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# Sewage Pollution: a Culprit in Indian River Lagoon



This is an excerpt taken from the article “Sewage Pollution: a Culprit in Indian River Lagoon” published in *Informed Infrastructure* January/February 2014. The entire article can be downloaded from this page. The Indian River Lagoon is a narrow channel of brackish water that extends nearly 160 miles down the spine of Florida’s Atlantic coast. Although not as well known to outsiders as the Everglades or Florida Keys, the Indian River Lagoon (IRL) is an “estuary of national significance” and vitally important to many species of wildlife, including endangered manatees and sea turtles.

## The Challenge

The estuary also contributes significantly to Florida’s economy. For those reasons, the environmental health of the IRL is, in many ways, essential to the health of Florida’s east coast. Given the importance of the IRL, it was alarming in 2013 when it was discovered that more than 162 manatees, 300 pelicans and 76 bottlenose dolphins—all in the northern IRL system of lagoons and inlets—had died of unknown causes. High casualty rates for these species have continued during the last year, with another 49 manatees dead as of August 29, 2014. These animals are iconic symbols of the state, much like the alligator and panther, and tourists come to the IRL to see them. Their demise, however, was more than a blow to tourism. It also indicated a much more serious problem with the waterway itself. Something was wrong with the complex ecosystem of the IRL, something serious enough to kill wildlife and perhaps threaten the safety of the humans who live, work and play in the area.

The problems unfolding in the Indian River Lagoon system are not unique, which should bring hope to the residents who rely on and enjoy the IRL ecosystem. In the 1990s, civic leaders, public works officials and scientists faced a similar situation in the Phillippi Creek area of Sarasota County on Florida’s gulf coast. Near Phillippi Creek, 14,000 houses were served by septic tanks. In 1997, after three years of study, it was found that fecal coliform pollution from septic tanks in the area reached a level

that made the creek unsafe for humans and unhealthy for aquatic life. Clearly, something had to be done to stop the flow of sewage into the groundwater and, ultimately, Phillippi Creek. Leaders recognized the need for a sewer conveyance and treatment system but faced the enormous challenge of funding and installation. Public-works officials in Sarasota County studied the situation and evaluated various sewage-treatment options. Like much of Florida, the terrain is flat and the water table high. That meant the trenches for gravity sewer lines would be, by necessity, deep and difficult to dig. A gravity sewer system also would require numerous expensive lift stations to transport sewage to the nearest treatment plant.



Dr. Brian Lapointe, Research Professor for the Harbor Branch Oceanographic Institute at Florida Atlantic University, has spent decades studying the impact of humans on aquatic ecosystems.





Sarasota County public-works officials addressed the problem of septic tanks in the Phillippi Creek area several years ago and have since seen seagrasses recover and water quality improve.

## The Solution

Instead of traditional gravity sewers, the engineers recommended a vacuum sewer system from Airvac, a world-leader in the technology. Vacuum sewers were determined to be an excellent solution for wastewater collection in about 80 percent of the service area. Vacuum sewer lines require relatively shallow trenches, the lines don't leak, and only a few vacuum stations are needed to convey sewage to the treatment plant. The first system went into operation in 2003, and the county has since installed eight more vacuum systems, with only a few areas remaining to be connected. Thanks to the foresight of the Sarasota Bay National Estuary Program and community stakeholders, data now show that Sarasota

Bay is much cleaner and safer than the IRL. "Seagrasses in the creeks and bay are recovering nicely, and aquatic life has made a significant comeback," said Lapointe (Dr. Brian Lapointe, a research professor for Florida Atlantic University's Harbor Branch Oceanographic Institute in Fort Pierce, FL). "I am convinced that this is a direct result of management actions that reduced nitrogen loading to the bay, including the elimination of septic tanks at Phillippi Creek. A similar success story is unfolding in Key Largo and Marathon Key, where a new vacuum sewer system is helping to reduce nitrogen and bacteria levels that were threatening the coral reefs."

## Additional Information

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