

# ENR Southeast

Water Quality

## Tampa Taps Novel Tech for \$200M Project to Remove Organics and Other Pollutants From Water Supply

When completed, SIX treatment system for the city would be world's largest of its kind

*By Pam McFarland*



The contactor where water interacts with regenerated suspended resin material is seen at pilot SIX treatment facility in Tampa.

*Photo courtesy of Carollo Engineers.*

*January 29, 2024*

Tampa, Fla, is working with a team from Carollo Engineers to implement a novel European technology to reduce organics and other drinking water contaminants in the city supply through a \$200-million treatment plant project. The effort builds on a successful pilot of the pretreatment process and will be its largest worldwide application when complete.

The approach will add 10 trains of suspended ion-exchange resins, known as SIX, to the city's existing David L. Tippin water treatment plant, a 77 million-gallon-per-day facility.

The technology, developed and owned by Dutch firm PWNT, has been used at smaller drinking water facilities in the UK and the Netherlands.

A joint-venture team of Garney Construction and Wharton-Smith will begin construction some time in 2028.

“SIX’s strength is that it removes organics really well,” says Vinnie Hart, Carollo managing director of technical practices and SIX project manager. “These organics interfere with PFAS removal technologies such as single-use ion exchange and granular activated carbon. Pre-treatment can make these technologies much more effective.”

## **Capital Improvements Planning**

As part of master-planning efforts to expand and upgrade its water treatment plant to manage 140 mgd, the Tampa water department tapped Carollo to explore options for improving water quality using a non-proprietary ion-exchange system. “There are different processes that need to be improved from their current status, even to meet their current permit. So as we were looking at all of that, we wanted to evaluate ion exchange in general,” says Sarah Burns, city capital projects program director and water engineering project coordinator.

Higher levels of organics in raw water can reduce efficiency of treatment plant operations, she says. Local water supplies typically contain high levels of dissolved organics such as algae and carbon. Total dissolved organic carbon levels can reach 37 milligrams per liter (mg/L) at some times of the year. Also, some byproducts created as materials interact with disinfectants used for treatment are known to be carcinogenic.

Carollo evaluated the SIX technology at a pilot 30 gal-per-minute plant over a ten-month period in 2021 and found that using it with coagulation improved overall plant treatment outcomes. The process resulted in a six-fold increase in the amount of water that could be run through filters, says Hart. “The six-fold increase is a combination of much higher filter loading rate and longer filter runs,” he says, allowing the city to process more water with fewer filters, saving on costs.

The pilot showed that adding SIX lowered organics levels from 2.6 mg/L at the full-scale plant to 1.5 mg/L.

Burns says using the SIX system will prevent Tampa from having to expand the plant footprint beyond current property lines, saving an estimated \$250 million. “Without SIX, we’d potentially have to double our filter capacity. With SIX, we don’t have to do that,” she says.

Hart suggests that because plant filters won’t be clogged with organics, they will be able to reduce PFAS levels, although it is not clear to what degree.

“SIX data show some PFAS removal but it is not as high as other technologies and is not yet well understood,” he says.

KEYWORDS: [Carollo Engineers](#) [City of Tampa](#) [SIX water treatment](#) [suspended ion resin exchange](#)

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