

# CHECKLIST

## FOR PREPARING MBR SYSTEMS FOR HIGH FLOW RATES

When storm clouds gather, the readiness of wastewater treatment facilities is key to maintaining public health and environmental compliance. And it's not just storms; winter snowmelt or a sudden industrial discharge can cause major problems.

Membrane bioreactor (MBR) systems, known for their efficiency and effectiveness in treating wastewater to high standards, face unique challenges during high flow events. These situations can dramatically increase the volume of water and debris entering the system, potentially leading to hydraulic overload and reduced treatment efficacy.

To safeguard these advanced systems and ensure they continue to operate effectively through adverse weather conditions, meticulous planning and proactive measures are essential.

The following checklist is designed to guide wastewater treatment professionals through the necessary preparations and adjustments for MBR systems in anticipation of high flow rates.

Take the time, on a quarterly basis, to revisit the items in this list. By adhering to this guide, facilities can enhance their resilience and minimize the risk of system failure even during severe weather events.

# YOUR CHECKLIST:

## FORECAST INTEGRATION AND MONITORING

Implement advanced meteorological tracking systems to monitor weather patterns and predict potential storm impacts on flow rates.

Establish protocols for receiving real-time alerts from local weather services. Adjust operational settings based on forecast data.

## FLOW REGULATION DEVICES

Install and calibrate flow balancers and surge tanks designed to buffer sudden increases in water volume, ensuring they are capable of handling expected peak flows.

Perform pre-storm inspections of all flow regulation devices to confirm their operational readiness and efficiency.

## ENHANCE PRE-TREATMENT FACILITIES

Upgrade fine screens to more robust models capable of handling larger volumes of debris typical of storm runoff.

Review and enhance grit removal systems to improve sediment capture efficiency, focusing on preventing sediment buildup that could impair the MBR process during storms.

Maintain and test grease traps or DAF units frequently to ensure they can effectively remove increased loads of fats, oils, and grease that are washed into the system during heavy rains.

## SYSTEM MODULARITY AND SCALABILITY

Evaluate the existing modular capabilities of your MBR system and plan for quick expansion modules that can be easily connected to accommodate temporary flow increases.

Keep spare membrane modules and related components in stock and readily available for quick installation without significant system downtime.

## OPERATIONAL ADJUSTMENTS

Develop dynamic operational plans that include increasing aeration rates and adjusting hydraulic retention times to optimize treatment during high flow conditions.

Prepare to adjust the return activated sludge (RAS) rates to manage the biomass effectively and maintain process stability.

Add MPE50 coagulant to maintain sludge filterability and smooth operations during winter and high flow events.

Perform a membrane CIP procedure prior to high flow events.

## **EMERGENCY PROTOCOLS**

Formalize emergency action plans specific to high flow events, detailing each step of the response from initial detection to post-event recovery.

Conduct regular emergency drills to ensure staff are proficient in executing high flow response procedures and can make swift decisions under pressure.

## **BACKUP POWER SOLUTIONS**

Assess the capacity and reliability of existing backup power systems to ensure they can support critical treatment operations for extended periods during outages.

Schedule regular maintenance checks and simulate power outage scenarios to test the system's responsiveness and effectiveness.

## **COMMUNICATION AND COORDINATION**

Develop a communication strategy that includes notifying local authorities and the community about potential service disruptions and safety precautions.

Coordinate with local emergency management teams to ensure a unified response to infrastructure challenges that may arise during high flow events.

## **DOCUMENTATION AND REPORTING**

Keep meticulous records of operational changes, system performance, and maintenance activities before, during, and after high flow events to ensure compliance with environmental regulations.




Use data collected during high flow events to refine predictive models and improve the accuracy of future preparations.

## **POST-EVENT ASSESSMENT AND MAINTENANCE**

Implement a structured protocol for system inspection and maintenance following high flow events, focusing on identifying and addressing any damage or wear to membranes and other sensitive components.

Quickly mobilize repair teams to restore full functionality, and consider enhancements to system resilience based on post-event analysis.



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