Exploring the Boundaries...Peak Flow Handling Ability of a Membrane Bioreactor

PHASE I Pilot Configuration

- Single deck membrane cassette configuration
- 88% of outlet area
- 500 gpm nominal
- 12.8 gfd net flux
- 0.024 scfm/sf air scour
- Operated at King County West Point Treatment Plant in Seattle, WA

PHASE II Testing the New Membrane Design

- Double deck membrane cassette configuration
- 2,490 sf surface area
- 36,300 gpd nominal
- 14.6 gfd net flux
- 0.057 scfm/sf air scour
- Operated at King County West Point Treatment Plant in Seattle, WA

Simulating a Northwest Storm

- Defined as a 24-hour peak of the highest flow during a storm

Factors Affecting Phase I Peak Testing

- Hydraulic Conductivity
- Organic Load
- Temperature

Diurnal and Seasonal Fluctuations

- Diurnal and seasonal fluctuations in flow
- Storm events can significantly increase EQ volumes and or footprint

Defining Factors:

- King County historical data
- AWWF
- AMF
- Storm event

Current Status of Phase II Pilot Testing

- Successful completion of 24-hour peak test at twice the nominal flux
- Successful completion of 24-hour peak test at twice the nominal flux
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- Successful completion of 24-hour peak test at twice the nominal flux

NEXT STEPS:

- Confirm the ability of the membrane to handle diurnal and sustained peak events
- Define the impact of polymer addition on MBR hydraulic and process performance
- Confirm design operating condition of 10-12 day SRT

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Next Test:

- 10-12 day SRT
- 10-12 day SRT
- 10-12 day SRT
- 10-12 day SRT
- 10-12 day SRT