

PRODUCTS IN ACTION

Nestled in central Florida between Lake Eustis and Lake Dora, the city of Tavares is the Lake County seat and home to about 11,600 people.

By Robert Eckard

effective monitoring

Revamping a Florida wastewater system's approach

ARTICLE SUMMARY

Challenge: False alarms and residential sewage backups overwhelmed four city staff members responsible for maintaining and monitoring a treatment plant and 69 lift stations.

Solution: Rather than hire additional staff, the city purchased a SCADA system and integrated its lift stations to streamline operations.

Conclusion: The new system has saved staff time and money and allowed for the implementation of a more prevention-oriented maintenance program.

Related search terms from www.waterinfolink.com: lift station, pumps, SCADA, RSE Consulting.

When Brad Hayes moved from Massachusetts to Tavares and took over as director of utilities, he was surprised by the city's rolling hills, beautiful trees, numerous lakes and all 69 of its wastewater lift stations—about one per 168 residents, or one per 68 acres of land area. How could such a small municipality need that many lift stations? Turns out that the scenic, rolling hills make it difficult for the gravity feed to reach the wastewater treatment plant in most parts of the city. Couple that with the city's relatively low population density (approximately 1,600 people per square mile) and many lakes, and the result is 69 wastewater lift stations.

During his first few weeks on the job, Hayes knew something needed to change. The entire wastewater system, including the treatment plant and the lift stations, was monitored and kept in working order by a staff of four, but the stations were not monitored effectively. The staff was constantly responding to lift station failures, lift station false alarms or complaints from residents about sewage backup.

Hayes recalled that during his first two months on the job, a lift station failure sent untreated wastewater gurgling into one very unlucky residence. "The main problem was getting a reliable way to oversee this amount of lift stations with four staff and 69 stations," he said.

With the city's old equipment, a downed pump and the resulting sewage backup would trigger an alarm at the affected lift station. The same often occurred due to a minor equipment error, often the result of frequent lightning storms in the area that can knock out power for a few moments or some noncritical electronic or mechanical problem.

There was no way to discern the alarm's cause without sending someone to the malfunctioning lift station

to investigate. Additionally, when the service technician arrived, there was no way to tell which part of the system was malfunctioning. The technician would have to embark on a time-intensive visual and mechanical inspection of the system and perform detailed diagnostics. The result was overburdened staff, complaints from residents and a managerial mess.

A Call for Change

After a short time with the city, Hayes made a call for change. He had two potential choices: continue business as usual and hire additional maintenance staff to keep on top of the existing system, or add a new system of computerized monitors, controllers and SCADA interface that would streamline the workload of his existing staff. The system upgrade was the obvious choice.

Hayes and staff waged an uphill battle with the department's existing procured equipment policy before spending money to implement any system upgrades. Some thought that there was no reason to change vendors since the existing equipment appeared to be functional enough to continue operations. But after writing a short white paper, it was evident that a change was warranted. As a result, the group looked into several different SCADA systems before deciding on MultiTrode.

Cost was a reasonable factor for the city to consider. Portions of the city are deemed blighted, and the 2000 median household income was about \$31,000—about 33% below the U.S. average. Purchasing, installing and operating the MultiTrode products, however, ended up being substantially more cost-effective compared to continuing business as usual and forcing the hire of new staff. After a year and a half spent on background research and positioning, Hayes and his team got the go-ahead to purchase and install the new systems.

"Getting money in an economic downturn is hard," Hayes said, "so we are relying on MultiTrode. We have 15 stations covered so far, and our goal is to put in 15 per year until we have all of the lift stations integrated."

Environmental Regulation

The MultiTrode system has also helped Hayes and his staff keep pace with environmental regulations. Like many other states, Florida implements

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U.S. Environmental Protection Agency regulations for wastewater treatment facilities and adds its own state statutes and regulations relevant to wastewater collection systems, system design, permitting capacity, spillage overflows and oversight of stations.

Hayes has found that the MultiSmart helps proactively maintain compliance with many of these regulations. "My goal is to help us implement a preventative maintenance program as opposed to a reactive maintenance program," he said. "The MultiSmart does this. It helps us to preserve resources and the environment, eliminates backups into residence homes and helps comply with environmental regulations."

Making the Transition

Ease of training has also been significant for the wastewater treatment operations staff. Generally speaking, the city's workers have been able to get proficient at using the MultiSmart units without much training. While staff members admit that they are still learning about some advanced features, they have quickly learned to use the system to operate and collect pump system data and report pumping equipment errors.

"Our own men can be trained to install and maintain

the system," Hayes said. "We don't need an outside vendor to come in and do it for us. What I really loved was that our men could take out a module, insert a new module and get it up and running in a short amount of time."

Jerry Blair has been in the business of wastewater treatment since the late 1970s. Three years ago, he moved into public service and took on his current position, field service supervisor in charge of day-to-day wastewater operations for the city of Tavares. Having worked with three other pump system controller and monitoring systems, Blair said that he likes the MultiSmart's intuitive operator interface.

"It's user-friendly. The unit gives you voltage, amperes, resistance and flow data accurate to within 2%. It makes it easy to track efficiency of the pumps ... [and it is] big enough to run three pumps. We have a few triplex stations."

In comparison to its previous system, the MultiSmart's ease of use has substantially reduced the city's reliance on expensive consultants for system installation and maintenance.

"The nice thing is this system allows us to totally control the pumps from any office or from any station," Blair said. "Now we don't have to go to the station to

address an alarm, and we don't have so many nuisance alarms. Now we can see if it is a real problem or not without having to visit the lift station."

Saving Effort, Electricity and Money

Since implementation, MultiTrode's system has helped the city substantially reduce the amount of time staff spends chasing down and diagnosing problems. The functionality of the system also helps Hayes and his staff effectively monitor the lift stations for signs of worn equipment.

A significant advantage, according to Hayes, is that the system allows staff to collect data for kilowatts per hour, enabling them to keep an eye on pumps and pumping times to see if kilowatts are starting to rise, which indicates a problem with the pumps. "We can look at electricity and pumping time, identify and fix pumps that need maintenance and can reduce electricity and conserve energy," he said.

"This city is recognizing an approximate cost savings of \$4,000 per installation and no need for an integrator to be under contract," Hayes added. "This has been a win-win situation for us." **WWD**


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