PURDUE EXTENSION
LAND USE teamWORK

# Septic Systems & the Urban Fringe

More Americans are choosing to leave the city and reside in the rural/suburban area on the fringe of the city. The urban fringe typically contains houses of similar size on relatively large lots ranging from 1 to 20 acres. The lot size isn't determined only by the developer. For example, the developer of a 160-acre tract may be told the maximum number of houses that can be placed on that 160 acres is 80, so the land is divided into 80 two-acre lots.

## Reasons for Larger Lots

Because of high costs involved in putting these developments on municipal sewer systems, these communities typically use wells to obtain their drinkable water and septic systems to dispose of their wastewater. Many Indiana counties require enough room on the lot for two absorption fields (soil areas to absorb discharged wastewater), even though there will only be one septic system installed when the house is built. The second absorption field area is reserved in case the first fails.

Because of the inherent soil variability and soil limitations common in Indiana (high water tables and dense water restricting layers), many times a lot 2 acres in size may not have a suitable area large enough for a septic system. Planning commissions may compensate for poor soils by requiring larger lots, resulting in the use of a large land area for a very small population.

## Alternatives

"Recent advances in wastewater disposal technology have provided numerous alternatives to larger lots," according to Brad Lee, Purdue Extension Agronomist. "Many include secondary treatment units that will clean the water to a greater extent than the septic tank alone," notes Lee. Examples of this type of technology include recirculating sand filters, aerobic treatment units, peat filters, and wetlands.

After wastewater flows through a secondary treatment unit, it can be disposed of in the soil just below the lawn through a series of drip lines, which consist of small tubes with tiny holes spaced intermittently along the tube. The tubes are buried near the soil surface, where biological activity is greatest and the potential for water removal by plants is highest. Generally, systems with drip lines do not need a second area set aside in case of system failure, so lots large enough for two conventional septic systems are not necessary.

Another alternative system that does not require expanded lots is a cluster system. Lee explains, "In contrast to individual household septic systems, a cluster system has multiple households utilizing one large septic system." This may include a neighborhood with individual septic tanks at each household and a pump to take the effluent to a large secondary treatment facility.

After treatment, the effluent can be dispersed into a large absorption field. Cluster systems are a good choice for those communities interested in open space development with small lots and large parks; however, these systems must be maintained by a third party. Lee notes that many county health departments have information about alternative technology options.

So does Purdue Extension. Agricultural Engineer Don Jones has developed the Purdue On-Site Residential Waste Disposal (PROWD) Web site, which includes septic system information and research results.

To learn more, visit PROWD <http://danpatch.ecn.purdue.edu/~epados/onsiteOnline/>.