Cluster Systems & Commercial Systems

OTHER ESTABLISHMENTS & THOUGHTFUL INFRASTRUCTURE

University of Minnesota Onsite Sewage Treatment Program

Sustainable & Affordable

System Keys for Long-term performance

- **Good design**
  - Soil identification
  - Flexibility
- **Good installation**
  - System accessibility
- **Preventive Management**
  - System care
  - System reporting

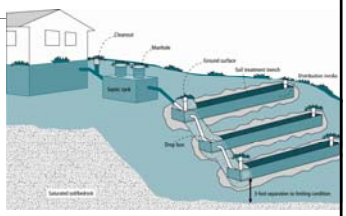
"Active Management"

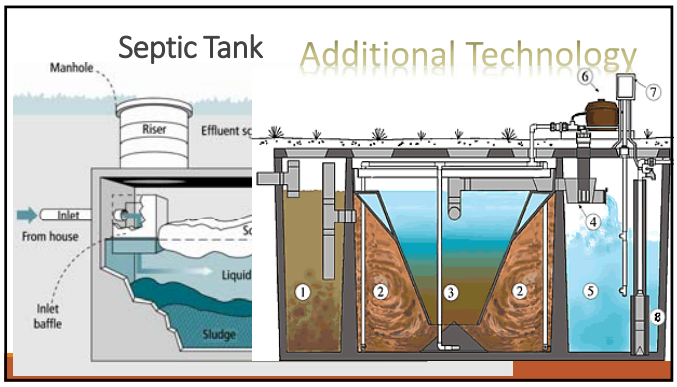
Anatomy of a Septic System

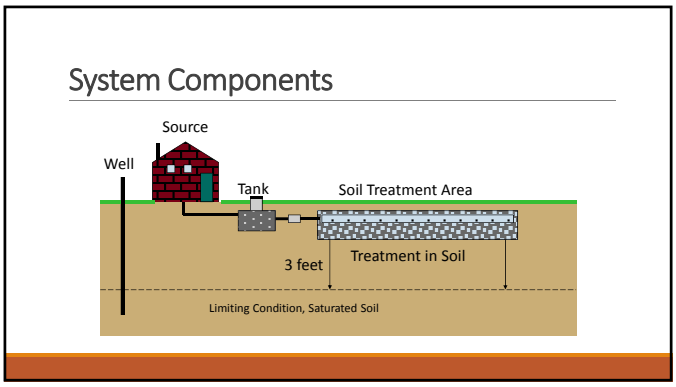
Plumbing: wastewater collection

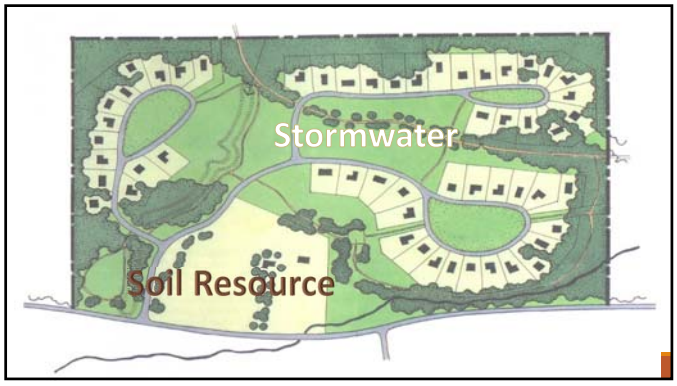
Pretreatment: primary treatment

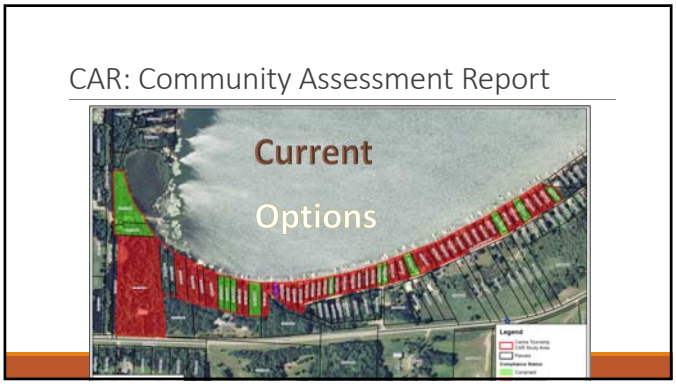
Soil treatment area: final treatment and dispersal




Septic Tank
Additional Technology
Manhole
Riser
Inlet
From house
Liquid
Inlet baffle
Sludge


System Components
Source
Well
Tank
Soil Treatment Area
3 feet
Treatment in Soil
Limiting Condition, Saturated Soil


Stormwater
Soil Resource


CAR: Community Assessment Report
Current
Options

Collection System

- Collecting the wastewater
- Gravity
- Septic tank effluent "Gravity"
- Septic tank effluent "Pump"
- Grinder System

Cluster Systems: Advantages

- System location
  - Lot geometry
  - Planning
- Common management
- Affordability

Cluster Systems: Potholes

- Cheap choices
- Unreal expectations
  - Same as Backyard
- Tragedy of the Commons

Cluster Systems: Requirements

- Size sets the Professionals
- Complete soils work
- Additional Nitrogen requirements
  - > 5,000 gpd
  - >10,000 gpd [State Permit: Review]
- Management oversight
  - Operating Permits

Other Establishments

Commercial Systems [Commercial Kitchen]
- Higher BOD
- Higher TSS
- Higher FOG

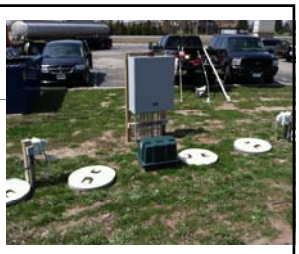
At risk Waste
- Medical
- Service [Residential, Automotive, Marine…..]
- Industrial

Other
- Retail, Fuel +

Thoughtful Design

- Flexibility
  - Technology
- Responsibility [Single Source]
- Accessibility

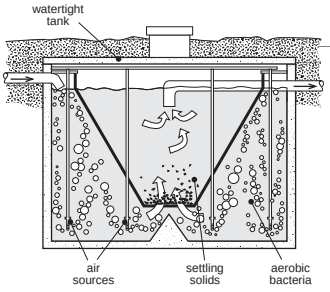
Technology additions

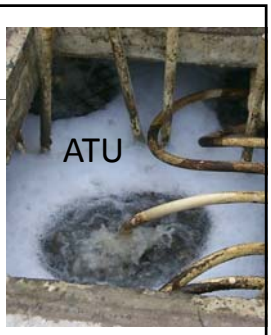


Organic loading
- Residential
  - Long life
- Better than that
  - Sizing

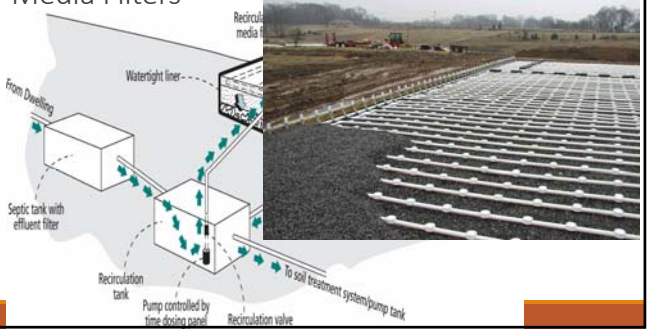
Nutrient loading [Nitrogen]

Aerobic Treatment Units





Media Filters



Long-term Infrastructure

- "Active Management"
  - System Care
  - System Oversight

Operating Permit

Thanks

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