

# Help For the Springs

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Septic tank maintenance should be better controlled in order to protect our drinking water supply. Legislation was enacted and changed but we need to try again. Read this article by Bob Knight in today's [Gainesville Sun](#).



## Robert Knight: New septic system standards needed to save springs

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Nitrate-nitrogen contamination of Florida's groundwater is widespread, affecting about 30 percent of the entire state and 70 percent of the state's artesian springs. The principal sources of nitrate in Florida's groundwater include fertilizers, septic tanks, confined animal feeding operations, and central wastewater treatment and disposal systems. In some areas nitrate levels in groundwater are so high that they not only exceed the springs-protection standard of 0.35 parts per million, they even exceed the safe drinking water standard of 10 parts per million.

Septic tanks and their associated drain or leach fields are a convenient but primitive form of domestic sewage treatment and

disposal. They remove most of the solids but are inefficient at removing dissolved pollutants, including nitrogen and phosphorus. They are also less effective at removing the bacteria and viruses associated with human sewage. There are an estimated 2.6 million septic systems in Florida. Roughly half of these are in the springs region north of Interstate 4.

Septic tanks “clarify” sewage by separating solids from liquid. The clarified liquid effluent from a septic tank enters the below-ground drainfield and then is “disposed” of by leaching through the soil. In areas with poor surface drainage (due to clayey or other impermeable soils), the septic tank effluent may follow the course of the shallow groundwater to the nearest stream, lake, or canal. In areas with high groundwater recharge potential (i.e., karst areas characterized by sandy soils overlying porous limestone), the septic tank effluent leaches into the underlying potable aquifer.

A fully functional septic system discharges wastewater with elevated nitrogen concentrations to the groundwater no matter how often the solids are pumped out. Pumping a septic tank is only helpful to avoid clogging the drainfield. A septic system fails when the drainfield is plugged with solids and the household sewage does not remain below ground, causing a public nuisance.

The occurrence of large numbers of septic systems is not problematic for springs where the Floridan Aquifer is confined by clayey soils and not vulnerable to nitrogen loads at the ground surface. In these areas the leachate from septic system drain fields flows laterally, and may pollute adjacent surface waters. For this reason, all septic systems should be inspected at a minimum of once every five years, and if found to have surface flow or otherwise be out of compliance, be renovated as needed.

Florida's entire springs region is highly vulnerable to nitrogen contamination, even from properly maintained and working septic systems. The permeable sands in karst areas allow drainfield leachate to move unimpeded downward into the aquifer. Under these conditions essentially all of the nitrogen in the wastewater converts to nitrate, a threat to humans and to springs. Routine septic tank maintenance and pumping does little to alleviate this nitrate pollution source. The best solution to the devastating effects of thousands of septic systems on groundwater quality and springs is to reduce their density.

In Florida's springs region, the density of septic systems needs to be limited so that the resulting groundwater nitrogen concentration is not above protective standards. One septic system on five acres will not by itself cause unacceptable pollution of the underlying aquifer. For smaller parcels, only performance-based septic systems capable of reducing total nitrogen load by at least 80 percent should be allowed.

Unfortunately, there are many developments in Florida's springs region that have much higher septic system densities. In the interest of groundwater quality protection, it is reasonable to prohibit all new septic systems at densities greater than one unit per acre. In existing developments with high septic system densities, city or county municipalities should be required to connect houses to a central sewer with advanced nitrogen removal.

Nitrate is chronically and acutely toxic to humans at concentrations that currently exist in portions of the Floridan Aquifer. Continued nitrate contamination of the aquifer due to uncontrolled fertilizer use, high septic tank densities, and wastewater disposal practices, will further contaminate Florida's drinking water supply. Nitrate concentrations in the Floridan Aquifer are already unsafe for the health of the 1,000-

plus artesian springs that are dependent upon clean groundwater.

Time is of the essence for groundwater and springs protection in Florida. The Florida Legislature should seriously consider adoption of reasonable septic system requirements in the 2016 session.

– Robert Knight is director of the Gainesville-based Howard T. Odum Florida Springs Institute and author of “Silenced Springs – Moving from Tragedy to Hope.”