
IYKYK

1913

Wisconsin enacts the first statutes and rules dealing with plumbing and water supply because of large outbreaks of typhoid fever and dysentery.

1941

Percolation tests are recommended for septic systems

1966

Restricted plumbing license classes are adopted.

1969

Percolation test procedures were established – required verification 3’ below system elevation

1971

Counties are required to issue septic tank permits and perform inspection of installations.

1974

Certification of all soil testers began and septic and plumbing review at the state level started.

1978

The Wisconsin Fund program started at the DNR. The Clean Water Act of 1972 provided funding to upgrade water and wastewater infrastructure in communities. Wisconsin recognized the need for some of this funding to go to onsite systems as well.

1979

Soil mottling is mentioned as an indicator of soil wetness or high groundwater

1991

Morphological evaluation of soil is required – no more perc tests after 7/1/1994

2000

Code went from prescriptive to performance.

Soil test requirements was removed for subdivisions.

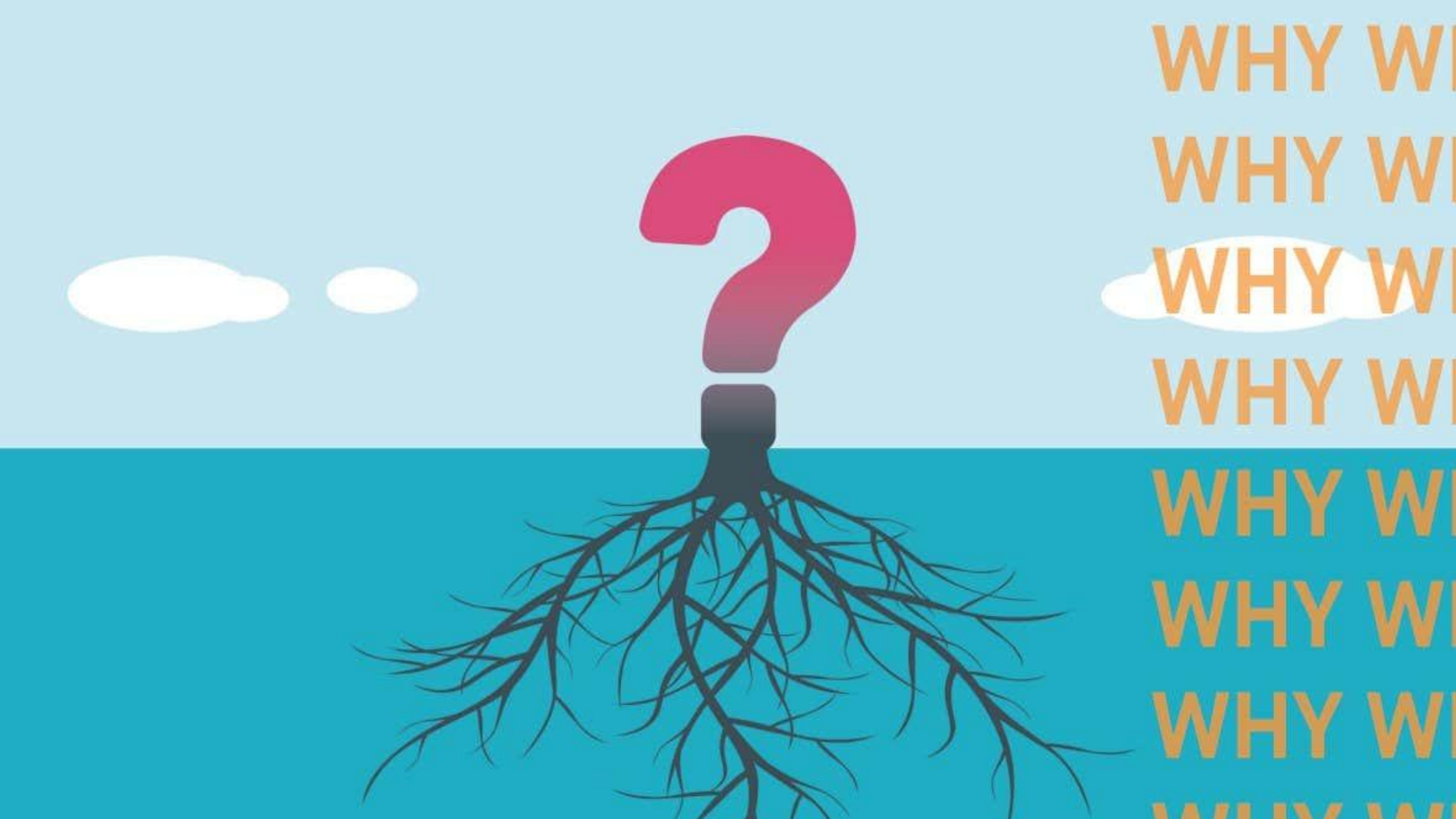
Component manuals were established

2017

Governmental units are required to have completed an inventory of all POWTS located within their jurisdiction

2019

Governmental units are required to begin implementation of a POWTS maintenance program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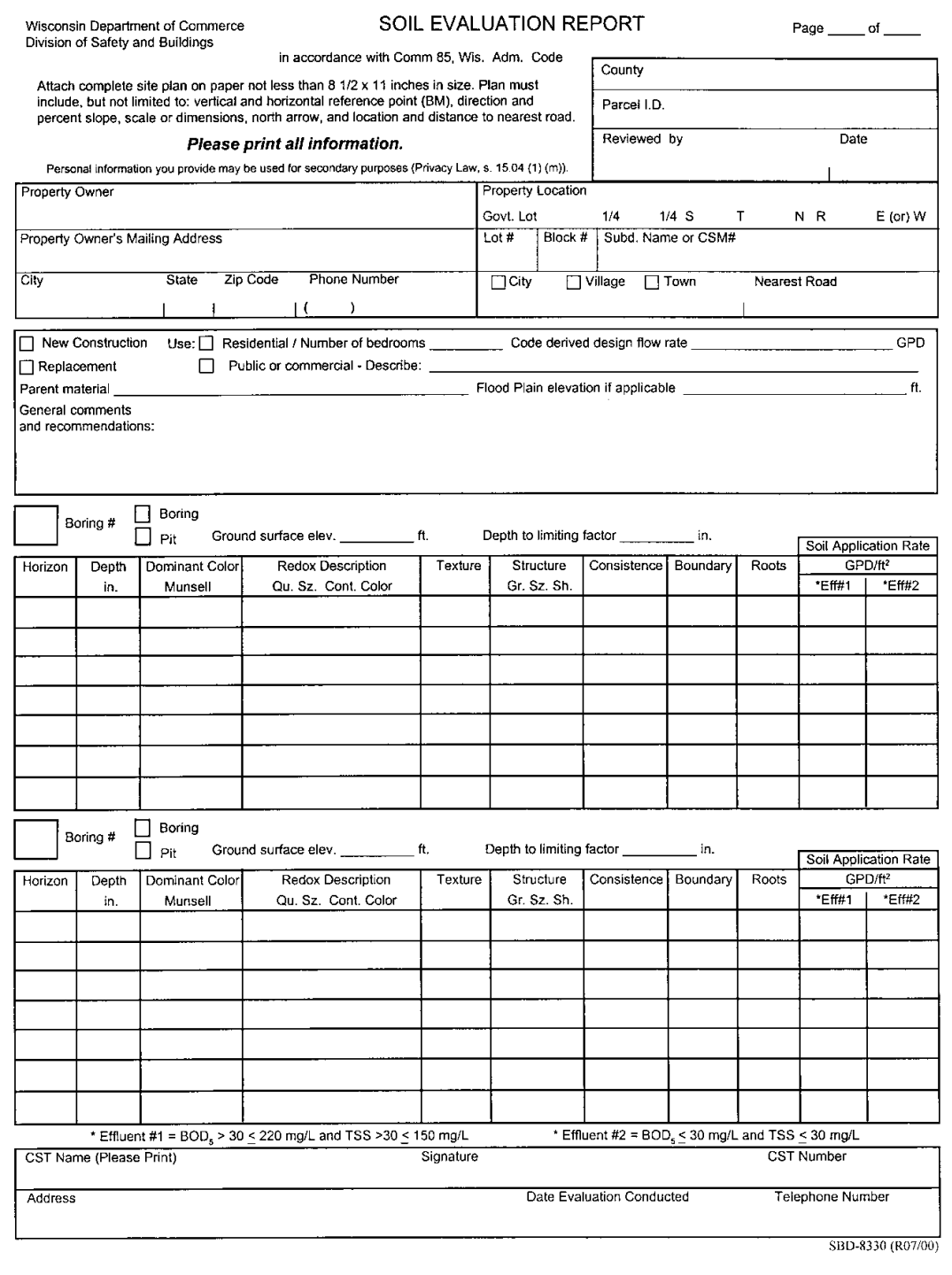
WHAT IS AN EH115 FORM?

No longer used!

If these exist for

- **Reconnects**
- **Tank Replacements**
- **Drainfield Replacements**

Soil verification must be done



Wisconsin Department of Commerce
Division of Safety and Buildings

SOIL EVALUATION REPORT

Page ____ of ____

in accordance with Comm 85, Wis. Adm. Code

Attach complete site plan on paper not less than 8 1/2 x 11 inches in size. Plan must include, but not limited to: vertical and horizontal reference point (BM), direction and percent slope, scale or dimensions, north arrow, and location and distance to nearest road.

Please print all information.

Personal information you provide may be used for secondary purposes (Privacy Law, s. 15.04 (1) (m)).

County

Parcel I.D.

Reviewed by Date

Property Owner

Property Location

Govt. Lot 1/4 1/4 S T N R E (or) W

Property Owner's Mailing Address

Lot # Block # Subd. Name or CSM#

City State Zip Code Phone Number

☐ City ☐ Village ☐ Town Nearest Road

☐ New Construction Use: ☐ Residential / Number of bedrooms _____ Code derived design flow rate _____ GPD

☐ Replacement ☐ Public or commercial - Describe: _____

Parent material _____ Flood Plain elevation if applicable _____ ft.

General comments and recommendations:

☐ Boring # ☐ Boring ☐ Pit Ground surface elev. _____ ft. Depth to limiting factor _____ in.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	Roots	Soil Application Rate GPD/ft² *Eff#1	*Eff#2

☐ Boring # ☐ Boring ☐ Pit Ground surface elev. _____ ft. Depth to limiting factor _____ in.

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* Effluent #1 = BOD_5 > 30 ≤ 220 mg/L and TSS >30 ≤ 150 mg/L

* Effluent #2 = BOD_5 ≤ 30 mg/L and TSS ≤ 30 mg/L

CST Name (Please Print) Signature CST Number

Address Date Evaluation Conducted Telephone Number

SBD-8330 (R07/00)

WHY IS PIPE BEDDING IMPORTANT?

SPS 383.25(5)

All vessels and pipes shall be bedded in accordance with a product approval under SPS 384.10 or plan approval under SPS 383.22

WHY IS PIPE BEDDING IMPORTANT?

SPS 382.30(11)(e)

Bedding: 3 inches sand or gravel ≤ 3/4” dia

Backfill: 12 inches sand or material of ≤ 1” dia

HOW ABOUT HEADER BEDDING?

SPS 383.25(5)

All vessels and pipes shall be bedded in accordance with a product approval under SPS 384.10 or plan approval under SPS 383.22

IS PROPER PITCH IMPORTANT?

Table SPS 382.30-3

Minimum pitch for 4” pipe = 1/8” per foot

HOW ARE SEPTIC TANKS SIZED?

The amount of scum and sludge that accumulates in septic tanks is based on studies by Weibel, Bendixen and Coulter for the US Public Health Service (1955), Winneberger (1977), Schmidt (1976) and Bounds (1988). Their research revealed the rate of scum accumulation equals 5.24 gallons per person per year plus 12.04 gallons per person. A formula was developed and reduced to

Design Flow x 2.088 = Minimum septic tank size when pumped every 3 years.

HOW ARE SEPTIC TANKS SIZED?

Tank geometry affects the hydraulic residence time in the tank.

Tanks that have a length to width ration of 3:1 or more reduce short-circuiting of raw wastewater across the tank and improve suspended solids removal

WHY DO WE HAVE INLET BAFFLES?

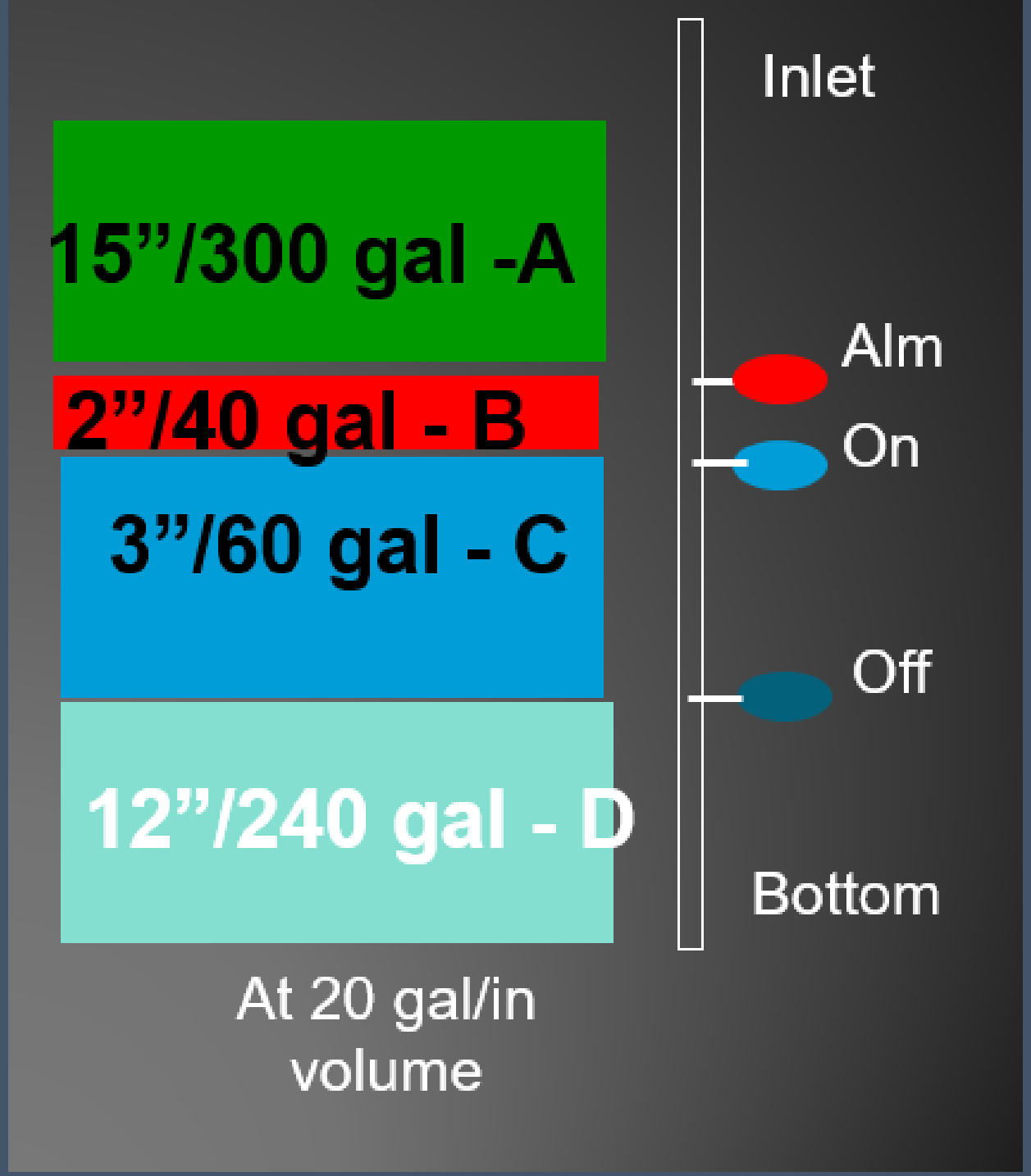
The inlet baffle is designed to prevent short circuiting of the flow to the outlet by dissipating the energy of the influent flow and deflecting it downward into the tank.

Without them, there will not be adequate treatment in the tank.

HOW ARE DOSE TANKS SIZED?

Dose tanks are sized based on the liquid level and gallons per inch

D Dimension = enough water to keep the pump submerged
C Dimension = dose volume
B Dimension = alarm tether
A Dimension = estimated flow



WHAT HAPPENS IF THE FLOAT SWITCH IS NOT SET CORRECTLY?

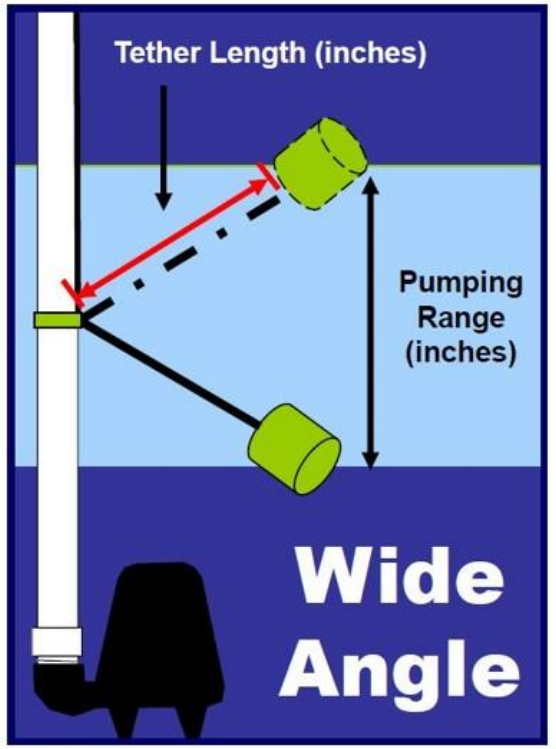
Too little dose volume = laterals will not fill with water properly and equal distribution will not occur

Too much dose volume = system may be getting more water than it is designed to handle and may not be able to provide treatment or early failure could occur

SJE-Rhombus

Pump Switches

Tether Length	Pumping Range
3.5	6.6
6	8.5
8	11
10	13
12	14
15	17
17	19

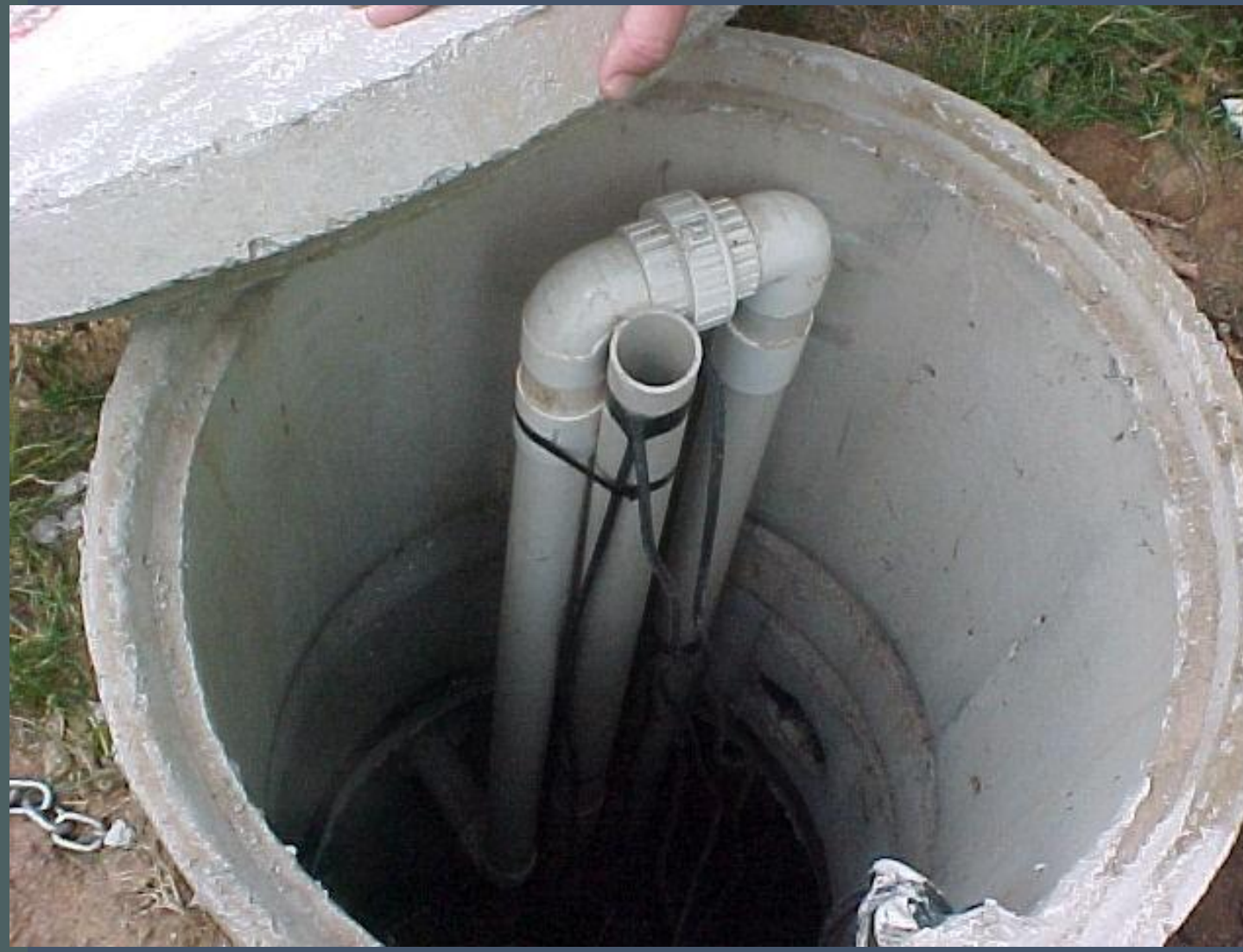


www.sjerhombus.com

WHO CAN CHANGE A PUMP?

A pump and the float settings are considered part of the POWTS and must be installed by a person licensed to install plumbing – See Chapter 145

- Plumbing Apprentice
- Plumbing Learner
- Journeyman, JPRS
- Master Plumber, MPRS



WHAT HAPPENS IF THE ORIFICES ARE NOT DRILLED CORRECTLY?

The size and number of orifices in a lateral determine pump sizing.

If larger or additional orifices are drilled, the pump may need be able to supply adequate pressure to each of the holes.

If smaller or fewer orifices are drilled, uniform distribution is not occurring.

DO WE REALLY NEED TO WORRY ABOUT LINEAR LOADING RATES?

Absolutely YES!

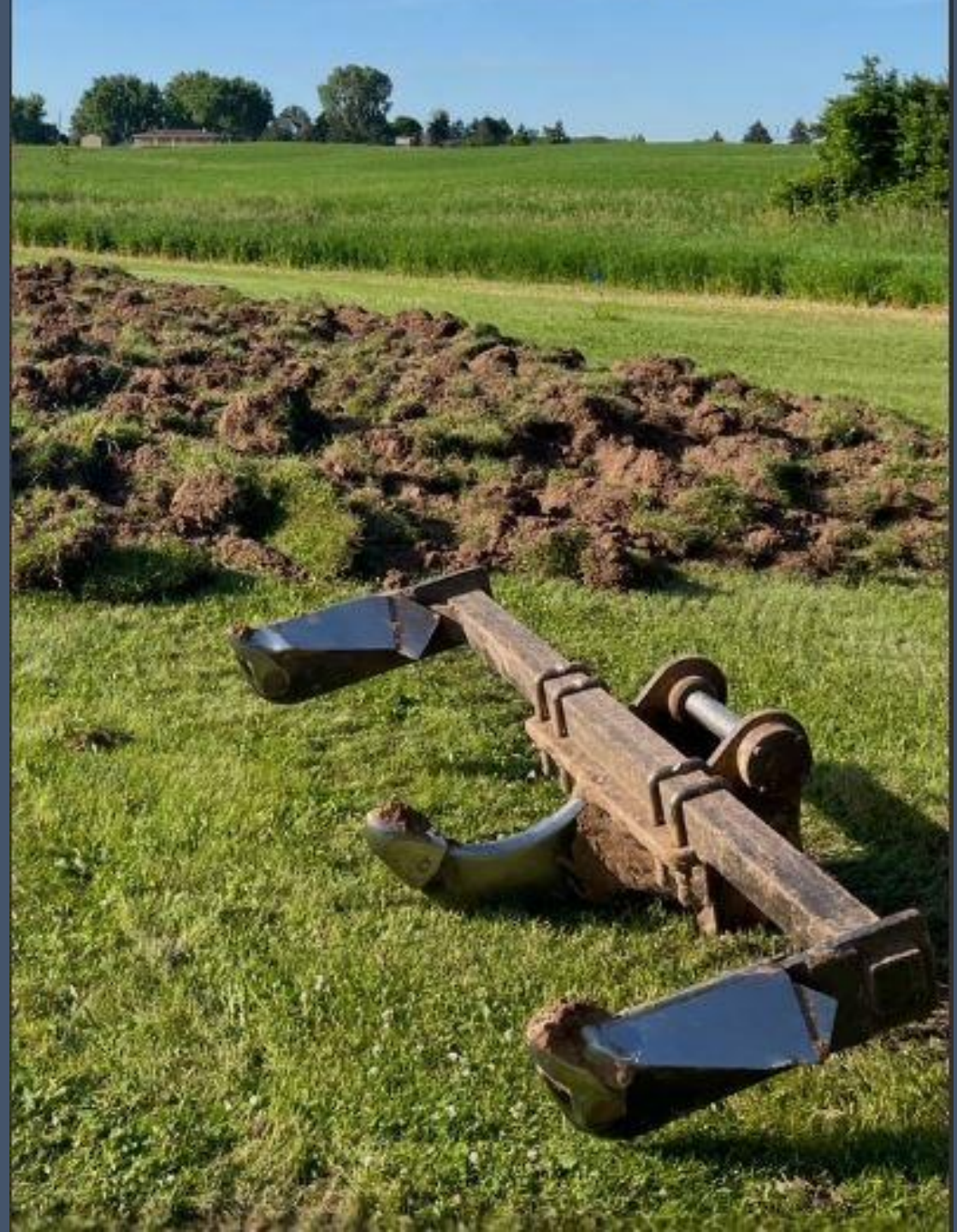
When we are installing above grade systems, these are usually on slowly permeable soils. Since these soils tend to take on water slowly…..we should reduce the amount of gallons we apply per foot to reduce the chance for toe leakage

DWF / cell length = LLR in gallons per foot per day

DOES PLOWING REALLY MATTER?

Absolutely YES!

When mounds were being developed, they tried installing without plowing – this doesn’t work. We need to cut open the natural ground surface and place the sand or rock so that it intermingles with the natural soil. This provides the best base for a mound or at-grade.



HOW CAN I TELL IF THE ROCK IS CLEAN?

Look at the piping

Put some in your hand

IS IT IMPORTANT TO PUT PARENT MATERIAL ON THE SOIL TEST FORM?

Absolutely YES!

Knowing the parent material helps us understand what kind of soil we might be seeing on a report.

Use the SOIL SERIES to help you learn more about parent materials.

WHY IS MOTTLING A LIMITING FACTOR?

Redoximorphic features are a result of iron or manganese being reduced, translocated and oxidized in the soil. This only happens when saturated conditions exist. These features indicate that saturation has occurred or does occur in these areas.

TABLE 3.1 Treatment Performance of Soil

Parameter	Raw Waste	Septic Tank Effluent	One Foot Below Distribution Media	Three Feet Below Distribution Media
BOD_5 (mg/L)	30-1147***	39-861***	0**	0**
TSS (mg/L)	18-2233***	22-276***	0**	0**
Fecal Coliform (MPN/100ml)	30,000-10,000,000,000**,***	1,000-120,000,000**,***	1-100**	0**
Viruses (PFU/ml)	unknown**	100,000-10,000,000**	0-1,000**	0**
Nitrogen (mg/L)				
Total	35-189**,***	25-124**,***	—	—
NH_4	7-40**	20-60**	*B-20**	—
NO_3	<1**	<1**	*B-40**	*B-40**
Total Phosphorus (mg/L)	10-27**	3-40***	*B-10**	*B-1**

* B = background
**Tchobanoglous and Burton, 1991
***Lowe et al., 2007


Field Margins
(not plowed in 30+ years)
Tilled Field
(history of field corn
and currently vegetables)

SHOULD I LEARN MORE ABOUT PROBLEM SOIL AREAS IN MY COUNTY?

AND NOW YOU KNOW! ☺

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