

Suffolk tests new type of advanced septic system to reduce nitrogen

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A new type of advanced septic system designed to reduce nitrogen in wastewater was installed Thursday for a house in Southaven County Park in Shirley. The system, which uses a septic tank plus layers of sand and wood chips, was developed by Stony Brook University's Center for Clean Water Technology in consultation with experts in Massachusetts and Florida.

"It's as good as or better than a sewage-treatment plant," said Chris Gobler, co-director of the center and a professor in Stony Brook's School of Marine and Atmospheric Sciences. Nearly 75 percent of the county uses septic systems or cesspools and experts say that causes high nitrogen levels that feed algal blooms, harm clam stock and degrade wetlands. Reducing nitrogen pollution has been a focus of Suffolk County, the state and the university.

The clean water center, founded in 2015, is charged with researching ways to reduce nitrogen in wastewater, as well as focusing on treating unregulated chemicals in drinking water. The technology — called a nitrogen-reducing biofilter — is part of a pilot program run by Suffolk County to test and provisionally approve use of advanced septic systems. The county has set a threshold of 19 milligrams per liter of nitrogen.

The center's goal for their system is to reduce nitrogen to 10 milligrams per liter, to cost less than \$10,000 and last for 30 years. "It's a great goal," Deputy County Executive Peter Scully said. "It's a clear goal. We're very anxious to see how they work in the real world." Two other systems were installed previously at county parks.

Experts from the center took sand and wood chips from Long Island to a facility in Massachusetts for testing. With about 18 months of data, the systems were shown to remove nitrogen to less than 10 milligrams per liter. They also remove emerging contaminants such as prescription drugs and care products by at least 90 percent, Gobler said. Unlike other systems provisionally approved by the county, the center's technology will not be proprietary, so anyone can build one without having to work with a manufacturer, Gobler said.

The system at Southaven connects a septic tank with a large leaching field that feeds on ammonia, converts it to nitrate and nitrogen and then into nitrogen gas, which dissipates in the environment, said Harold "Hal" Walker, also a co-director at the Center for Clean Water Technology. Construction and

installation at this site cost \$30,000 to \$40,000. Walker said the center was working on reducing costs. Systems provisionally approved by Suffolk County cost an average of \$19,200.

The property, near the banks of the Carmans River, has a high water table so the system is large, about 880 square feet, because it needs to be shallow. Other systems can be deeper and have a smaller footprint. “The road to clean water is a long one but change has begun,” said Adrienne Esposito, executive director of the Farmingdale-based Citizens Campaign for the Environment. “As the technology advances, the price is going to come down and the nitrogen will be removed. It’s a long journey, but we have started.”