

Transient Monitoring System Provides Cost-Saving Data to Extend Asset Life

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Western Lake Superior Sanitary District (WLSSD) provides wastewater treatment for 17 communities and 3 large industrial facilities in a 530 square mile region in the Duluth-Cloquet (MN) area. While treating about 14 billion gallons of municipal and industrial sewage annually, WLSSD is committed to protecting the environment, including the region's most precious resource – Lake Superior. Preventing sewer overflows and leaks into the watershed is a top priority; pump stations and force mains serve as an effective way to control sewer overflows.



THE CHALLENGE

Western Lake Superior Sanitary District (WLSSD) provides wastewater treatment for 17 communities and three large industrial facilities in a 530 square mile region in the Duluth-Cloquet (MN) area. While treating about 14 billion gallons of municipal and industrial sewage annually, WLSSD is committed to protecting the environment, including the region's most precious resource – Lake Superior. Preventing sewer overflows and leaks into the watershed is a top priority; pump stations and force mains serve as an effective way to control sewer overflows.

Based on this analysis, the consultant provided recommendations based on worst-case scenarios, ranging in cost from \$185,000 to a \$1 million in capital improvements. Faced with this significant investment, WLSSD decided to obtain additional data to verify the model results prior to making capital improvements.

THE SOLUTION

A WLSSD operator suggested using the Syrinix **PIPEMINDER-ONE** transient monitoring system, which he had seen at a conference. He noted the Syrinix unit's ability to measure high-resolution transients, down to an absolute vacuum (-14.50 psi gauge), together with its portability, ease of use, and robust support.

The **PIPEMINDER-ONE** is a smart pressure monitor that measures continuously at 128 samples per second. Data is sent to Syrinix's RADAR data hub, where it is analyzed against set performance parameters. This reveals the system's operating state, enabling operators to quickly pinpoint issues that can be addressed to extend the life of the network.

THE RESULTS

WLSSD installed the Pipeminder-C system in January 2020. Analyzing multiple locations, they found that the data generated during normal operations lined up reasonably well with the models, as expected. Syrinix's **PIPEMINDER-ONE** enabled the WLSSD team to verify or identify specific problem areas:

- A welded air release valve that wasn't providing benefit. The modeled data revealed this valve was providing limited air transfer to and from the pipe. The **PIPEMINDER-ONE** was installed and allowed WLSSD to confirm that this component was not critical to forcemain operation. The risk of an emergency repair from this connection will be eliminated without detriment to the operation of the system.
- An ineffective air release valve manhole. At one station, WLSSD had planned to vent an air release valve manhole to improve conditions. Data from the **PIPEMINDER-ONE** revealed that this change would not benefit pressures at the station or in the pipeline. This finding surprised the WLSSD team. Additional work is planned to evaluate whether reinstating a former air release valve location will improve pressures.
- Transient events due to power outages. The **PIPEMINDER-ONE** captured four significant transient events when the pumps shut down due to power failure. Transients were documented and showed significant additional pressure on the pipes that could cause a failure if continued. This data enabled the team to highlight the importance of determining the cause of the outages and to work with the utility to identify the cause and mitigate the problem.



THE BENEFITS

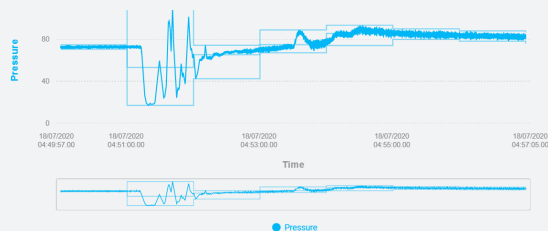
The information provided to WLSSD by the Syrinix **PIPEMINDER-ONE** transient monitoring system, resulted in some valuable benefits:

Informed Decisions

WLSSD improved its ability to make decisions regarding capital investments and operations backed by accurate data. They now have the information needed to invest resources where there is the greatest risk and the greatest potential benefit.

Improved System Availability

Industrial and residential customers rely on WLSSD's systems 24 x 7. Shutting down a pipeline due to transient events or component failures is not an option. By proactively identifying potential problem areas using data generated by the **PIPEMINDER-ONE**, WLSSD can take steps to reduce the risk of operational interruptions.

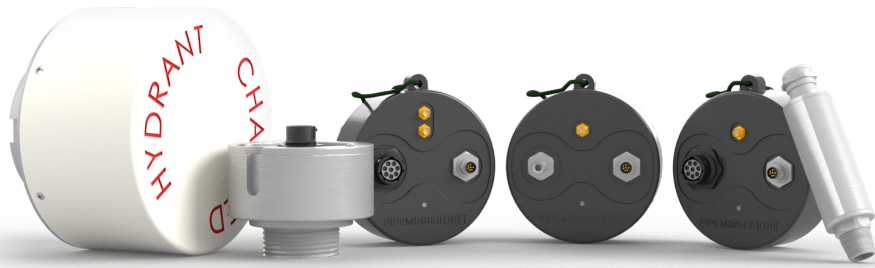


Ease of Use

The WLSSD team found the **PIPEMINDER-ONE** and **RADAR** platform very user friendly and easy to install, maintain and evaluate. Syrinix support was excellent. Their only wish: 16 more units: one for each pump station.

Cost Savings

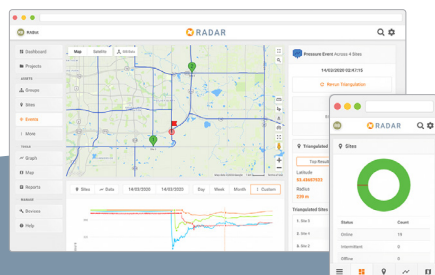
Data provided by the **PIPEMINDER-ONE** now informs capital planning work to improve conditions of WLSSD's force mains. While modeling is important, the results may not reflect actual conditions. Modeling that is too conservative can lead to unnecessary capital expenditures. Having accurate monitoring data helps WLSSD identify smaller capital projects that extend pipeline life—and to see where additional protection is not warranted.



PIPEMINDER ONE

Installed on water and wastewater pipelines of all sizes, the PIPEMINDER-ONE range combines high-resolution pressure monitoring with precision time stamping and, with the PIPEMINDER-ONE Acoustic, leak detection as well. The PIPEMINDER-ONE range provides utilities with the data-led insights they need to manage their networks more effectively and efficiently, to reduce leak and bursts, to save time and save money.

Future proof reliable cellular technology, that can use 4G, 3G and 2G networks, connects PIPEMINDER-ONE to RADAR, Syrinix's secure cloud-based platform. Empowered with proactive tools, the PIPEMINDER-ONE range provides burst alerts, transient event detection, operational and maintenance alarms and support for integrating flow, water quality, SCADA and other third-party data. In some markets, the PIPEMINDER-ONE Hydrant is available for quick mounting and start-up on commissioning. The PIPEMINDER-ONE Acoustic also provides reliable leak detection along with high resolution pressure monitoring. With data-led operational insights, operators can safely and reliably act to calm their networks to reduce leaks and bursts, to save time and money and to extend the life of their key assets.



Syrinix's **RADAR** cloud-based platform collects, analyses and alerts on data from Syrinix PIPEMINDER units, SCADA systems and third party flow, water quality, data loggers and data platforms. By combining multiple data types and sources from across your network, our analysis tools provide a new level of detailed insights into network operation and behaviour. These insights, alongside our smart, actionable alarms, empower utilities to enhance, mitigate and innovate to reduce leakage and breaks, calm networks and extend asset lifetimes.

www.syrinix.com

About Syrinix

Syrinix is an award-winning global market leader in developing intelligent pipeline monitoring technology, including the PIPEMINDER series of water and wastewater monitoring solutions, the RADAR cloud-based network analysis platform, and Syrinix Intelligence analysis and consultancy services. Syrinix helps cost-conscious utilities move network management from reactive to proactive, detecting and mitigating network issues before they become failures.

Syrinix
Intelligent Pipeline Monitoring