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INDUSTRY NEWS

What's Happening in the Region

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— Jeff Littlejohn, President, National Stormwater Trust

Smart Water: Stormwater Ponds That Manage Themselves

On June 9, a pond near Port Tampa Bay began emptying itself. The water level in the pond dropped about 10 in., emptying almost 70,000 cu ft of water into Tampa Bay. It wasn't quite enough to catch the 2.8 in. of rain that fell in one hour on June 10, but Jeff Littlejohn, president with National Stormwater Trust (NST) considers it a success for the group's new Smart Pond technology.

“This is an indication of an optimum scenario,” he says. “The pond's at the right level, a rain event is coming, the pond says it's time to open, it opens, it discharges and then the next day when that big rain event happens it almost exactly captures all of it.”

The pond is fitted with Smart Pond technology, developed by NST and installed via an agreement with the Florida Dept. of Transportation (FDOT). An internet-connected computer responds to National Weather Service forecasts, calculating how much water the pond is expected to catch and emptying that amount



ahead of an expected rain event without any human interaction. When no rain is in the forecast, the ponds will hold an optimal level of water for water quality treatment purposes.

Littlejohn explains that the more residence time—that is, how long the water spends in the pond—the more nutrients like nitrogen and phosphorus are removed through uptake in vegetative material or by bacteria in the water and soil. The longer, the better, he says.

The FDOT-NST agreement provides access to thousands of ponds in Florida, Littlejohn says, with plans to actively develop 12-20 more ponds in 2022. The pond near Port Tampa Bay is NST's sixth, and the first FDOT pond to be fully automated.

Littlejohn is excited about the possibilities associated with equipping multiple ponds in a local area with this technology.

THINKING PONDS New Smart Pond technology from the National Stormwater Trust is giving organizations like Port Tampa Bay a different way to manage stormwater and valuable real estate.

“We could have entire neighborhoods saved from flooding if you have enough ponds retrofitted that could be actively drained down to prevent a flood.”

Comparing modeling for the original pond designs and models for the retrofitted Smart Ponds shows 44% more water quality treatment and 84% more flood attenuation volume, Littlejohn says.

At Port Tampa Bay, Patrick Blair, vice president of engineering, sees in the technology a middle ground between conventional ponds that take up lots of land and expensive vaults that store lots of water. He also sees an option that could have other benefits for the port, like opening up valuable acreage.

The port has more than 20 stormwater ponds over its 5,000 acres, he says, in a state that sees 100 rain days a year, including roughly 48 in. between the months of May and September.

At \$200,000-\$300,000 per retrofit, the Smart Ponds are cheaper than the \$650,000-per-acre-ft vaults, but more expensive than conventional stormwater ponds.

“Our hope is [to achieve] widespread water quality benefits and widespread regional resiliency benefits—flood control benefits,” Littlejohn says.

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For more information, visit www.nationalstormwater.com or contact Jeff Littlejohn at JML@nationalstormwater.com.