

Troubleshooting a Septic System

Public sewer is frequently not available in rural areas. In Charlottesville, every one of our units is on public sewer, but in the outlying counties virtually none of them is. Knowing something about the care and maintenance of a septic system can prevent serious problems with that system and make your stay a lot more pleasant. Most of the rules for proper care of septic systems are summarized under “Being Plumb Smart” and are common sense when you understand that septic systems work through bacterial digestion of waste. Anything that kills the bacteria (bleach, many drain cleaners, some detergents and dishwashing soaps, household chemicals) is bad, anything that can’t be digested by those bacteria (lint from washing machines, plastic, literally anything other than toilet paper that is not human waste) is bad, and anything that plugs the pipes or places an inordinate amount of water into the system (excessive laundry, running stools, running sinks) is bad.

If you have an old car (or even a new one), how you operate the car can make a major difference in how long the car lasts and what trouble it gives you. Running stools or excessive water and lint from washing machines can flood a new field and can even ruin an old field just as surely as running a car low on oil or without oil can ruin the engine on the car. A backed up field due to flooding or a ruined field due to improper use represents a significant inconvenience to the Tenant and can represent a major expense to the Landlord.

Unfortunately, many of the people who purport to be knowledgeable about septic systems in fact know very little about them. When you have a septic problem, we want to know immediately. We have actively and directly maintained over 80 individual septic systems in rural areas for many years; we know how they work and how to diagnose and fix the problems. Much of the diagnosis involves a hand shovel and digging. On the several occasions where tenants have first called in the “experts” to solve a septic problem, the experts ended up coming up with totally incorrect diagnoses and we ended up having to solve the problem anyway.

You may have little desire to learn how to troubleshoot plumbing problems or septic systems, and if so need to read no further. Your perspective might change quickly if you end up owning a house that uses such a system. Briefly, the first part of diagnosis involves simply collecting information. The tenant is usually first aware of a problem when the system stops working. If the sink or tub doesn’t drain, but the stool on the same floor level flushes readily, the problem can be immediately localized to the drains that are not working. If the sinks drain well but when they are used water backs up in the tub or shower or comes out below (in the case of units with basements or lower level apartments), something is wrong with a main sewer line. In the city on public sewer, that would mean a blockage in the line at some point, possibly due to invasion by roots, by something hanging up and obstructing the line (paper towels are notorious for this) or by a physical problem with the line such as

collapse or improper installation. When a septic system is involved, the same problems could arise at any point between the house and the septic tank but septic systems have even more areas of potential concern. If the main sewer line leading to the tank is backed up, then the tank must be located and the lids uncovered.

Septic tanks contain an inlet "T" and an outlet "T", named after the plumbing fitting from which they are made and shaped like a "T" laying on its side (simply shift the letter "T" by 90 degrees to visualize); the inlet "T" is laying on its side with the stem connecting to the line from the house and the outlet "T" is laying on its side with the stem going from the tank to a much smaller box called the distribution box. The top of the "T" is vertical, with one part being immersed in sewage and the other gasping for air above the surface. The normal level of liquid in an operating septic tank is up to the bottom of the outlet T. If the tank is operating at a normal level, the liquid level in the tank will be at the horizontal level of the outlet "T", which should be slightly lower than the horizontal level of the inlet "T".

To troubleshoot the tank, you simply look. Occasionally the tank will be almost full of solids, which is an excellent example of a tank that has not been properly maintained or which has been the recipient of a lot of bleach or other antibacterial chemicals. If the tank is at a normal level, the problem is either in the inlet "T" or in the sewer line leading to the house. If the inlet "T" is not blocked, digging up the line leading to the tank is usually the next step. On the other hand, if the tank is full to the very top, the outlet "T" is either blocked or there is a problem farther down the line. Roots can block either the inlet or the outlet "T", although this is a relatively infrequent problem. Condoms can lie dormant in the tank for years, only to slowly fill with gas and rise up to plug the outlet "T" in a final gesture of defiance.

Assuming the tank is completely full and the outlet "T" is not blocked, the distribution box must be located. If the distribution box is not full, then a blockage is occurring somewhere between the tank and the distribution box and that line must be cleared; usually the line must be dug up and replaced unless the line happens to be pvc (pvc is a white plastic pipe made from polyvinylchloride); on rare occasions a pvc line can simply be cleaned out, but most likely there is a problem that is difficult to detect without digging the line and careful examination; we have found roots entering through joints that had been improperly glued and even joints that had been improperly constructed from cement. The assumption that septic work was originally done correctly or that subsequent repairs were correctly made is a dangerous assumption to make.

A wet spot in the septic field may indicate that the distribution box is not allowing the effluent to go equally into each line, with the result that the field is still good but one of the lines is getting too much water and the water from that line is rising to the surface. In this case, the distribution box can be leveled or the entry level to the lines emanating from the distribution box can be adjusted so that each line gets

its appropriate share of the total effluent. If the distribution box is totally full, the problem is more difficult to resolve and may even mean that the field has to be replaced—this is the worst-case scenario. However, we have had one case where the lines leading from the distribution box to the fields had been installed over an improperly compacted ditch; the lines ultimately sagged, creating blockages in each line and eventually preventing effluent from reaching the field.

If the fields are flooded due to incorrect use by tenants, correcting the use problem and pumping the tank to give the field a rest may be all that is required. If physical corrections are necessary, the several techniques that are available involve either replacing the field (an expensive solution, but pretty much assured of working), extending the fields to give them additional capacity, or attempting to restore the fields. One method of restoring fields, untried by us but advertised by some companies with the requisite equipment, involves “shocking” the field by introducing high pressure and fracturing the sealed soil. We are currently utilizing several different additives that are introduced between the tank and the distribution box and that are represented as being able to restore fields by dissolving the grease and lint that ultimately prevents the field from working properly.