

Background

DC Water maintains approximately 1,800 miles of sanitary and combined sewers, nine pump/lift stations, 22 flow-meter stations, 75,000 catch basins and one of the largest treatment plants in the world.

DC Water’s Potomac Interceptor (PI) is a 50-mile-long linear system that carries about 60 million gallons of wastewater a day from communities in several counties and the Washington Dulles International Airport to the Potomac Pumping Station in Washington, DC. Flows from the pump station are then sent through the Blue Plains Advanced Wastewater Treatment Plant before being discharged into the Potomac River. Overall, on an average day close to 300 million gallons of raw sewage flows into the Blue Plains Advanced Wastewater Treatment Plant.

The Challenge

The PI’s gravity flow sewer system has many drops, which create high turbulence, causing massive corrosion along the linear asset. To prevent corrosion at high rates, forced ventilation of the headspace is needed to remove the headspace sewer air. That causes smelly sewer gases to be released into the air.

DC Water needed a way to monitor and reduce H2S odors and optimize its odor-control process. Preventing odor complaints and decreasing the cost and the amount of time inspectors spent responding to odor complaints also was a priority.

The Solution

To control the H2S levels, DC Water implemented a PI optimization program, which included odor control facilities, specialized media testing, and installing Variable Frequency Drives (VFDs). As part of that initiative, DC Water looked to monitor H2S levels in real-time, so they installed smart sewer monitoring.

DC Water worked with SmartCover, in early 2023 to install six (6) H2S sensors along the PI linear asset at critical points as part of the utility’s Odor Abatement Program.

Highlights

- Established an effective Odor Abatement Program using 6 SmartCover real-time H2S sensors
- Reduced odor complaints from 23 to 0
- Lessened site inspections from 26 to 4 per year
- Decreased the cost and use of odor control chemicals, a cost savings

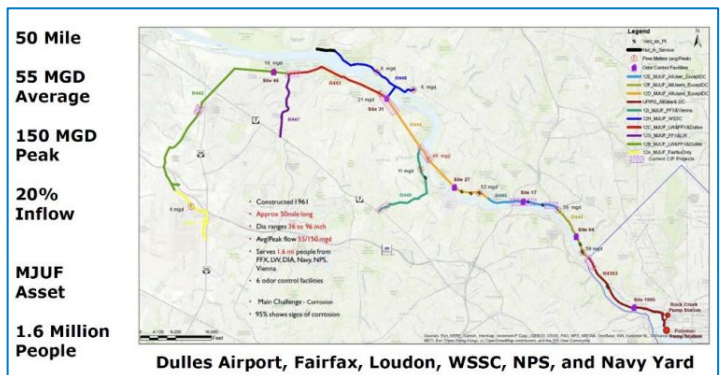


Figure 1: Map of Potomac Interceptor

DC Water was already familiar with SmartCover because the utility had installed 23 SmartLevel and SmartFloe monitors to track inflow and infiltration and other important data throughout its system.

This H2S solution provides accurate data reporting every 15 minutes, for H2S gas levels in the range of 0-1,000 PPM. The sensor is designed to seamlessly operate with the hardware system, enabling reliable, real-time measurements of H2S levels in remote locations over extended periods of time. DC Water found SmartCover devices easy to install and maintain, requiring

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no confined space entry, delivering 90 days of continuous service before calibration is needed, and up to two years battery life. In addition to providing real-time alarms, data readings from H2S units are incorporated into the software platform to enable overall trend analysis with the ability to overlay H2S data with level, flow, and rain data.

The Results

The SmartCover solution is a self-contained system that bolsters targeted mitigation strategies based on identified locations. PI was able to reduce its site inspections to four per year compared to 26 visits per year previously.

The H2S data from the SmartCover units allows for remote monitoring of H2S trends across the 50-mile PI system in real-time. The real-time data provided by the SmartCover units alerts crews to odor breakthroughs, enabling them to immediately identify issues remotely from 50 miles away. Utilizing the information, crews can precisely locate problems, leading to reduced travel and inspection times, and lower fuel expenses. Consequently, the number of odor complaints decreased significantly, from 23 to 0.

Conclusion

Installation of the 6 SmartCover H2S sensors along the Potomac Interceptor (PI) marked a significant advancement for DC Water, empowering the organization to transition from a reactive to a proactive approach in managing its infrastructure. With these sensors in place, DC Water can access real-time data streams,

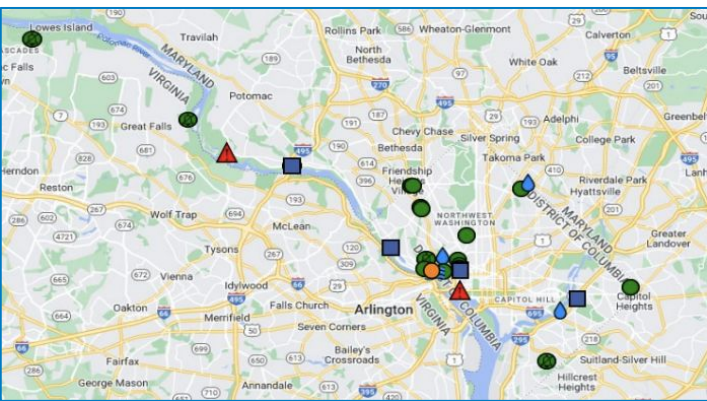


Figure 2: SmartCover sensors installed along PI



Figures 3&4: DC Water SmartCover installation

offering immediate insights into the condition of the PI. This transformative capability enabled crews to swiftly identify instances of odor breakthroughs, even when they occurred at remote locations 50 miles away.

Armed with this information, maintenance teams can promptly pinpoint the exact source of the issue and take corrective measures before it escalates. As a result, the deployment of SmartCover H2S sensors not only enhanced the operational efficiency of DC Water and resulted in significant cost savings, but also contributed to the overall integrity and reliability of the Potomac Interceptor system.

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