

## SAND FILTER

A sand filter system is like a pressure distribution system, but it incorporates a large sand pit for filtration between the pump chamber and the drainfield. This system consists of a septic tank, a pump chamber, a sand filter and a drainfield (AKA leech field). The pump chamber can be incorporated into the septic tank, but is more commonly found in its own second tank. The septic tank must be placed accordingly so that it is downhill from the home/building's plumbing. A bio-microbial process in the septic tank treats the waste before it reaches the pump chamber. Further settling occurs in the pump chamber, ensuring that the pump does not send solid material to the drainfield. The pump chamber contains two floats: an on/off float (lower) and a high-water alarm float (higher). When the effluent in the pump chamber reaches the on/off float, the pump turns on and doses a set amount of effluent to the sand filter. There, a valve box evenly distributes the effluent between pressurized lateral lines in the sand filter. **The system must use a pump even if gravity flow can be achieved from the pump chamber to the sand filter.** This is to ensure that the sand filter lines are pressurized and all parts receive the same amount of effluent. Each lateral line has orifices that allow the effluent to reach the sand throughout the entire filter at the same rate. The effluent then filters through the sand where another bio-microbial process treats the effluent. After filtration, the effluent is collected at the bottom of the filter and funneled into a pump chamber. This pump chamber also contains two floats: an on/off float (lower) and a high-water alarm float (higher). When the effluent in the pump chamber reaches the on/off float, the pump turns on and doses a set amount of effluent to the drainfield. The effluent is then dispersed by a distribution box into several lateral lines where it is filtered through the soil. By the time the effluent has filtered through the soil and reached the water table, it is clean.

If the water level in the first pump chamber ever reaches the high-water alarm float, the alarm will go off, indicating that there is something wrong with the system.

If the water level in the second pump chamber (in the sand filter) ever reaches the high-water alarm float, the alarm will go off AND the pump in the first pump chamber will automatically be turned off to prevent the sand filter from over-flowing.

Sand filter systems should have an operation and maintenance inspection done once every year of operation. Concurring reports may need to be turned in to the county.

Septic systems are sized according to the amount of waste they will be treating, usually estimated by the number of bedrooms in the home. For non-residential buildings, water usage usually determines the size.

The most basic sand filters are rectangles, usually 12 feet wide and between 25 and 35 feet long. The most basic drainfields include parallel, 60-foot-long lateral lines that are spaced six to eight feet on center. More intricately designed drainfields may include lateral lines of varying lengths (from 36 to 60 feet) that branch out from the distribution box in multiple directions.

Upon installation, the only parts of the system that will be visible from above ground are 24-inch riser lids above the tanks and sand filter, valve box lids at the sand filter and the

drainfield, and observation port lids at the ends of the lateral lines in both the sand filter and the drainfield. Each of these lids will be flush with the final grade and can be walked on, mowed over or disguised to lessen noticeability.

Sand filters and drainfields should be treated as fragile to increase their longevity. Large animals such as cows or horses should not be kept on sand filters or drainfields and vehicles should not be driven over them. Vegetation with intrusive roots should not be planted near them. Finally, a home owner should be mindful of what is going into the system.