



# AquaStorm® Cloth Media Filtration for Wet Weather Treatment

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# Presentation Outline

- Issues with Peak Wet Weather Flows
- Wet Weather Options for Utilities
- Peak Wet Weather Flow Management
- AquaStorm® EHRT Operation
- Facility Application
- Projects
- Summary



# Peak Wet Weather Flows

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## Issues

# Peak Wet Weather Flows

## Places



All Size Installation or Town



CSO and SSO Communities



Peak Flows at the Plant



Remote Overflow Sites



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# Peak Wet Weather Flows

## Problems



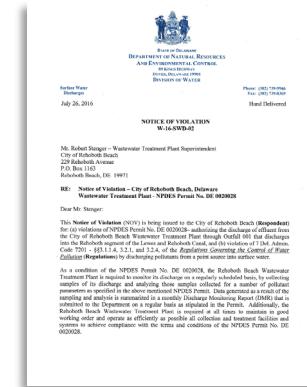
Network Overflow



Overflow at the Plant



Process Upset



Permit Violation

# Peak Wet Weather Flows

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## Options for Utilities

# Peak Wet Weather Flow Management

## Utility Options



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Repair Network



Storage / Tunnels



Plant Expansion



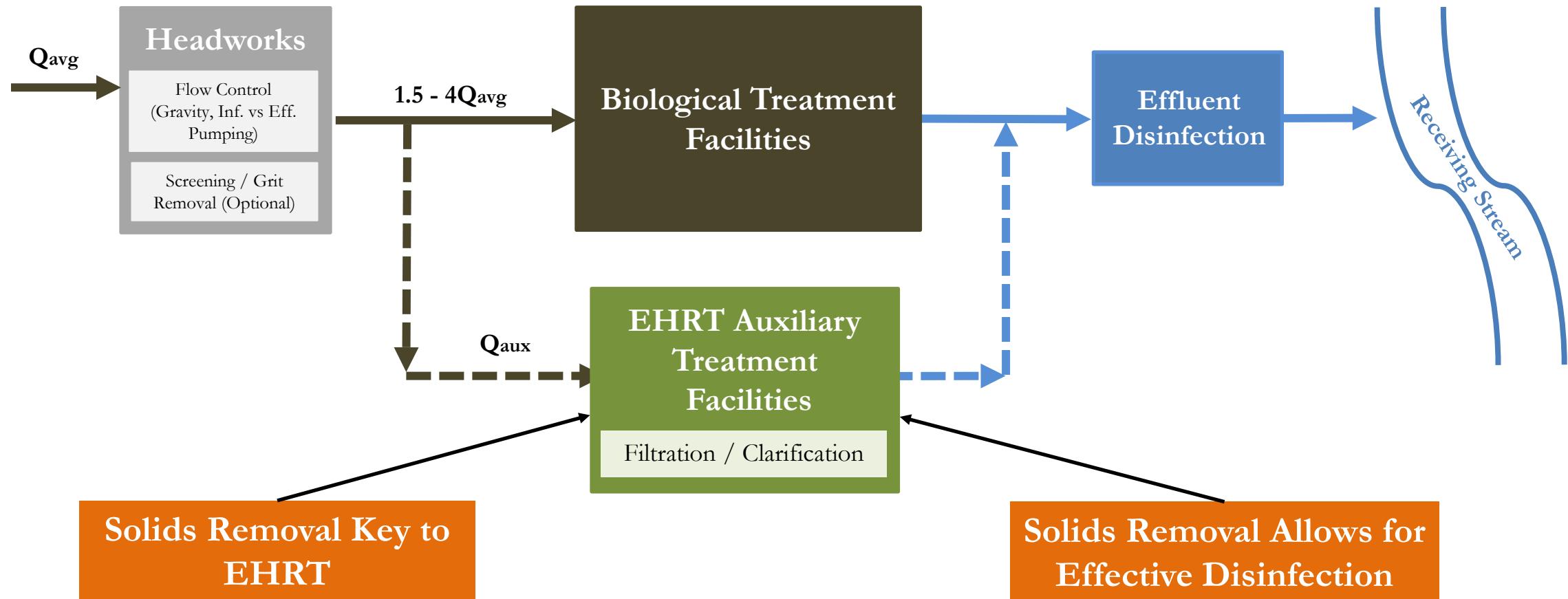
EHRT Treatment

# Peak Wet Weather Flow Management

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# Peak Flow Management

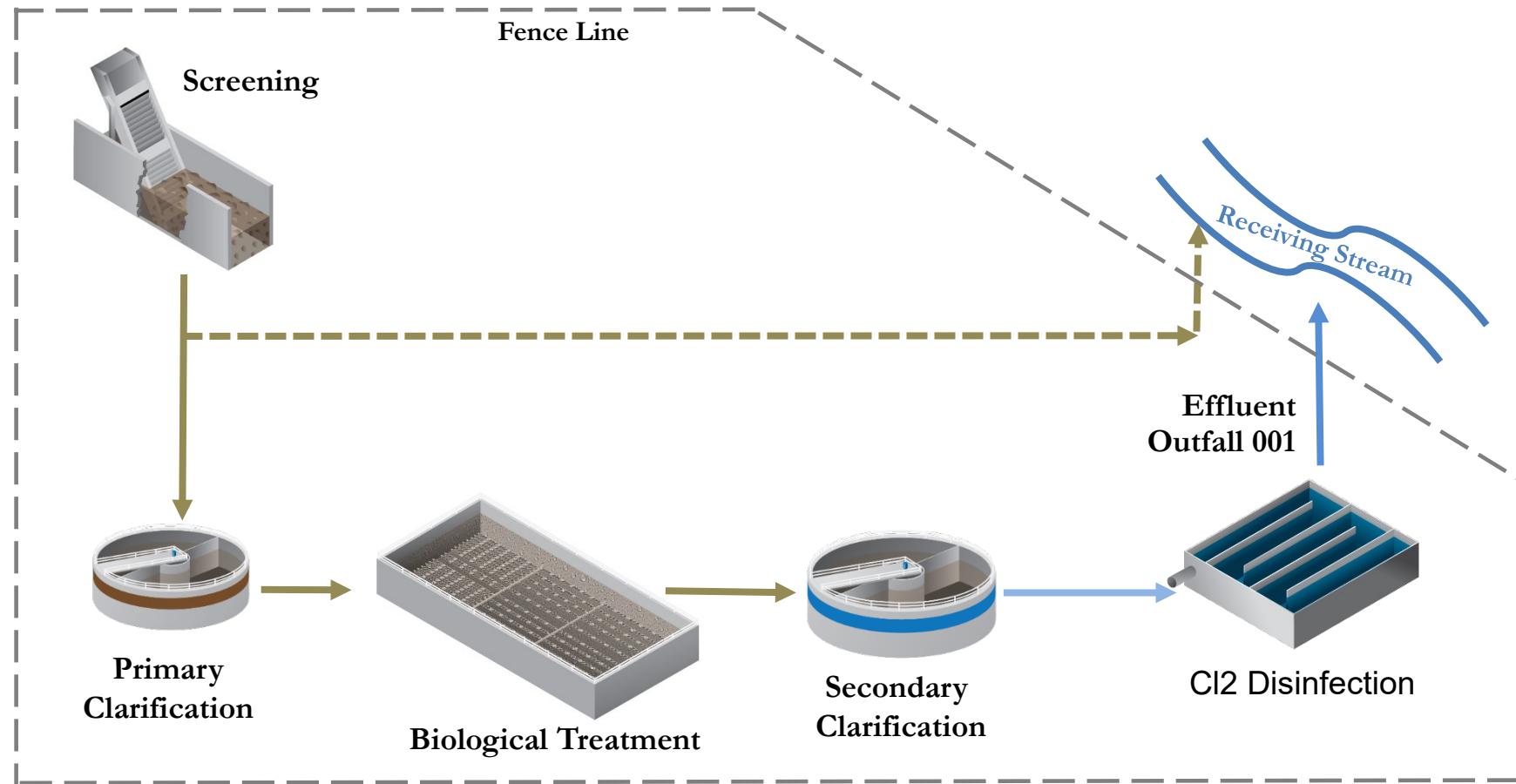
## Auxiliary Treatment Capacity



Instead of diversion or bypass, either split or intercept peak flows for auxiliary treatment.

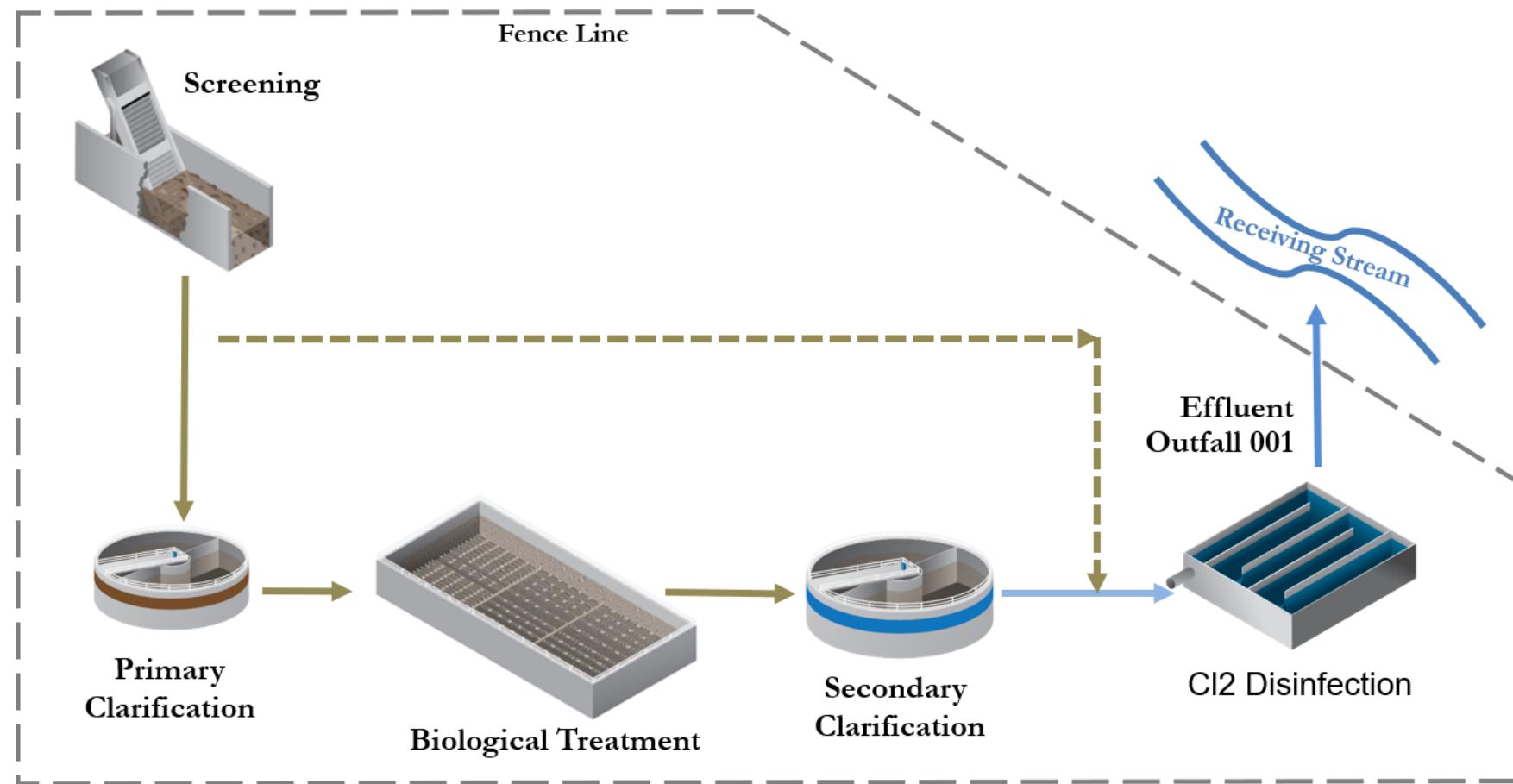
# Regulatory Update

## Bypass



# Regulatory Update

## Blending

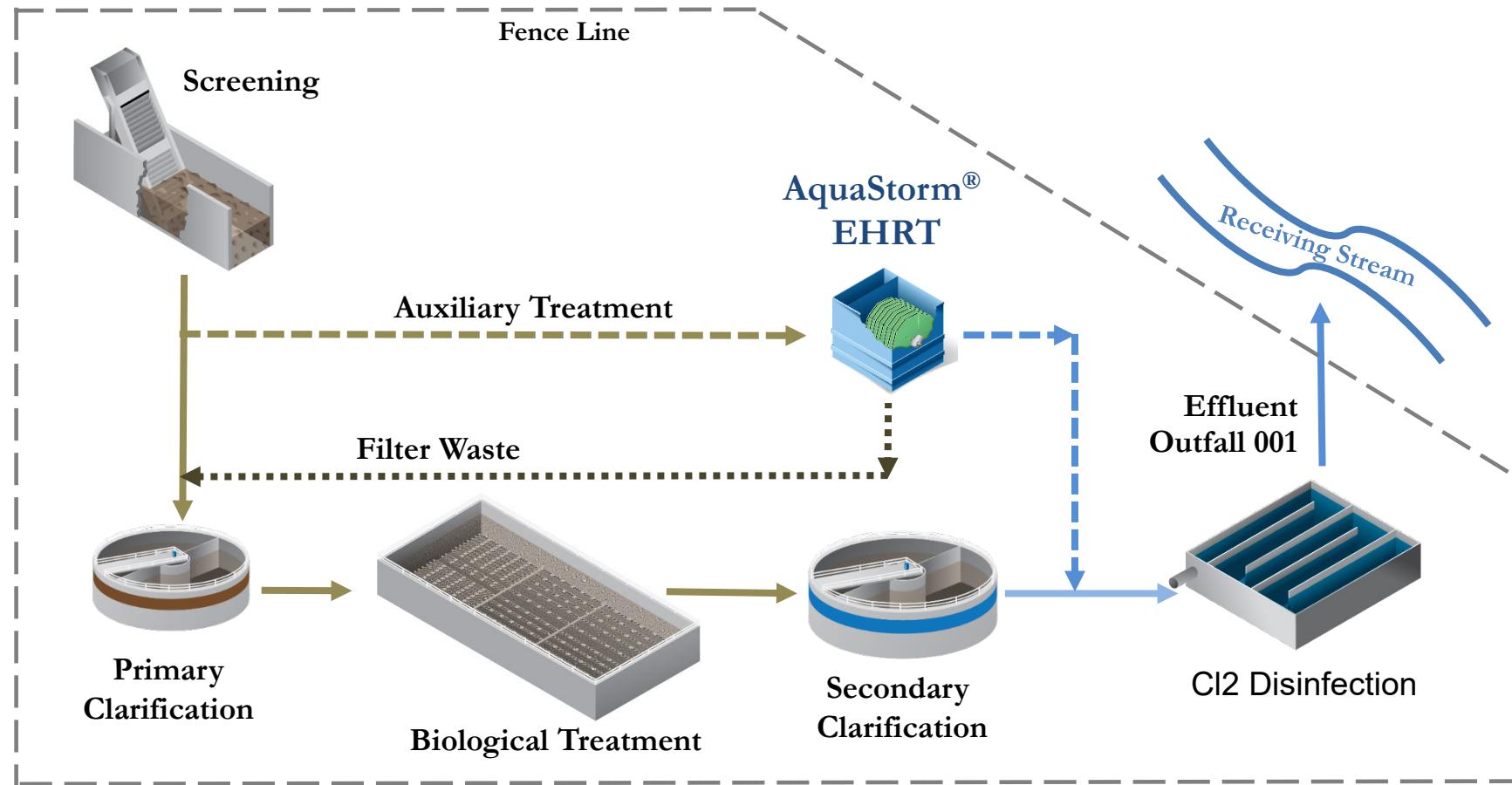




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# Regulatory Update

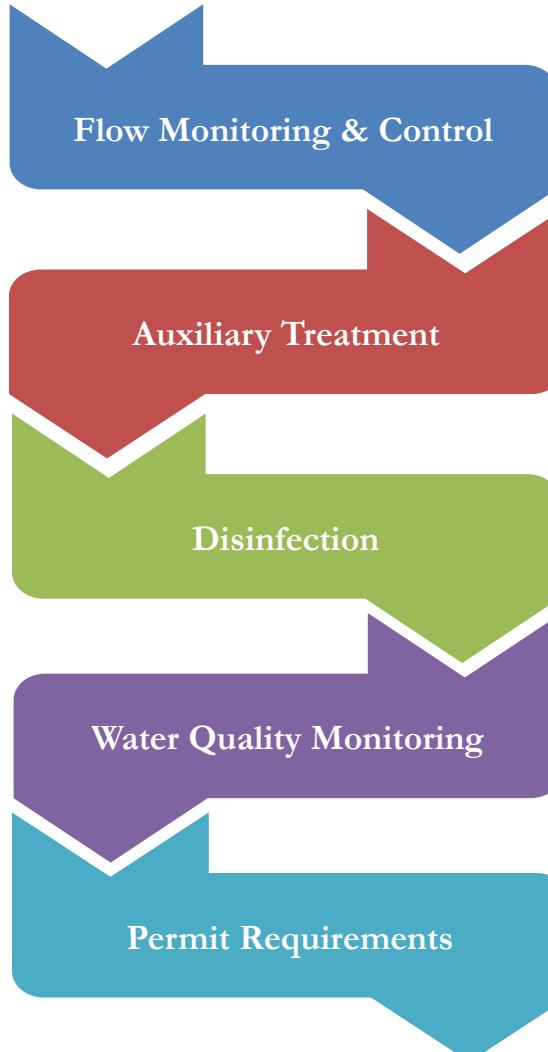
## Peak Wet Weather Flow Management



Peak Wet Weather Flow Management – Provides immediate water quality improvements

# Peak Wet Weather Flow Management

## What Does It Involve?



- 1 Flow must be maximized through biological treatment train & monitored
- 2 Solids Removal Required with Clarification or Filtration and flow monitored
- 3 All flow must disinfected
- 4 Wet weather events should be monitored for water quality parameters
- 5 Treatment facilities must meet permit requirements weekly and monthly requirements



# AquaStorm®

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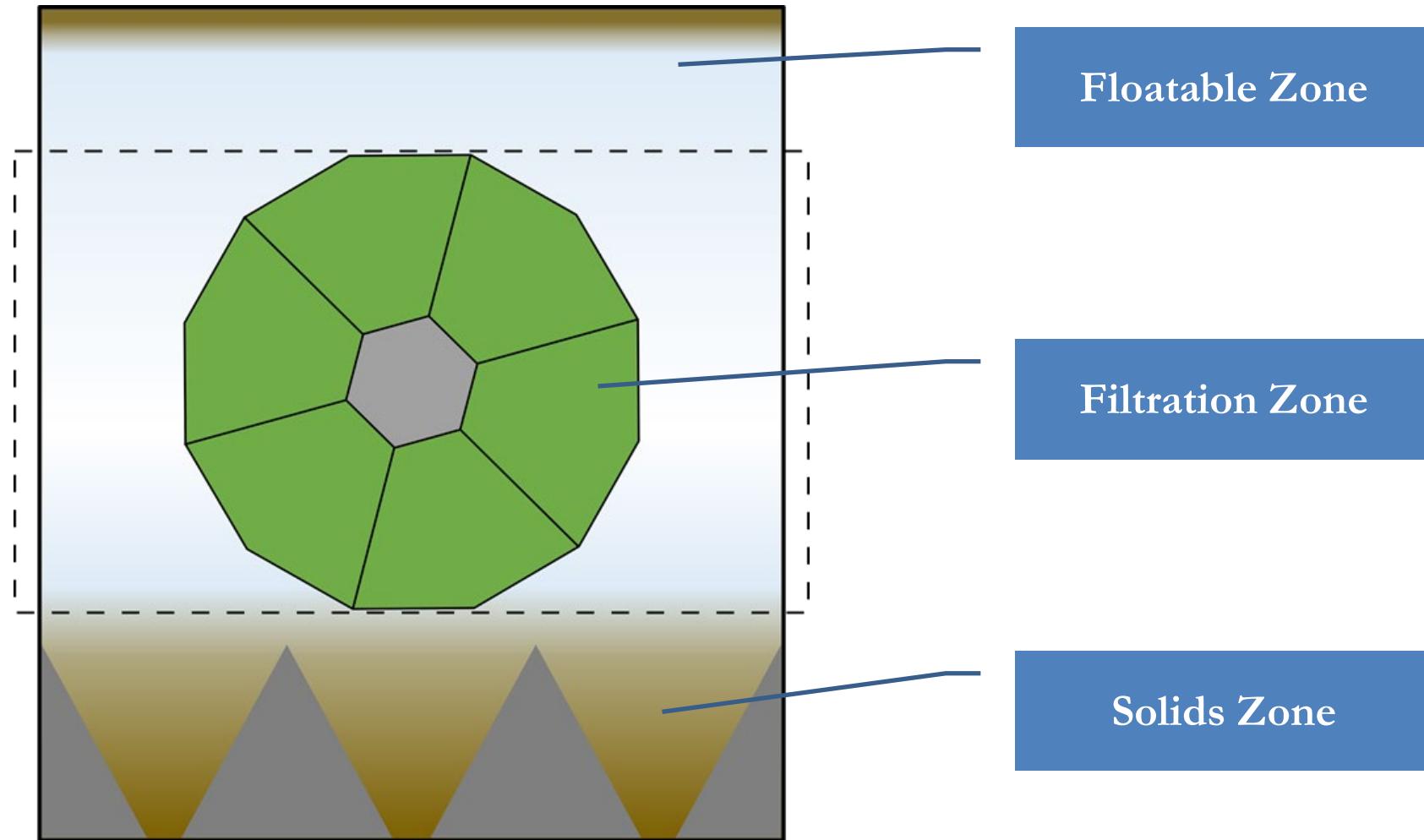
## Pile Cloth Media Filter Operation

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## Basics - Differentiation



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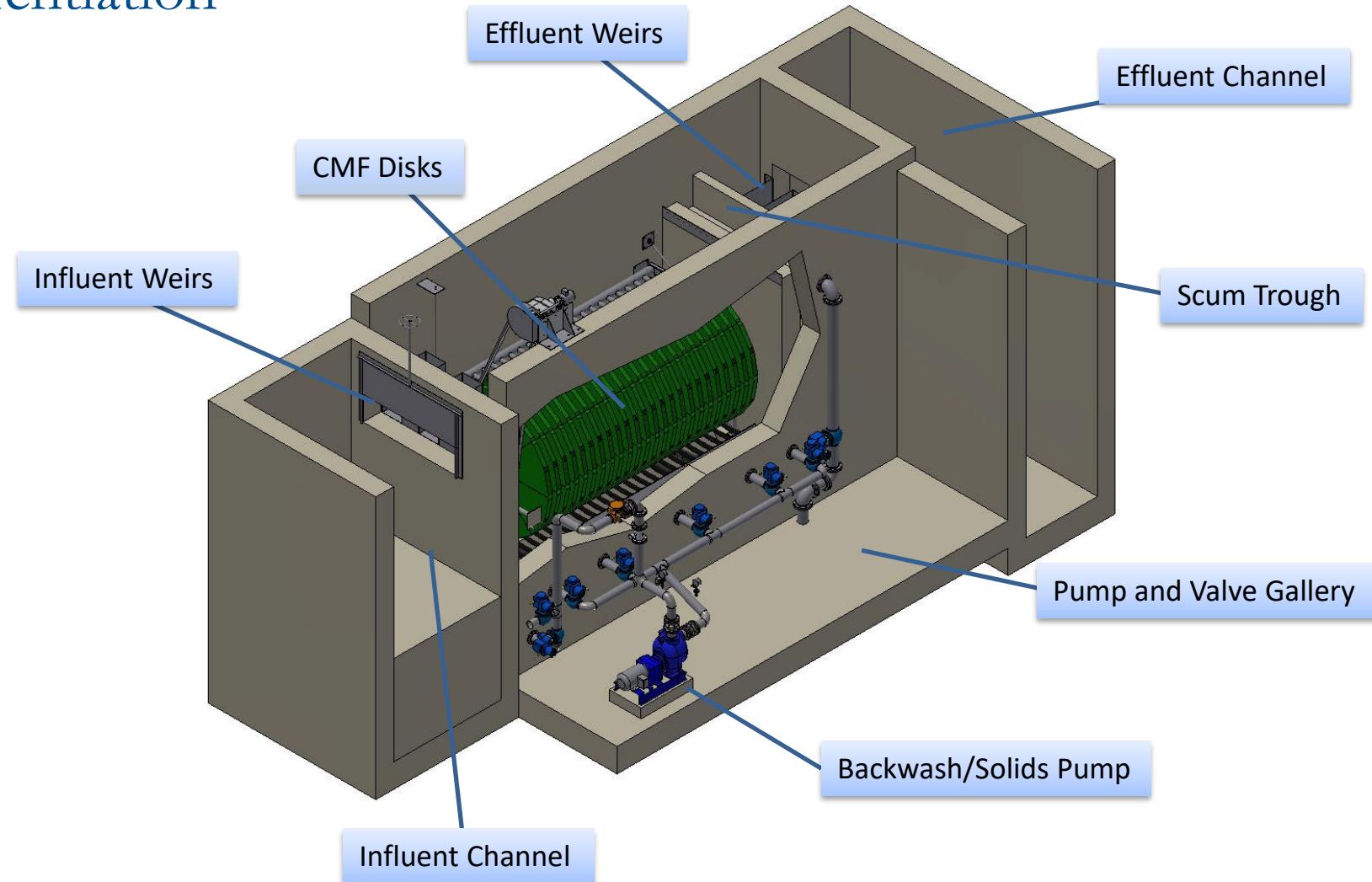


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## Basics - Differentiation



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## Startup For Wet Weather Event

- Online – Idle – Waiting for Event
  - Influent Gate Closed
    - Open Unit Influent Gate
    - Allow the Tank to Fill
    - In Filtration Mode
    - Backwashing and Wasting are all Automatic



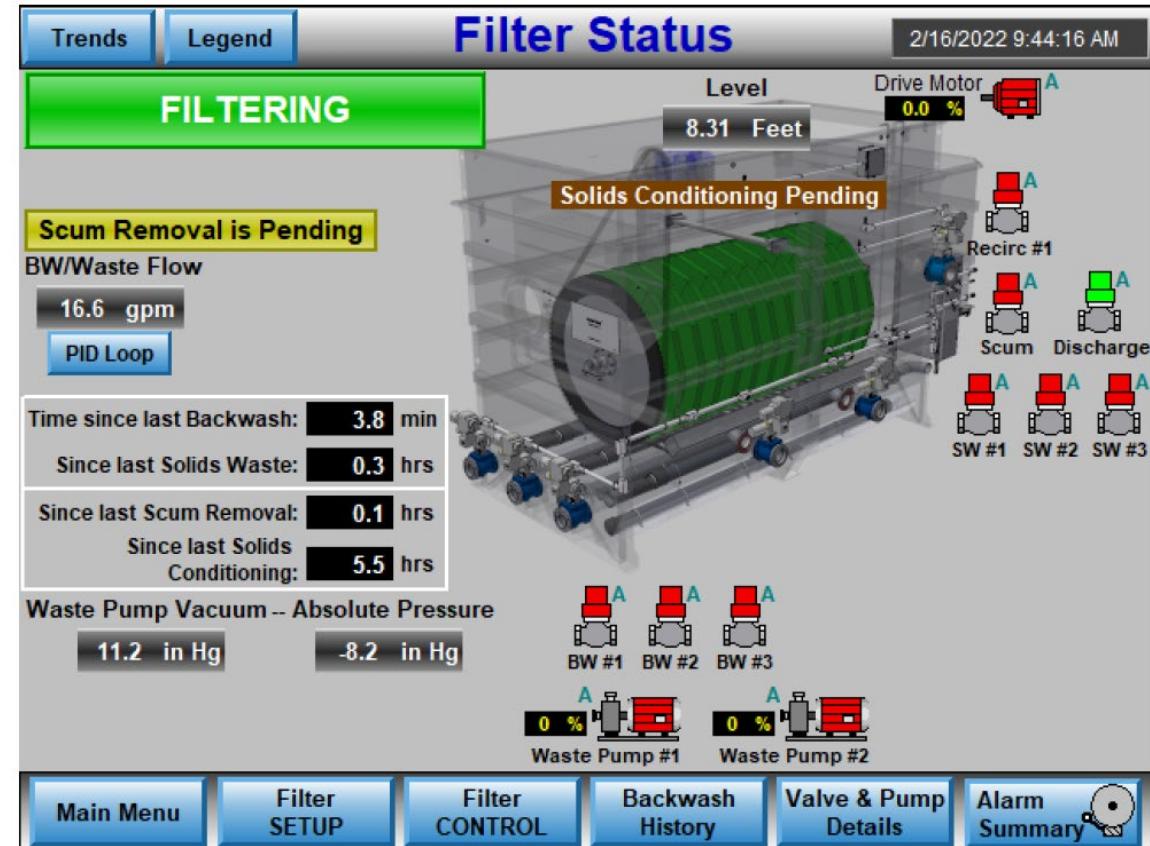
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## Other Control Features

- Cycle Equipment
- Automatic Shutdown & Storage
- Double Speed BW
- Storm Drive



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# Case Studies & Applications

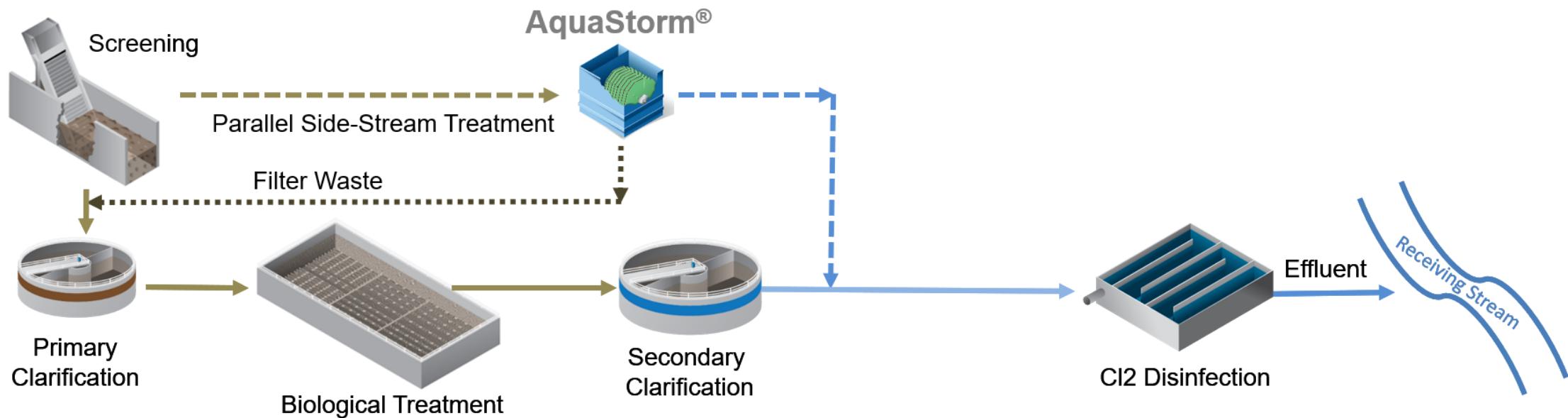
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# AquaStorm® Locations



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## Parallel Side-Stream Treatment

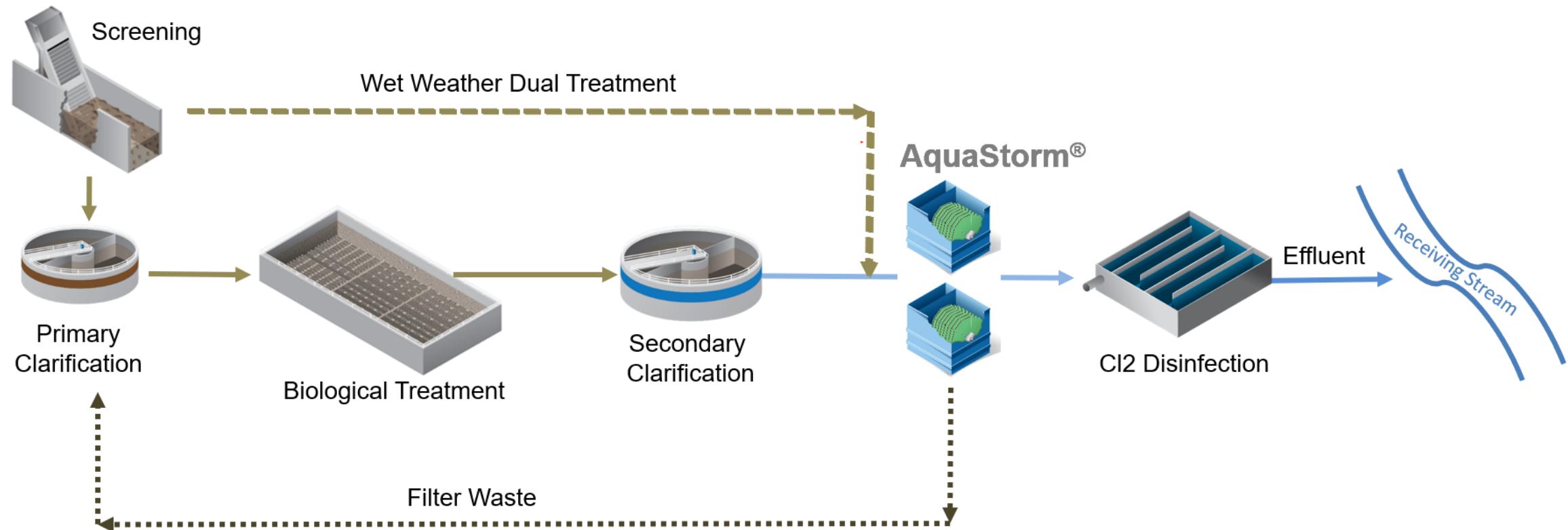


# AquaStorm® Locations

## Dual Treatment

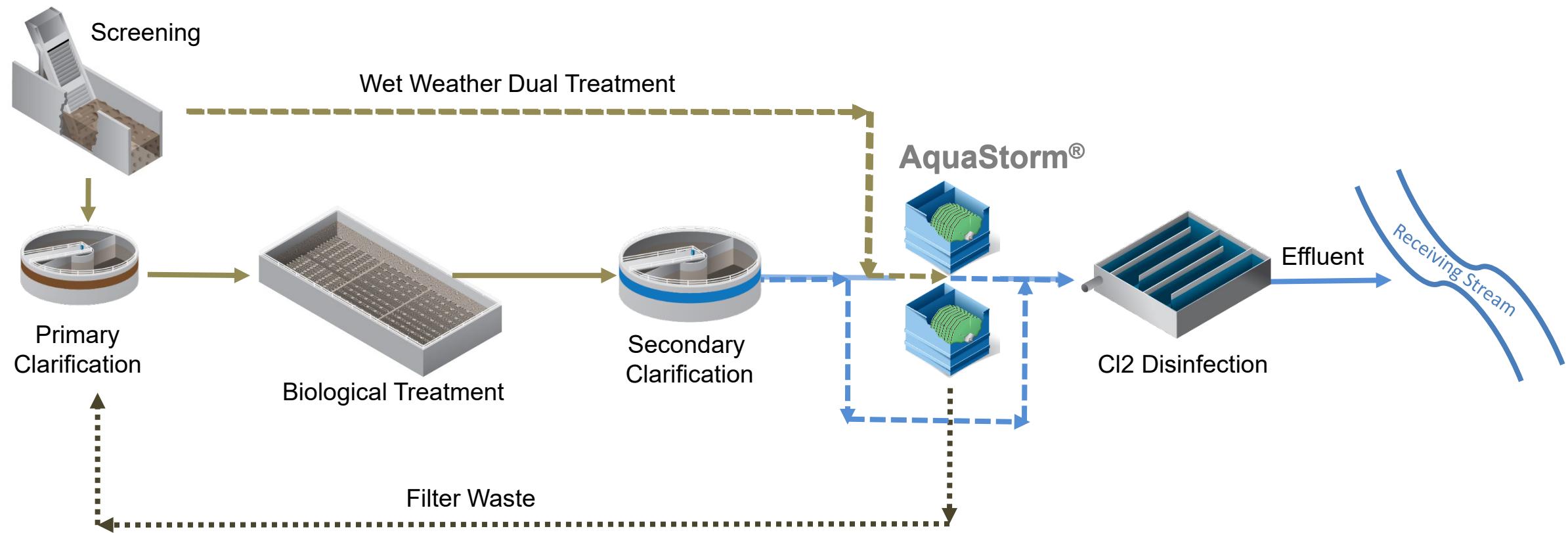


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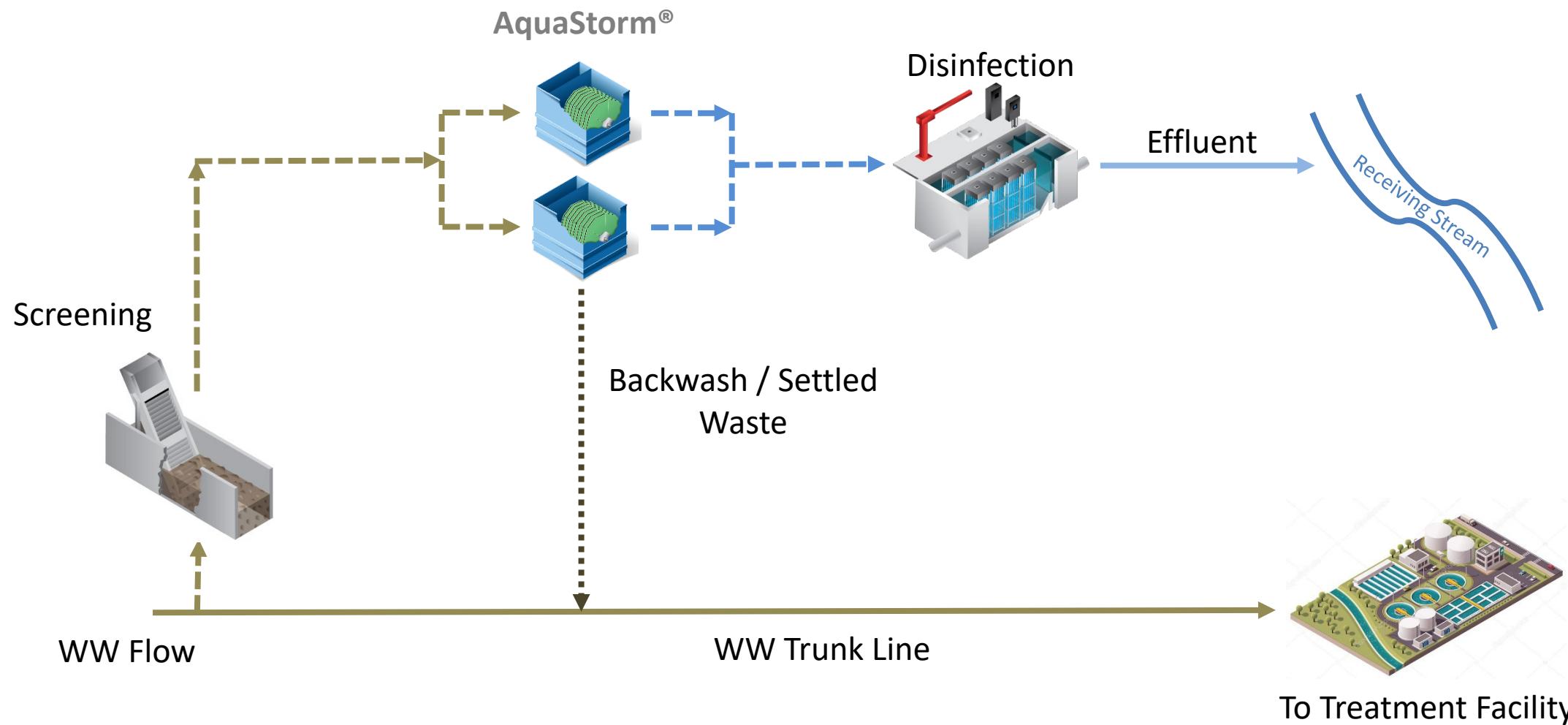
# AquaStorm® Locations

## Tri-Mode Treatment

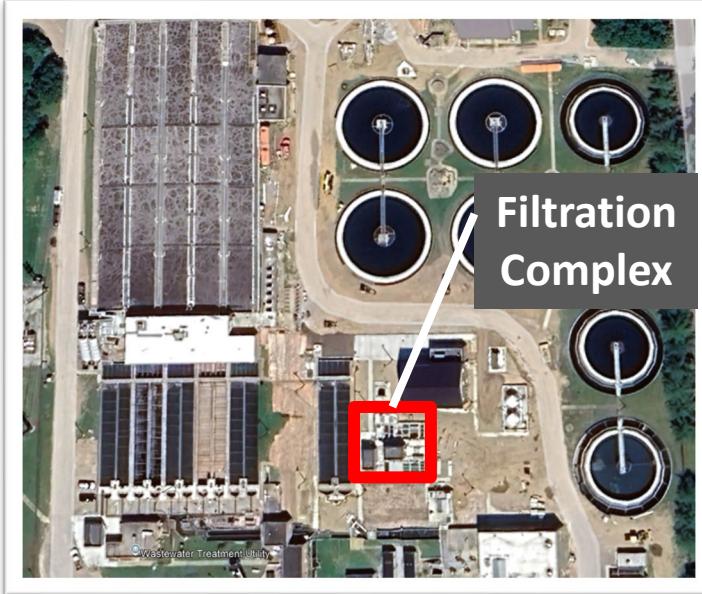


# Remote Wet Weather Treatment

## Typical Auxiliary Arrangement



# Elkhart, IN WWTP



## Location / Startup

- Elkhart, IN/ July 2024

## Capacity

- PHF – 32.6 MGD, (2) AS-108 w/24 disks

## Consultant

- Donohue & Associates, Inc.

## Overview

- Retrofit, Side-Stream Treatment

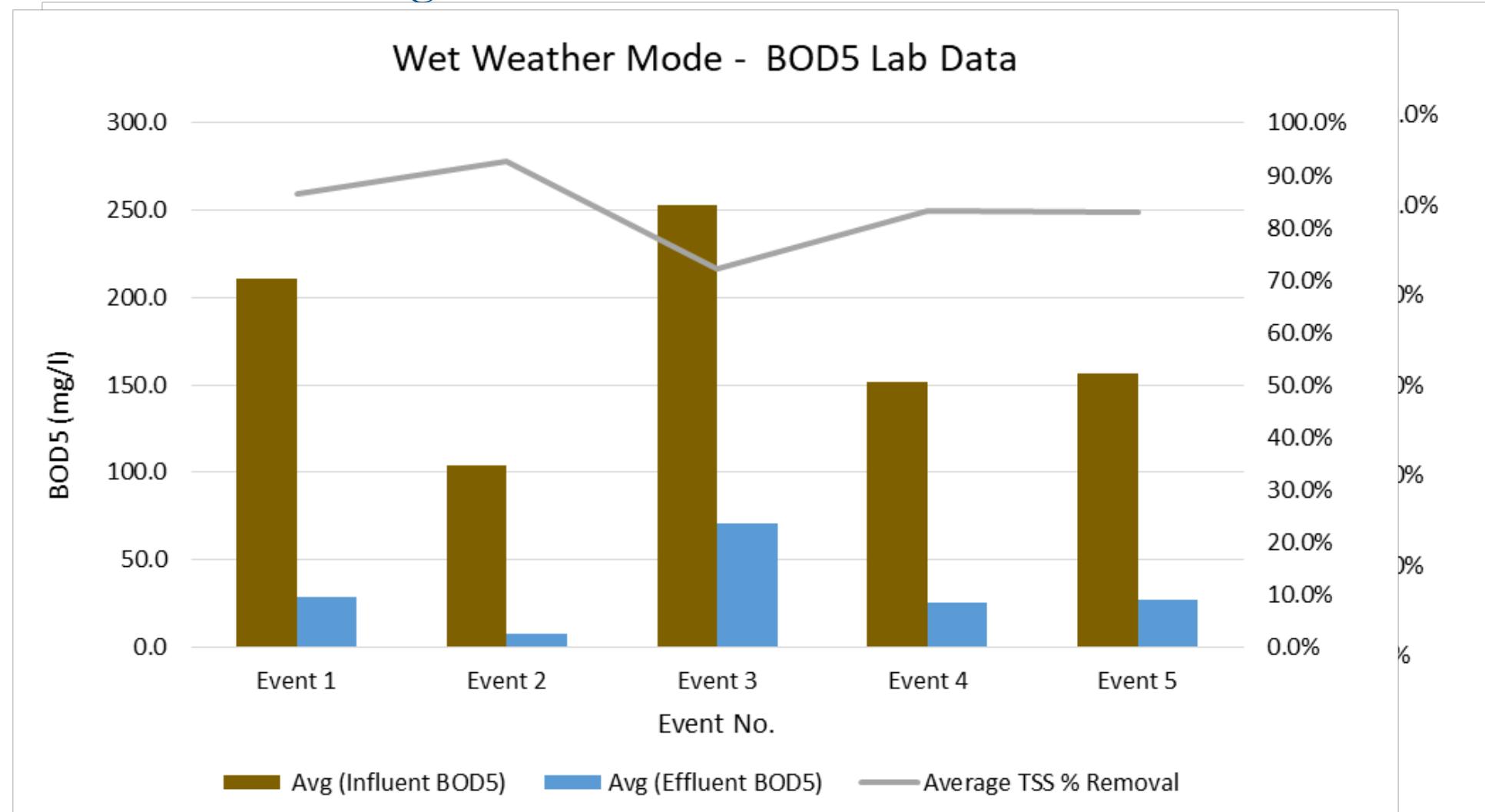
## Keys to Success

- Easy of Operation, Footprint, Water Quality

# Elkhart, IN



## Wet Weather Event Testing



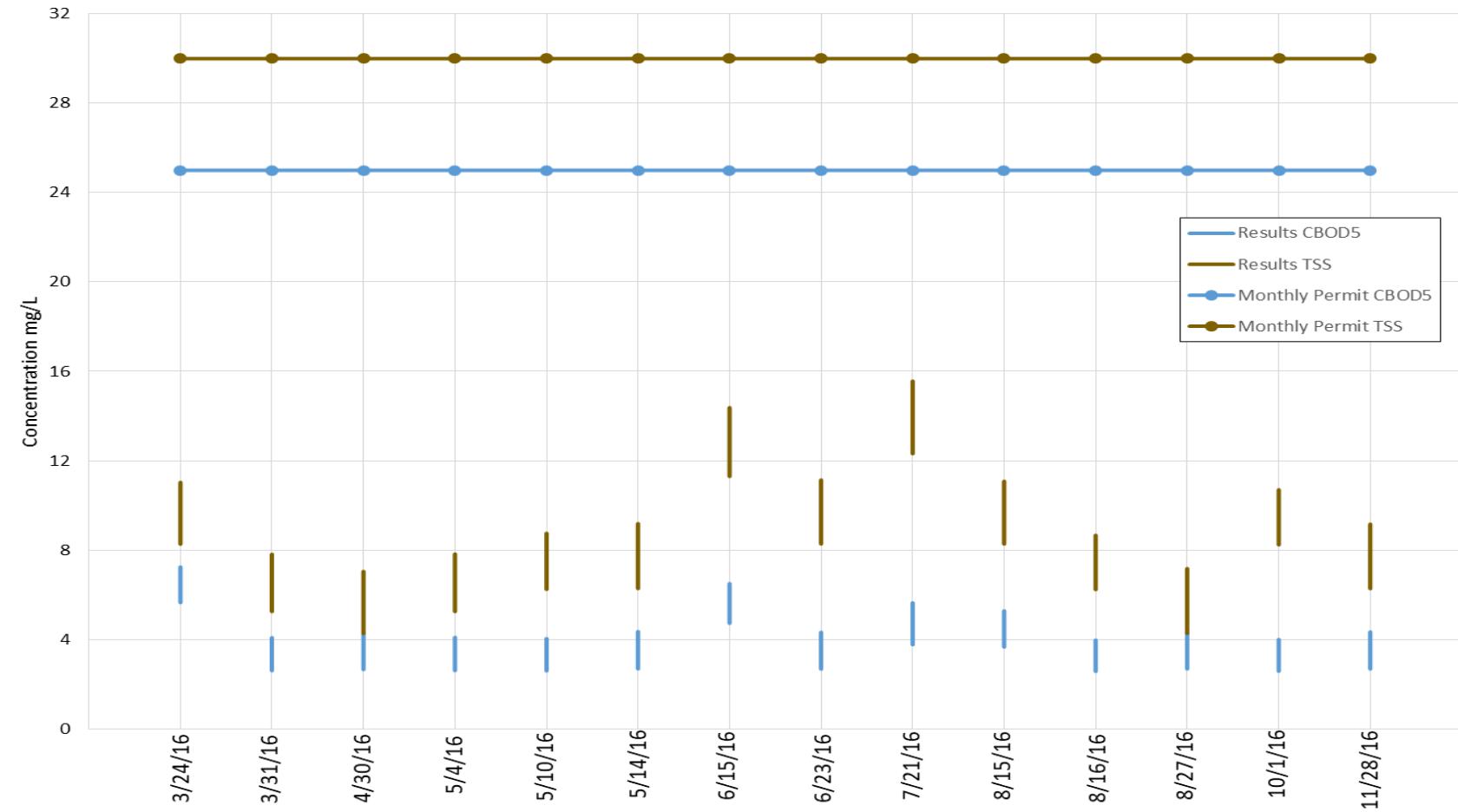
# Elkhart, IN

## Modeling



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Combined Effluent Evaluation for CBOD5 and TSS - 14 Wet Weather Events in 2016 Coupled with 5 CMDF Pilot Results (Fall 2018)



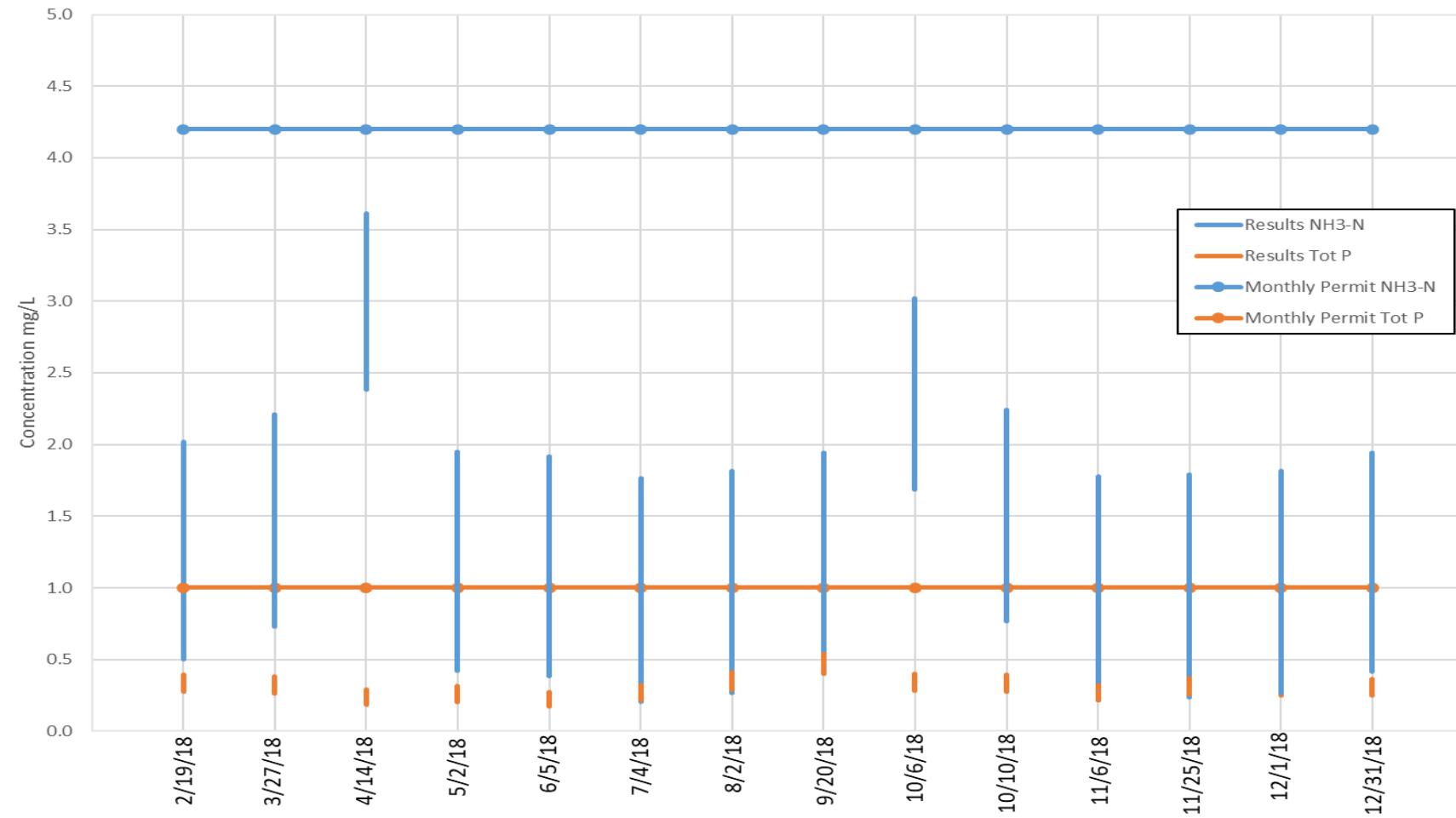
# Elkhart, IN

## Modeling



AQUA-AEROBIC SYSTEMS, INC.  
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Combined Effluent Evaluation for NH<sub>3</sub>-N and P - 14 Wet Weather Events in 2018 Coupled with  
5 CMDF Pilot Results (Fall 2018)



# Rushville, IN WWTP



Location/Startup

- Rushville, IN / August 2017

Capacity

- PHF – 12.5 MGD, (2) AS-54 w/ 14 disks

Consultant

- Donohue & Associates, Inc.

Overview

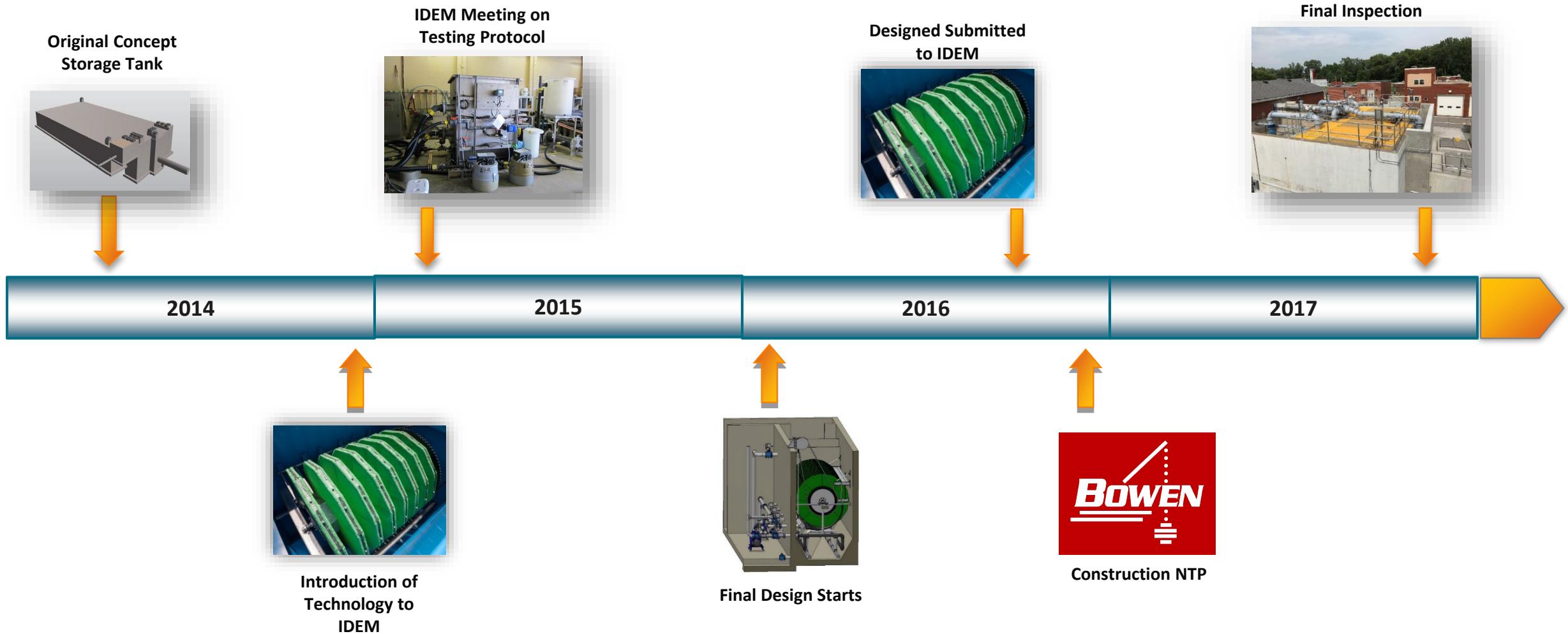
- Retrofit, Dual Treatment, TP Removal

Keys to Success

- Easy of Operation, TP Removal, Cost Savings

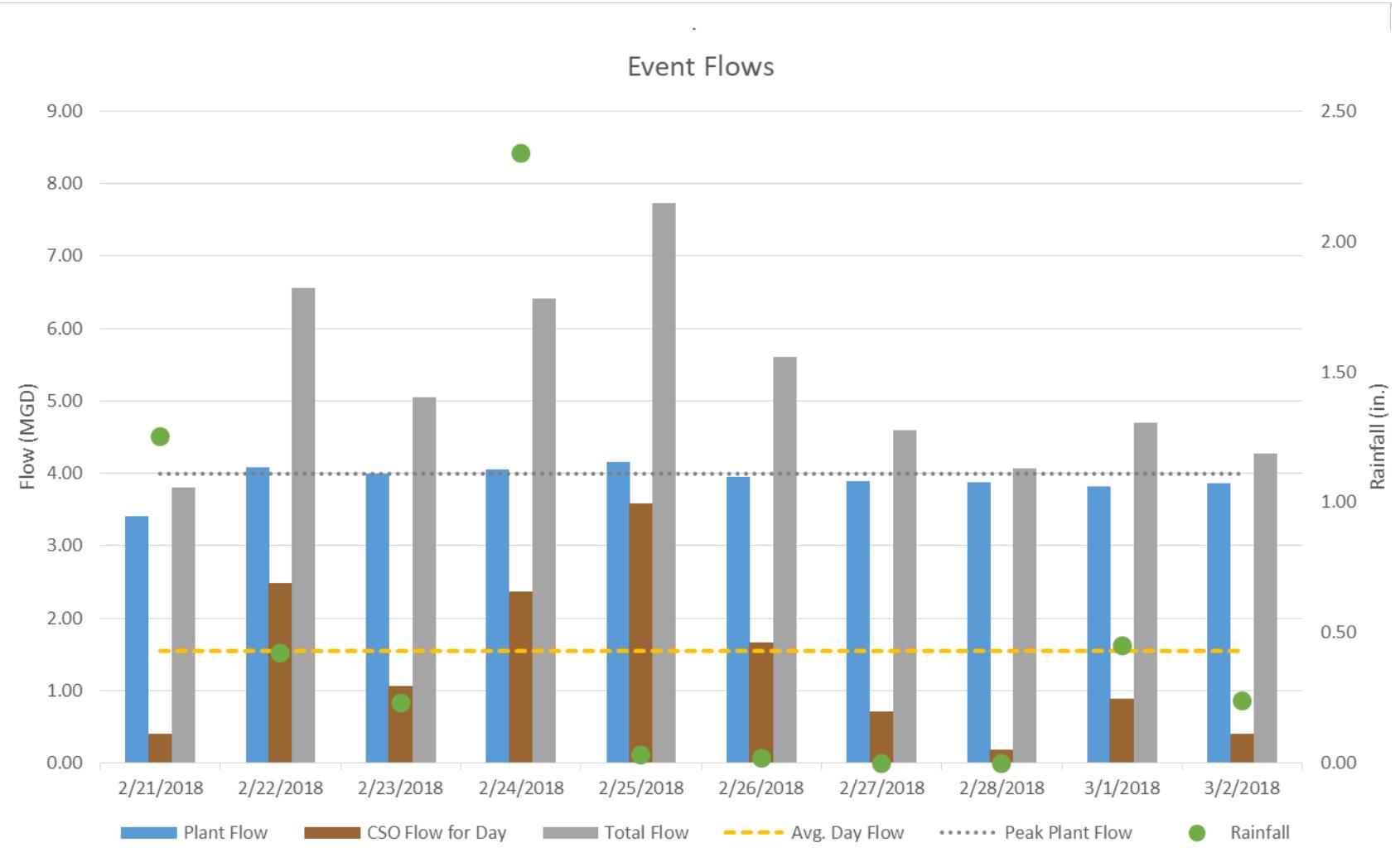
# Rushville, IN Project

## Phase 3 Wet Weather Improvements



# Rushville Performance

Wet Weather Event – Feb 21, 2018

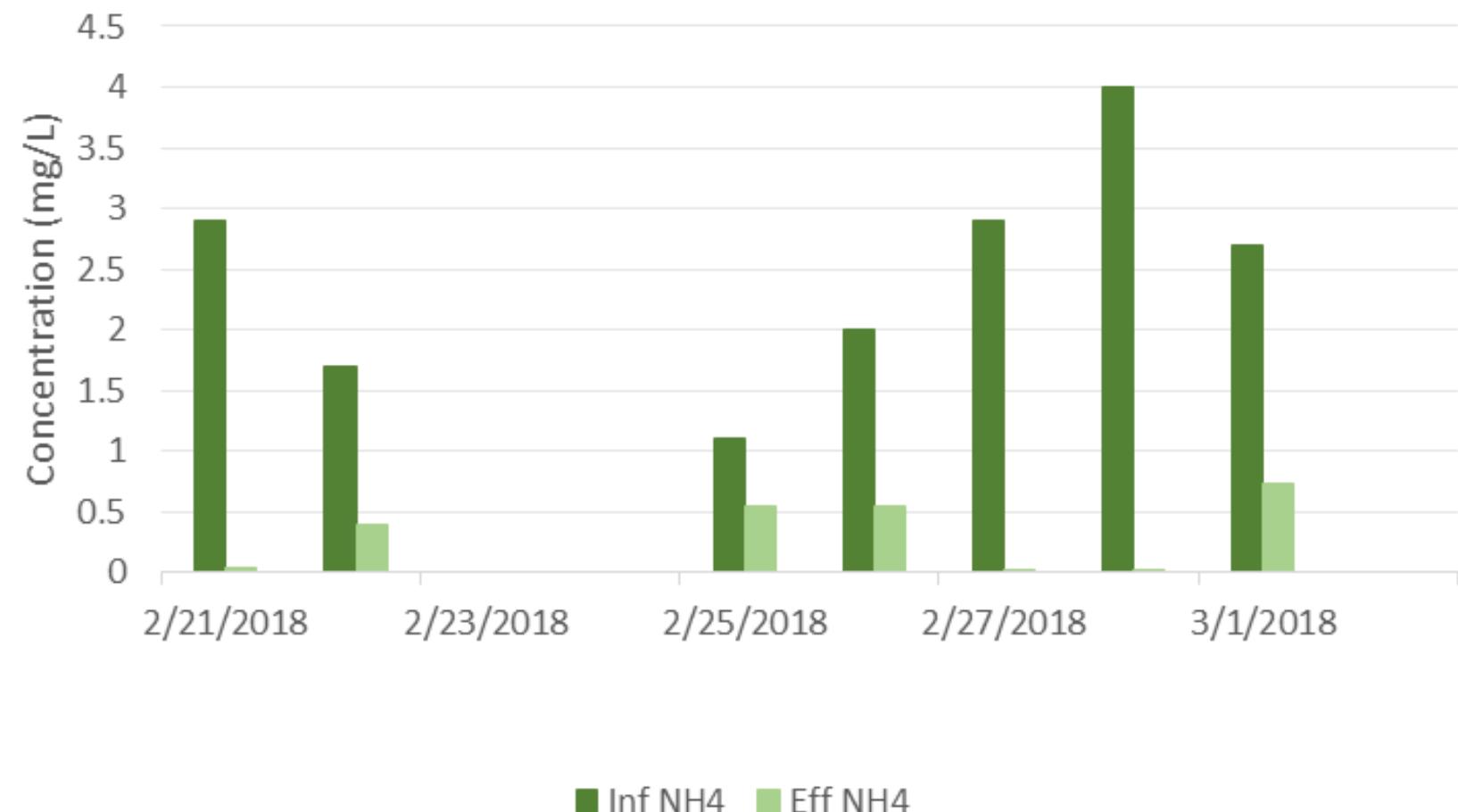


# Rushville Performance



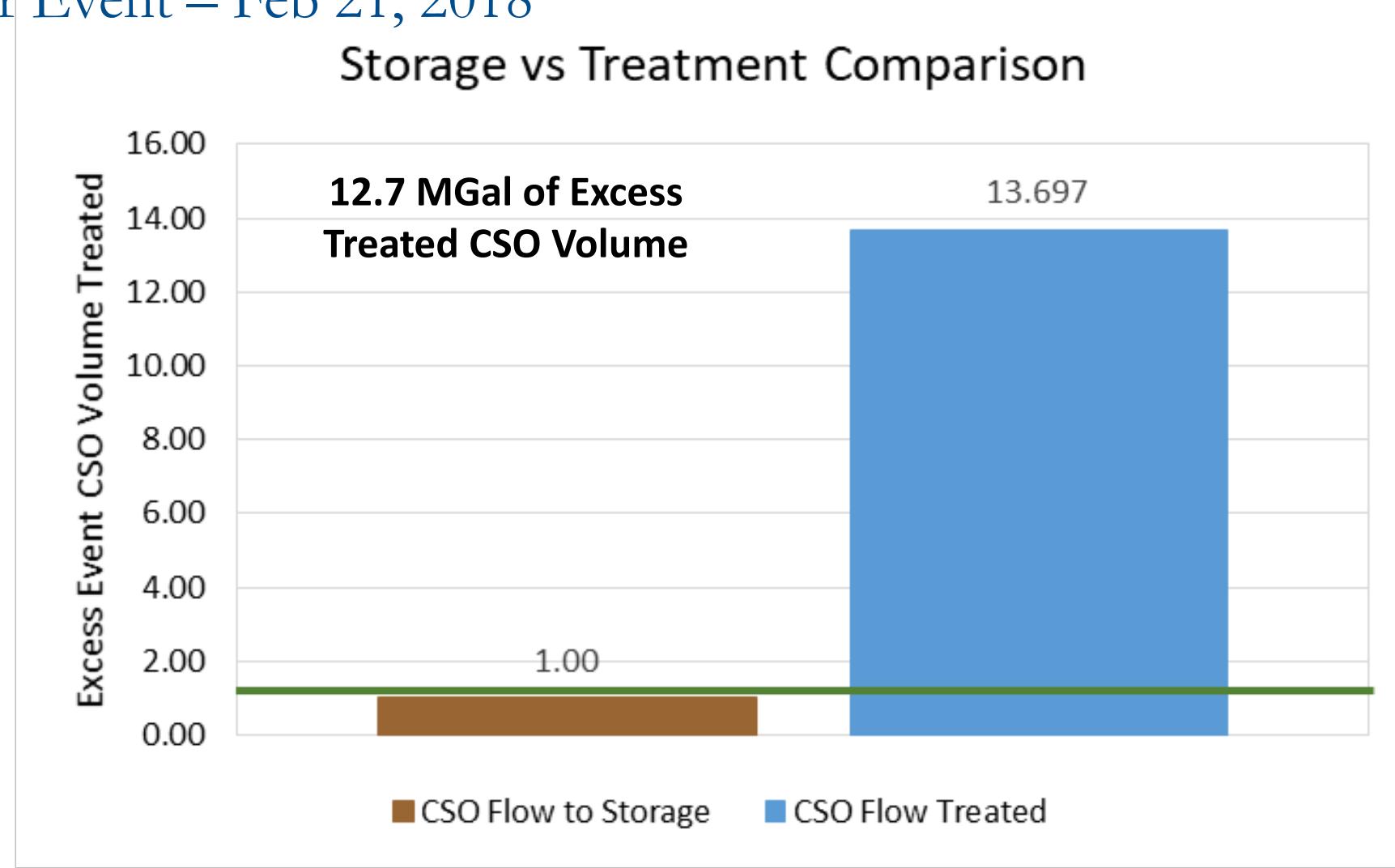
Wet Weather Event – Feb 21, 2018

Event NH4 Results



# Rushville Performance

Wet Weather Event – Feb 21, 2018



# Rushville, IN Performance

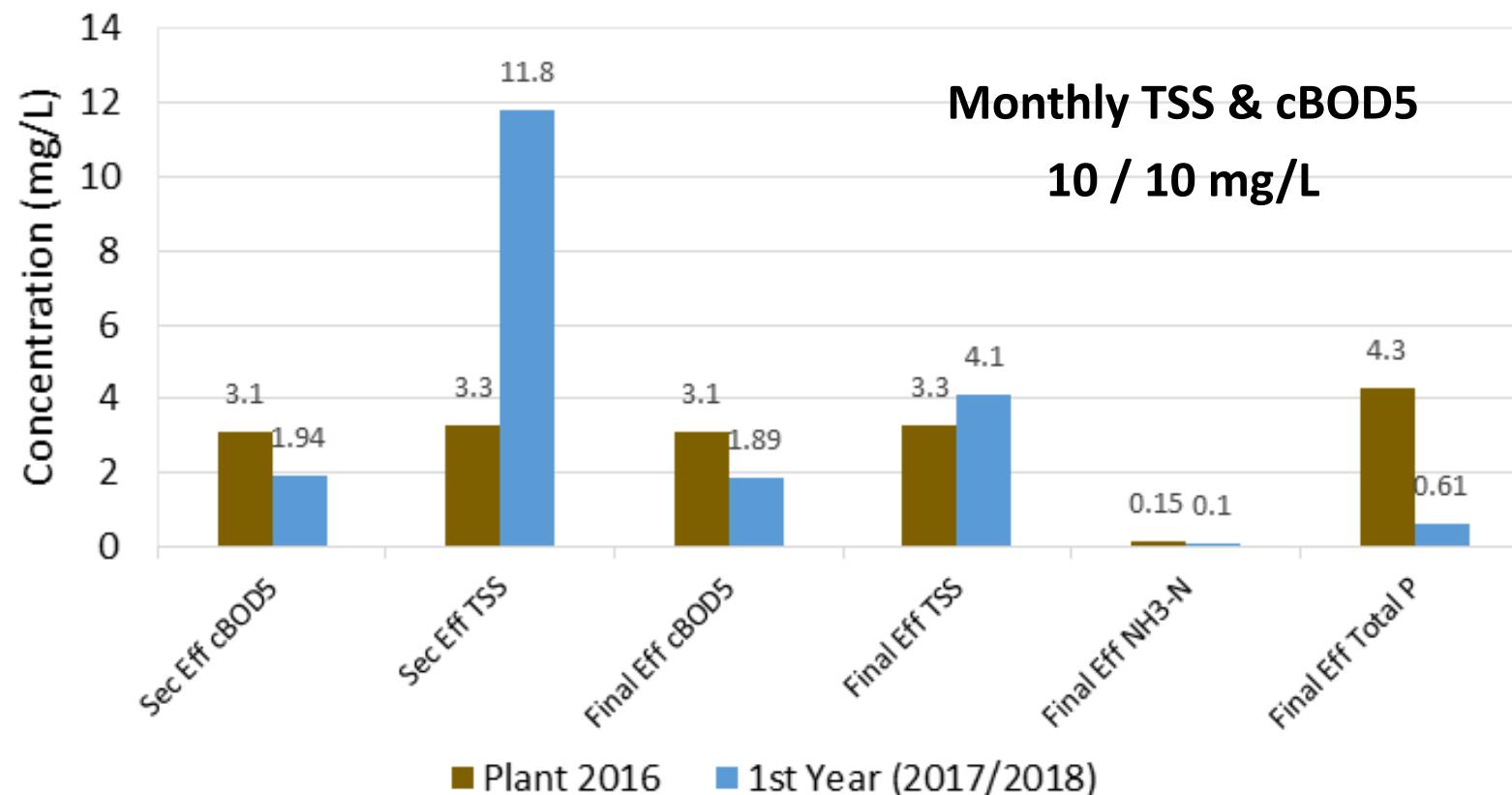
1 Year Of Operation

Comparison NPDES Permit vs. Monthly Average Effluent after CMDF Start-up



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## AquaStorm® Performance Comparison

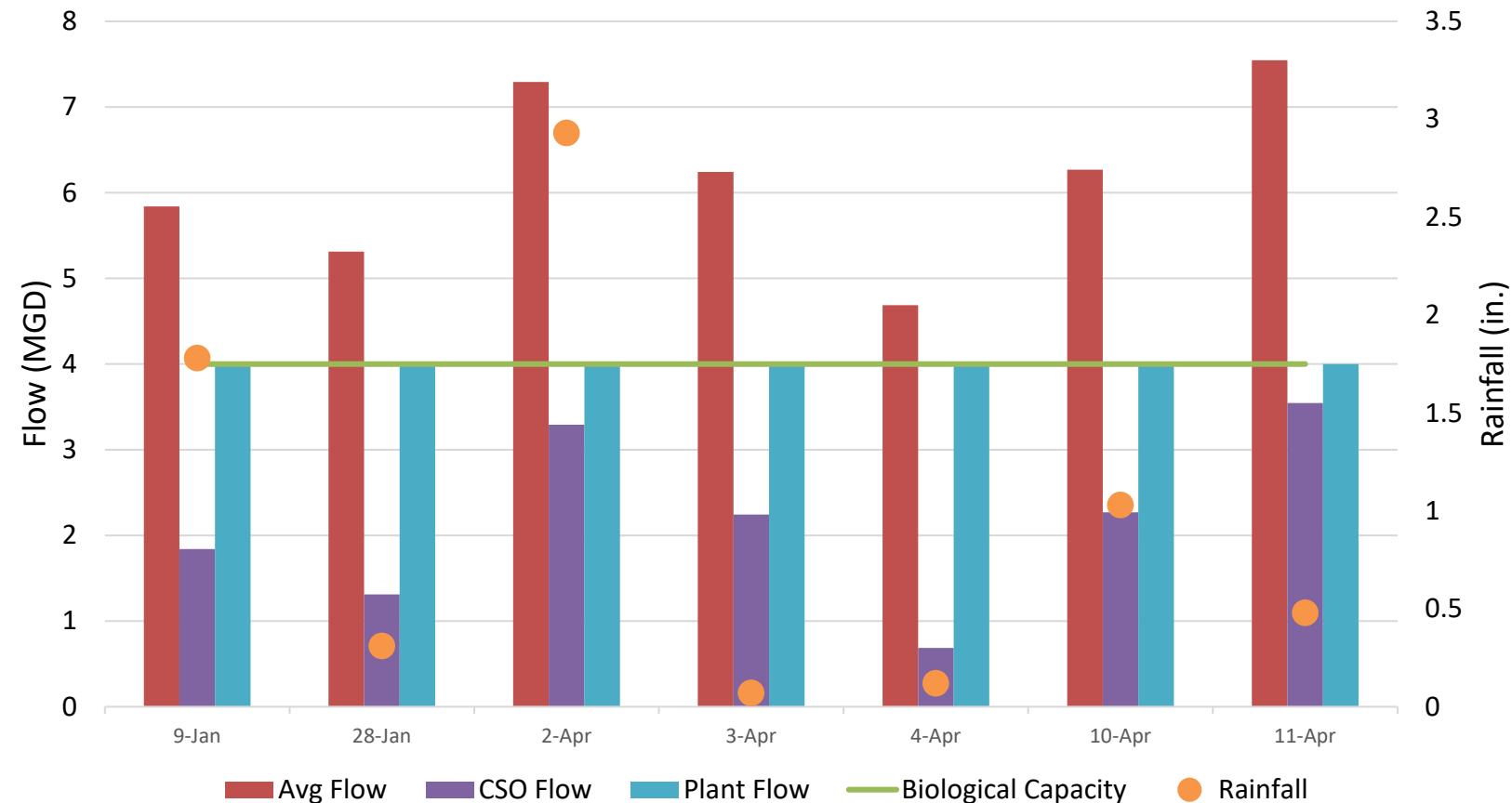


# Rushville Performance

## Wet Weather Events – 2024



### 2024 Event Flows



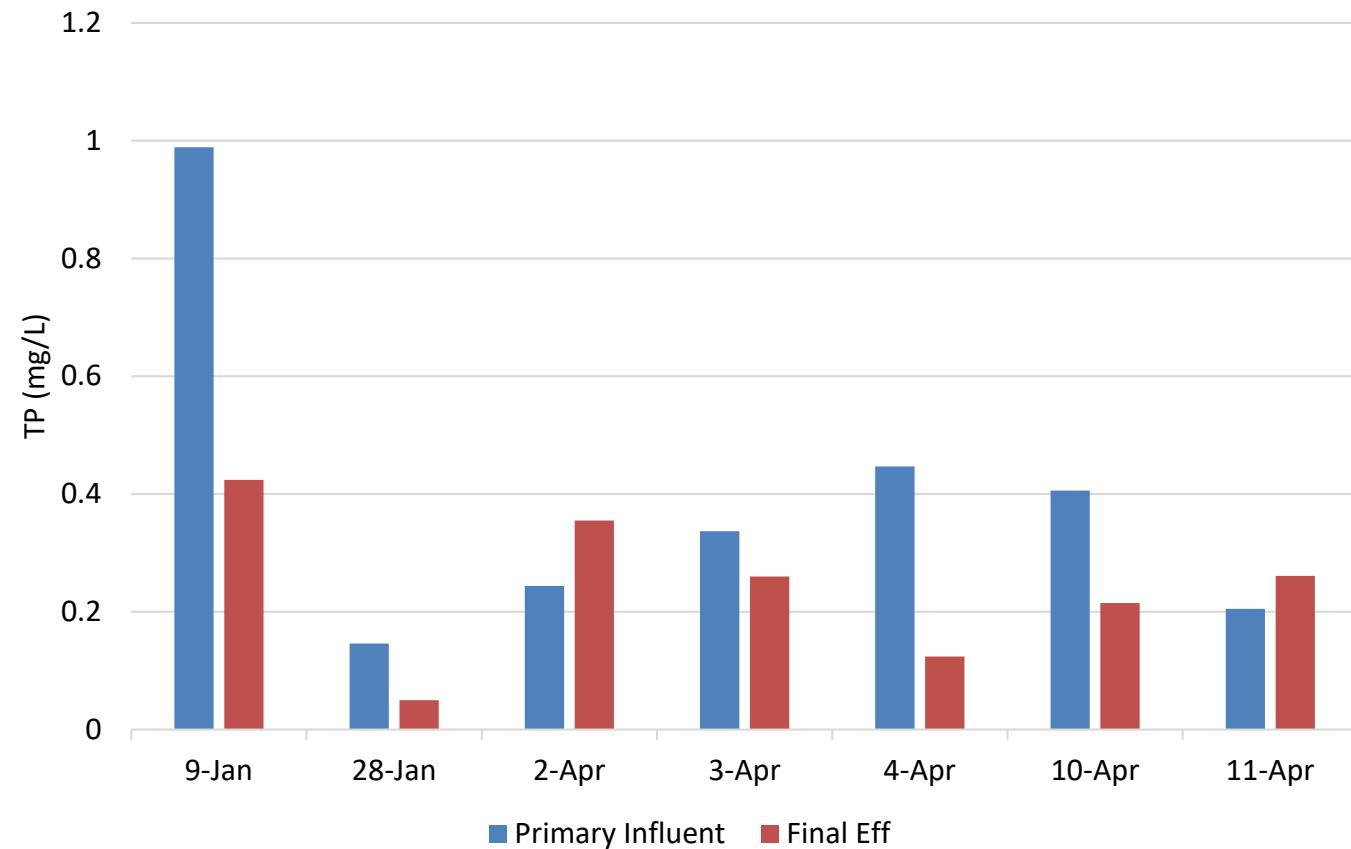
# Rushville Performance

## Wet Weather Events – 2024



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### 2024 Event TP

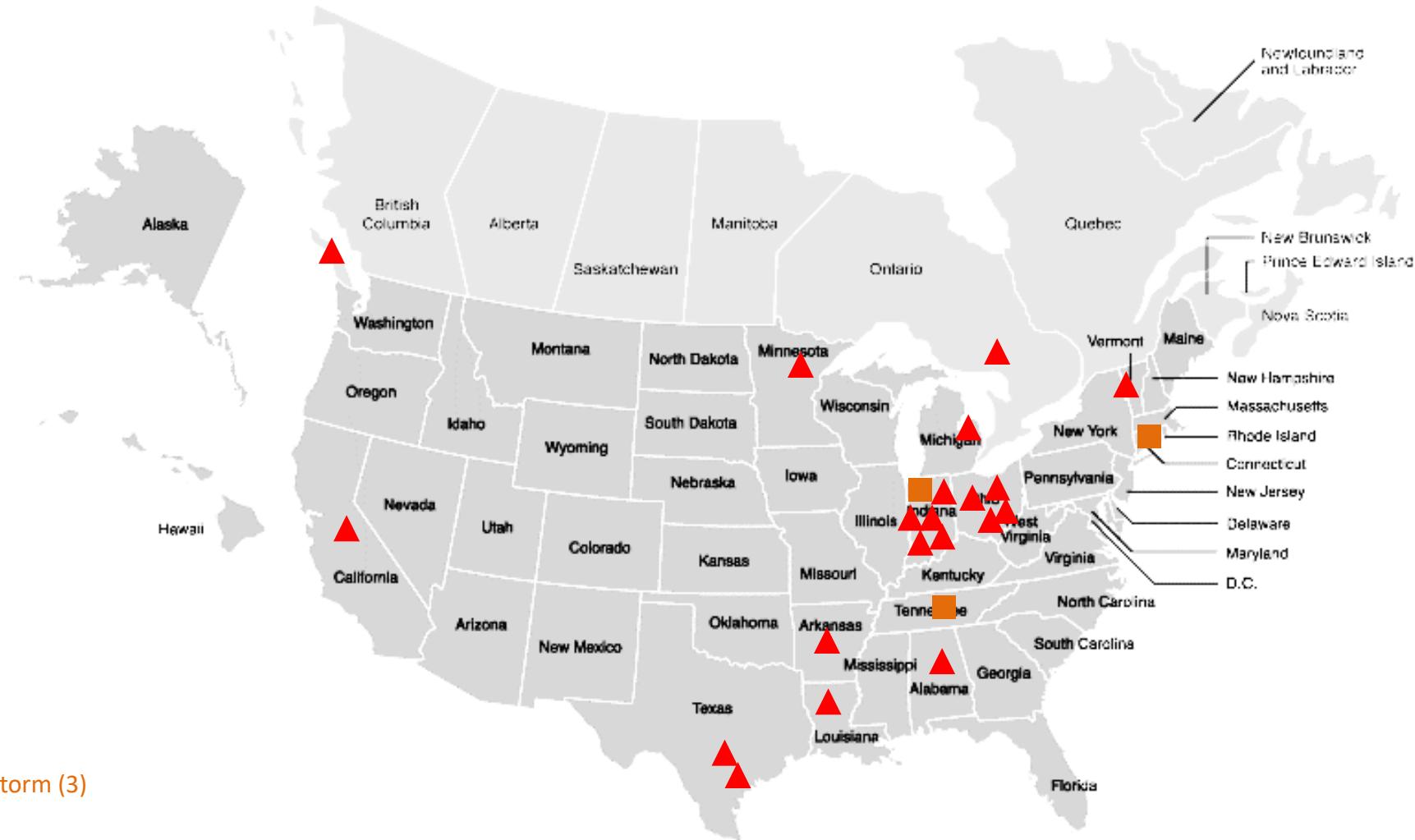


# AquaStorm® PCMF

## Pilot Studies



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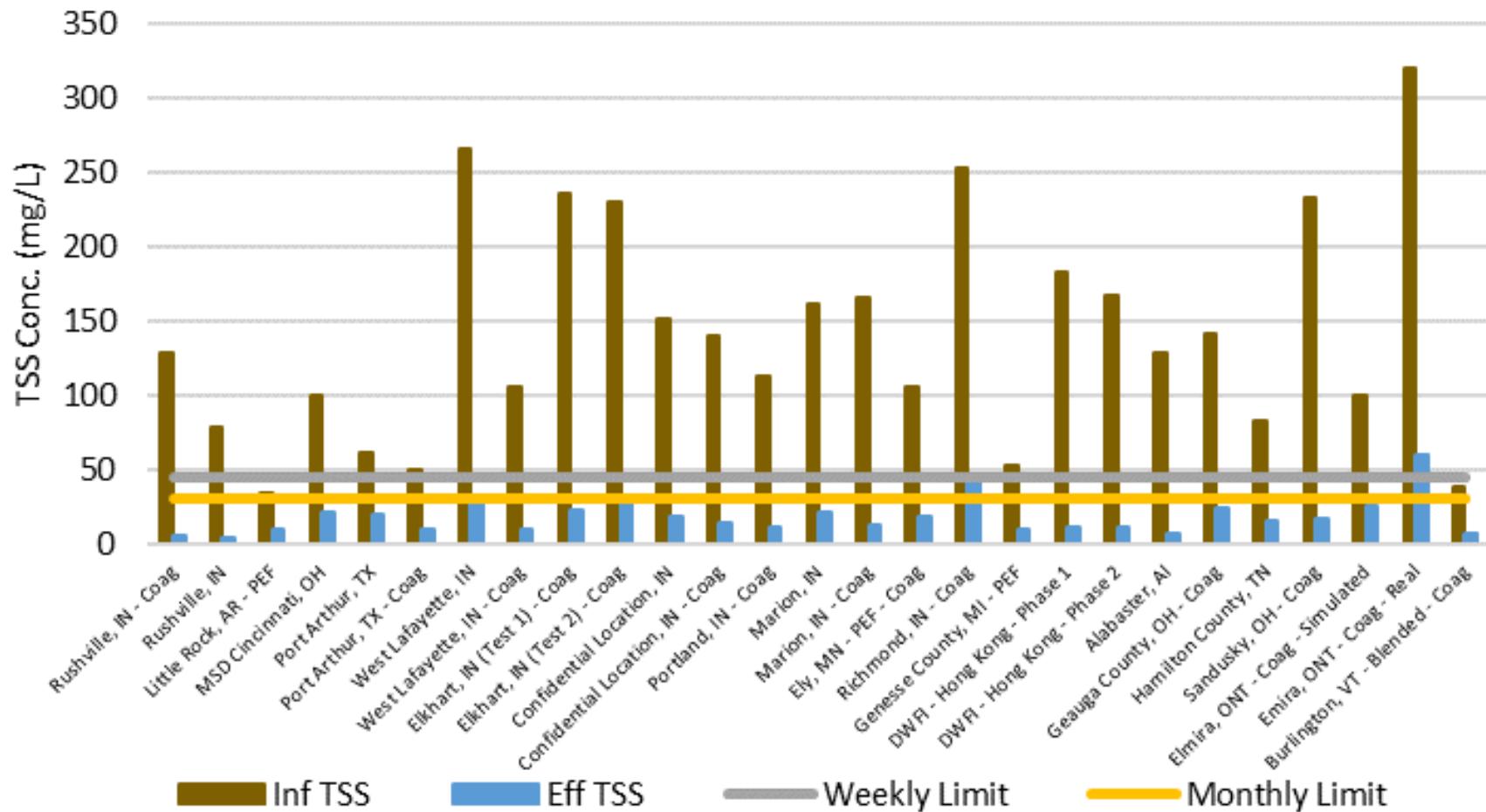
# AquaStorm® PCMF

## Pilot Studies



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### TSS Removal Efficiency



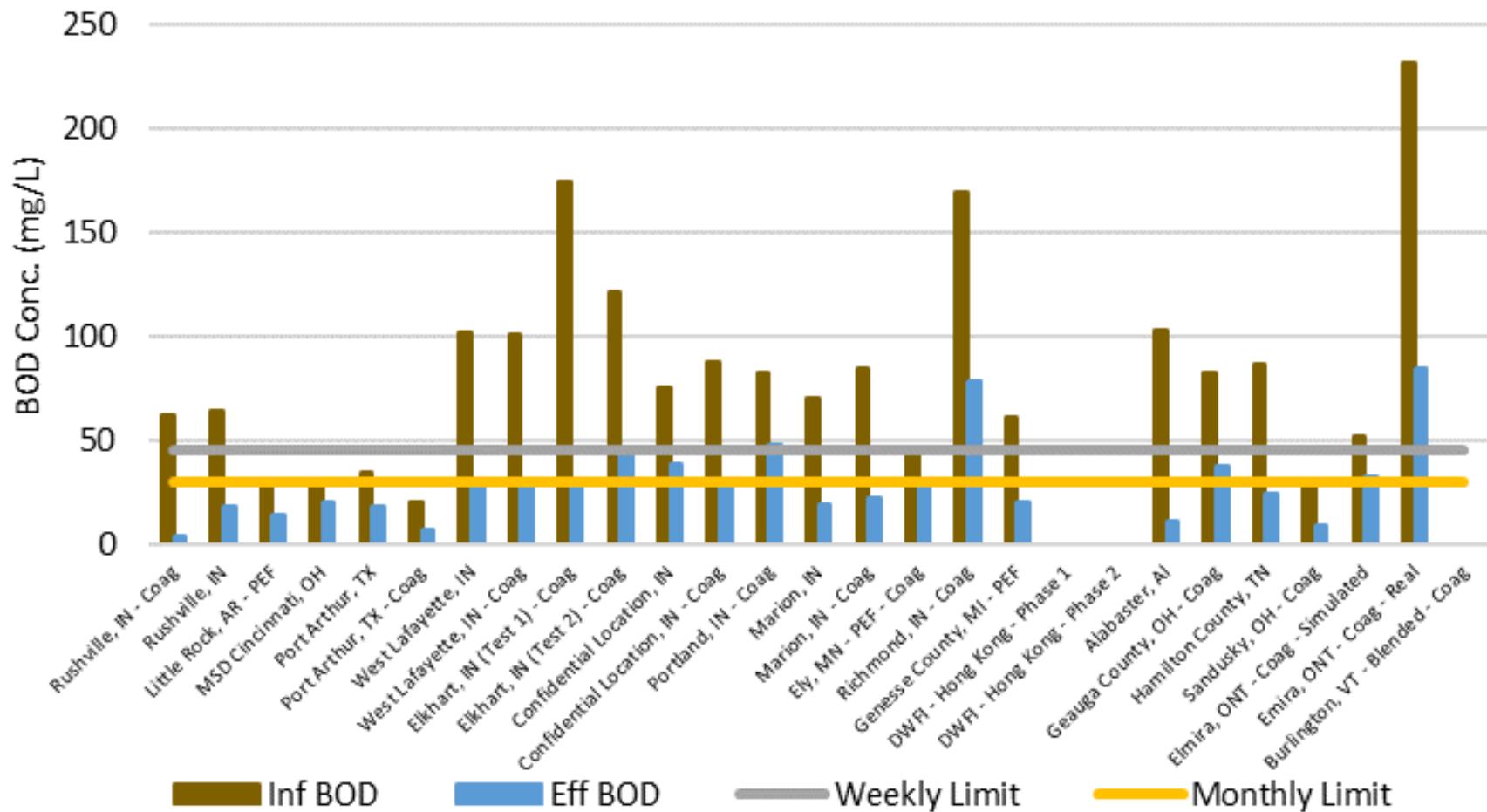
# AquaStorm® PCMF

## Pilot Studies



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### BOD Removal Efficiency



# Summary

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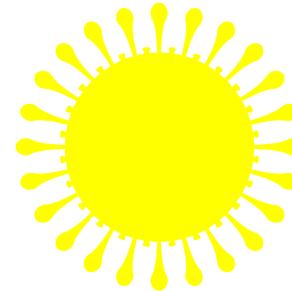
# AquaStorm® Summary



Wet Weather Treatment



High Effluent Quality



Disinfection & Pathogen Removal



Dual Treatment



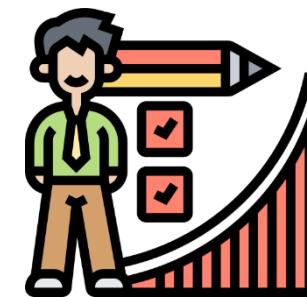
Increased Secondary Capacity



Footprint Savings



Simple Operation



Net Present Value



# AquaStorm® Cloth Media Filtration for Wet Weather Treatment

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