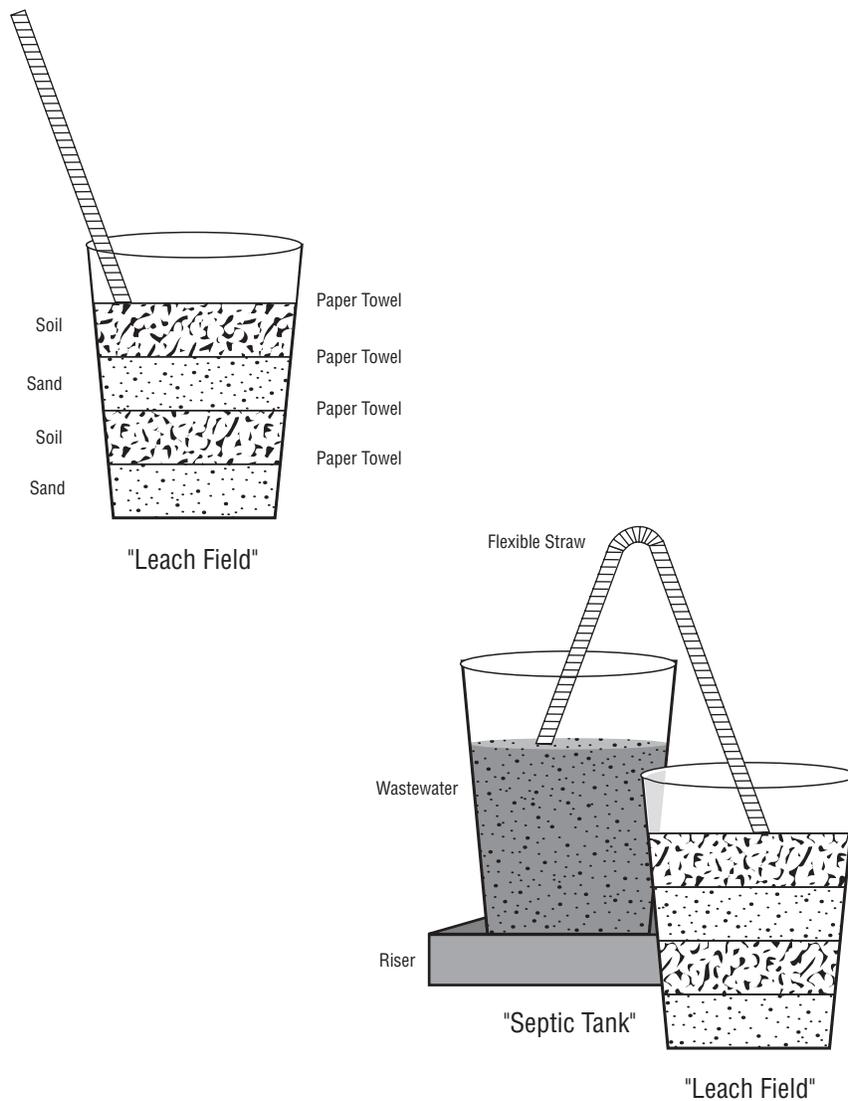


How Septic Systems Work Activity Sheet

Part A: Simulation

1. Prepare a “wastewater” sample—water, sand, small bits of paper and 2-3 drops of green food coloring.
2. Construct a model septic tank system:
 - a) Label small beaker or jar “septic tank.”
 - b) Pour a well-stirred sample of wastewater into the septic tank until it is about 3/4 full.
 - c) Allow sample to settle and observe. Record your observations.
 - d) Prepare a “leach field” as follows: To large beaker or jar add alternating layers of sand and potting soil, separated by paper towels (as shown). Wet the “leach field” with water.
 - e) Set the septic tank on a book or other riser. Place the leach field directly below the septic tank. Bend the flexible straw and fill it with water. Place fingers over both ends to keep the water in. After the wastewater has settled, connect the septic tank with the leach field as shown. Keep fingers over the ends of the straw until it is placed in the wastewater. This should create a siphon, allowing the wastewater to flow onto the leach field. (If wastewater doesn’t flow through the siphon, try again!) Observe the action of wastewater on the leach field.





Part B: Survey

Interview a friend or relative who has a septic tank system (instead of being connected to a municipal wastewater treatment plant). Find answers to the following questions:

1. Where does their water come from?

2. If their water is from a private well, how far is their septic tank from the well?

3. How far is the leach field from their well?

4. How far is their house from the septic tank?

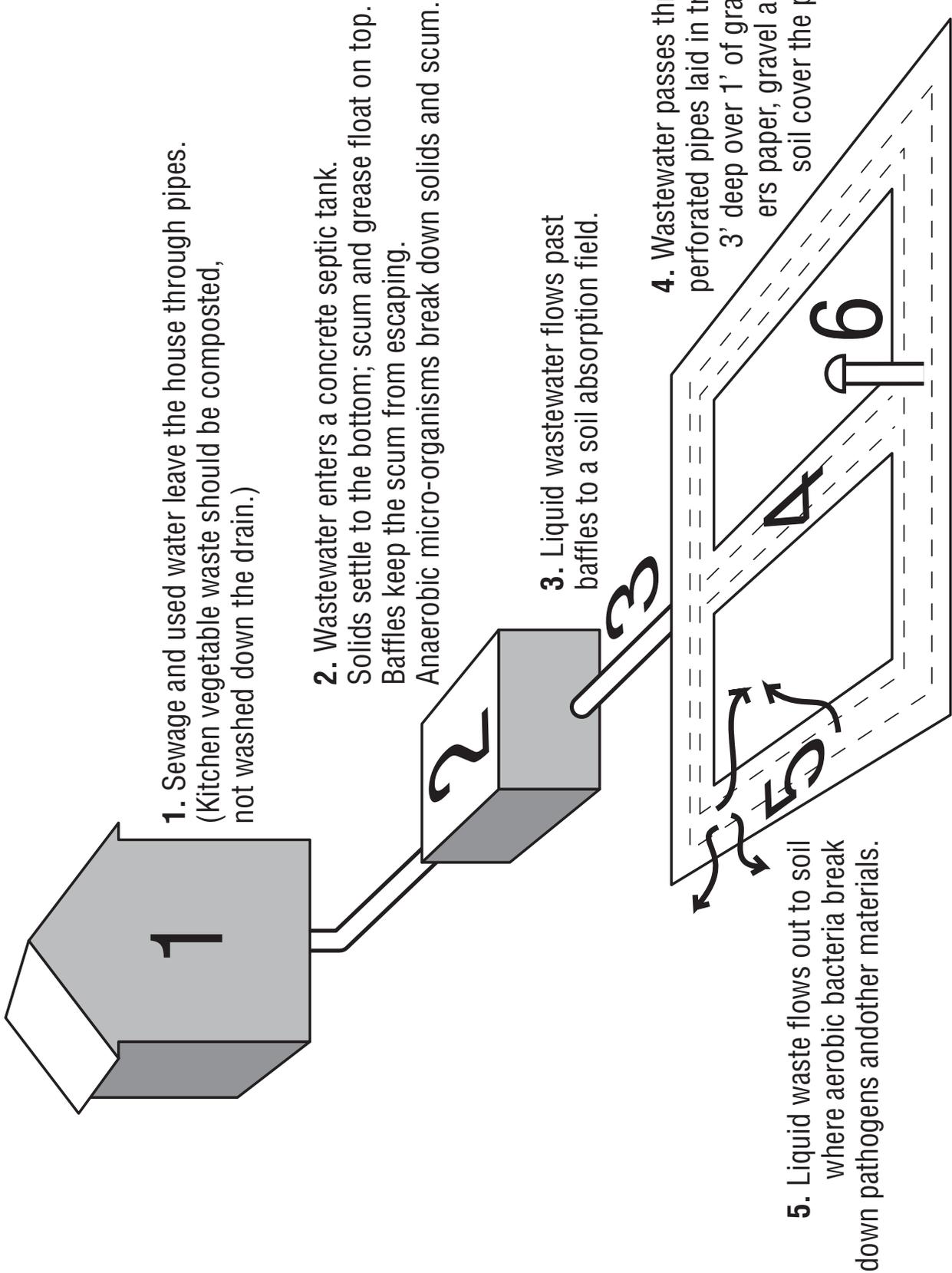
5. How far is their house from the leach field?

6. Refer to the table below. Is there anything closer to the septic tank or leach field than the recommended minimum separation distance? If so, circle the unit and record next to the table how close it is.

7. What is one other factor (besides separation distance) to consider when planning a septic system?

Unit	Septic Tank	Absorption Field
Private well	25 feet	50 feet
Public well	400 feet	400 feet
Lake or reservoir	25 feet	50 feet
Stream or ditch	25 feet	50 feet
House or other building	5 feet	10 feet

Overhead Master



1. Sewage and used water leave the house through pipes. (Kitchen vegetable waste should be composted, not washed down the drain.)

2. Wastewater enters a concrete septic tank. Solids settle to the bottom; scum and grease float on top. Baffles keep the scum from escaping. Anaerobic micro-organisms break down solids and scum.

3. Liquid wastewater flows past baffles to a soil absorption field.

4. Wastewater passes through perforated pipes laid in trenches 3' deep over 1' of gravel. Builders paper, gravel and 2' of soil cover the pipes.

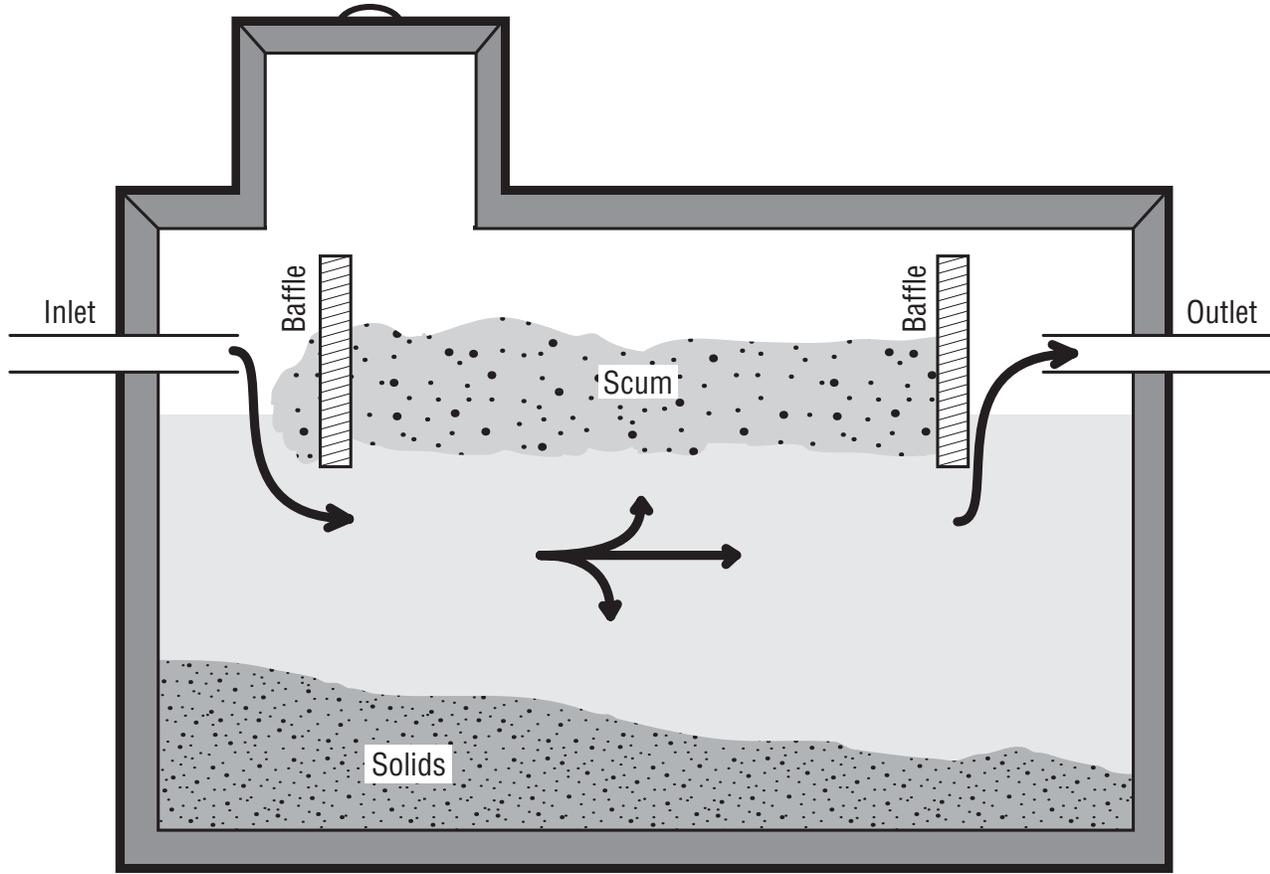
5. Liquid waste flows out to soil where aerobic bacteria break down pathogens and other materials.

6. The field vent releases methane and other gases from the septic field and allows aerobic bacteria to breathe.

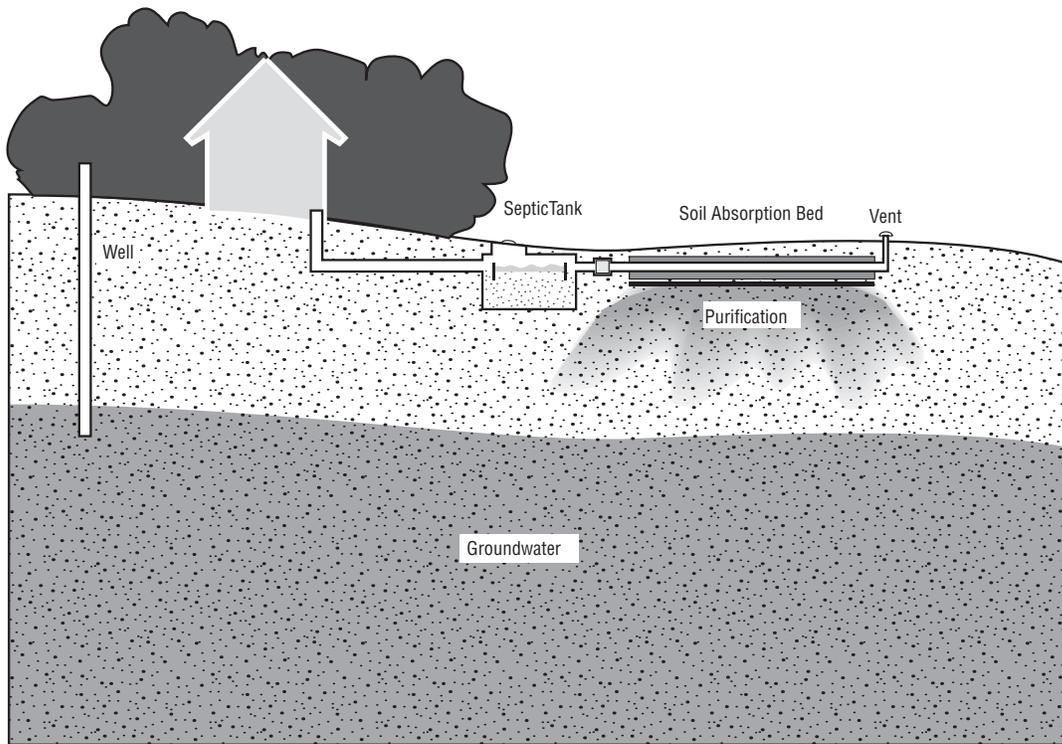
from: *Local Watershed Problem Studies*
compiled by the Water Resources Center,
UW-Madison, Madison WI



The Septic Tank at Work



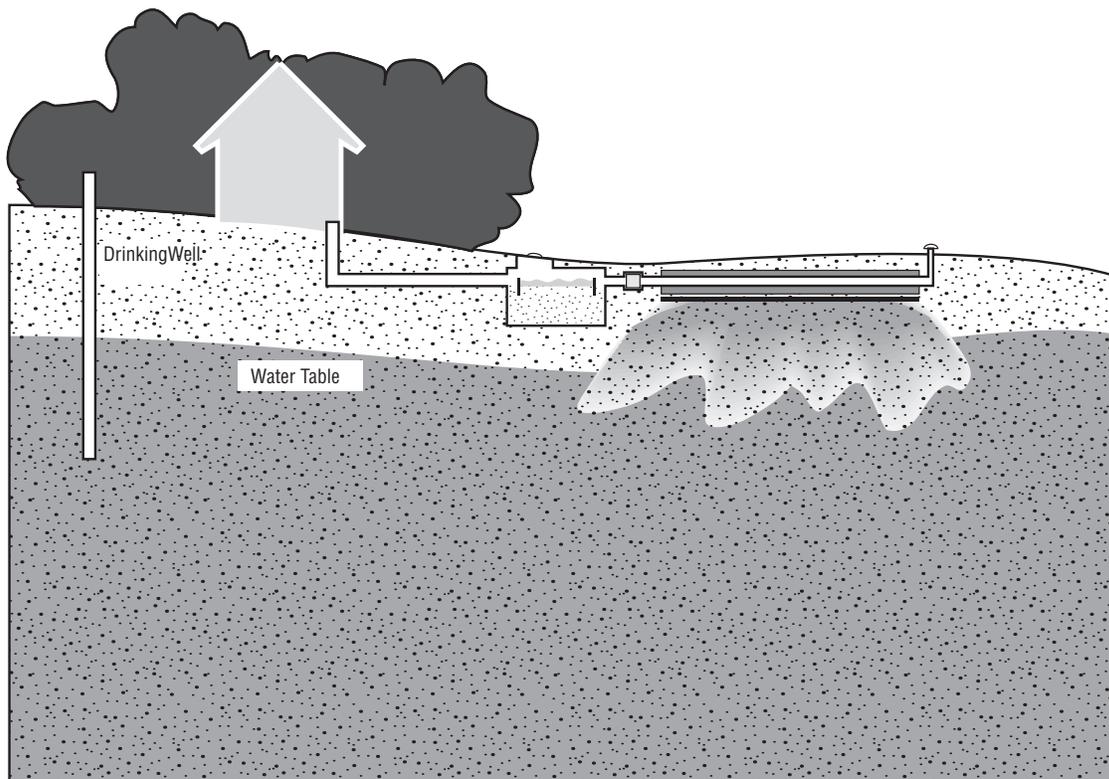
Filtering bacteria





Saturated soil

Saturated soil conditions may allow wastewater to reach the surface or to contaminate groundwater.



Septic system on a slope

Septic systems installed on slopes that are too steep allow wastewater to escape to the surface.

