

Conducting a Soil Profile for an Onsite Wastewater System

The determination of what type of onsite wastewater system is required can be found in the physical properties of the soil that is available. There are many variables in the physical characteristics of soil. The two characteristics that are most important in determining wastewater systems are soil texture and soil structure.

Soil texture is the size of particles that make up the soil. The traditional method for determining particle size is by separating the particles into three size ranges-sand, silt, and clay. Sand particles are the largest, (.05 to 2 mm), followed by silt particles, (.002 to 0.5 mm) with clay particles being the smallest particles (less than .002 mm). As the particles get smaller, they will pack together tighter, and fill in the *pore space*. Pore space is the space between soil particles where water is transported. Obviously, soil with a large percent of sand particles will transport much more water than a clay soil.

Soil structure is the shape and arrangement of soil particles into *peds*. Peds are small clusters of soil particles. It is possible to get very technical in terms of soil structure, but for the purpose of onsite wastewater, soil structure will be very simplified. Structure will be described in the four terms - weak, moderate, strong, and massive. Weak, moderate, and strong structure refer to how well soil particles form in to the peds. The stronger the particles form the peds; the more pore space is available for the transportation of water. Massive is a term used to describe a complete lack of structure, where all the particles form one large mass. This situation will to transport water very well.

Conducting the Test

The test is conducted in a trench. This trench will need to be about three feet wide, eight to twelve feet long, and five feet deep. This trench is usually dug with a backhoe, but any piece of equipment that will create this trench is adequate. Some criteria to consider when digging a soil profile hole is:

1. Slope one end, or place steps in one end of the trench so that someone can get down the trench.
2. Orient the trench north and south if possible. This will allow sunlight to shine on the trench wall from either the east or the west.
3. It is important to select the best place for the wastewater system. It may be necessary to dig more than one soil profile hole to find the best location. Meeting the contractor onsite can eliminate multiple trips to one site for both the contractor and the sanitarian.

The type of wastewater system and size of that system will be determined by the sanitarian that does the soil profile. He/she will take into consideration soil texture, soil structure, size of the residence, available space, and water usage. It is the goal of the Salina-Saline County Health Department to install wastewater systems that will only be adequate for the application, but also protect the environment, especially ground water.