

# Setbacks

The Forgotten Inconvenience

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# Disclaimer

- The material being presented represents the presenters and author's own opinions.
- And do NOT reflect the opinions of NOWRA!

# Credits

- RSMO 701.025-059
- Missouri 19 CSR 20-3.060-.080
- Missouri Department Of Natural Resources
- EPA
- **Clean Water Act 33 U.S.C. §1251 et seq. (1972)**

# What Are Setbacks

- Setback—A separation distance measured horizontally;
- Setback standards for wells and septic tank systems vary widely from state to state, but most range from **50 to 100 feet**. Setback distances may increase when special limiting factors exist, such as the presence of limestone, karst or fractured bedrock in the soil formation.

# Measure From Closest Tank



# Measure From Closest Line



# What Is A Survey

- What does it mean to do a survey on a property?
- Property surveys are done **to determine or confirm land boundaries**, such as the plot of land a home sits on and any sub-surface improvements like a septic tank or well, and identify other types of restrictions and conditions that apply to the legal description of a property, including easements or encroachments.

# More Survey

- What does a survey look like for a property?
- The survey will also include **a written description of the property, the street address, the location of buildings and adjacent properties, and any improvements a homeowner can make to the land.** A property survey also includes things like rights-of-way and easements.



# Markers



# ROD Rules The World



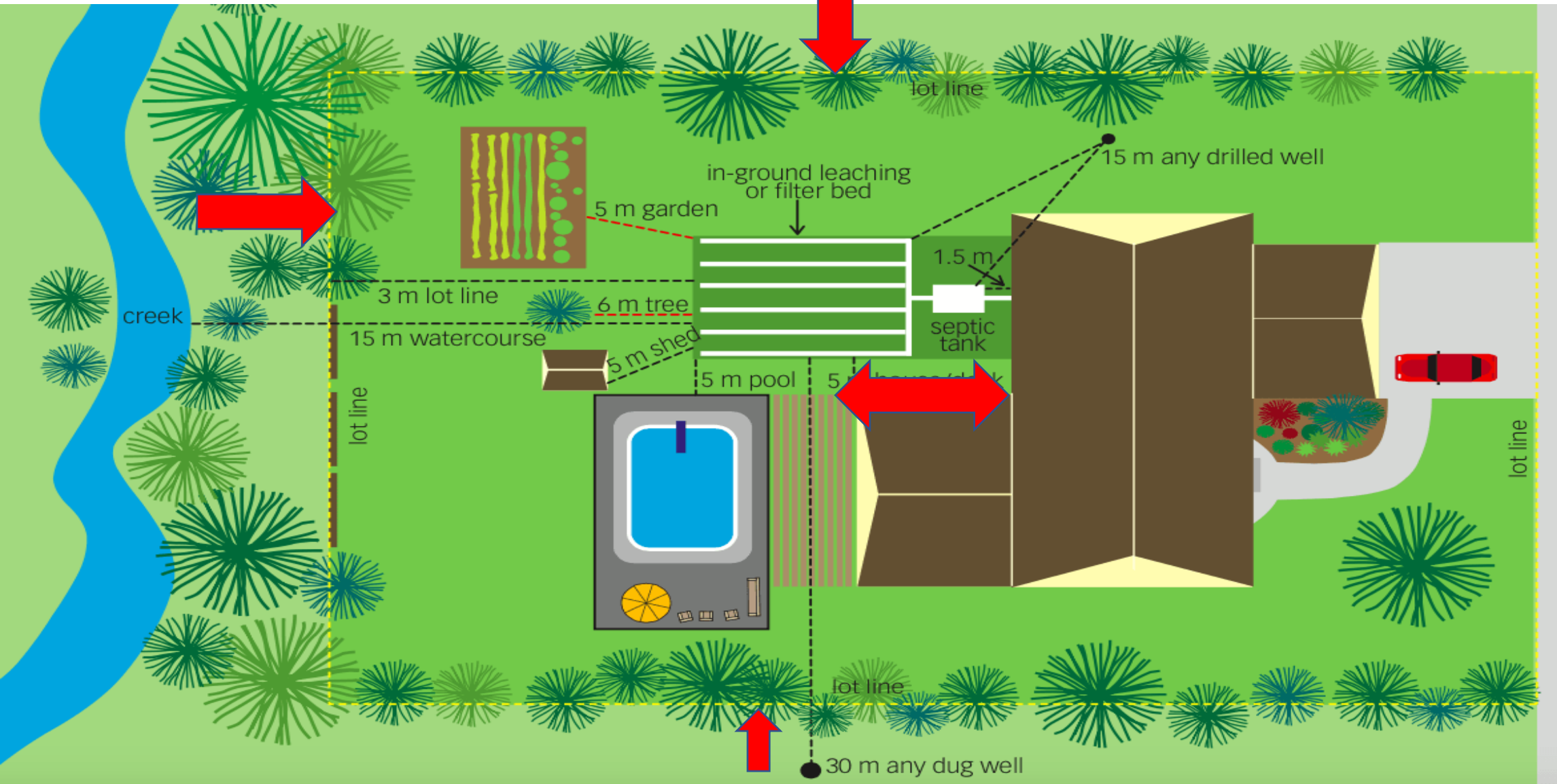
# Wooden Stakes And Flags Mean Nothing



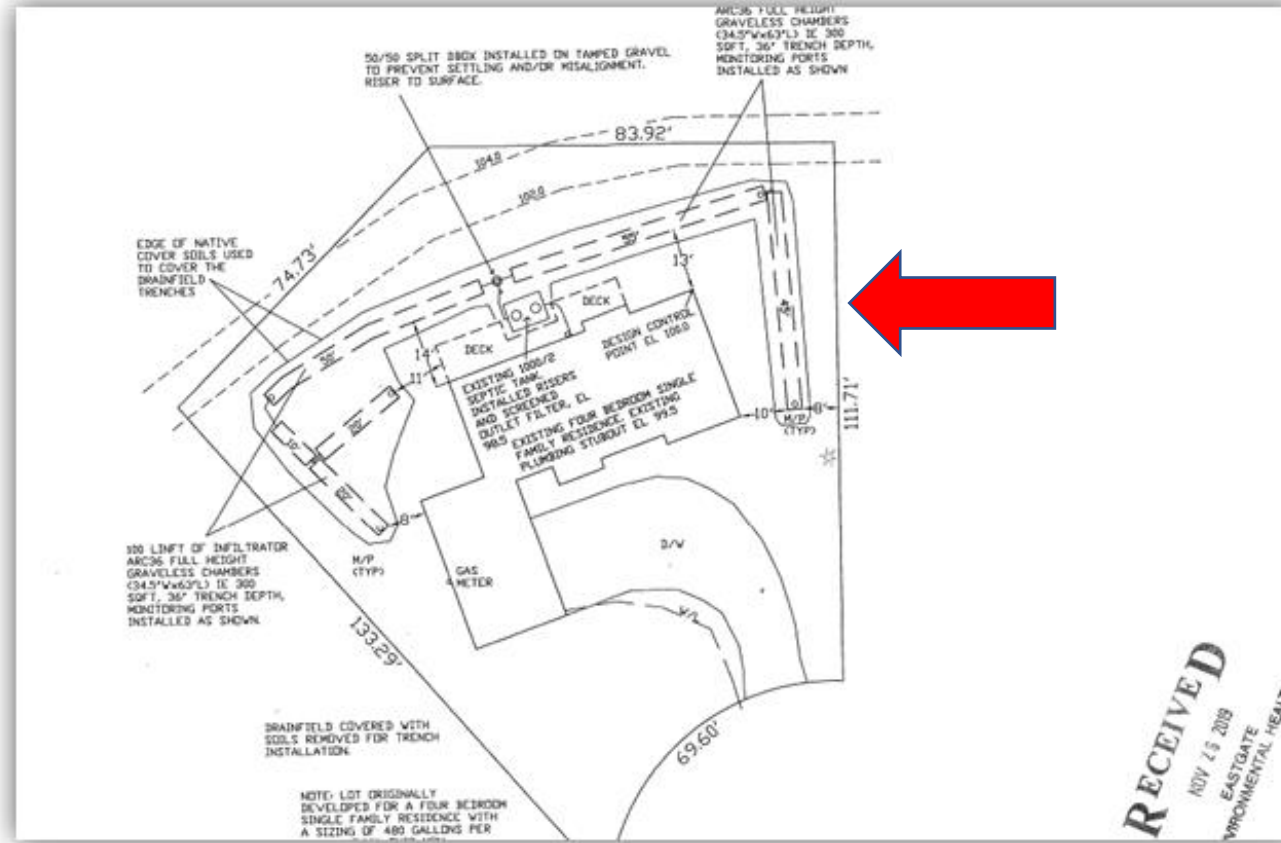
# Past Missouri Case Law

- Land can be worth (3-X) its appraised value if you encroach UPON IT.
- Case Stories from Instructor
- Additional information for septic systems installed off property

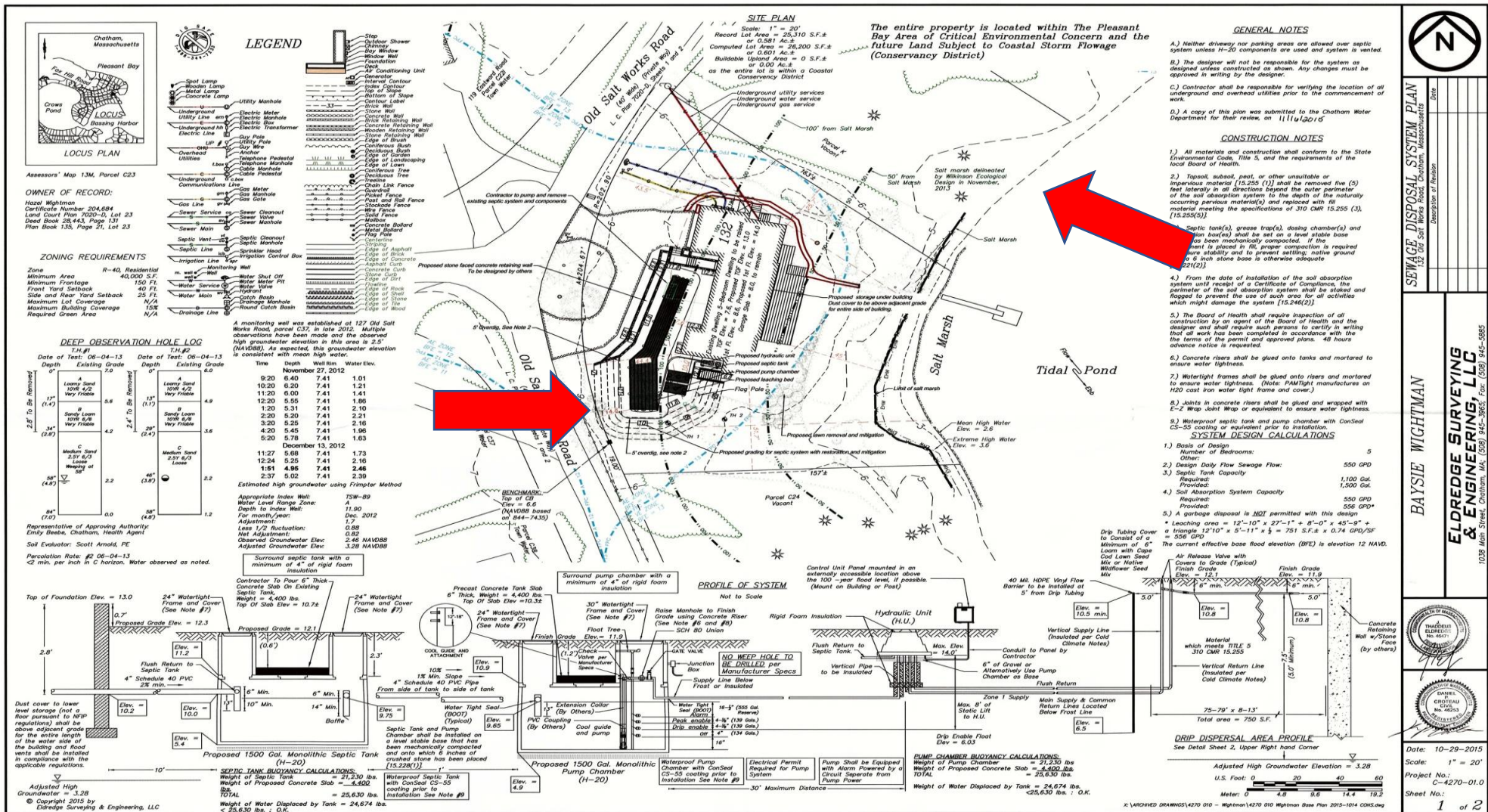
# More On Setbacks



# Drawings



# Drawings



## GENERAL NOTES

- A) Neither driveway nor parking areas are allowed over septic system unless 15-20 components are used and system is vented.
- B) The designer will not be responsible for the system as designed unless constructed as shown. Any changes must be approved in writing by the designer.
- C) Contractor shall be responsible for verifying the location of all underground and overhead utilities prior to the commencement of work.
- D) A copy of this plan was submitted to the Chatham Water Department for their review on 1/11/14/2015.

## CONSTRUCTION NOTES

- 1.) All materials and construction shall conform to the State Environmental Code, Title 5, and the requirements of the local Board of Health.
- 2.) Topsoil, subsoil, peat, or other unsuitable or impervious material (15.225 (1)) shall be removed five (5) feet laterally in all directions beyond the outer perimeter of the soil absorption system to the depth of the naturally occurring pervious material(s) and replaced with fill material meeting the specifications of 310 CMR 15.225 (3), [15.255(5)].
- 3.) Septic tank(s), grease trap(s), dosing chamber(s) and man box(es) shall be set on a level stable base as been mechanically compacted. If the permit is placed in fill, proper compaction is required for stability and to prevent settling. Native ground to 6 inch stone base is otherwise adequate.
- 4.) From the date of installation of the soil absorption system until receipt of a Certificate of Compliance, the contractor of the soil absorption system shall be retained and flagged to prevent the use of such area for all activities which might damage the system [15.246(2)].
- 5.) The Board of Health shall require inspection of all construction by an agent of the Board of Health and the designer shall require such persons to certify in writing that all work has been completed in accordance with the terms of the permit and approved plans. 48 hours advance notice is requested.
- 6.) Concrete risers shall be glued onto tanks and mortared to ensure water tightness. (Note: PAMTIGHT manufactures an H20 cast iron water tight frame and cover).
- 7.) Watertight frames shall be glued onto risers and mortared to ensure water tightness. (Note: PAMTIGHT manufactures an H20 cast iron water tight frame and cover).
- 8.) Joints in concrete risers shall be glued and wrapped with E-Z-Wrap J-30 or equivalent to ensure water tightness.
- 9.) Waterproof septic tank and pump chamber with ConSeal CS-55 coating or equivalent prior to installation.

## SYSTEM DESIGN CALCULATIONS

- 1.) Basis of Design  
Number of Bedrooms: 5  
Other: 5
- 2.) Design Daily Flow Sewage Flow: 550 GPD
- 3.) Septic Tank Capacity  
Required: 1,100 Gal.  
Provided: 1,500 Gal.
- 4.) Soil Absorption System Capacity  
Required: 550 GPD  
Provided: 556 GPD\*
- 5.) A garbage disposal is NOT permitted with this design.
  - \* Leaching area = 12'-10" x 23'-1" + 9'-0" x 42'-0" + a triangle 12'-10" x 5'-11" x 5 = 751 S.F. x 0.74 GPD/SF = 556 GPD
  - The current effective base flood elevation (BE) is elevation 12 NAD.

## SITE PLAN

Scale: 1" = 20'  
Record Lot Area = 26,310 S.F. ±  
or 0.581 Ac. ±  
Computed Lot Area = 26,200 S.F. ±  
or 0.601 Ac. ±  
Buildable (Existing) Area = 0 S.F. ±  
as the entire lot is within a Coastal Conservancy District

The entire property is located within The Pleasant Bay Area of Critical Environmental Concern and the future Land Subject to Coastal Storm Flowage (Conservancy District)



Assessors' Map 13M, Parcel C23

OWNER OF RECORD:  
Hazel Wightman  
Certificate Number: 204-684  
Land Court Plan 7030-0, Lot 23  
Deed Book 28,443, Page 21, 23  
Plan Book 135, Page 21, Lot 23

## ZONING REQUIREMENTS

Zone R-40, Residential  
Minimum Area 40,000 S.F.  
Minimum Frontage 150 Ft.  
Front Yard Setback 40 Ft.  
Side and Rear Yard Setback 25 Ft.  
Maximum Lot Coverage 25%  
Maximum Building Coverage 15%  
Required Green Area 1/4"

## DEEP OBSERVATION HOLE LOG

CH #1 171-82  
Date of Test: 06-04-13  
Date of Test: 06-04-13  
Depth: Existing Grade

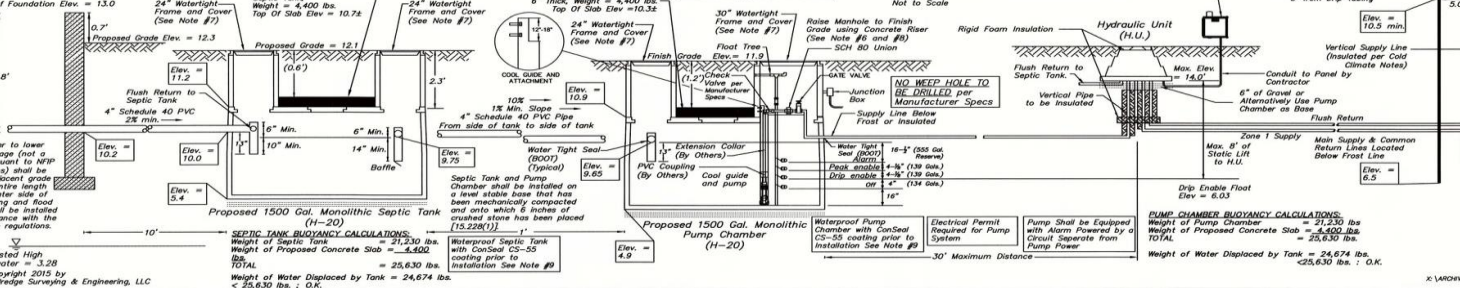
Time	November 27, 2012	Time	November 27, 2012
9:20	6.40	7.41	1.01
10:20	6.50	7.41	1.21
11:20	6.00	7.41	1.41
12:20	5.55	7.41	1.88
1:20	5.31	7.41	2.10
2:20	5.20	7.41	2.21
3:20	5.25	7.41	2.18
4:20	5.45	7.41	1.98
5:20	5.78	7.41	1.63
11:27	5.88	7.41	1.73
12:24	5.25	7.41	2.18
1:51	4.95	7.41	2.48
2:37	5.02	7.41	2.39

December 13, 2012  
11:27 5.88 7.41 1.73  
12:24 5.25 7.41 2.18  
1:51 4.95 7.41 2.48  
2:37 5.02 7.41 2.39

Estimated high groundwater using Tomer Method  
Appropriate Index Well: TSW-89  
Water Level Range Zone: A  
Depth to Index Well: 11.90  
For month/year: Dec. 2012  
Adapted From: 0.88  
Less 1/2 fluctuation: 0.88  
Net Adjusted: 0.00  
Observed Groundwater Elev: 2.46 NAVD88  
Adjusted Groundwater Elev: 3.28 NAVD88

Surround septic tank with a minimum of 4" of rigid foam insulation.

## PROFILE OF SYSTEM



**SEWAGE DISPOSAL SYSTEM PLAN**  
Description of Revision:  
Date:  
Scale: 1" = 20'  
Project No.: C-4270-01.0  
Sheet No.: 1 of 2

**BAYSIE WIGHTMAN**  
**ELDRIDGE SURVEYING & ENGINEERING, LLC**  
1038 Main Street, Chatham, MA, (408) 945-3665, Fax: (408) 945-5665

MASSACHUSETTS  
REGISTERED PROFESSIONAL ENGINEER  
No. 45177  
DATE: 11/11/14

Date: 10-29-2015  
Scale: 1" = 20'  
Project No.: C-4270-01.0  
Sheet No.: 1 of 2

# Private water supply well

- Tank setback- 50 feet
- Remember Clean Drinking Water Act
- Treatment system set back 100 feet
- Which President Signed The Clean Drinking Water Act Into Law?
- Exceptions-Unplugged abandoned wells or wells with less than eighty feet (< 80') of casing depth shall have one-hundred-fifty feet (150') minimum distance from all above.



# Well Above Ground Construction



# Wells Pit Construction



# Driven Sand Points



# More Water System Setbacks

- Public water supply well 300 feet setback
- This is for tanks/fields/lagoons
- Cistern- 25'/25'/25'- tank, field, lagoon
- Classified, Stream, Spring, Lake, Impoundment- 50' tank/100' treatment area/100' Lagoon

# Lake VS Pond

- To help determine the difference, both the depth and surface area must be considered. **Lakes are normally much deeper than ponds and have a larger surface area.** All the water in a pond is in the photic zone, meaning ponds are shallow enough to allow sunlight to reach the bottom.
- The simplest way to distinguish between a pond and a lake is to **find out their depths.** A small pond is usually 4 to 20 feet deep, while a lakes are typically any depth beyond 20 feet.

# Lake



# Pond



# What Is Classified

- \*A classified stream is any stream that maintains permanent flow or permanent pools during drought periods and supports aquatic life.
- Is my pond/lake on my property only/ or does it touch others property?
- Where does my pond or lake overflow end up?
- Aquatic life?
- Did the Department of Natural Resources stock my water body?



# Classified VS Unclassified

- **Streams and lakes with anadromous or alluvial fish or fish habitat;** or, high quality resident fish waters, or habitat above fish migration barriers known to provide reasonable enhancement opportunities for anadromous fish.
- Supports Aquatic Life. Frogs etc....
- For More Info visit Missouri Department Of Natural Resources websites-

# Is The Lake Or Pond Contiguous With Other Properties- SHARED

- **Definition of *contiguous***
- **1:** being in actual contact : touching along a boundary or at a point

# Stream Or Open Ditch

- Sewage tanks and soil absorption systems should never be located in the drainage area of a ditch or stream.
- What are some examples?
- Rain Events Has Serious Effects
- Setback is 15 Feet
- Some Folks Confuse Streams & Ditches

# Stream



# Open Ditch



# Sinkhole

- The department has identified **approximately 16,000 sinkholes in Missouri**, although, many more exist that have not been reported or documented. The largest known sinkhole in Missouri encompasses approximately 700 acres in western Boone County, southeast of where Interstate 70 crosses the Missouri River.
- [Sinkholes | Missouri Department of Natural Resources](#)
- <https://dnr.mo.gov>

# Edge Of Surficial Sink Holes

- Tank- 50 Feet
- Soil Treatment Field- 100 Feet
- Lagoon- 500 Feet

# Sink Hole





# Large Sink Hole



# Safe Drinking Water Act (SDWA)

- Protecting America's drinking water is a top priority for EPA. EPA has established protective drinking water standards for more than 90 contaminants, including drinking water regulations issued since the 1996 amendments to the Safe Drinking Water Act that strengthen public health protection. Over 92 percent of the population supplied by community water systems receives drinking water that meets all health-based standards all of the time.

# Property Lines

- Tanks- 10 feet
- Soil Treatment Fields- 10 Feet
- Lagoons- 75 feet waters edge- 100 feet overflow pipe
- \*\*Recommend twenty-five feet (25') of downslope property line initially, but repair may be allowed to ten feet (10') of downslope property line.

# Building Foundations

- Tank- 5'
- Soil Treatment Field- 15'
- Lagoon
- The pond shall be located a minimum of two hundred feet (200') from the nearest existing residence and a minimum of one hundred feet (100') from the residence that it serves; C. The pond shall be located at least one hundred feet (100') from a potable water supply or pump suction line; and D. The pond shall be located at least fifty feet (50') from a stream, water course, lake or impoundment.

# Foundation Or Short Wall



# Basement

- Tank- 15'
- Soil Treatment Field- 25'
- Lagoon
- The pond shall be located a minimum of two hundred feet (200') from the nearest existing residence and a minimum of one hundred feet (100') from the residence that it serves; C. The pond shall be located at least one hundred feet (100') from a potable water supply or pump suction line; and D. The pond shall be located at least fifty feet (50') from a stream, water course, lake or impoundment.

# Basement



# Swimming Pool

- 15/15/15
- But who wants a Lagoon near the pool and the previous rule applies
- Do not have tank or field within 15 feet of pool
- We have found pool decks over tanks, or pool concrete patios



# Swimming Pools



# Lagoons

- The pond shall be located a minimum of two hundred feet (200') from the nearest existing residence and a minimum of one hundred feet (100') from the residence that it serves; C. The pond shall be located at least one hundred feet (100') from a potable water supply or pump suction line; and D. The pond shall be located at least fifty feet (50') from a stream, water course, lake or impoundment. Waters edge (50') feet from heavy timber. Waters edge (75') from property line, overflow pipe 100 feet from property line.

# Lagoon



# Lagoon



# Water Line Under Pressure

- Tank- 10 Feet
- Soil Treatment Field- 10 Feet
- Lagoon 10 Feet- That means out of the banks and outside the fence
- What is a pressurized water line?
- Pressurized water pipes are **used for the drinking water that comes into your home and for carrying out waste.** Both pressurized and non-pressured piping systems are used for different purposes. The type of system used determines the best product for repairs when the pipes become compromised.

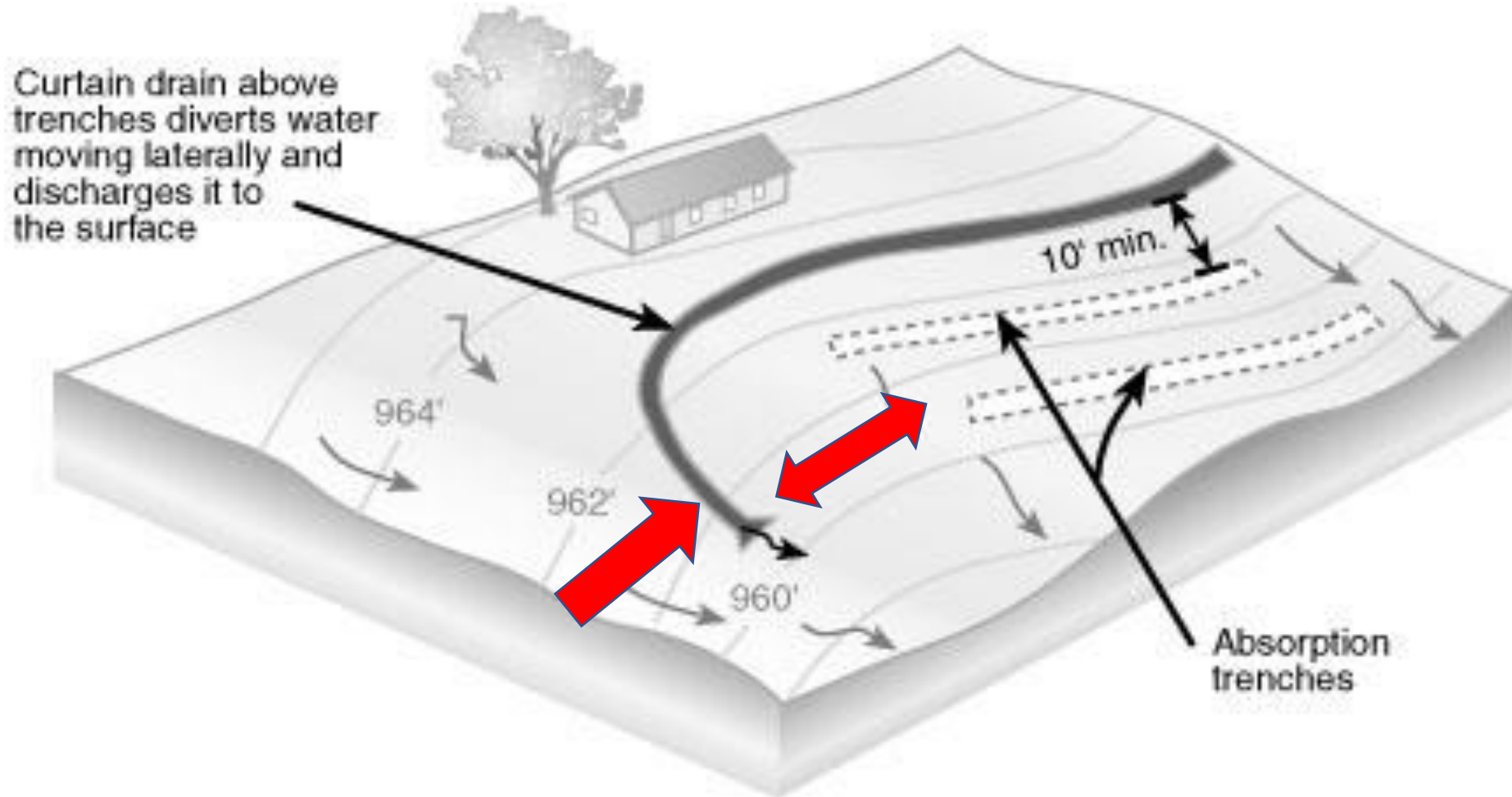
# Suction Water Line

- Suction pipes are widely used in **agricultural equipment for suction and delivery of freshwater and seawater.** They are also used for fertilization and irrigation purposes.
- Tanks- 50 Feet
- Soil Treatment Fields- 100 Feet
- Lagoons- 100 Feet
- Want to talk about Geo-Thermal systems in yards?

# Upslope Interceptor Drains

- Tank -----None
- Soil Treatment Field- 10 Feet
- Lagoon-10 Feet
- Why?
- How about heavy rain events
- If The Curtain Drain Is Too Close Problems With Lateral Migration

# Up Slope





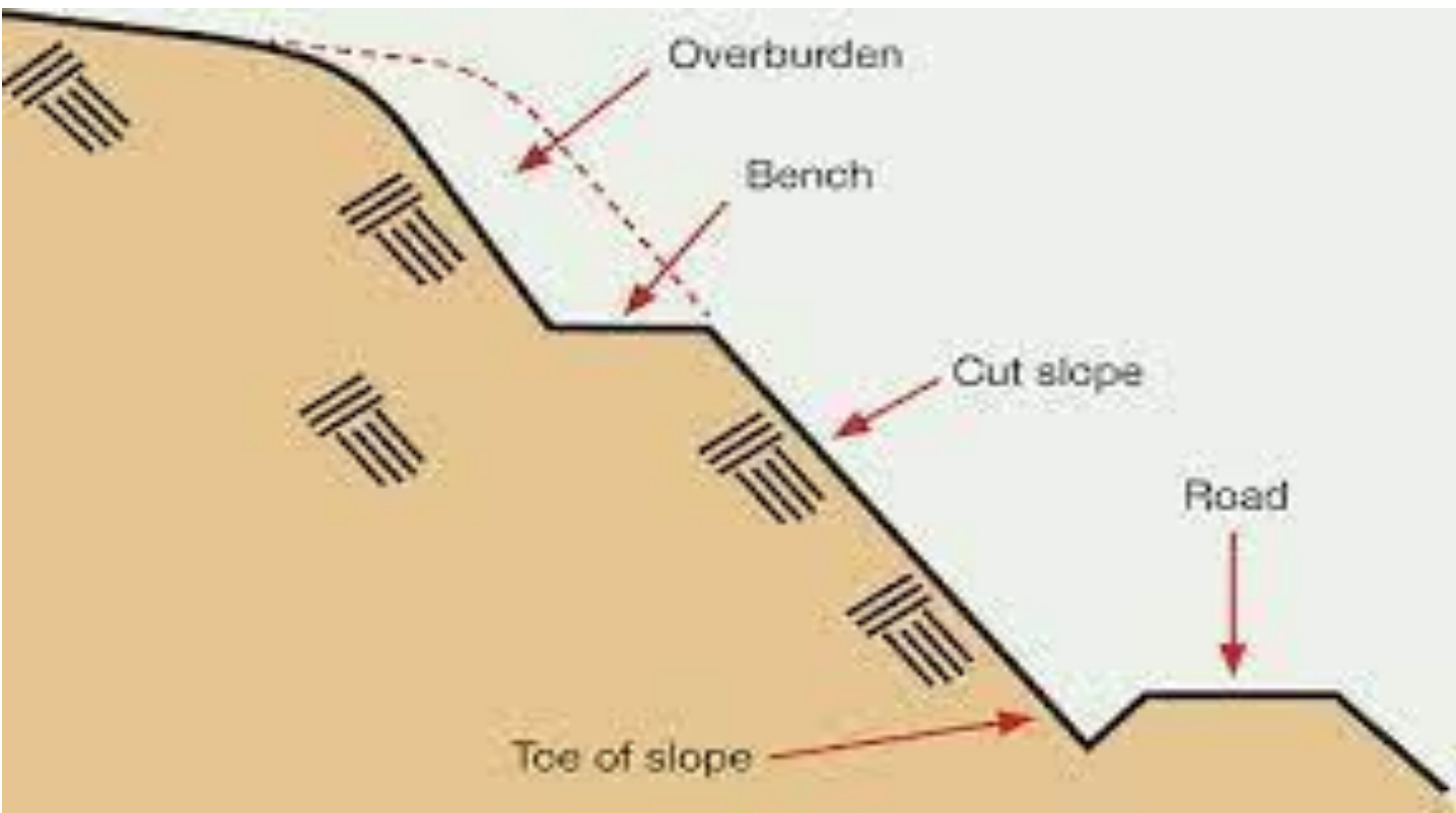
# Down-slope Interceptor Drains

- Tank---NONE
- Soil Treatment Field- 25 Feet
- Lagoon- 25 Feet
- **A drain that intercepts and diverts water before it reaches the area to be protected. Also called curtain drain.**

# Top of slope of embankments or cuts of two feet (2') or more vertical height

- Tank---None
- Soil Treatment Field- 20 Feet
- Lagoon- 20 Feet

# Slopes



# Other soil absorption system except repair area

- Tank- No Value
- Soil Treatment Field- 20 feet
- Lagoon- 20 Feet
- Other regulations do exist Under RSMO 701.031

# Variances

- A setback variance may be obtained on lots platted prior to January 1, 1996. Setback variances are not automatic.
- Minimum Set-Back Distances. All on-site wastewater treatment and disposal systems shall be located in accordance with the distances shown in Table 1. Or greater as outlined in rule.

# Summary

- **Do septic systems cause health or water quality problems?**
- Septic systems that are properly planned, designed, **sited**, installed, operated and maintained can provide excellent wastewater treatment. However, systems that are sited in densities that exceed the treatment capacity of regional soils and systems that are poorly designed, installed, operated or maintained can cause problems.

# Questions

- Q: What happens if I install a system off the property:
- Answer below:
- Buy the additional amount of property needed to meet setbacks; can be 3 X the properties value
- Buy a recorded deed easement, good luck!!
- Move The system, I have seen this happen many times.