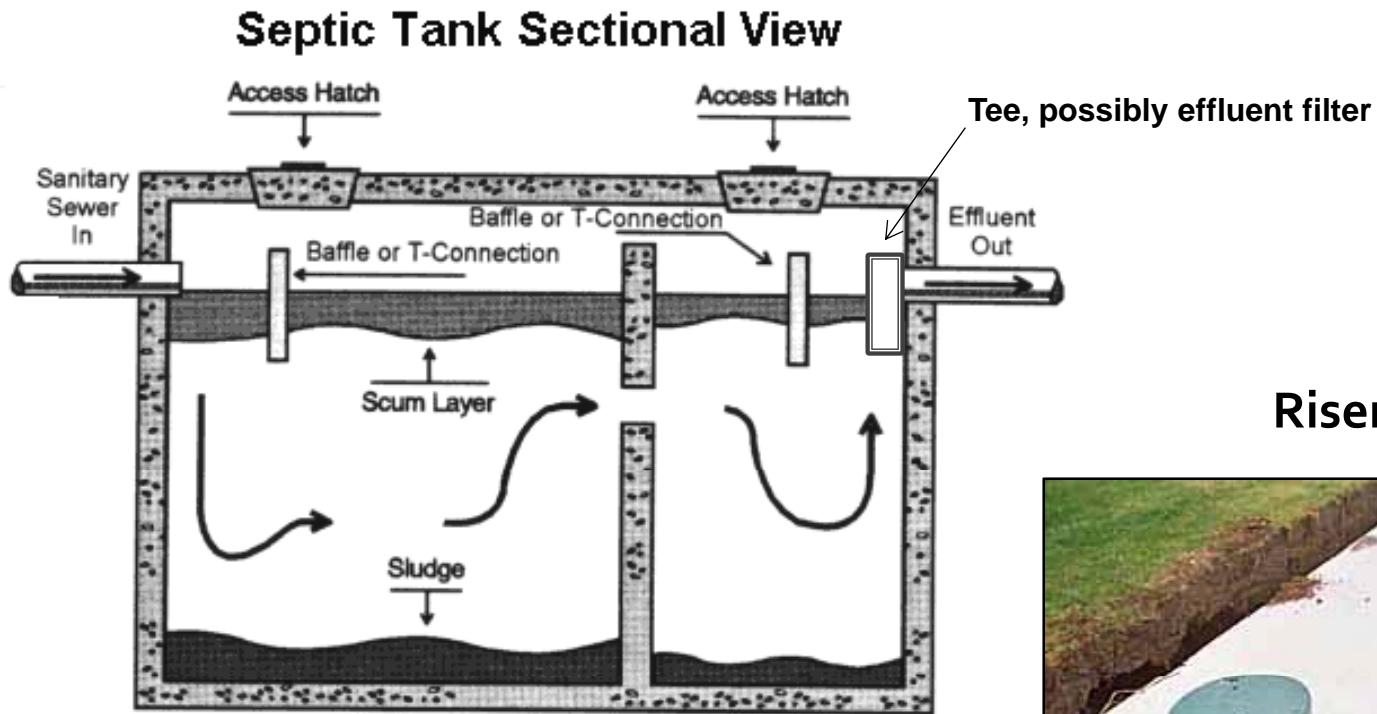
- Either (big plant or OWTS) Will Work,
If . . .
 - Well Designed
 - Well Constructed
 - Well Maintained

Conventional OWTS

*A Conventional
Septic System*

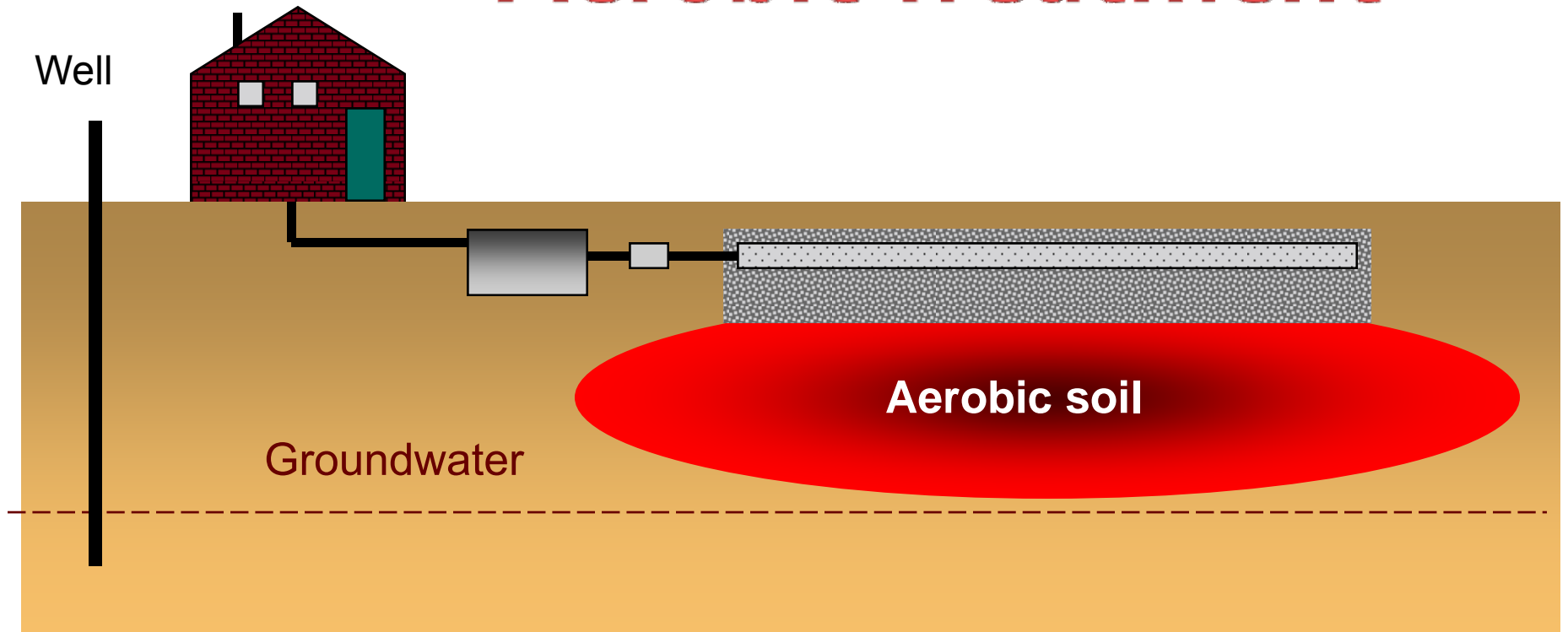


Septic Tank = Anaerobic Treatment

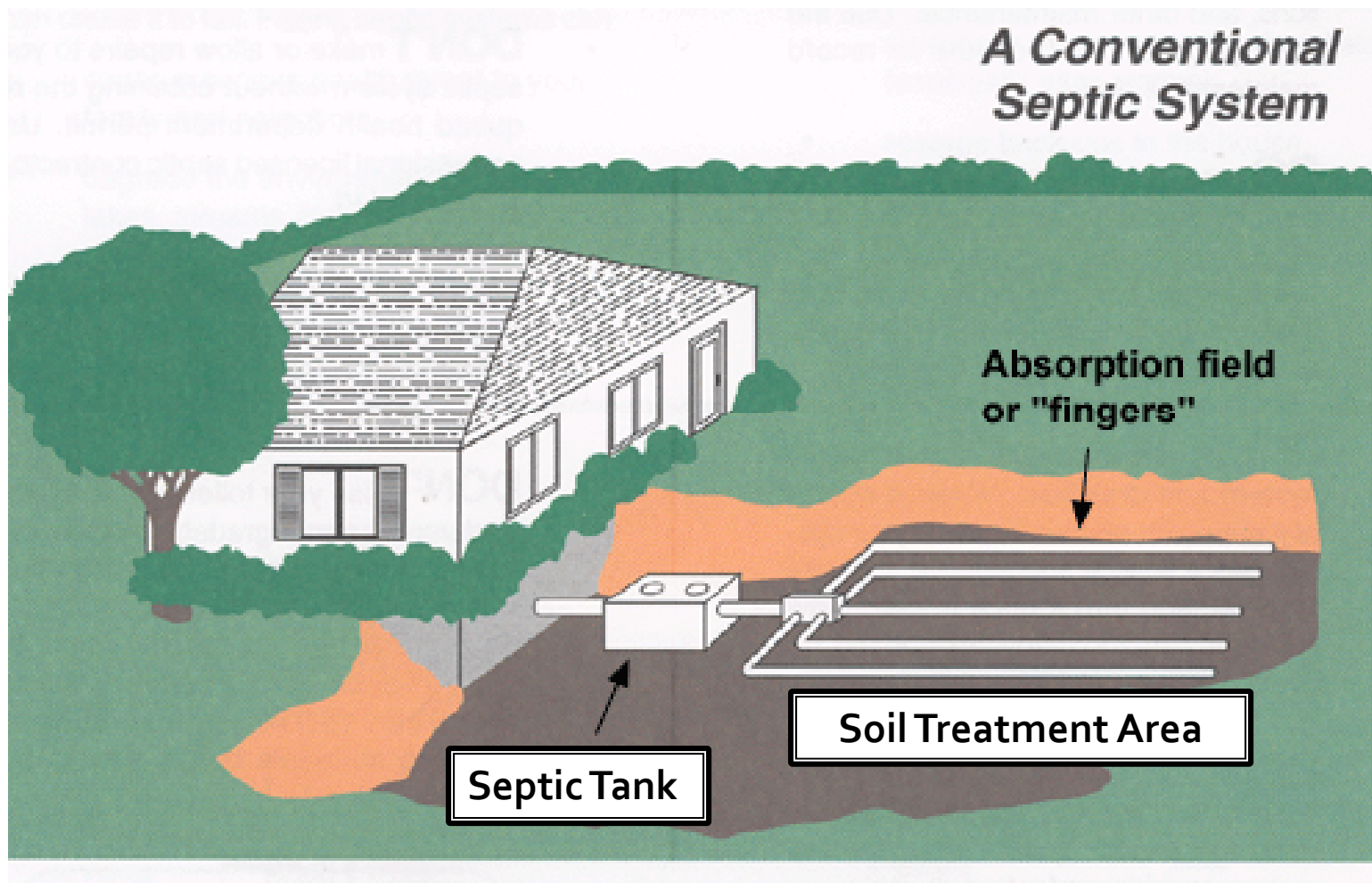


Soil Treatment Area =

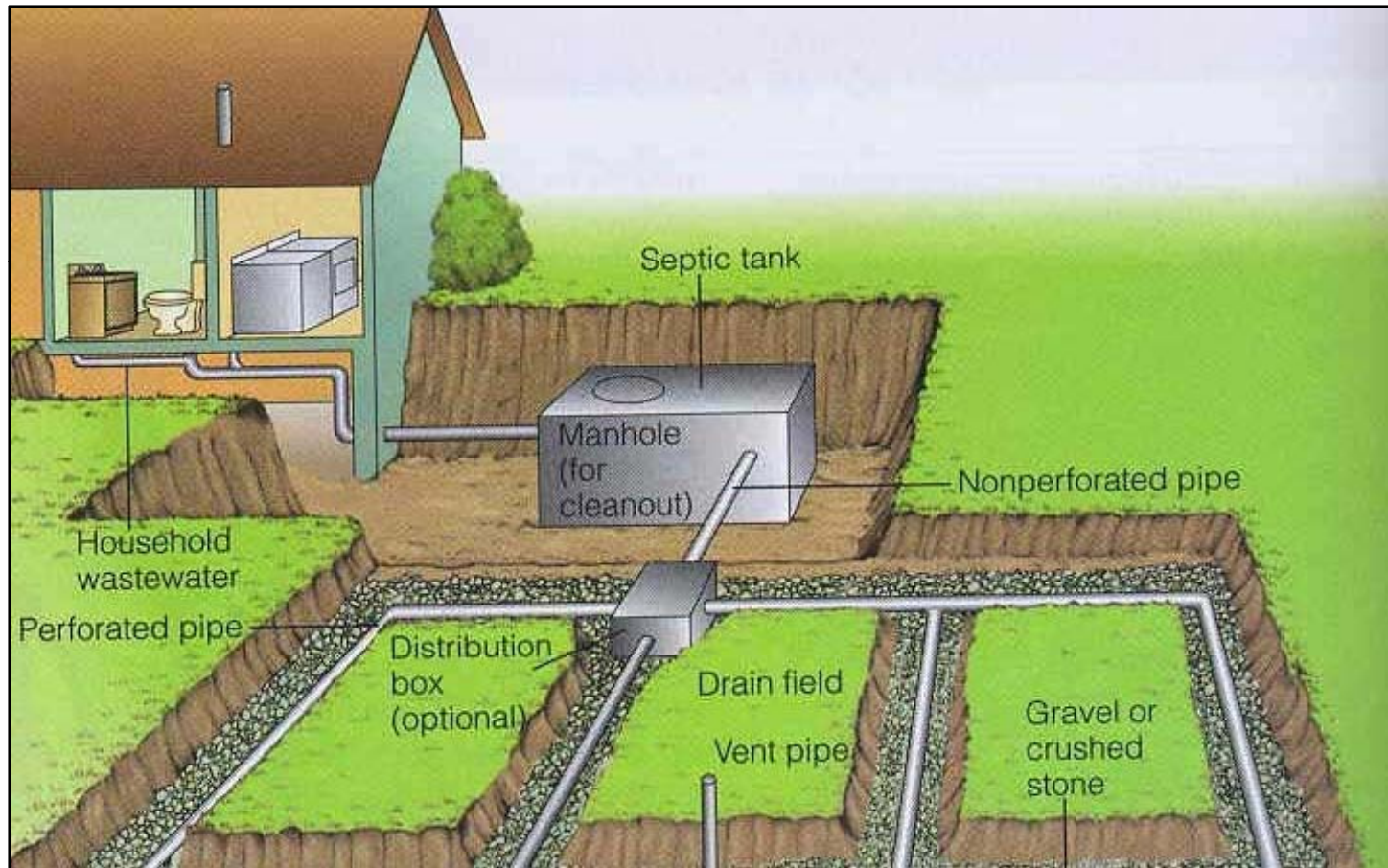
Aerobic Treatment



Conventional Soil Treatment Area



Alternate Layout



Soil Treatment Area

Keys to Good Soil Treatment Areas

- Shallow
- Narrow
- Level
- Dry
- Protected Soil

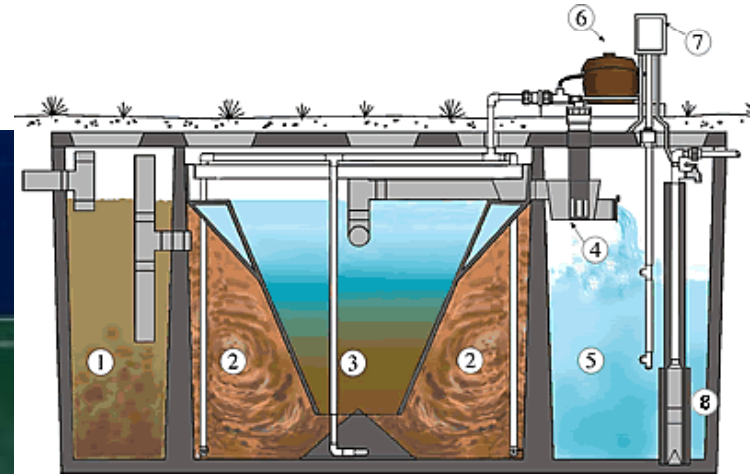
Basic System Plus

- Additional (Higher Level) Treatment
 - Organic (BOD₅) 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 “Adsorbers”

Tools for Water Protection

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

- Practitioner Training
- Maintenance
- Inspection

Regulatory Framework

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. $\text{STA Area} = \text{Flow} \div \text{LTAR}$
 2. LTAR Based on Soil Type
5. Local Option: Reductions Based on More Treatment **PLUS** Maintenance Oversight
6. Local Option: Transfer of Title Inspections

THE END

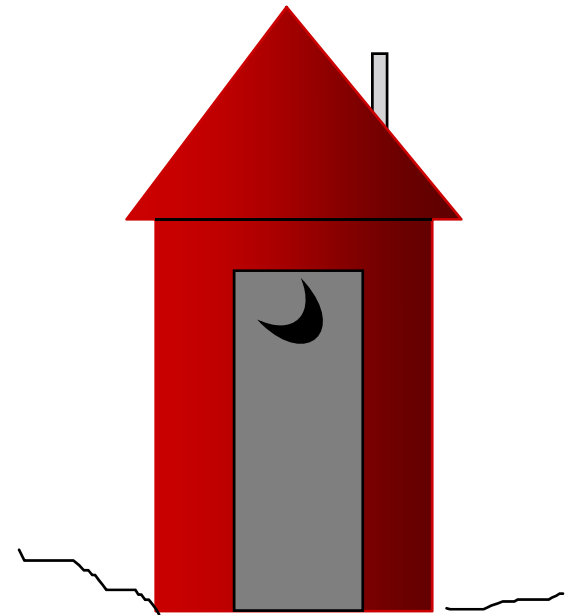
Questions?



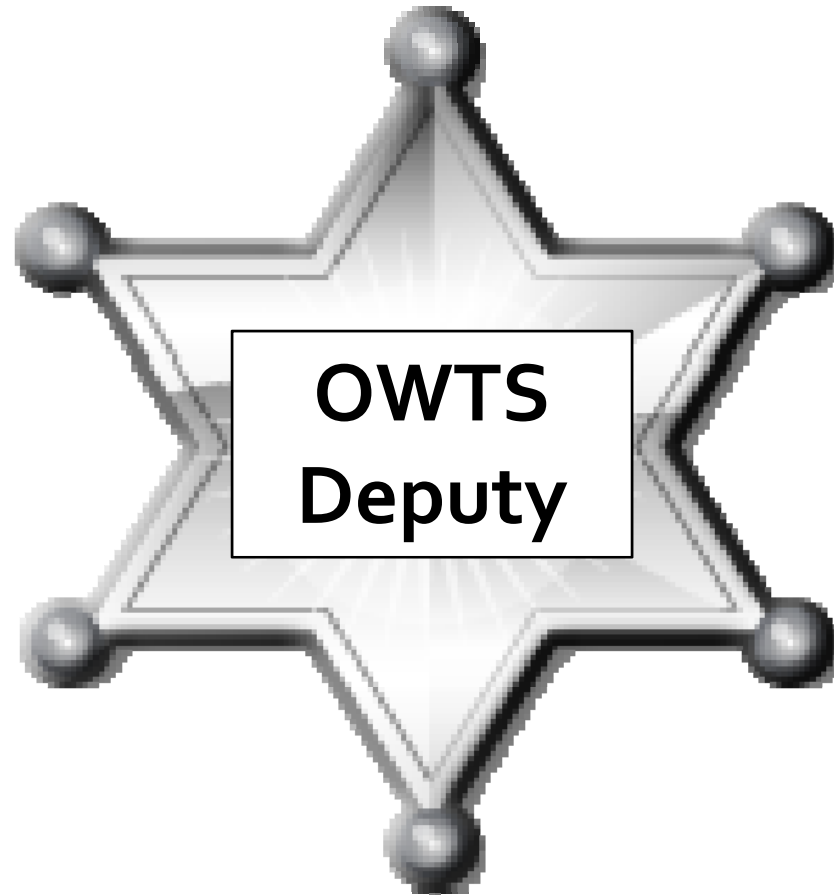
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You Are Being Deputized:



Spread the Word About Maintenance and Care