



# VIDEO 4: SSTS PRINCIPLES - MPCA SSTS ADMINISTRATION TRAINING

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## Introduction

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Talk 4 of 12

SSTS Principles

# Topics for today

## Broad Overview

- What is sewage?
- How does an SSTS work?
- What types of SSTS are allowed in Minnesota?

## Public Health Outcomes

- Imminent Threat to Public Health and Safety
- Failing to Protect Groundwater

## Environmental Outcomes

- Set-backs
- Pretreatment

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## WHAT IS SEWAGE AND WHY DOES IT NEED TREATMENT?

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Sources of sewage, contaminants of concern

# What is sewage? What's an SSTS?

- Sewage is wastewater from domestic activities such as cooking, cleaning, laundry or bathing.
- Exposure to sewage through ingestion or bodily contact can result in disease, severe illness, and in some instances death from the bacteria, viruses and parasites contained in the waste.
- SSTS = Subsurface Sewage Treatment System
  - Prevents discharge of sewage to surface waters
  - Uses soil to treat wastewater by removing pathogens
  - Setbacks from groundwater, wells and surface water provide additional protections

## How do SSTS work

- This video from St. Louis County describes the elements of a septic system and how it works.
- St. Louis County is the Minnesota County that extends from Duluth north to the Canadian border.
- Information in this video applies to all areas of Minnesota, even though St. Louis County is the only area mentioned.
- This video was funded through a grant from the National Oceanic and Atmospheric Agency, NOAA.

<http://www.stlouiscountymn.gov/LANDPROPERTY/BuildingZoning/SepticSystems/SepticSystemVideos.aspx>

# What this video showed

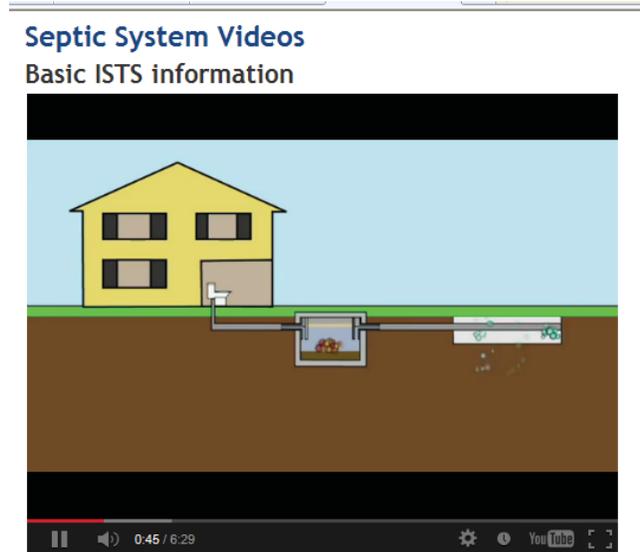
Sewage leaves home and is settled in septic tank

- Removes sludge and scum
- Water passes through but still carries pathogens and other contaminants

**Dry soil is critical to effective treatment in a SSTS!**

If the setting does not provide 3 ft. of unsaturated soil, the system has to be designed to compensate:

- At-grade
- Mounds
- Pre-treatment



# Why treat sewage?

- Sewage contains the nutrient phosphorus, which if discharged into lakes can cause excessive aquatic plant growth leading to degradation in water quality.
- Despite our abundance of lakes and rivers more than two-thirds of Minnesotans get their drinking water from ground water (i.e., wells).
- Since septic systems discharge treated sewage into the ground, ultimately traveling to the ground water, they must be properly sited, designed, built and maintained to protect human health.

# PUBLIC HEALTH OUTCOMES

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The required elements for compliance

## Public health outcomes

Avoid exposure to sewage

- No direct discharge to surface water or land surface
- No surfacing of sewage or septic tank effluent
- No backup into dwelling
- No physical safety hazards

If these conditions exist >>>  
Minnesota Rule 7080.1500

**Imminent Threat to  
Public Health  
and Safety**



# Public health outcomes

Must remove pathogens to protect drinking water

Separation to groundwater essential to ensure travel through dry soil

- Three feet for new systems
- More flexible for older systems, allow 2 ft to 31.5”
  - Determine where soil is most always dry
- Redoximorphic features in the soil
- Indicate where water stays for an extended time
- Highest water table usually in early spring

If separation is not met >>> MR 7080.1500

**Failing to Protect Groundwater**

## Upgrades required

Imminent Threat to Public Health and Safety

- 10 months by law
- Maybe shorter in local ordinance
- Many ordinances require abatement before upgrade

Failing to Protect Groundwater (FTPG)

- Timeline for upgrade must be set in local ordinance
- Some allow two years; some less than this

# ENVIRONMENTAL OUTCOMES

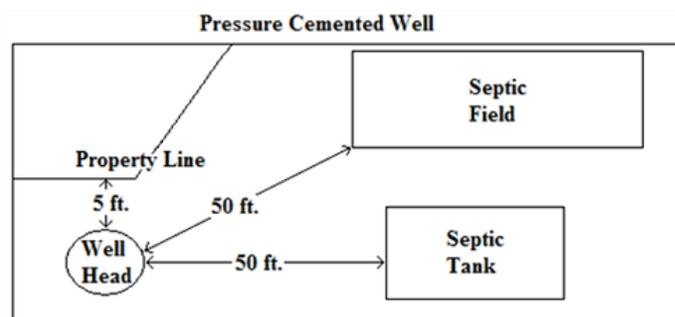
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Ensuring clean water through effective treatment

## Environmental outcomes

Ensure sewage is treated before coming in contact with water

- Reduce pathogens
- Reduce contaminants



Setbacks are important – provide a margin of safety to prevent exposure to sewage contaminants

# Summary

1. Sewage contains pathogens & nutrients which must be treated

2. The protected resources are:

a. People

1) Coming in contact with pathogens

2) Ingesting of pathogens via drinking water (groundwater protection)

b. Lakes

1) Eutrophication (phosphorus from sewage entering lakes)

3. Goals of SSTS are to:

a. Keep sewage below grade and not exposed to people/vectors

b. Keep pathogens from entering groundwater

c. Keep phosphorus out of lakes

d. Keep people safe (no cracked maintenance hole covers)