

Cleaning Up Water Systems

Flood Recovery for Homes and Business Structures

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What We'll Cover....

- Reclaiming a flooded well
- Reclaiming a flooded septic system
- Making the house more flood-resistant

Reclaiming a Flooded Well

- Hire contractor to check for pump or electrical damage; let it dry out
- Pump the water until it is clear
- Scrub pump room with a 2% percent chlorine solution = 1 gal. bleach + 1 1/2 gal. water



Disinfecting a Flooded Well ₁

Well cap



Newer wells

Vent pipe



Older wells

Disinfecting a Flooded Well ₂

- Bypass the water softener
- Turn off electrical power to the pump



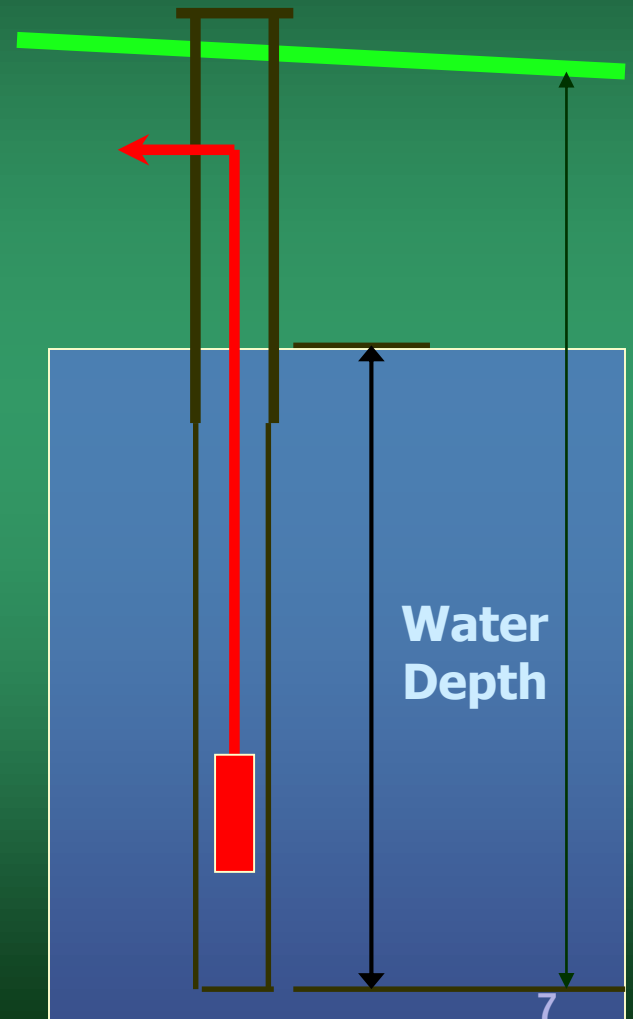
Disinfecting a Flooded Well ₃

- Remove the well seal/cap and lift the wires aside



Disinfecting a Flooded Well ⁴

- Well diameter and water depth determines chlorine dosage
- Too much chlorine can damage rubber plumbing and electrical parts



Disinfecting a 6" Flooded Well ⁵

- Mix the chlorine/water solution in bucket
 - Liquid bleach @ 1 pint per 25' of water depth, or
 - Chlorine tablets @ 0.5 lb. per 150' of water depth



Disinfecting a Flooded Well ⁶

- Add the chlorine mix to the well



Disinfecting a Flooded Well ⁷

- Turn on pump power
- Attach garden hose to nearby faucet'
- Recirculate water back down well casing until chlorine odor is detected



Disinfecting a Flooded Well ⁸

- Turn on each faucet one at a time until you smell chlorine odor
 - May need to remove faucet aerators to prevent clogging
- Let chlorine water stand in system overnight to kill bacteria



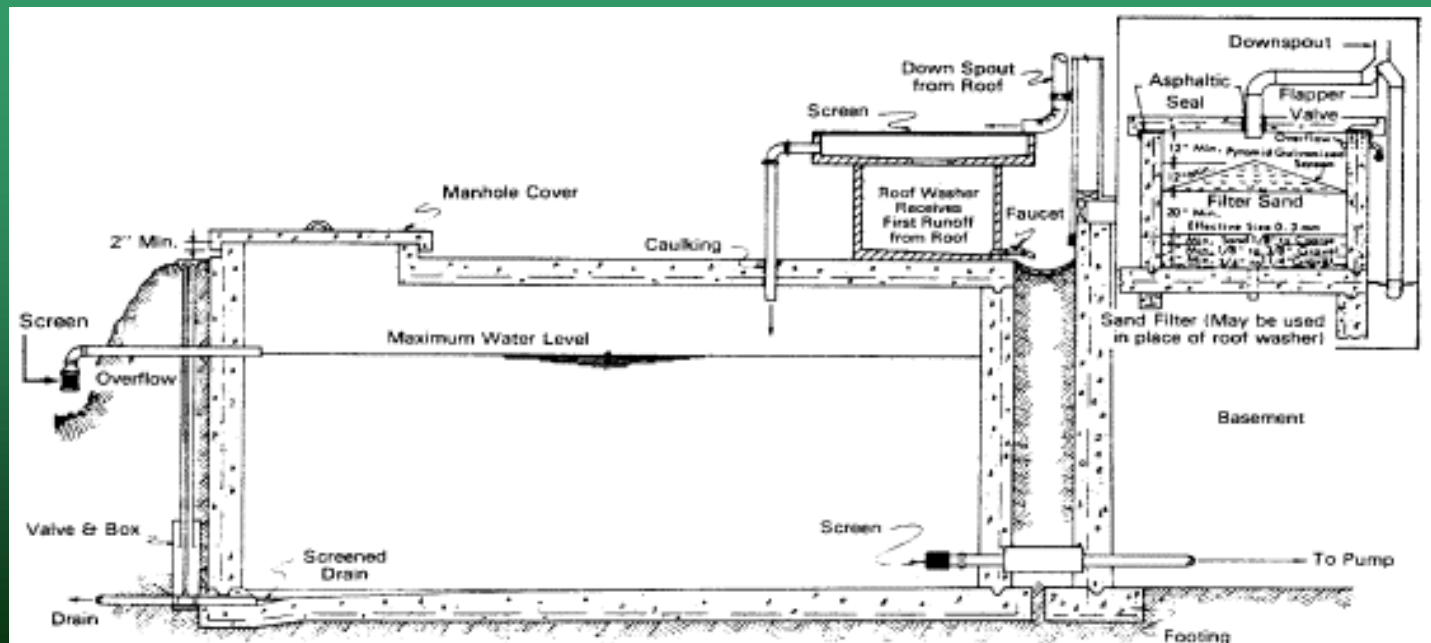
Disinfecting a Flooded Well 9

- Starting outside, flush out system with water, until chlorine taste and odor are no longer present.
 - May take 1 hour to 4 days to clear
 - Avoid desirable vegetation
 - Don't overload septic system
- Retest for bacteria after 7-10 days
 - \$10 cost; DHSS has sterile sample bottle
 - Keep sample cool & dark, get to lab in 6 hours
- Keep test results with important papers



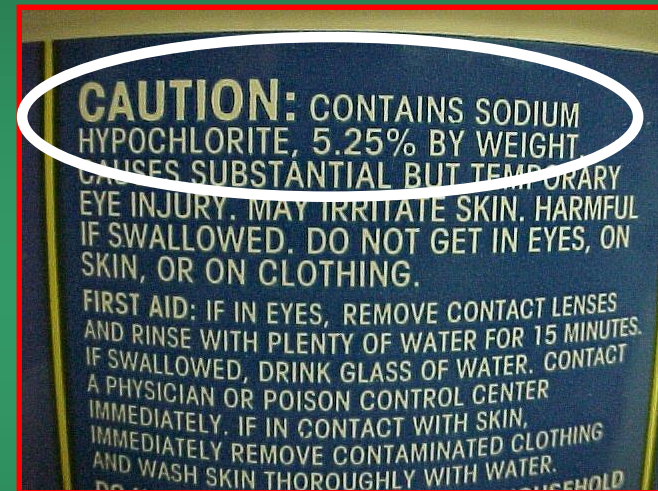
Disinfecting a Cistern ¹

- Pump dry with auxiliary pump. Do not pump water through the piping system.
- Wash walls, ceiling and floor with clean water and pump out the dirty water.



Disinfecting a Cistern ₂

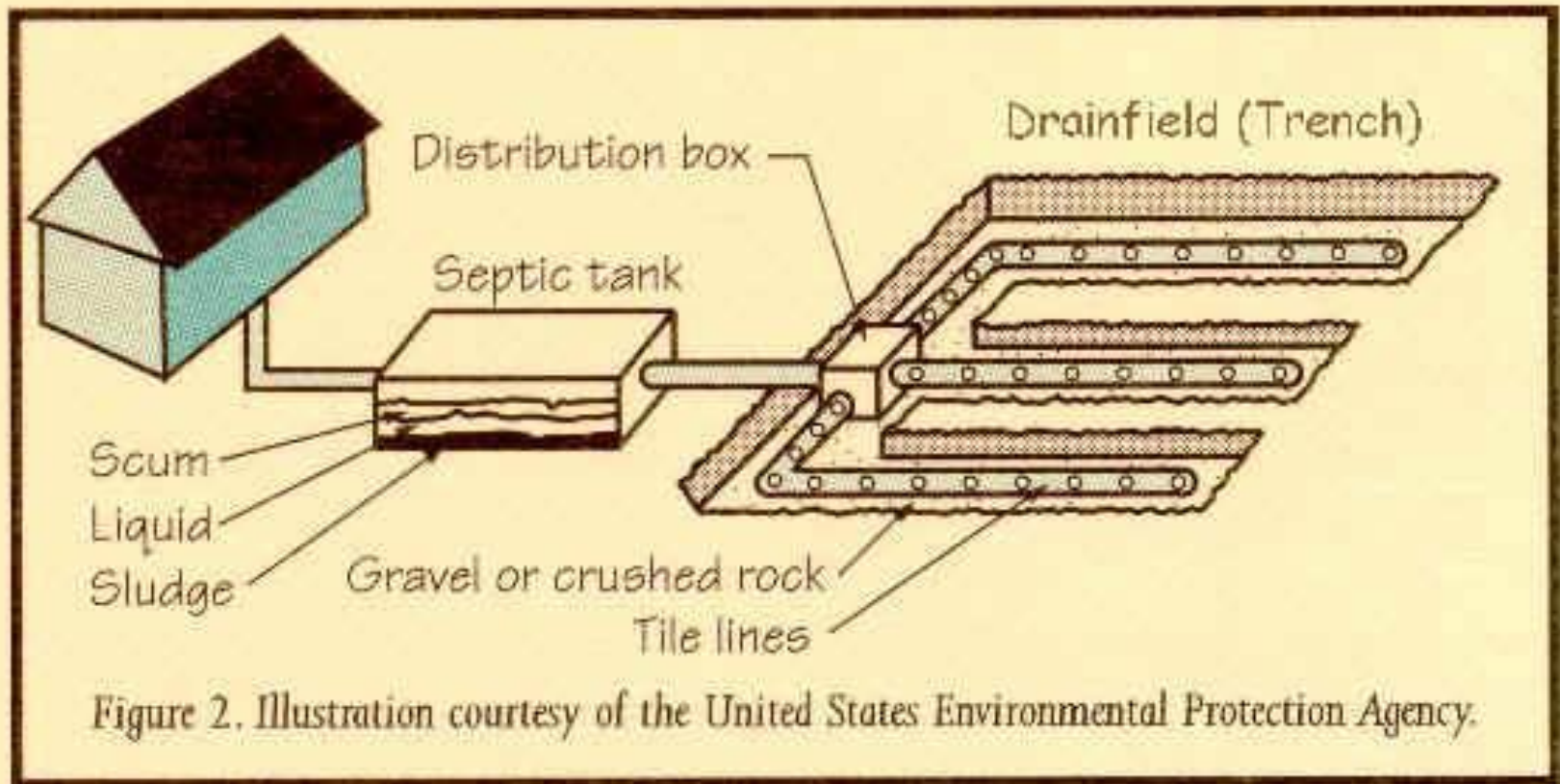
- Check walls, ceiling and floor for cracks.
- Disinfect cistern's interior with 1 qt. bleach + 3 gal. water. Apply with sprayer or stiff broom. Pump out solution that collects in cistern bottom.



Disinfecting a Cistern ₃

- Decontaminate the piping system before using it. Disinfect, using the same procedure as for wells.
- Fill cistern with water for use and have it tested. The water should have a chlorine taste for a while, but it should be safe. Drinking water should be treated and boiled until the water is tested and found safe for drinking.

Reclaiming a Flooded Septic System ₁



Schematic of a Drainfield

Reclaiming a Flooded Septic System ₂

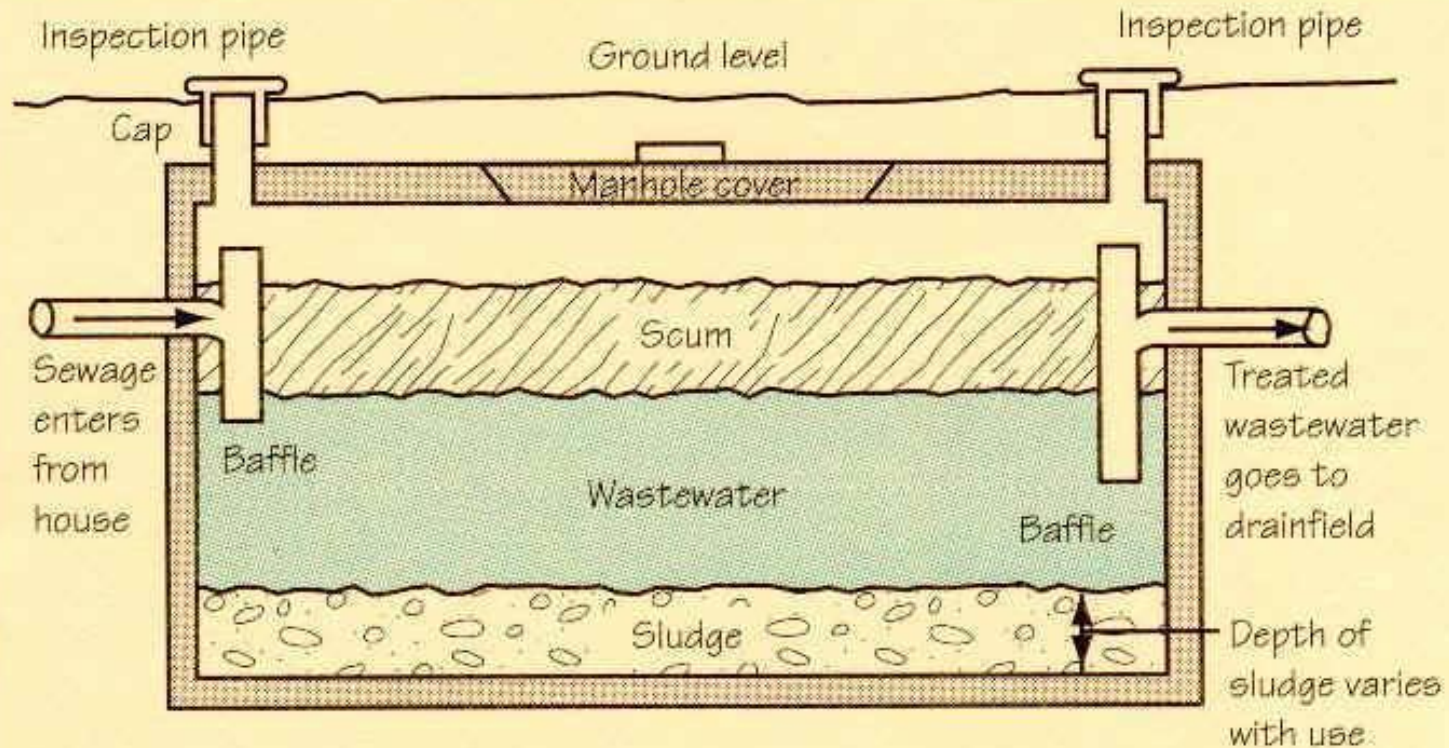


Figure 1. Illustration courtesy of the Maryland Department of the Environment.

Schematic of a Septic Tank

Reclaiming a Flooded Septic System ³

- Do not use the system until flood water has receded from all components of the system
- Shut off power to septic system sewage pumps until flood water goes down
- Don't remove septic tank lid while tank is still under water
- Remove silt and other material from the septic tank, distribution boxes and sewage pump chambers after water recedes
- Limit water use until soils are no longer soggy¹⁸

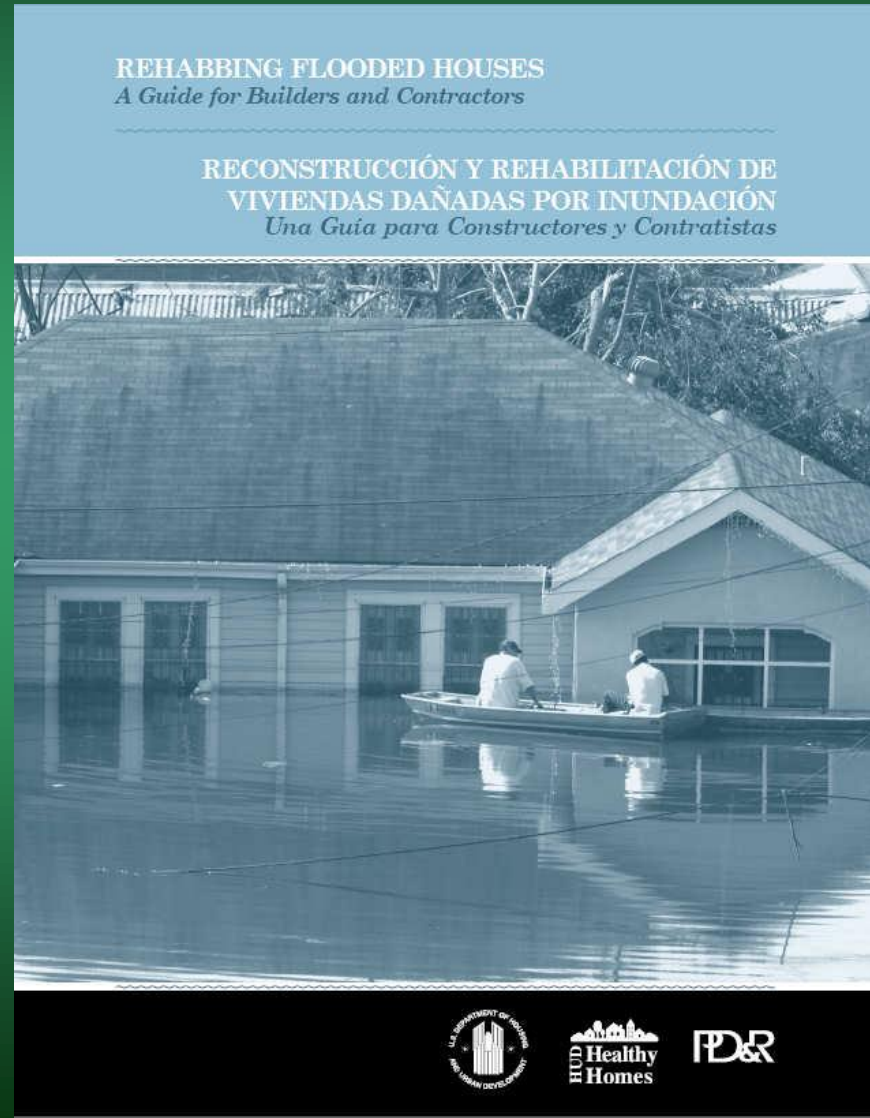
Reclaiming a Flooded Septic System ⁴

- Replace absorption field if it was silted in from septic tank
- Install effluent filter on outflow side of septic tank



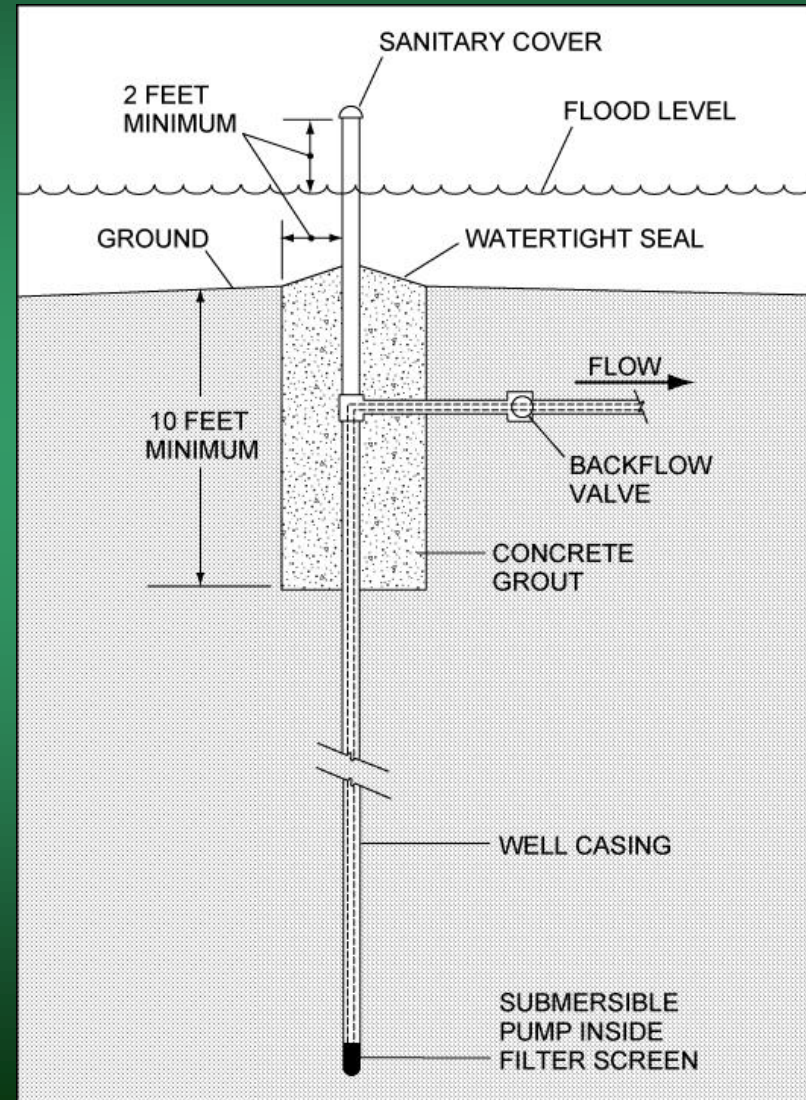
Flood-Resistant Construction

- Wells
- Water heater
- Sewage backflow
- Electrical & HVAC
- Fuel tanks
- Building materials



Protecting Well from Flooding

- Extend well casing > 2 feet above the highest known flood elevation
- Install sanitary seal on casing
- Watertight seal at ground level 4 in. thick x 2 ft. radius around casing
- Grout 10 ft. deep between casing & bore hole
- Install backflow valve in the water line
- Protect electrical controls from flood water
- Drill a new well on higher ground, beyond flood levels and pollution sources



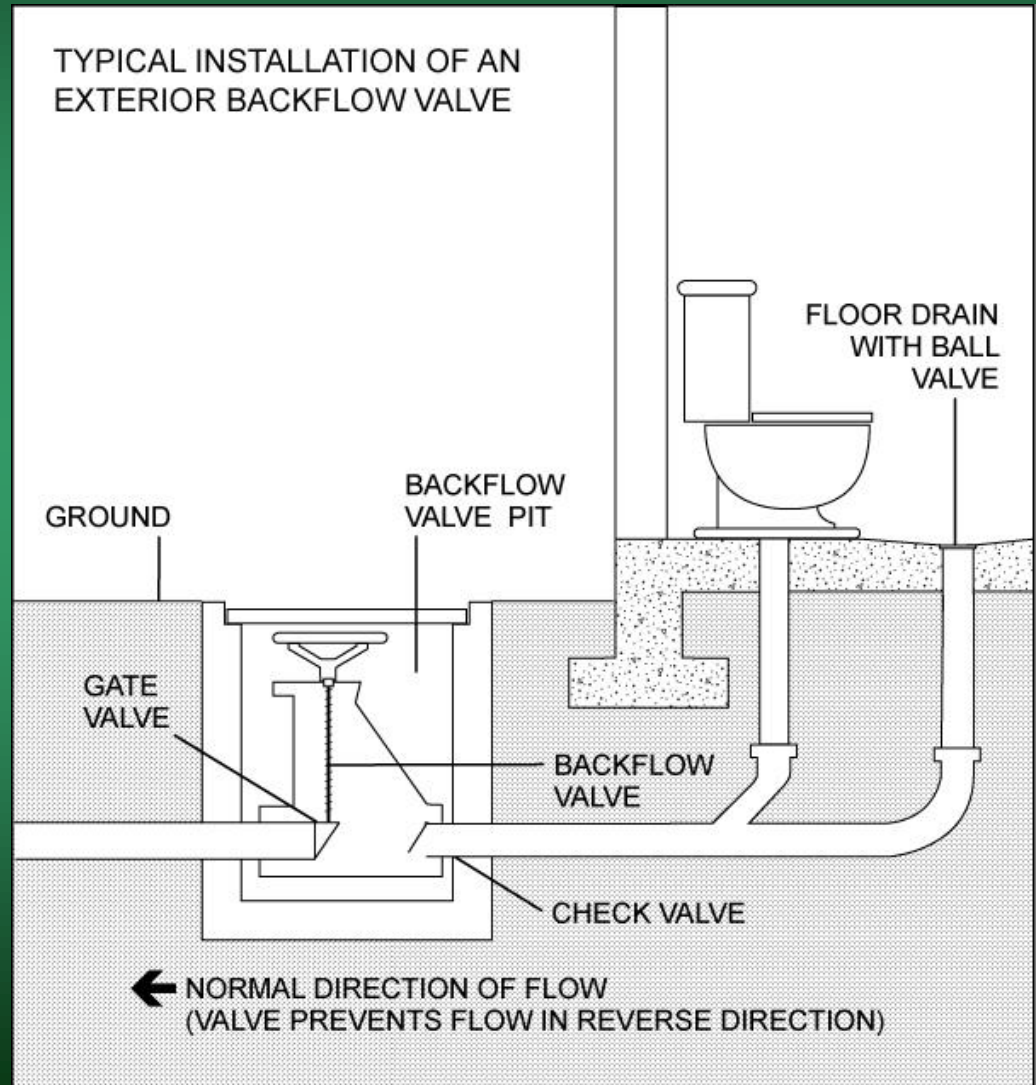
Elevate Water Heater

- Hang from ceiling or bolt to wall
- Secure tank with plumber's straps



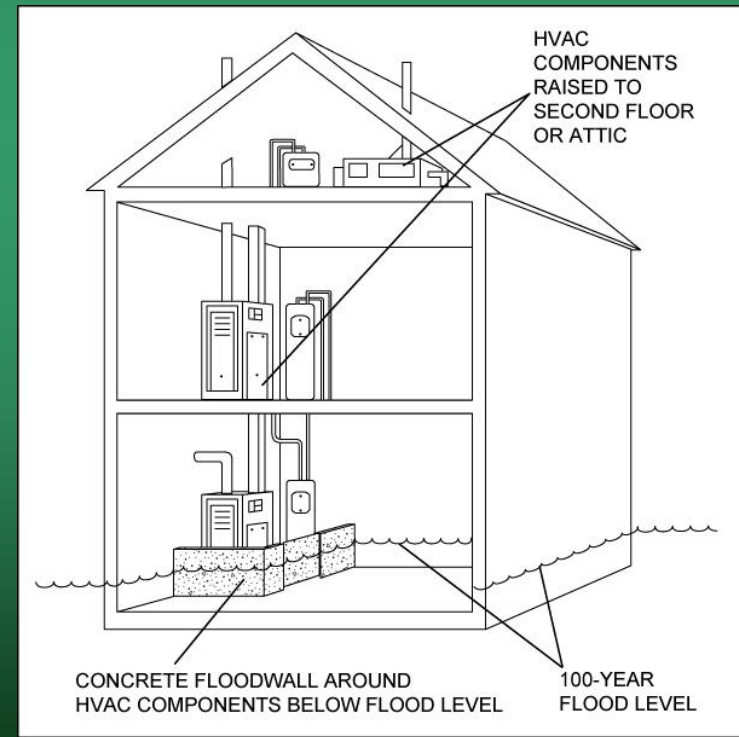
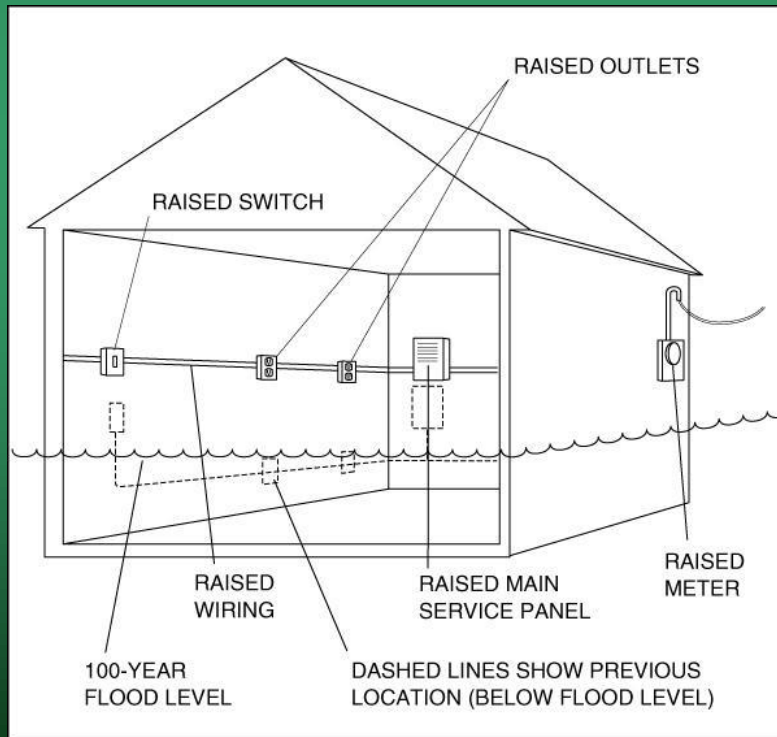
Install Sewer Backflow Valve

- Use licensed plumbing contractor & follow codes
- Installed on all pipes below flood level
 - Septic
 - Washing machine drain
 - Laundry sinks
 - Fuel oil lines
 - Rain downspouts
 - Sump pumps

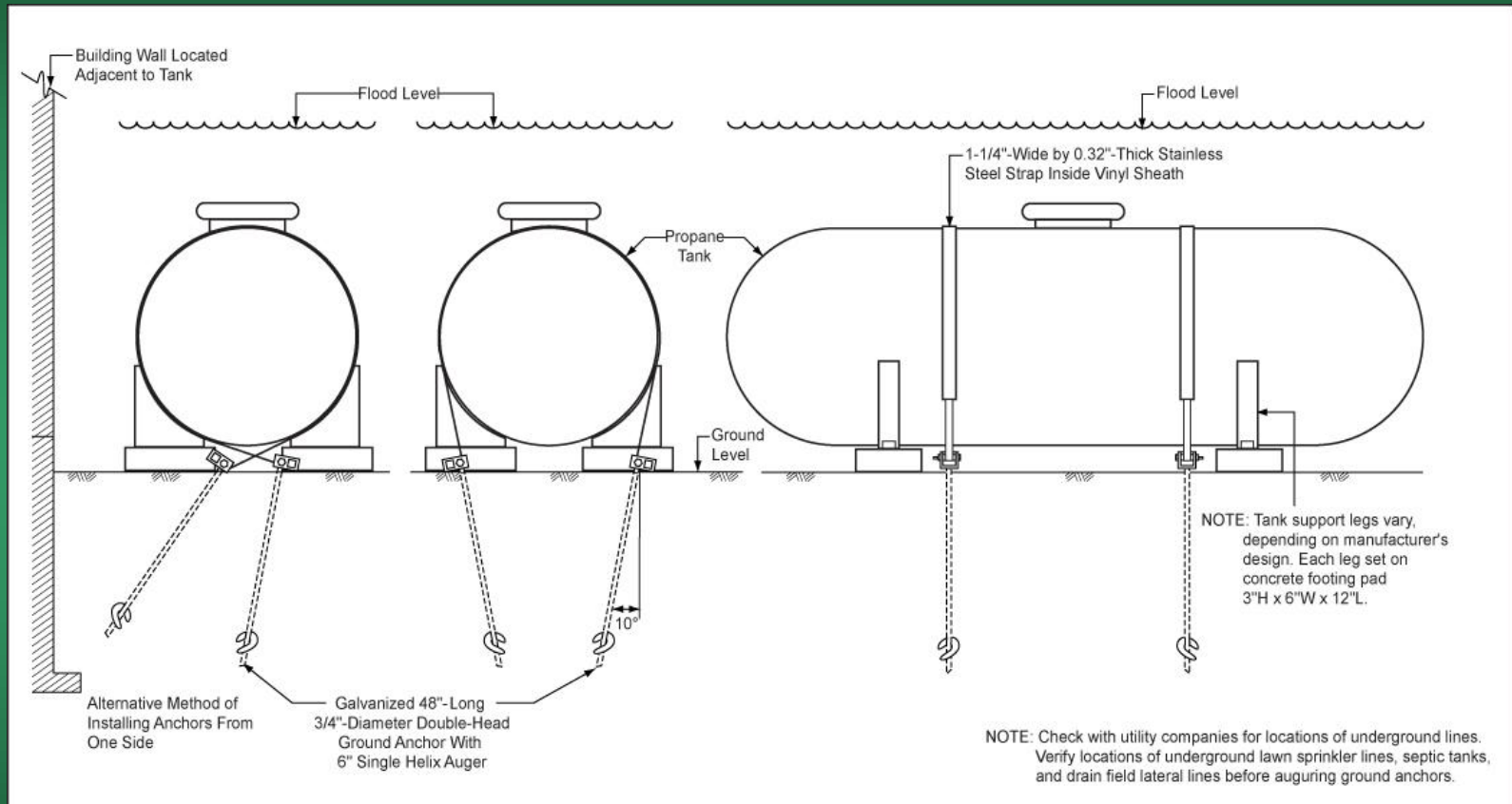


Raise Electrical & HVAC System

- Use licensed electrical contractor & follow codes
- Ask local power company about maximum height of electric meter
- Upgrade to more modern equipment (service panel, furnace)



Anchoring Fuel Tanks



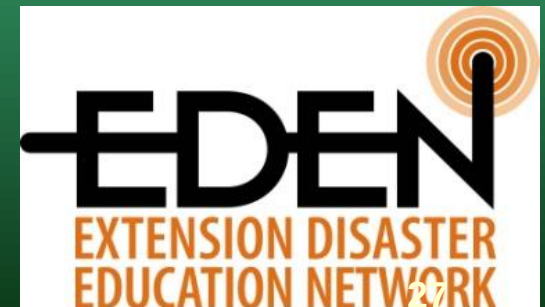
- Ground anchors and metal straps or cables, or
- Embed legs in concrete slab

Building Material Selection

- Resist water damage or are water-tolerant
- Are easy to clean
- Allow wall and floor systems to drain and dry, or are easy to remove to allow drying
- Resist mold growth
- Do not transport water or moisture to adjacent materials
- Are dimensionally stable when exposed to water
- Maintain their strength and stiffness after exposure to water

Information Resources

- University of Missouri Extension
Web: extension.missouri.edu/cemp
extension.missouri.edu/pdf/YourFloodedHome.pdf
- HUD – Rehabbing Flooded Houses
Web: www.huduser.org/Publications/pdf/Rehab_FloodedHouses.pdf
- Extension Disaster Education Network (EDEN)
Web: www.agctr.lsu.edu/eden
- Federal Emergency Management Agency (FEMA)
Web: www.fema.gov
- County Health Department
Web: www.dhss.mo.gov
- County Emergency Management



Questions??

**Contact your county University of
Missouri Extension Office**