CASE STUDY

SHELTER FROM THE RAIN

Miles Crossing, Oregon, United States

The transition from a reliance on septic-based wastewater handling to the implementation of a vacuum sewer system marked a significant shift for the community of Miles Crossing, Oregon. While this change promised solutions to existing problems, such as septic system failures and groundwater contamination, it also unveiled unforeseen challenges, particularly during rain events.

The flat terrain and high-water table of Miles Crossing exacerbated these issues, necessitating a sophisticated approach to managing wastewater flows. Realizing the limitations of manual intervention, the community sought out advanced monitoring and automation tools to ensure the efficient operation of its sewer system.

Miles Crossing, Oregon, is a small unincorporated community located in Clatsop County. It's situated near Astoria, which is the county seat and a historically significant city near the mouth of the Columbia River. This location gives Miles Crossing a proximity to significant natural and historical sites, including the Lewis and Clark National Historical Park.

The community's geography is influenced by its closeness to both the Columbia River and the Pacific Ocean, contributing to its low-lying topography and issues related to water management, such as those involving septic systems and sewer infrastructure.

Given its setting between various bodies of water, including Youngs Bay, the Youngs River, and the Lewis and Clark River, Miles Crossing is subject to the environmental challenges and benefits that come with coastal and riverine surroundings.

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THE CHALLENGE

Miles Crossing's shift to a vacuum sewer system was driven by rising septic system failures, compounded by its flat, below-sea-level location between the Youngs and Lewis and Clark Rivers, challenging traditional sewer solutions and necessitating innovative management of inflow and infiltration.

The decision to convert to a vacuum sewer system was prompted by the escalating number of septic system failures attributed to the area's unique topography. Miles Crossing, nestled between the Youngs River and the Lewis and Clark River, faced the dual challenges of being both flat and situated below sea level.

These geographical characteristics posed significant obstacles to the installation of traditional gravity-based sewer systems. Additionally, rain events exacerbated the strain on the system, leading to operational overload and increased costs. Addressing these challenges required a proactive approach to managing inflow and infiltration while maintaining the integrity of the community's infrastructure.

key outcomes

1. **IMPLEMENTATION OF FLOVAC TELEMETRY MONITORING SYSTEM FOR REAL-TIME SYSTEM TRACKING.**
The implementation of the Flovac telemetry system revolutionized the efficiency of Miles Crossing's sewer system. This advanced technology offers real-time tracking capabilities, providing operators with instantaneous insights into the system's operational status. By leveraging data analytics and automation, operators can swiftly identify anomalies and potential issues, enabling proactive interventions to maintain optimal system performance. The Flovac telemetry system serves as a cornerstone in the efficient management of sewer operations, ensuring timely responses and mitigating risks of downtime or operational disruptions.

2. **IMPROVED OPERATIONAL EFFICIENCY AND REDUCED COSTS IN MANAGING WASTEWATER FLOWS.**
The integration of Flovac monitoring technology has yielded substantial cost reductions and enhanced operational efficiency for Miles Crossing. By proactively monitoring system performance and identifying potential issues before they escalate, operators can minimize the need for costly emergency repairs and reactive maintenance activities. This proactive approach not only reduces operational expenses but also extends the lifespan of critical infrastructure components, optimizing long-term asset management. The Flovac system empowers operators to implement data-driven maintenance strategies, maximizing operational uptime and minimizing associated costs.

3. **ENHANCED COMMUNITY DEVELOPMENT AND GROWTH WITH SUSTAINABLE SANITARY SYSTEM.**
The establishment of a reliable and sustainable sewer infrastructure has significantly contributed to the development and sustainability of the Miles Crossing community. The implementation of Flovac technology ensures the provision of essential sanitation services, supporting community growth and well-being. With a dependable sewer system in place, residents and businesses can confidently invest in the community, fostering economic development and social prosperity. Moreover, the long-term sustainability of the sewer infrastructure enhances resilience against environmental challenges, safeguarding public health and ecological integrity for future generations.

4. **PREPARATION FOR FUTURE EXPANSION AND OPTIMIZATION OF THE SEWER SYSTEM INFRASTRUCTURE.**
Flovac technology provides Miles Crossing with a scalable and adaptable solution to meet future expansion needs and infrastructure demands. The modular design and flexibility of the Flovac monitoring system enable seamless integration with existing infrastructure and facilitate the addition of new components as the community grows. By investing in scalable technology, Miles Crossing ensures that its sewer system remains agile and responsive to evolving requirements, effectively accommodating population growth and urban development. The proactive approach to infrastructure planning and expansion lays the foundation for sustainable and resilient community development.

5. IMPROVED ENVIRONMENTAL PROTECTION.
The implementation of Flovac monitoring tools not only enhances operational efficiency but also contributes to improved environmental protection and sustainability. By effectively managing wastewater flows and minimizing inflow and infiltration, Miles Crossing reduces its environmental footprint and safeguards groundwater quality. The advanced monitoring capabilities of the Flovac system enable operators to detect and address potential environmental risks promptly, preventing pollution and mitigating ecological impacts. Through responsible stewardship of natural resources and ecosystems, Miles Crossing demonstrates its commitment to environmental preservation and ecological health.

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THE FLOVAC SOLUTION

Initially, Gifford and Smith tried using individual pit-fire counters to track when a property's vacuum pit was activated, but this method was costly and ineffective for pinpointing issues. They soon discovered FLOVAC, a globally recognized company in vacuum sewer system installations.

FLOVAC offered Miles Crossing a telemetry system that could connect to each vacuum pit, providing detailed data essential for identifying and addressing their infiltration and inflow (I&I) problems.

This monitoring system utilizes a sensor attached to the valve body, detecting the movement of a magnet every time the valve opens and closes, and measuring how long it stays open. Given that vacuum valves activate every 10 gallons of effluent, the system can estimate the volume of flow based on valve activations. High volumes of water, indicated by longer valve openings, can pinpoint excessive inflow at specific sites, allowing for targeted investigations.

With the new FLOVAC Monitoring System (FMS), operators can now monitor the entire system in real-time, tracking activations and durations for individual properties. This technology is particularly useful during rain events, as unusual patterns, like a home firing thousands of times in a day, can immediately signal issues, allowing swift on-site responses.

One notable issue identified through this system was a property with a damaged lateral pipe running under a driveway, which inadvertently channeled surface water directly into the sewer system. Through the use of CCTV cameras, the team documented the damage and collaborated with the homeowner to devise a repair plan.

In terms of infrastructure adjustments, Miles Crossing installed wireless telemetry equipment on utility pedestals along roadsides due to the area's flat terrain and metal manhole covers, using advanced Gateway, Bluetooth, and LoRaWAN technologies integrated into the district's SCADA system. This setup enables remote monitoring and sends alerts for any abnormalities.

Since implementing the system, maintenance has been minimal, typically requiring just an annual inspection. Nearly 60% of the sewer system now has telemetry monitoring, with plans to expand this to the entire network. This proactive approach not only reduces field time and treatment costs but also enhances the system's overall efficiency and sustainability, ensuring its long-term performance for the community.

Refurbishing and replacing old equipment.

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THE RESULTS

The implementation of the Flovac monitoring system yielded tangible results for the community of Miles Crossing.

By detecting and addressing excess water inflow during rain events, operators were able to minimize operational disruptions and reduce the burden on the sewer system.

Through the identification and removal of unnecessary tie-ins, the community achieved greater operational efficiency and cost savings.

Looking ahead, plans for a complete system rollout with Flovac monitoring technology promise to further enhance the sustainability and performance of Miles Crossing's sanitary system, ensuring a bright future for the community.

advanced data analytics enabled precise monitoring of pit fires and rainfall correlation, which enhanced response efforts

"We're able to generate 30-day reports of when pits are firing, the levels, and overlay the rain data. When we see a big spike in a rain event on the graph and it is over the top of a spike in pit fires, we know we have additional water coming in due to the rainfall, and address it,"

Carl Gifford, Miles Crossing Sanitary District Superintendent

for more information

Join us in shaping a sustainable future. To learn more about how Flovac is leading the change in environmental engineering and how we can assist in your wastewater management needs, contact us at info@flovac.com