

Alternative Individual Onsite Systems or What are those things sticking up in my back yard

FSN – 4.1

Loudoun County Health Department

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Two Aerobic Treatment Units (ATU's) awaiting installation

Alternative onsite sewage systems (AOSS) are wastewater systems that have more complex components than a traditional septic tank and drainfield system. These complex components may include aerobic treatment units, fixed media filters, low pressure distribution systems, drip distribution systems, spray irrigation systems, and elevated mounds. The purpose of this fact sheet is to provide basic information on AOSS. The first picture to the right shows household wastewater from a septic tank, from an aerobic treatment unit, and from an advanced treatment unit. The picture visually represents that more advanced treatment produces a higher quality wastewater.

Alternative onsite sewage systems are typically utilized where site and soil conditions will not allow the use of a conventional septic tank and drainfield. A conventional septic system needs certain soil characteristics in order for the wastewater to be treated adequately. General soil characteristics that make a site unsuitable for a conventional system can include: shallow water tables, shallow depth to rock, soils with low permeability, or soils with high clay content. An alternative system can allow greater flexibility on utilization of a site which often cannot be developed with septic tank and drainfield systems.

<http://www.loudoun.gov/onsite>

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Alternative Systems

Service Desk
703-777- 0234

Inspection of Systems
703-771-5802

Operation and Maintenance
703-771-5802



Effluent Quality



Aerobic Fixed Media

Despite the fact that alternative onsite sewage systems are able to be installed in soils that are not suitable for conventional systems and offer other benefits that conventional systems cannot, there are still attributes of these systems that cause concern. AOSS are not passive; they are reliant on power, electronics, and mechanical equipment. Many of these systems such as aerobic treatment units, utilize air to provide treatment of the effluent. This makes these systems more sensitive to external conditions such as: wastewater flows, wastewater strength, weather conditions, and chemicals including paint, cleaners, and pharmaceuticals. AOSS require service and maintenance by trained professionals, requiring homeowners to contract with a private sector agent to perform the necessary maintenance.

Problems can occur in the early stages of use of an AOSS, therefore, it is important to establish a maintenance and monitoring schedule early. Without proper maintenance, an AOSS can fail causing sewage to break out on the ground surface, back-up into the house, or potentially pollute groundwater. Additionally, most properties that are served by AOSSs are also served by private groundwater wells. Therefore, protection of groundwater resources by properly maintaining your AOSS is critical.

Alternative Systems require service, inspection, monitoring and maintenance. Everyone should have a service agreement with a provider to care for these systems. Additionally, Loudoun County and the state of Virginia require an annual operator visit of most AOSS.

For additional information we suggest you look at specific fact sheets for a technology or component or else go to one of the following web sites:

Virginia Onsite Wastewater Recycling Association – <http://www.vowra.org/>

National Onsite Wastewater Recycling Association -- <http://nowra.org>

National Environmental Services Center-- <http://www.nesc.wvu.edu/>

US EPA Wastewater Management Septic Systems --
<https://www.epa.gov/septic>

Consortium of Institutes for Decentralized Wastewater Treatment --
<http://www.onsiteconsortium.org/>

Virginia Department of Health --
<http://www.vdh.virginia.gov/environmental-health/onsite-sewage-water-services/>