



## Panama City, FL

# Optimizes Operations and Reduces Spills, Monitoring Collection System with SmartCover Technology

Two hurricanes in less than two years caused catastrophic damage in the Florida Panhandle, along the Gulf of Mexico. Panama City was hit hard both times, severely damaging its 333-mile sanitary and stormwater collection system that serves more than 36,000 customers. The city’s collection system is also comprised of 4,920 active manholes and 143 lift stations that convey four million gallons of wastewater daily to two different wastewater treatment plants, which discharge into two outfalls.

Hurricane Michael in 2018 and Hurricane Sally in 2020 ripped up much of Panama City’s sewer infrastructure, causing Inflow and infiltration (I&I) to increase significantly. As I&I increased, so did the sills, backups, flooding, and citizens’ complaints.

### The Challenge

Panama City needed to reduce sanitary sewer overflows (SSOs), achieve regulatory compliance and reduce fines, plan for capital improvements, and protect public health, workers, and the environment.

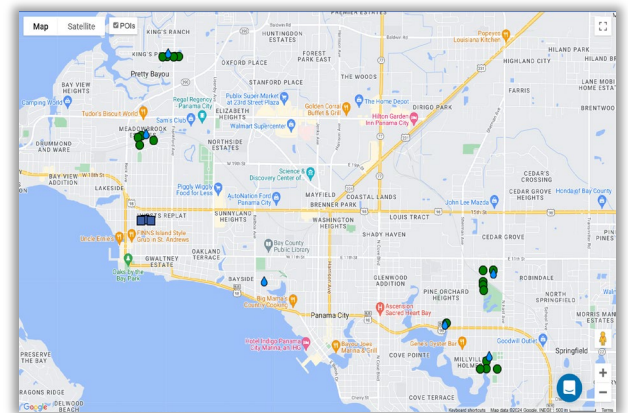
“Hurricane Michael hit; that was so severe, and then came Sally, and we couldn’t keep up with all the overflows, flooding and complaints,” Robert Bush, Utilities Operations Manager, said, recalling the frustrations. A big concern was the health of tributaries to the Gulf of Mexico.

Before the hurricanes, it took nearly eight inches of rain to fall before I&I was noticeable at the treatment plants. Following Hurricane Sally, each treatment plant received more than one million gallons of wastewater per inch of rain.

Due to the excessive spills of raw sewage that flowed to local waterways, the Florida Department of Environmental Protection, a subsidiary of the Environmental Protection Agency (EPA), placed Panama City under a consent decree order. The city racked up \$600,000 annually in fines before city officials decided a better course of action was needed to address the infractions.

### Highlights:

- **Reduced frequent sanitary sewer overflows.**
- **Avoided two major spills in early 2024, saving the city hundreds of thousands of dollars in damages.**
- **Reduced annual environmental infraction fines from \$600,000 to less than \$40,000.**
- **Optimized cleaning schedule.**



SmartCover Systems  
in the Panama City service area

## The Solution

Panama City received an in-kind grant that focused on improving the environmental impacts caused by natural disasters. In 2021, Panama City embarked on a pilot program with SmartCover Systems for its subsonic sensor and satellite remote monitoring technology that keeps surveillance of the underground infrastructure without confined space entry.

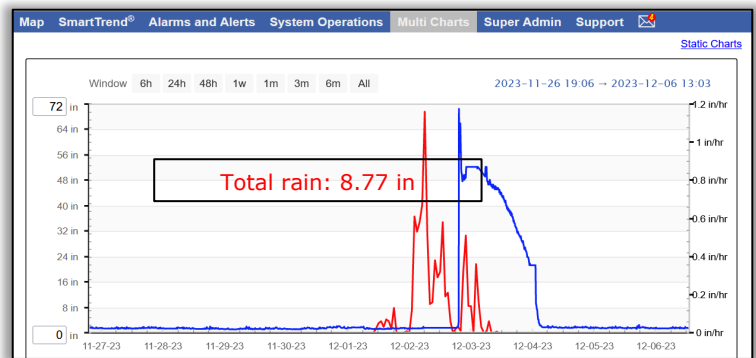
Currently, Panama City uses 29 monitors for I&I tracking as well as for several other applications that help protect local waterways of and in between St. Andrews Bay and West Bay. Both bays are tributaries to the Gulf of Mexico. By using the SmartRain™ software, Panama City is able to integrate SmartLevel and SmartFloer data with Doppler radar and local rain gauge data to develop a comprehensive understanding of how different amounts of rain affects the collection system's level and flow.

## The Results

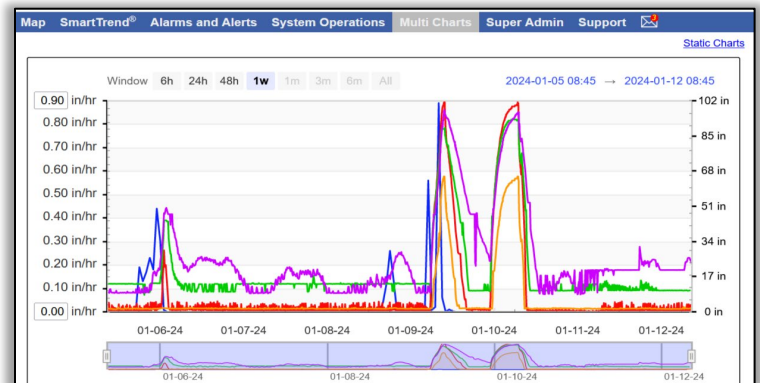
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The SmartCover monitors are relocated in Panama City to "hot spot" areas that have had three or more high-level I&I issues during rain events. The monitors are placed in the trunks of the gravity mains in each direction moving outward from the lift station. That method informs the collection systems maintenance team whether the entire line is damaged or certain sections from any direction. Once it is determined which direction the I&I is coming from, the flow is followed by deploying the monitors until the exact problem area is pinpointed. Then smoke testing and video help find the root cause of the problem. That process saves time and money when crews don't have to spend countless hours videoing hundreds of miles of sewer pipe, focusing on areas of the system that had no issues.



SmartRain I/I Correlation



Rise in Level in Multiple Manholes

Using smart monitoring, Panama City avoided spills two separate times in January 2024 at lift stations that lost power and were not on SCADA. Alerts were sent from sensors monitoring nearby manholes. Because SmartCover monitors were in the area they detected a level rise in the manhole and within minutes responded. Repairs were made to the lift stations before sanitary overflows occurred. Catching the emerging issues saved the city hundreds of thousands of dollars.

## Conclusion

The return on Panama City's investment has been substantial. In addition to the reduction of sanitary overflows using SmartCover technology, the city has improved management practices, optimized its cleaning schedule and significantly reduced the amount it pays in fines and penalties annually, from \$600,000 in 2021 to less than \$40,000 in 2023.