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## In Maryland, a Push for Better Septic Systems~

Coastal environments, almost by definition, are sensitive ecosystems. One of the biggest threats to the coastline's health is sewage. Even widely separated houses can cause harmful pollution to estuaries and bays if their septic systems don't perform well.

In Maryland, the state's environmental agency has been tackling the problem one house and one septic system at a time. The Maryland Department of the Environment is offering free septic system upgrades worth \$12,000 to homeowners in sensitive coastal areas — paid for by a \$30-per-year assessment on all houses served by onsite systems. It's all part of a law passed in 2004 that created a Bay Restoration Fund, intended to reverse worsening pollution in the Chesapeake Bay (the fund also pays for improvements on municipal sewage treatment systems that aren't performing up to par). DelMarvaNow.com has the story of one happy Deal Island, Maryland homeowner ("[Free septic upgrades offered](#)," by Greg Latshaw).

In the Deal Island example, the solution was a drop-in septic tank replacement with a small-scale, powered treatment system developed by Bio-Microbics, Incorporated. The system uses an above-ground air pump to aerate and agitate the contents of the septic tank, allowing micro-organisms that live on a synthetic medium within the tank to efficiently break down the waste in the tank. The resulting septic effluent is low in nitrogen, and won't create clogs in the septic drain field, the company explains. In fact, they say, a retrofit installation can break down existing mats of growth that may be clogging the drain field from the old system's operation. For a video of the system in operation, look [here](#).

Small-scale sewage treatment technology has been advancing for years. Some systems are based on aerobic treatment like the Bio-Microbics unit; others, such as the recirculating sand filter systems from Orenco Systems, Inc., pump liquid instead of air. And the new methods are not restricted to single-home solutions, says alternative wastewater treatment expert Anish Jantrania. Depending on the need, they can be scaled up to serve a dozen homes or a whole development.

Jantrania studied the technology in the 1990s at the University of Rhode Island, where he helped state environmental officials implement innovative methods to address pollution of the state's shellfish beds, caused by failed septic systems on shore. (Jantrania's authored a feature article for the January, 1997, issue of the Journal of Light Construction, called [Alternative Septic Systems](#). (Requires online membership to JLC Archive.) Jantrania went on to work for the State of Virginia developing policies for wastewater treatment solutions for individual home sites. He now works for NCS Wastewater, a company that does design-build management for larger-scale systems, targeting the niche that falls between the single-home septic system and the full-scale municipal treatment plant.

Traditional development patterns, says Jantrania, tend to fall at one or the other extreme: either an urban model, where homes are served by a single very large treatment plant, or a dispersed rural model, where each house uses part of its lot as the dispersal field for an individual septic tank. But technology offers a superior third way, Jantrania argues. With modern methods, he says, you can develop a site so

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that homes are clustered more closely within a space too small to allow for individual drain fields — but use parts of the freed-up open space for a shared drain field able to handle the entire cluster's wastewater. The result, argues Jantrania, is a settlement pattern with lower environmental impacts, a more livable community, and more open space. For an example, he points to a neighborhood west of Richmond, Virginia, called "Fox Glen," where an NCS Wastewater-designed system enabled 25 homes to be constructed on a site that would otherwise have allowed only 12 — but with a smaller total footprint than those 12 homes might have applied.

Similar strategies can work in sensitive areas nearer the coast, says Jantrania. "In coastal areas, there are nutrient issues — nitrogen, phosphorus — and so we try to find nutrient reduction technology, and find the right size tool that meets the demand," he explains. "There are open areas in many places all along the East Coast where the public infrastructure is just not there. And if the sewer is more than about a mile away, it just does not make sense cost-wise — it will be very expensive to put 15 or 20 homes and then expect the sewer to come there. So that's where we come and offer the solutions, and it becomes cost-effective to protect the public health and protect the environment."

For an in-depth look at alternative on-site systems and technologies, check out Anish Jantrania's 2006 book, *Advanced Onsite Wastewater Systems Technologies* (\$97.95; CRC Press). Preview it on [Google Books](#) or purchase it on [Amazon.com](#).



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