



# Septic System Basics for Realtors

Sergio M. Abit Jr., PhD  
State Specialist on On-site Septic Systems

Larry Boyanton  
Certified Installer, Plumbing Contractor and Licensed Home Inspector, LB Home Services

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has an aeration tank wherein the wastewater is bubbled with atmospheric air (has about 20 percent oxygen). The introduction of oxygen significantly enhances microbial activity, which in turn, improves wastewater treatment prior to land application. Effluent may be dispersed by subsurface drip lines or may be surface-applied by a spray irrigation system. Surface-applied effluent is pre-treated with bleach. This system will need a lot more maintenance than other systems.

for pre-treatment of wastewater. Lagoons are permitted on any type of soil that has a lot size of at least two and a half acres.

### Alternative Systems

There are instances when none of the systems described earlier can be allowed, or is practical. In these instances, an alternative OWTS is needed. For additional information concerning the types of alternative systems available and the application/approval process for alternative systems, please contact your local DEQ office or call 405-702-6100.

For more detailed discussions about the various OWTS permissible in Oklahoma, refer to Extension Fact Sheet PSS-2913, *On-site Wastewater Treatment Systems Permitted in Oklahoma*.

### Treatment Lagoon

Treatment lagoons are good alternatives in areas where evaporation exceeds total precipitation. It relies on evaporation as a mode of disposal of wastewater. This system uses an open pond as the storage/evaporative area and a septic tank

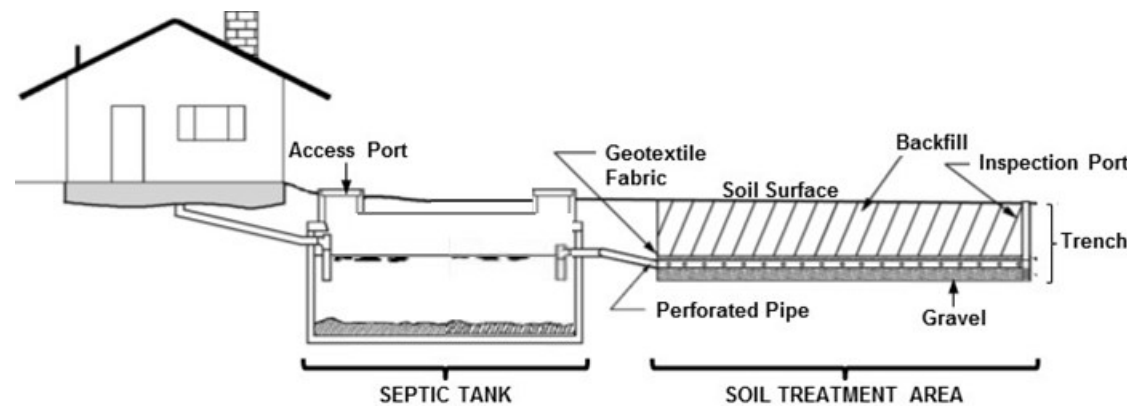


Figure 1. Schematic Illustration of a conventional septic system.

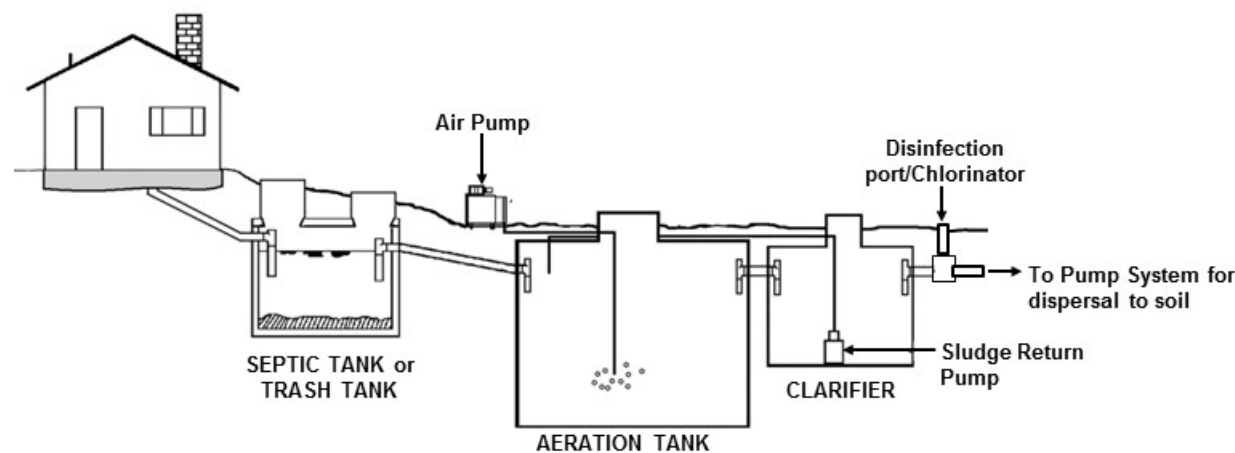


Figure 2: Schematic illustration of an aerobic treatment system. Other variations of this system involve a single large tank divided into three compartments/smaller tanks namely: 1) the trash tank, 2) the aeration tank and 3) the pump tank.

Whether in connection to the purchase or sale of a parcel of land or a house, the realtor is the buyer's and the seller's main source of information and advice. Information about neighborhood, proximity to good schools, number of rooms, kitchen features, the land area and number of bathrooms are standard talking points between client and realtor. However, household wastewater treatment features, like septic systems, often are not discussed in great detail.

A house may have the best location and curb appeal, and may have the best features in terms of living space, kitchen and bedrooms, but if its septic system has problems or is under stress, then the property would lose some of its value. If the land for sale would require a very expensive septic system (say \$10,000) to get a building permit, it is best if the realtor can advise the buyer about this detail so it can be considered in the purchase negotiation.

It is a big plus for all parties involved in the transaction if the realtor can provide information about the septic system that a client needs to consider before deciding to purchase. This Fact Sheet will focus on the following key topics that are useful to realtors when advising clients: 1) septic system basics; 2) important information for land buyers; 3) important information for home buyers; and 4) various permissible systems.

### Septic System Basics

Home sites that are not within reach of municipal sewer lines require on-site wastewater treatment systems (OWTS or septic systems). Some of the simpler systems use gravity for wastewater dispersal and heavily rely on the soil to accomplish treatment. Other systems, particularly those that require electricity and involve mechanical parts driven by complex electronics, cost more and require more upkeep. Components of a septic system include: 1) toilet and drains, 2) household plumbing, 3) the outdoor tanks for wastewater storage and pre-treatment and 4) the soil in the property that performs the final treatment. All of these components should work well to ensure proper treatment of household wastewater. Specific details about different OWTS permitted in Oklahoma are discussed later.

There is no one-size-fits-all system. All efforts must be made to make sure that the appropriate type of system be installed for the intended household size and that it is suited

for the area's soil and site properties and is professionally installed. There is no such thing as an install-and-forget system. All systems require some form of maintenance. To ensure a system stays effective for years, it has to be used as designed and maintained as suggested. A malfunctioning septic system not only has monetary consequences for clients (both home seller and buyer), but could have health and environmental repercussions as well. Improperly treated wastewater contains hazardous pollutants (chemicals and microorganisms) that can harm the home occupants and their neighbors.

### Land Buyers' Questions that Realtors Should Address

#### How do I know if I need a septic system at the home site?

If the area is not within reach of the municipal or city sewer system or if the town does not have a centralized wastewater treatment facility, a septic system is necessary. If unsure, ask the local utilities office.

#### Does the lot/area meet minimum requirements for installing a septic system?

The realtor should ascertain if the property has enough space for both the house and the OWTS. At least 10,000 square feet should be allocated for the OWTS in the general intended installation area. Dry areas on the property that are submerged in water at certain times of the year are not included. In addition, the area should be accessible to installers and the equipment needed in earth-working activities related to the installation.

If public water will be used in the house, the minimum size for a residential lot that needs an OWTS is one-half acre. If a drinking water well needs to be installed in the area, then a minimum lot size of three-fourths acre is required.

#### Other site-related factors to be considered

- **Slope:** Sloping areas could still be used for installation of OWTS. However, installation of OWTS in relatively flat areas is easier for installers and would not require major earth work (meaning, less labor cost). As rule of thumb, areas with a slope greater than 10 percent are undesirable areas for the installation of an OWTS.

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- **Proximity to protected water body:** The realtor should determine if the property is within the Water Body Protection (WBP) area as described in the rules of the Oklahoma Department of Environmental Quality (DEQ). If the chosen effluent dispersal area is in Zone 1 (660 feet) or Zone 2 (1,320 feet) from a streambed, advanced systems with a nitrate-reduction component would be required. This means that the client is going to pay more for the OWTS. To determine whether the property is within the WBP, check with your local DEQ office or go to <http://gis.deq.ok.gov/flexviewer/>.
- **Subdivision restrictions/codes:** If the property is in a housing subdivision, it is best practice to double-check if the Subdivision Covenant/Agreement has restrictions about septic systems or not (e.g. a provision stating that spray dispersal systems are not allowed).
- **Repair area:** Apart from the area allocated for OWTS installation, there should be enough area next to the intended OWTS installation site that could be designated as a "repair area." The repair area is where dispersal lines will be installed in case the first system installed would fail.

#### What possible types of septic systems can be installed in the property of interest?

The type of septic system that would be permitted in the area would largely depend on soil and site properties. To get an initial idea of the type of systems that could be installed in the area, one needs to know what type of soil could be found in the area. Information about soils in the area could be accessed at <http://websoilsurvey.nrcs.usda.gov>. For details about how to access the necessary soil information, refer to Extension leaflet L-430, *Land Buyers' Septic System Guide for Oklahoma* at <http://nonagriculturalsoils.okstate.edu/publications>.

There are six types of systems that are permitted in the State. The various types of systems permitted in the Oklahoma are discussed later.

#### How much money and time needs to be allocated for septic system installation?

Cost for installation varies widely depending upon the type of system, location and site properties. Homebuilders are advised to check with a local installer for the range of installation cost applicable for the area. Table 1 shows the estimated time required for installation of the various OWTS.

#### Who can install septic system?

The services of a State-certified septic system installer is recommended. The homeowner or the installer will need to request a soil profiler to characterize the soil at the area intended for septic system installation. Using the description of site and soil properties provided by the soil profiler, the installer will design the system and file the appropriate permits with the local DEQ office. In some cases, a percolation test (a test measuring the rate of downward water flow through the soil) may need to be done. It should also be noted that many municipalities in Oklahoma require a soil test report before issuing a building permit.

A list of State-certified installers can be found at: [www.ocia.s5.com/custom.html](http://www.ocia.s5.com/custom.html) or <http://www.deq.state.ok.us/ECLSNew/CertInstallers/certInstallers.htm>. The list of licensed soil profil-

**Table 1. Estimated time required for installation of various OWTS designed for a two-bedroom house that produced 200 gallons of wastewater per day.**

<i>On-site Wastewater Treatment System</i>	<i>Installation Time</i>
Conventional System	1-2 days
Shallow Extended Subsurface Absorption Field	1-2 days
Low Pressure Dosing System	1-2 days
Evapotranspiration/Absorption System	1-2 days
Lagoon System	2 days
Aerobic Treatment System	1 day

ers can be accessed at <http://www.deq.state.ok.us/ECLSNew/On-site/soilprofilers.htm> or inquire from the local DEQ office.

### Home Buyers' Questions that Realtors Should Address

#### Are there maintenance records of the home's OWTS?

Possession of a complete maintenance record shows that the owner is taking care of the house and to some degree can vouch that the system should stay effective for some reasonable amount of time after the purchase. Imagine if the realtor, who is expected to know the details of a house, could not answer the simple question of "When was the last time the septic tank was pumped?" or "When was the last time the aerator was serviced?" This would be equivalent to a used car dealer not being able to answer the question about a car's last oil change. The selling agent should ask the seller to provide this information in case a buyer would ask for it.

#### Do I need to update the septic system if I make house expansions?

The septic system is designed for a given home size (number of occupants and bedrooms). If additional bedrooms would be built after the home purchase to accommodate a larger family size, then the OWTS may need to be updated/modified. It is best to check with the local DEQ office.

#### Is the current OWTS covered by installation warranties and service agreements?

The State of Oklahoma has a mandatory two-year maintenance period for aerobic treatments systems (ATS). This rule mandates the installer of an ATS to maintain the system, at no additional cost to the homeowner, for two years following the date of installation. This means it is important the realtor knows when the ATS was installed. It is also helpful if the realtor is aware of any manufacturer warranties and/or whether the OWTS is currently covered by some agreement with a maintenance provider. At the very least, the realtor must know who installed and who is currently maintaining the system so the homebuyers would know who to call should some issues arise.

#### What if the septic system would have problems?

This is when information about the installer and the service provider would be useful. Somebody who is familiar with the system would be a good person to call when problems arise. Also, it is important to make sure the property has a repair area (discussed earlier). If structures have been built on the site that was originally designated as a repair area, this could be a serious issue.

#### What are the maintenance requirements of the existing system?

Maintenance requirements vary with the type of system. If the homebuyers do not have experience with septic systems in a previous home, it is best if the realtor can inform them of simple maintenance tips/requirements. This is important because there could be instances when homebuyers are not willing to deal with the extra "trouble" of maintaining a system. For details about maintenance requirements of various systems, refer to Extension Fact Sheet PSS 2914, *Keep your Septic System in Working Order*.

Here are a few simple maintenance tips a realtor could share with a homebuyer:

#### Work within the daily treatment capacity of the system

There is a maximum limit on the amount of wastewater that a system can treat in a day. An owner should be aware of this limit and should make sure it is not exceeded. In some cases, this would require adjustments concerning major water uses in the house. Examples of adjustments would be to postpone doing the laundry until visitors leave, setting a limit on the number of loads of clothes that are washed per day or to refrain from using the bathtub, clothes washer and dishwasher at around the same time.

#### Be familiar with the system

Knowing how the existing OWTS works will provide home buyers some idea of the level of care and expertise needed to maintain the system. For example, if the house has an aerobic treatment system with a spray dispersal system, it is necessary to constantly treat the wastewater with bleach prior to surface-application to the yard.

#### Be aware of what NOT to put in the drain

There are materials that if disposed in the drain or toilets, may limit the functioning and the lifespan of the system. Grease and used cooking oils should not be poured into the kitchen sink drain. Solid materials such as sanitary napkins, non-biodegradable wipes, cigarette butts, disposable diapers and plastic wrappers should not be flushed in the toilets. Household chemicals and unused pharmaceuticals, like antibiotics and hormonal treatments, should never be disposed through the toilets or sinks. As much as possible, kitchen refuse should not be disposed through the drain even if the kitchen sink has a garbage disposal.

#### Have your septic tanks checked regularly

The most common cause of septic systems problems is the failure of homeowners to pump out (empty) the septic tank. There is a limit on the amount of solids the septic tank can accommodate. Table 2 shows that estimated pumping frequency of septic tanks.

**Table 2. Estimated Septic Tank Inspection and Pumping Frequency in Years (adapted from Mancl, 1984).**

<i>Tank Size (gallons)</i>	<i>Number of People Using the System</i>				
	<i>1</i>	<i>2</i>	<i>4</i>	<i>6</i>	<i>8</i>
1,000	12	6	3	2	1
1,250	16	8	3	2	1
1,500	19	9	4	3	2

#### Maintain the spray field/drain field outside the house

Properly maintaining the drain field starts with knowing where the lines or spray heads in your drain field are. To ensure proper functioning of the soil in the drain field outside the house, homeowners should do the following: a) maintain adequate grass cover over the drain field, b) divert surface waters (runoff and water from gutters) away from drain field and c) keep heavy traffic like automobiles and heavy equipment off the drain field.

### Permissible Systems in Oklahoma

#### Conventional System

The conventional system is the most widely-used and least expensive type of on-site wastewater treatment system. It has two main components: 1) the septic tank and 2) the soil treatment area (STA). This is the preferred system in sites with deep, good soils (loamy sands, loam, clay loam, sandy clay) that meet STA size requirements. This system relies on the soil for wastewater treatment and on gravity for the distribution of wastewater throughout the STA. Well-maintained conventional systems could stay effective for more than 20 years.

#### Low Pressure Dosing (LPD) System

The low pressure dosing system is similar to the conventional system except that it has a pump tank. It is used in sites with slight limitations related to soil texture, soil thickness and area size. For example, it is used in areas with coarse soils (coarse sand or loamy coarse sand) that do not meet the land area size requirement of a conventional system.

Pressure generated in the pump tank is used to evenly apply the effluent throughout the entire soil treatment area. Because of the even effluent dispersal, the use of the STA is maximized, compensating for soil- and site-related limitations.

#### Evapotranspiration/Absorption System (ET/A)

The ET/A system is another option for areas with fine-textured soils (high clay content). This system is a particularly good option in areas where evapotranspiration exceeds precipitation. This system requires one acre as the minimum lot size. In Oklahoma, this would be more suited in areas west of Interstate 35 (e.g. the panhandle) than in the southeast.

#### Aerobic Treatment System

The aerobic treatment system is currently very popular in Oklahoma. It is used in areas with major limitations regarding soil texture, soil thickness, slope and other site limitations. It