

## Probable Causes of Failure

One or more of the following may have happened:

1. The sewage pipe between the house and the tank is blocked or broken.
2. Either the inlet or outlet tee is blocked or broken.
3. The line between the tank and drainfield is blocked or broken.
4. If the system has a pump, there may have been an electrical or mechanical failure.
5. The tank itself is blocked with solids or has collapsed (an old redwood tank perhaps).
6. The drainfield is flooded due to heavy rains or flooding.
7. The drainfield is (partially or completely) clogged with solids or roots.

## Locating the Problem

When the septic system is failing, there is a procedure for locating the cause, called the discovery process, in which you search for the problem in the following order:

### System Blockage

You start by searching for a blockage somewhere in the system because this is the easiest cause to locate, and the easiest (and cheapest) problem to solve.

1. If only one fixture does not drain, check for blockage between the fixture and the main drain pipe. Use clean-outs for checking.
2. If all fixtures on one branch of the drain pipe do not drain, check for blockage in that branch. Also, check the tank inlet for blockage.

3. Open the tank.
  - **If it is flooded:** The problem may be at the outlet or beyond. Check the outlet for blockage.
  - **If it is not flooded:** You can check the various household fixtures by running a hose down them to see if the water makes it to the tank.



4. If sewage is not arriving at the tank, then check for a pipe line blockage between the house and the tank.
5. If both the outlet and the inlet tees are good, but sewage is still backing up in the tank and house plumbing, the problem may be in the tightline (pipe between tank and drainfield) or the drainfield itself.
6. To check the tightline, you'll have to dig it up where it enters the drainfield. Try a plumber's snake to check for a blockage between the tank and drainfield. Or, the tightline may be broken or sheared off.
7. If the tightline is clear and intact, and all of the above steps have not produced the culprit, the drainfield is probably the problem.

### Clearing Pipe Blockage

If the plumbing suddenly backs up under normal use, especially in dry weather, blockage is the prime suspect. This is generally the easiest problem to correct, particularly if it's between the house and tank.

Most pipe blockages can be located using a plumber's snake. (All tool rental stores have snakes.) Or, an old garden hose may work if there are not too many bends in the pipe. Also, there is a simple (and brilliant!) rubber device called the Drain King, which fits on the end of a garden hose. The hose is then run down the

clogged drain pipe, and when the water is turned on, the bulbous rubber section expands, locks in the pipe, and emits strong pulsating bursts of water. These are available for 1- to 10-inch drains.

### Root Blockage

If you find that roots between house and tank are the problem, a Roto-Rooter can clear the line, but the roots will return if the entry points (leaks) are not found and sealed.

### Tightline Breakage

A common problem is that the tightline (pipe between tank and drainfield) has broken. This often happens when the tank, which is very heavy when filled, has settled in the ground some time after installation, and the pipe has not flexed. (In some areas, new systems now must include a flexible coupling at the septic tank wall.) As with pipe blockage, snaking the line usually helps you find this problem so the pipe can be either repaired or replaced. Sometimes it is easier and cheaper to replace the tightline, especially if roots are the problem, than to try to clear it.

### Flooding

If you live in an area with high ground water and/or heavy rains, your tank and your pump chamber might be filling with rainwater runoff. It is wise to have good risers around the inspection holes of the septic tank since concrete lids generally leak. These risers are sold in many builders' supply outlets.

## Tank failure

Concrete tanks can develop leaks if the ground shifts, if the concrete was of poor

quality, or (very common), when the joint between top and body leaks. Further:  
The tank may be porous and leak from the start.

The tank may not be properly sealed and small leaks can grow larger. Leaks can be fixed, but the tank must be properly cleaned and prepared, and techniques are difficult and dangerous in an older tank.

All tanks can leak around the inlet and outlet connections. This can usually be repaired by re-sealing the joints with caulk or mortar. Due to accumulation of gases, concrete outlet connections often disintegrate. Old ones should be replaced with plastic fittings.

Warning: Any underground tank that has had sewage in it is dangerous due to gases, especially if you are working alone. Only a trained professional with a self-contained breathing apparatus should enter a septic tank. Repairs to inlet and outlet tees can usually be completed without entering the tank, and should be done when the tank is pumped.

## Drainfield Failure

This is the most serious and costly type of failure. Pipe blockages can be removed. Loose connections can be fixed. A faulty tank can usually be repaired. But if the drainfield is clogged, it must be replaced, a disrupting and costly procedure.



## Suspicious Drainfield Behavior

You can suspect the problem is the drainfield if:

- there are odors or persistent wet spots over the field
- the plumbing becomes sluggish over a period of time, or when it's used heavily, or during wet months
- problems persist even though the tank has been pumped recently
- the septic tank is flooded

## Why Do Drainfields Fail?

**Clogging with solids:** When a tank has not been pumped periodically, it fills up and eventually the solids migrate out of the tank into the drainfield. Also, old drainfields can be clogged by soil infiltration. Either the perforated distribution pipe or the pores in the soil become clogged.

**Root blockage:** Root growth near a septic system is a mixed blessing. The good news is that plant growth over a drainfield will absorb much of the discharge; further, in arid areas, evapotranspiration will release the water back into the environment. The down side is that the same root growth that absorbs water can clog disposal lines and trenches and hinder drainfield function (although root blockage is not the same problem in a shallow drainfield).

Root deterrent products do kill roots, but we don't recommend them, any more than we'd recommend putting Drano down the drain. Most of these products contain copper sulfate, or "bluestone," which can kill off the beneficial organisms in both the tank and the drainfield, and poison things if it gets in the water table. (These products also produce toxins in the manufacturing process.) Far better to snake out the line and then remove the source of the roots.

**High groundwater:** When a drainfield is saturated with groundwater, it won't be able to perform its cleansing action. It's possible to improve things with better drainage.

## Two Degrees of Drainfield Failure

1. **Partial failure:** Here the drainfield will work during dry weather, but with heavy rains (or high household use), the system is overloaded.
2. **Complete failure:** Worst case scenario. Here no remedial steps can be taken with the present drainfield.

## Remedies for Partially Failed Drainfields

1. Cleaning the distribution pipe in the trench may work if things have not progressed too far. Have it snaked out with a Roto-Rooter.
2. If caused by roots, dig up a section and look. Remove invasive trees and plants. Roto-Rooter pipes. Consider removing invasive trees or plants. The drainfield may recover as dead roots decay.
3. Cut water usage in half, if possible.
4. Improve drainage.
5. The Distribution Box Solution: You might try this procedure for a saturated drainfield (here professional help is recommended): If there are several drainfield laterals, inspect them to see if they are *all* being overloaded. If not and if possible, put in a distribution box with flow levelers (or weir inserts). Adjust the levelers so effluent flows mostly to under-utilized lines. The idea is to allow the over-utilized lines to rest and rejuvenate — this may take a number of months, depending on local soil and climate.  
If all drainfields are saturated, use a larger distribution box, with inserts, and

install several replacement lines, leaving the existing lines hooked up as well. Here the old lines are not abandoned and they may be useful after being rested a while.

Note: Concrete distribution boxes tend to deteriorate rather rapidly, especially in acidic soils. High-density, polyethylene D-boxes solve this problem.

6. There are a variety of proprietary devices and procedures on the market that might be useful, depending upon your circumstances. These include flushing and vacuuming the drainfield, injecting air into the soil to loosen it and improve drainage (Terra-Lift), and aerobic treatment devices to reduce the organic load (Nibbler Jr.).

## Remedies for Completely Failed Drainfields

Hire professionals to design and install a new drainfield.

Do it yourself if you know what you're doing. Here you'll act as the contractor — renting a backhoe, ordering the gravel, etc. However, it's very important that the drainfield be properly designed and installed — this isn't an area for guesswork. Consult local professionals.



## Chelan-Douglas Health District

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# Septic System Failure!

Your system has failed! Water has backed up into the shower, the toilets won't flush, and/or drains won't drain. This means wastewater has backed up from the tank through the main drain into the house. It's going the wrong way! Or — untreated effluent is surfacing on the ground.