Suffolk's plan to clean its waterways could cost about $20,000 per household — and that's just one hurdle

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Suffolk County has launched an ambitious plan to clean the region's waters by getting homeowners to abandon cesspools and septic systems in favor of advanced and more costly treatment technology, but the effort is hitting technical and political hurdles, a review by Newsday/News 12 has found.

County-ordered tests show that only one of the four advanced systems approved by Suffolk in 2016 and 2017 has routinely met the threshold county officials set for reducing nitrogen, a key contributor to the polluting of Long Island's waterways.

A fifth system, approved this year, also met the standard, although in a single round of the ongoing testing, county officials said.

Additionally, county officials have encountered resistance from legislators who say they fear a voter backlash over the increased per-household cost of improving wastewater treatment.

"Alternative on-site wastewater treatment" systems — in essence, mini sewage-treatment plants that would be placed in thousands of yards across Suffolk County — are more effective than traditional cesspools and septics but, at an average of just under $20,000, are also at least twice as costly and require more maintenance.

"Clearly we want to see the whole universe of these performing better," Walter Dawydiak, Suffolk's director of the Division of Environmental Quality, said during a February conference call with environmentalists, builders, officials and others involved in the effort.

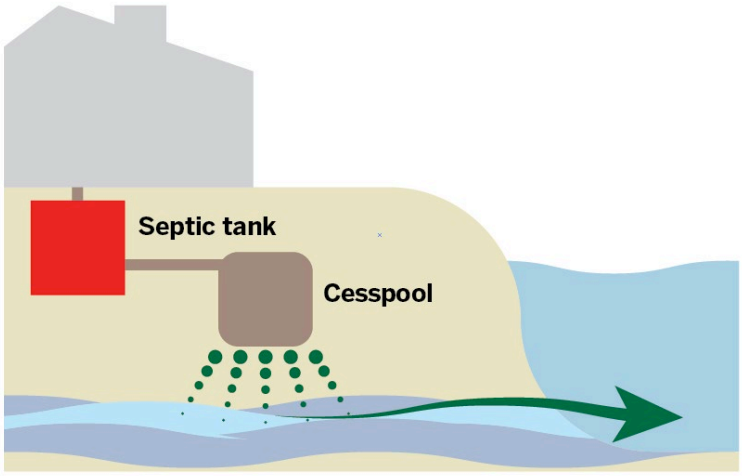
But he emphasized that the results were still encouraging "Even the worst of these systems is showing 50 percent removal [of nitrogen]," he said later.

Most homes and businesses in the counties surrounding New York City, including Nassau, are connected to sewer systems. Nearly 75 percent of Suffolk homes, though, do not have sewer service. Suffolk officials estimated that some 252,000 cesspools — holding tanks that eventually leech untreated waste directly into the ground — are in place in the county. An additional 108,000 properties are served by traditional septic systems, which offer better overall treatment but do little to reduce nitrogen.

That decades-long legacy of nitrogen-rich waste moving from homes largely unfiltered to the ecosystem has in part led to harmful algal blooms, loss of shellfish stocks, degraded wetlands and lower oxygen levels in Long Island's surface waters, including its bays, rivers and Long Island Sound.

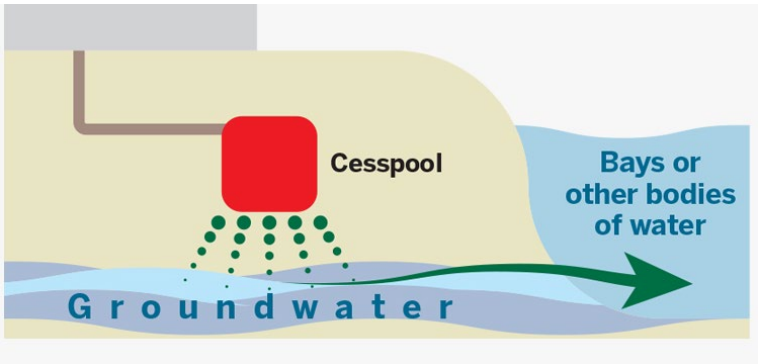
Individual systems

Nearly 75 percent of Suffolk County relies on cesspools and septic systems to treat its waste. Officials say the nitrogen from those systems is degrading water quality. Here's a look at what is in use now and the advanced technology the county is pushing. Dollar figures are the initial costs of each system.



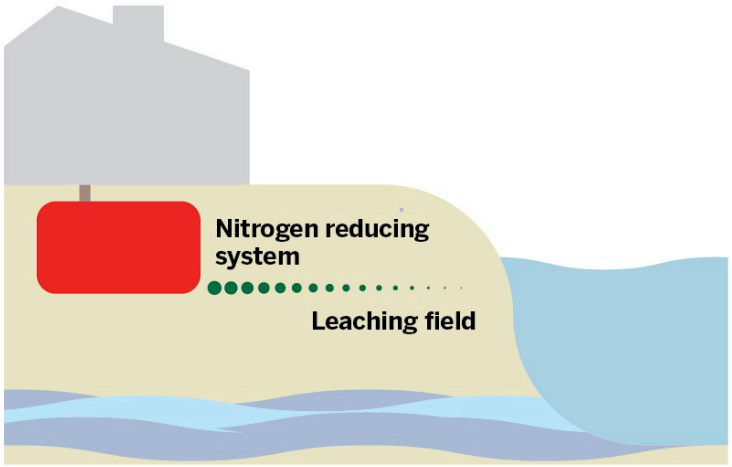
Cesspool: $2,000-$4,000

A simple holding tank with perforations that eventually leaches waste without treatment into the ground.



Septic tank: $5,500-$7,000

A separate unit designated to filter waste by enhancing natural settlement processes before the clarified fluid is released, commonly to a cesspool.



Advanced treatment system: $13,500-$23,800

Uses active technology and biological processes to further treat waste and reduce nitrogen.

Graphics by Rod Eyer. Sources: U.S. EPA, Suffolk County, and the Long Island Liquid Waste Association

Suffolk County Executive Steve Bellone labeled nitrogen as "public water enemy No. 1" in 2015 and released a wide-ranging water-resources management plan to reverse declining water quality, which included the advanced systems. That same year, the county started a pilot demonstration program to test some of these systems, selecting homeowners via lottery to get equipment installed at no cost.

In 2016 Bellone and the legislature amended the county sanitary code, outlining how the advanced systems would be tested, and setting rules for the average amount of nitrogen the new technology could release before being approved for widespread use.

A hydro-action septic system is installed at a home in Nesconset in August 2015. The homeowners were winners in the initial lottery to have the equipment installed for free. Photo credit: James Carbone

Suffolk officials settled on 19 milligrams of nitrogen per liter, limits also used in Massachusetts and Rhode Island, where officials have been battling for more than 20 years to reduce nitrogen levels in wastewater. That level of nitrogen is less than a third of what is usually found in raw sewage, but also nearly twice the state's standard for what can be released by a large municipal sewage-treatment plant — the type to which sewer pipes are connected.

Supporters hailed the change, saying it had been a long time coming and necessary. They noted that for more than 50 years it's been known that disposing of waste into groundwater is not wise for the environmental and economic well-being of an island where tourism and recreation are big business.

"This is as big or bigger than any other major policy issue that the Island has confronted," said Kevin McDonald, conservation project director for public lands at The Nature Conservancy on Long Island. "Any of these systems on their worst day can't be worse than what we have now," he added. "Even if they only perform at 50 percent that's better than what we're doing now."

Bellone declined to be interviewed, instead referring questions about the Newsday/News 12 review to Deputy County Executive Peter Scully. The county's so-called water czar, Scully said manufacturers will be given a chance to make adjustments to make their systems more effective, but over the long-term, if they can't meet the standard they won't be approved for general use in Suffolk County.

"It's very early in the process and the dataset is small but the county is forcing the manufacturers to meet a standard that is very difficult to meet," he said. "But the standard is in place for a reason."

Where is the money for these systems coming from? Grants and loan programs are available to help with the added expense, but that money is limited.

Expense is a major concern when it comes to the advanced wastewater treatment systems that are a big part of Suffolk County's program to reduce nitrogen heading from homes to waterways and drinking aquifers. The units cost two to

four times more than a conventional wastewater system to install and hundreds of dollars extra each year to operate and maintain.

County and state governments have set up grants to offset about half the initial costs, and made loans available to cover the other half. East End towns, funded by town-approved taxes on real estate transactions, have their own grant programs. That money is limited, though, and additional funding sources will have to be found; the money set aside so far will cover only a couple thousand of the systems in a county where an estimated 252,000 properties still rely on low-tech cesspools.

The added costs

Suffolk County officials say average installation costs of the innovative and advanced systems run $19,200. Builders, installers and engineers said the price tag can be as high as $25,000 to $30,000 for some houses where soil composition and other site conditions might make the work difficult.

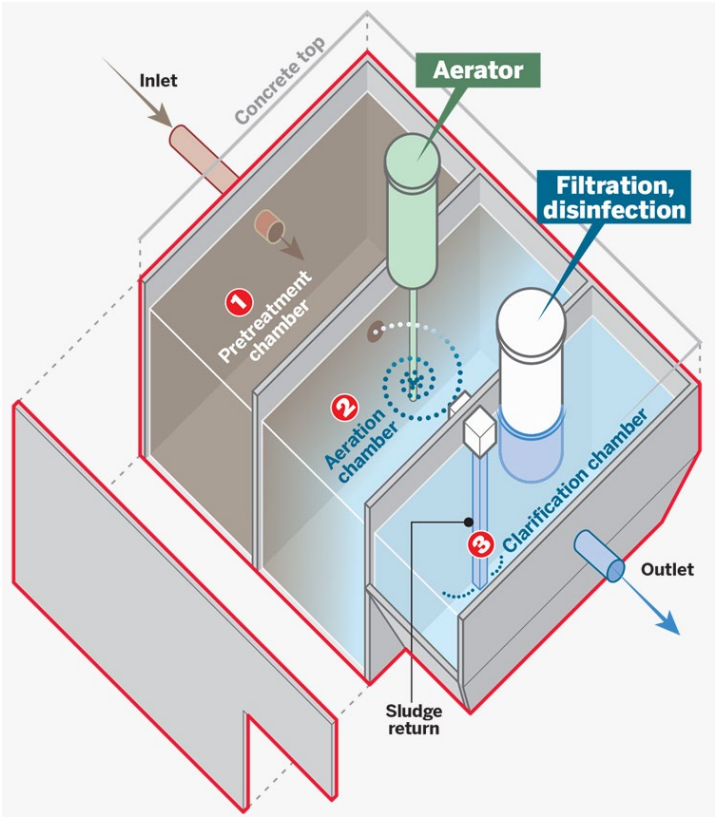
That's compared to about $5,000 to $10,000 to install a traditional septic tank and cesspool, installers said, and as little as $2,000 for a cesspool alone. In addition to upfront costs and maintenance, the advanced systems also have electrical components that add to utility bills.

In general, the first three years of maintenance costs are included by manufacturers in the installation price. But after that, residents will be required to have an annual contract that will cost between $250 to $300 a year, according to the county. "If you want to optimize your performance you have to take care of it," said Justin Jobin, Environmental Projects Coordinator In The Suffolk County Health Department.

Operators in other states where the systems are already in place say costs can run significant higher.

Annual maintenance contracts range between $500 and $2,000 at Cape Cod, Massachusetts-based Bennett Environmental Associates Inc., according to Samantha Farrenkopf, wastewater program manager for the company, which maintains systems for homeowners and files necessary compliance documents. Joe Martins, owner of Accu Sepcheck in Cape Cod, said contracts are between $500 and $1,800 a year.

The pumps, blowers, air compressors and other equipment use electricity — from $57 to $266 per year, depending on the model, the system manufacturers have told Suffolk officials. Those parts can also break, and replacements can cost from $11 for a Fiberglas air blower to thousands of dollars for some components, according to out-of-state operators.



Here's a simplified look inside an advanced system

This diagram is based on a design by Norweco and shows the basic elements common to many models. 1) Waste flows into a chamber where anaerobic bacteria and gravity condition it for treatment. 2) Nitrogen-laden organic matter is broken down in an aeration chamber. 3) Waste enters a third chamber where liquids and solids are separated, sludge collected and wastewater is clarified. The treated

Homeowners can kill off the microorganisms that play a key role in nitrogen reduction in the systems by using excessive

bleach or flushing chemotherapy drugs, for example. Jobin said systems typically rebound on their own and pumpouts aren't normally needed.

Under the rules established by county officials, once the systems receive final approval, they will have to be tested every three years for water quality, which will cost about $200, according to local installers. Suffolk officials said that they believed the price for testing, which they said was closer to $100, is included in the price of the operations and maintenance agreement.

Not all systems have the same demands, maintenance needs or costs. A Fuji Clean USA system, which was approved by the county in January, has barely any moving parts and uses technology developed in Japan in the 1960s.

Where is the money coming from?

For installation, purchase and other upfront costs, the county will provide $10,000 to $11,000 for about 1,000 homeowners who receive grants — up to $10 million over five years. New York State has also allocated $10 million to help the county expand its grant program and pay for up to half the costs of a system. East Hampton, Southampton and Shelter Island are also offering grants of up to $16,000 for residents who qualify based on need, funded from town-approved taxes on real estate transactions.

Mitchell Pally, CEO of the Long Island Builders Institute, a home-builders industry group, said given the increased costs of the advanced systems, homeowners — especially those of modest means — will need help. "You need the subsidy to make it palatable to people, especially if you're going to require them to do it," he said.

How to fund that subsidy in a sustained way is likely to be the subject of policy debates among officials leery of adding to the burden of property owners. County Executive Steve Bellone in 2016 proposed asking voters to institute a fee on water usage, which would have cost an average family between $73 and $126 a year, to help fund water-improvement projects including advanced systems and sewers. The idea was quashed when state lawmakers in both parties worried the money could be diverted and said they weren't consulted until shortly before the executive's administration announced its plan.

County officials, environmental advocates and business groups are discussing the creation of a Suffolk-wide district to administer and fund water-quality programs, including advanced systems and sewers. How it would collect money is to be determined, Scully said. Proponents of the systems say they expect the costs per unit to go down as more of the units get approved for sale in the county, more installers get certified and engineers get accustomed to putting them in the ground.

"Why wouldn't this market behave like any other market, that went from emerging to infant to very mature?" said Kevin McDonald, policy and finance adviser to the Long Island branch of The Nature Conservancy, an environmental conservation group.

The East End is already embracing the new septic technology. Local officials say the move shows the county and residents that clean water is a priority.

Officials on Long Island's East End are moving aggressively to require the installation of advanced nitrogen-reducing septic systems, even as Suffolk County assesses the effectiveness of the technology in cleaning the region's surface waters. The Town of East Hampton began in January of this year mandating that advanced systems be installed in all new residential and commercial construction sites or where an existing structure is undergoing an expansion of at least 50 percent.

Southampton is requiring them to be installed in new residential construction or expansions of existing homes in designated areas near bays and streams. Farther to the west, Brookhaven Town has a similar rule, although one limited

solely to new construction. The Shelter Island Town board in May will discuss a proposal to require the advanced systems in construction of all new homes larger than 1,500 square feet. Advanced on-site wastewater treatment systems are key to Suffolk County's ambitious plan to reduce the nitrogen pollution that leads to harmful algal blooms, loss of shellfish stocks, degraded wetlands and lower oxygen levels in Long Island's bays, rivers and Long Island Sound.

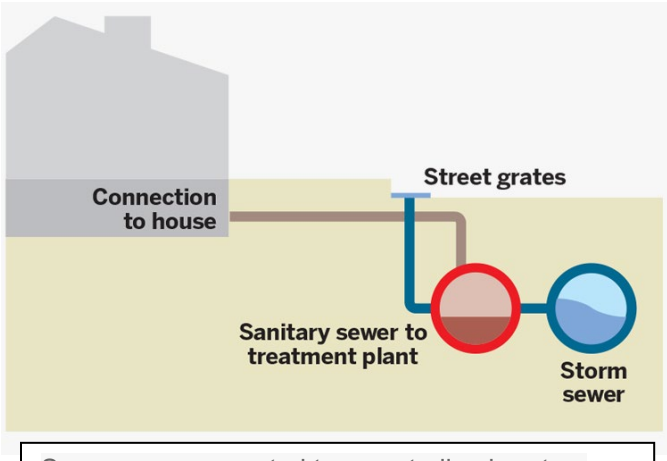
READ MORE ON EAST END HERE https://www.newsday.com/long-island/suffolk-septics-1.18260203

But rather than requiring their installation, the county has so far relied on government grants and other financial incentives to persuade homeowners to abandon the cesspools and septic systems that predominate in the region. The advanced systems have an average price of nearly $20,000, at least twice the cost of traditional waste-disposal systems, which do little to limit nitrogen.

How did a place like Suffolk County end up with such a subpar septic system? Cost overruns, a scandal and a murder, for starters.

Suffolk County officials had plans half a century ago for sewers throughout much of the county, from Smithtown and Huntington to Southold and East Hampton. The reality today is that nearly 75 percent of homes in Suffolk County — some 360,000 residences — are not connected to sewers and rely instead on septic tanks and/or cesspools, through which wastewater flows into the ground and Long Island's bays, rivers and the sound.

What happened? How does Suffolk — an upscale suburban area just outside one of the world's major cities — find itself struggling with a problem the rest of the region handled decades ago?



Sewers are connected to a centralized system that sends the waste to a treatment plant.

Credit: Rod Eyer.

The answer lies in the history of the Southwest Sewer District project of the 1970s, one of Long Island's biggest scandals. It was supposed to be a first step in establishing the county's sewer infrastructure, but the program was so plagued by cost overruns, mismanagement and corruption that until 10 years ago, all proposed sewer projects had become politically toxic, observers said.

And by the time elected leaders started discussing the topic again, the federal government, which along with the state paid for 87.5 percent of the costs of the Southwest Sewer District, stopped regularly funding sewer projects.

"The Southwest Sewer District scandals hit and shortly thereafter, the federal funding went away. You had the one-two punch right there," said Dennis Kelleher, senior vice president with Melville-based engineering firm H2M Water. An ambitious 1967 plan had sewers crossing from the South Shore of western Suffolk to Huntington, Smithtown and Commack. Voters rejected it 6 to 1. Two years later, officials put forward a scaled-down version and ran an aggressive campaign warning that residents would otherwise essentially be drinking from their toilets. "Long Island is the outstanding example in the world where a major population discharges sewage in groundwaters. Even people in underdeveloped countries tell me they can't understand it," said Dwight Metzler, New York State's deputy health commissioner for environmental services, in a Sept. 26, 1969, Newsday article.

Voters narrowly approved it, creating the Southwest Sewer District, covering Babylon and parts of Islip. The project was originally estimated to cost $291 million, but within four years the price was $588 million. Ultimately, the Southwest Sewer District would cost more than $1 billion and take 14 years before the first flush went through the system.

The Southwest Sewer District #3 officially broke ground on March 27, 1972, for the start of a sewer system in Lindenhurst.