CIty of Pompano Beach, Florida

Real-Time Technology Helps Fully Operate & Monitor Lift Stations

Case Study

Overview

Florida's City of Pompano Beach is known for its clear blue waterways and fine golden sand. The city covers 25 square miles along the Atlantic Ocean coast, midway between Miami to the south and Palm Beach to the north, and it has a year-round population of 101,500 residents. Pompano Beach's population swells to more than 150,000 during summer months.

The Pompano Beach Wastewater Pumping Division (COPBWWP) serves the city's residents by maintaining 59 miles of gravity and force main sewer pipes, 82 lift stations, and more than 4,300 manholes. The wastewater is treated by Broward County.

The Challenge

The City of Pompano Beach had issues with Inflow and infiltration (I&I) and sanitary sewer overflows (SSO), especially during heavy rains and when the population swelled during summer months. Another problem was blockages caused by fats, rags, oils and grease (FROGS).

Prior to 1993, COPBWWP relied on the awareness of residents to report lift station alarms. A flashing light or a bullhorn sound indicated something was wrong at a lift station. To report an alarm, residents had to call an answering service that would notify staff. That was before cell phones were widely used. Once a report was logged, a crew was dispatched to the alarm site to investigate the issue. The response time and solution were diminished by that slow notification process.

COPBWWP crews continuously worked in reactive mode as situations occurred. Crews often arrived too late to avoid an SSO or prevent a system glitch, such as when rags got entangled in a pump. SSOs triggered community complaints and hefty state fines for spills into the environment.

The Solution

COPBWWP adopted real-time, remote monitoring technology in 1993 to automate its operation and monitor the large lift station network. The city has since expanded its use of technology and incorporated software customized for its needs.

Highlights

- **Automation of pump stations with remote operation and control**
- **Significantly reduced SSOs and fines**
- **Saved time and costs associated with spill cleanups**
- **Improved community relations and minimized environmental impacts**
- **Evolved to a proactive versus reactive maintenance schedule**
- **Increasing longevity of the infrastructures**

Figure 1: A map of Pompano Beach in Broward County, FL

The first type of technology Pompano Beach acquired was SmartCover's Pump Control Units (PCU) that were integrated into lift station control panels. Still, PBWWP wanted more remote visibility and control of its stations and the ability to identify and troubleshoot issues without having to first go to sites. PBWWP advanced to using SmartCover Telemetry Control Units (TCU).

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The TCUs are used as COPBWWP's Supervisory Control and Data Acquisition (SCADA) system to fully monitor and operate the lift stations remotely. COPBWWP began upgrading from the TCU001 to the TCU800 in 2024.

The TCU800 is equipped with hardware and software to control pump operations based on level input from floats and/or analog level-indicating transducers. The units have integrated radio and touchscreen Graphical User Interface (GUI) for intuitive access to operation menus, set-point adjustments, fault resets, and status indications.

In addition to lift station operation and control, the TCUs reduce force main pressures and equalize flow into the wastewater treatment plant. The TCUs produce daily reports and data for analysis, and the integrated radio transmits alarms to a secure Central Terminal Unit (CTU) and to mobile devices. From a computer or cell phone PBWWP staff can immediately know the issue, troubleshoot and decide whether a site visit is necessary at that time. Staff get instant feedback on pump, power, and alarm status. If a pump goes down, it can be turn back on remotely.

The Results

Pompano Beach gained actionable insights into its lift station network, giving staff time to assess and respond to emerging issues that could trigger SSOs. The technology with radio communication and custom screens on a secure dashboard shows each station's points being monitored for possible fault alarms. The system allows

Figure 2: Pompano Beach's initial pump control unit (PCU)

Figure 3: The TCU800, Pompano Beach's upgraded pump controller

COPBWWP staff to efficiently manage real-time lift station performance, reduce SSOs, reduce costs associated with clean up, fines and work hours, and optimizes other resources.

Conclusion

Using the SmartCover monitoring solutions, the City of Pompano Beach has fully automated and optimized its pump station operations. They have saved time and costs associated with spills and gained actionable insights for the future. The utility also has improved community relations as well as minimized environmental infractions due to SSOs..

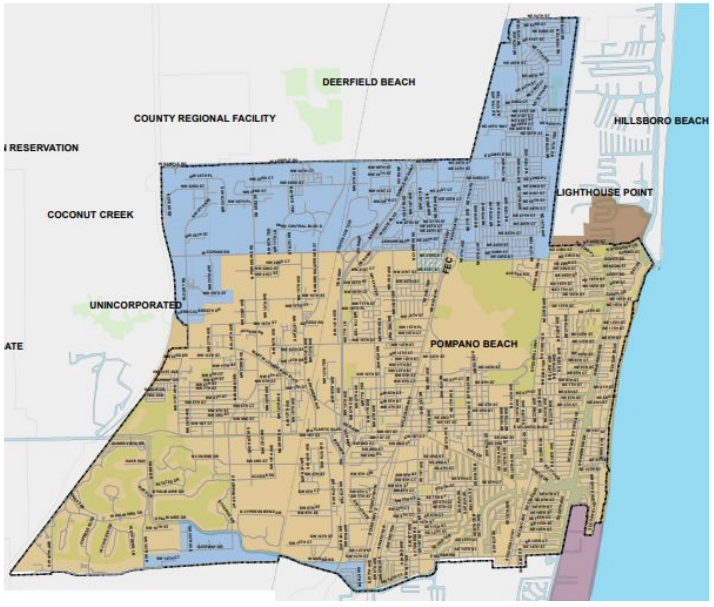

Figure 4: The Pompano Beach service area

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