



**Have Coffee with an Expert
in Booth # 4847**

October 10-12, 2022 | New Orleans, LA

Learn How Intelligent Sewer Monitoring Can Optimize Cleaning Processes, Lower Costs and Reduce Spills

For collection system operators, spill events rank near the top of risk factors. The decades-old, CMOM-driven solution for reducing sanitary sewer overflow (SSO) risk is for continuous, high frequency cleaning (HFC). While effective, the practice is time consuming and inefficient. Numerous studies now clearly indicate that cleaning may not be necessary at more than 80% of these HFC sites per their schedule.

This paper discusses how a technology-driven solution brings new levels of efficiency and, moreover, lowers SSO risk. Monitoring in combination with predictive, advanced analytics identify build-ups and prioritize action. For utilities challenged by lack of adequate labor resources, this is proving to be a reliable aid.

Three Approaches to Spill Prevention

It can be helpful to think about different cleaning approaches as a continuum that tries to balance cleaning efforts and expense against the goal of avoiding spills. Basically, utilities can use three methodologies for maintaining sewers and avoiding spills: preventive, reactive and proactive.

Preventive: This is the most common approach. Cleaning is schedule-driven and based on CMOM practices established more than 20-years ago. The objective is to avoid spills by removing accumulations associated with blockages (fats, oils, grease, sediment, and debris) from pipes to avoid blockage formation. Sites with a history of issues are identified as “hot-spots” and are the targets of high frequency cleaning (HFC) protocols. However, this approach is inherently inefficient because it is “blind” to what is really happening at the target sites. The inevitable result is erring on the side of cleaning some sites that don’t really need it, thereby consuming valuable operations resources and possibly placing greater stress on old, high failure-risk pipes from non-essential cleaning.

Reactive: This approach usually comes into play when the sewer system is under stress, with the most extreme example being in response to the occurrence of SSOs. Reactive cleaning can also be triggered by surcharged pipe conditions or alarms from level and flow monitors. Generally, the biggest problem with the reactive approach is that it is inherently disruptive, can pull staff away from other tasks, and only takes place when something bad is already happening.

Proactive: This approach uses both current and historic data in combination with sophisticated trend analysis powered by machine learning, to accurately predict when and where blockages are likely to occur. Typically, blockages are progressive and form over the course of weeks. The use of technology as described in the following section is key to getting ahead of the curve and determining which sites are

actually at future risk. That enables operators to proactively plan where and when to deploy operations resources. It promotes more efficient use of operations and, in concert with back-up alarming, avoids the potential for SSOs.

How a Proactive Cleaning Program Works

The key to success with proactive cleaning is to leverage both real-time data collection and predictive analytics. This leads to a long-term understanding of trends within the system.

Machine learning becomes more effective when large amounts of data are used. Through expert review, a level pattern is identified as a developing blockage or not. Historical flow data algorithms can identify minor changes to diurnal flow patterns, thereby enabling machine-learning to be applied for predicting a developing blockage long before it becomes a problem.



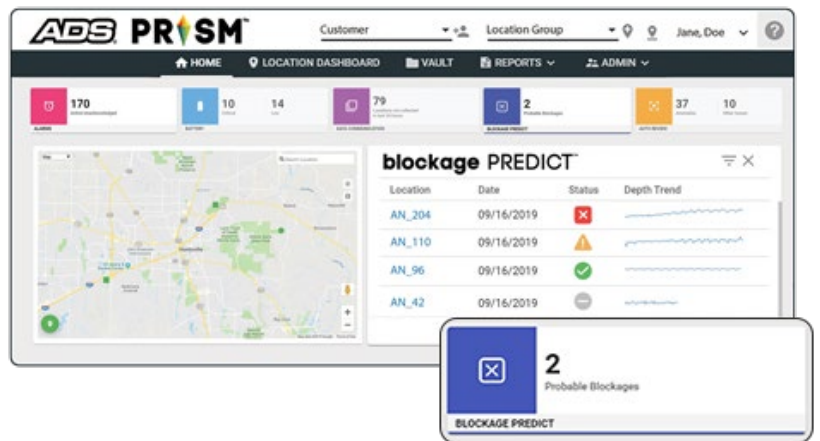
For example, using ADS ECHO™ or TRITON+™ monitors in combination with PRISM™ software and the Blockage PREDICT™ analytics solution, enables the system to constantly look for tell-tale signs of developing blockages.

Blockage PREDICT scans the network daily and then posts the status for review.

The system prioritizes urgency and provides graphical details for each site. With progressive build-up, cleaning can be scheduled based on actual site conditions.

This frees up personnel to work on other higher priority jobs throughout the day. Also, by eliminating unnecessary cleaning, it will improve the pipe lifetime by reducing the abrasive effects of frequently cleaning sewer pipes with high pressure water.

Real-world experience across many users shows that shifting to a proactive, data-driven cleaning optimization process, such as described above, can eliminate up to 80% of unnecessary truck rolls and reduce costs by hundreds of thousands of dollars, while at the same time reducing the occurrence of SSOs compared to preventive or reactive approaches.



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