



AQUA-AEROBIC SYSTEMS, INC.  
A Metawater Company

# Pile Cloth Media Filtration

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“AquaStorm<sup>®</sup>: Meet Regulatory Requirements for Varying Conditions with Peak Wet Weather Flow Treatment”

John Dyson

Product Manager – AquaPrime<sup>®</sup>/AquaStorm<sup>®</sup>

# Peak Wet Weather Flows

## Places & Problems



All Size Installation or Town



CSO and SSO Communities



Peak Flows at the Plant



Remote Overflow Sites

# Peak Wet Weather Flows Places & Problems



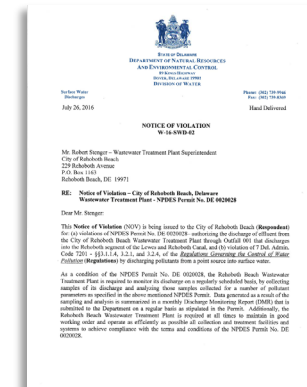
Network Overflow



Overflow at the Plant



Process Upset



Permit Violation



# Peak Wet Weather Flows

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Options for Utilities

# Peak Wet Weather Flows

## Utility Options



Repair Network



Storage / Tunnels



Plant Expansion



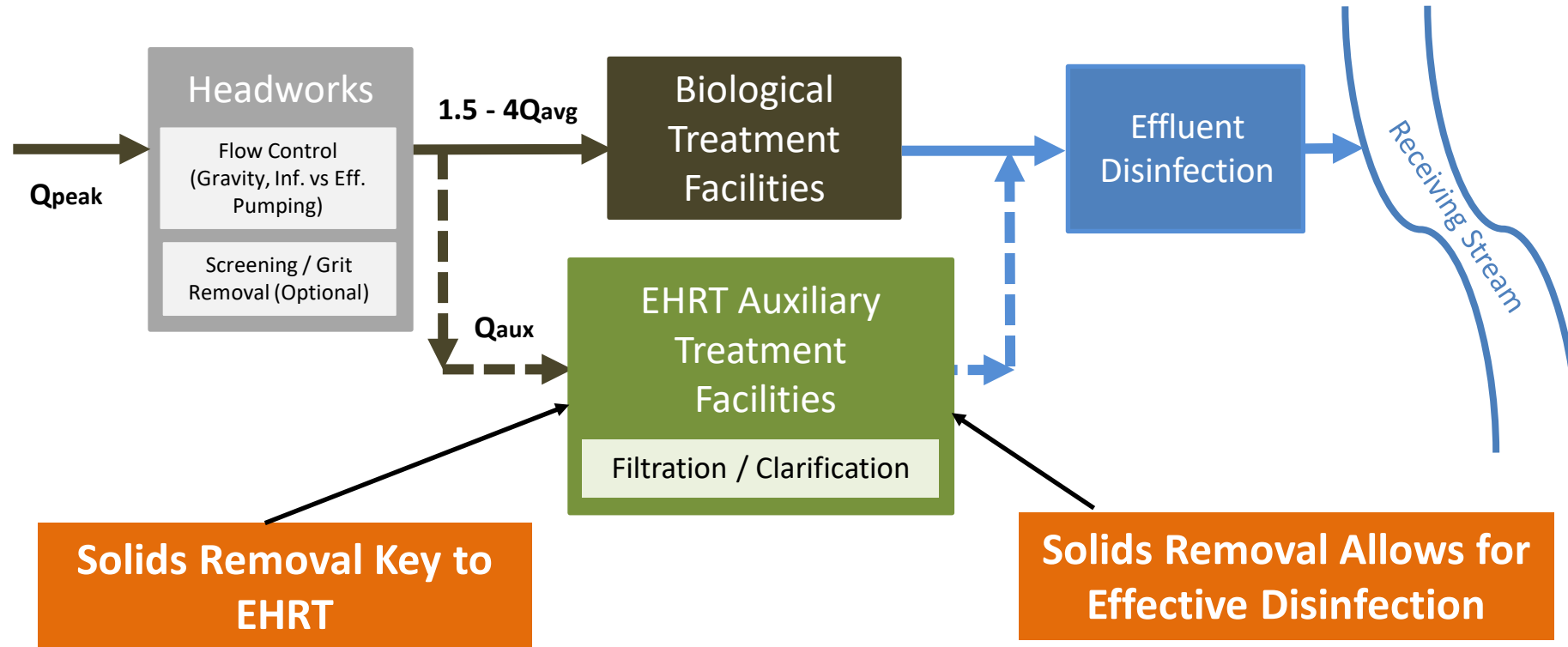
EHRT Treatment

# Peak Wet Weather Flow Management

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# Peak Flow Management

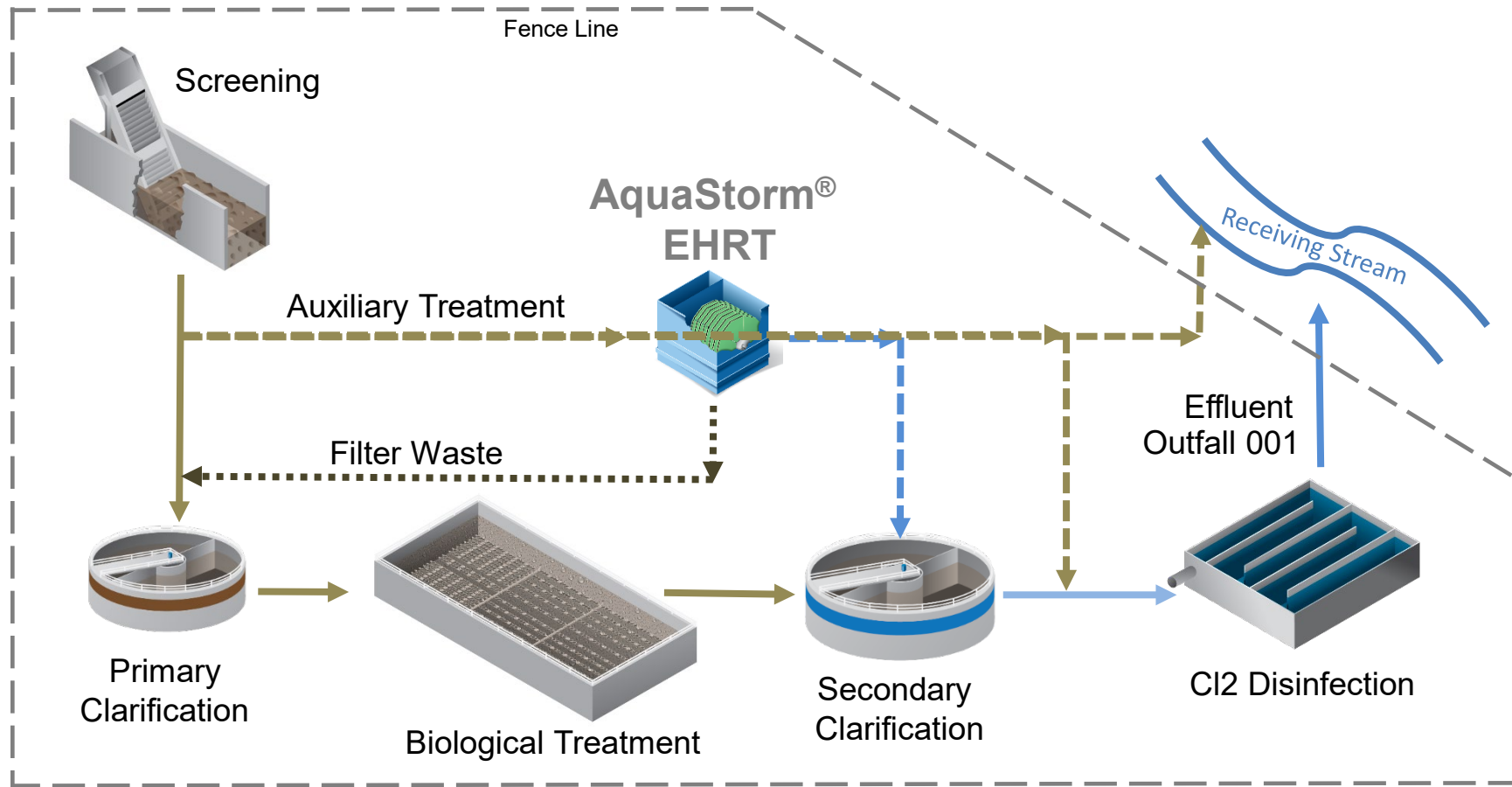
## Auxiliary Treatment Capacity



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

# Regulatory Update

## Peak Wet Weather Flow Management

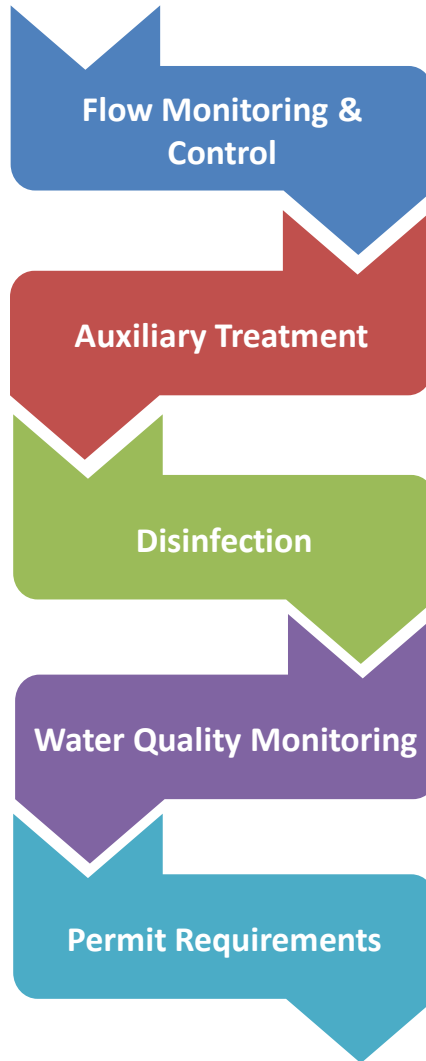


Peak Wet Weather Flow Management – Provides immediate water quality improvements



# 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 be disinfected

4

Wet weather events should be monitored for water quality parameters

5

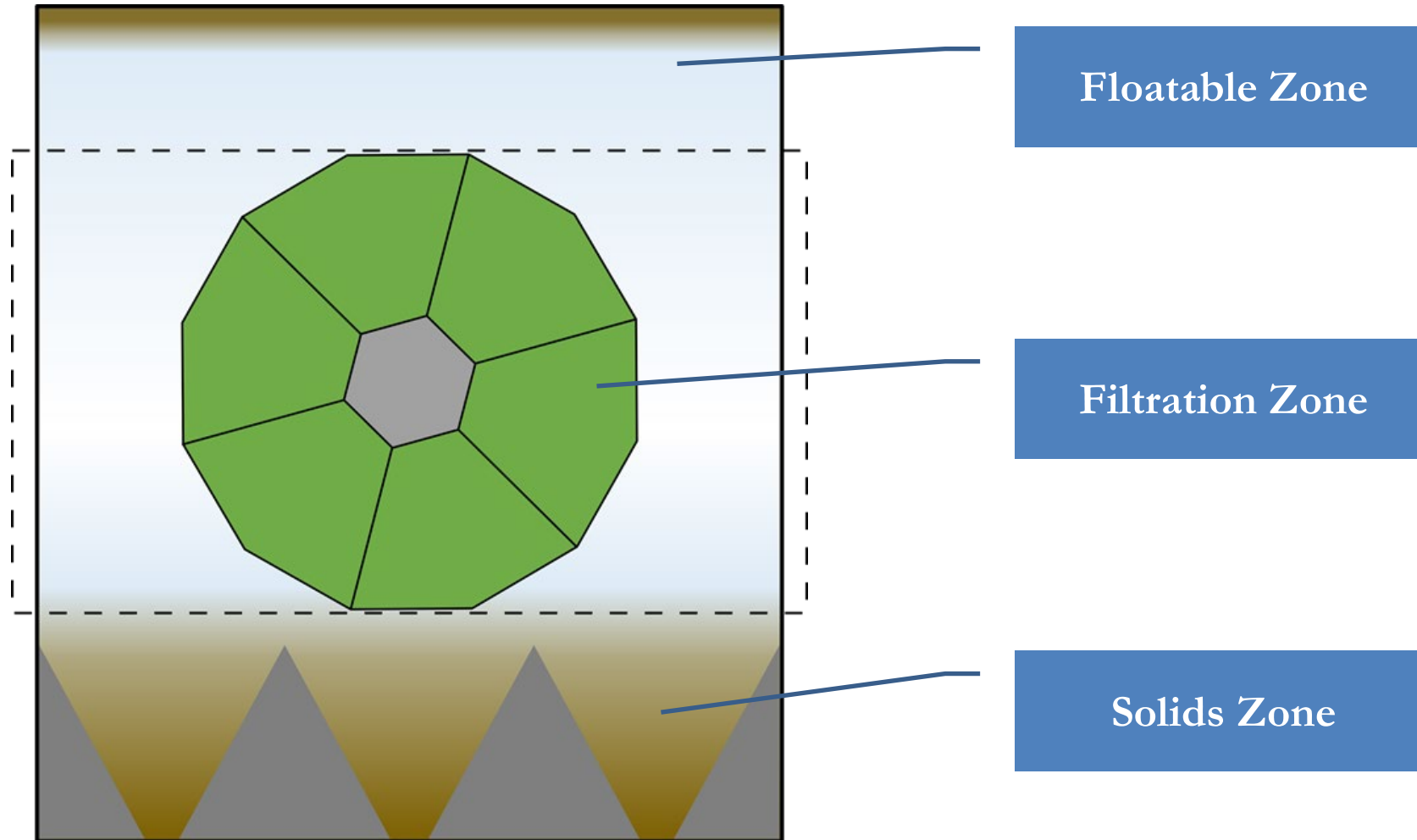
Treatment facilities must meet permit requirements weekly and monthly requirements

**AquaPrime<sup>®</sup> / AquaStorm<sup>®</sup>**  
**Pile Cloth Media Filter Operation**

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# AquaPrime<sup>®</sup> / AquaStorm<sup>®</sup>

## Basics - Differentiation



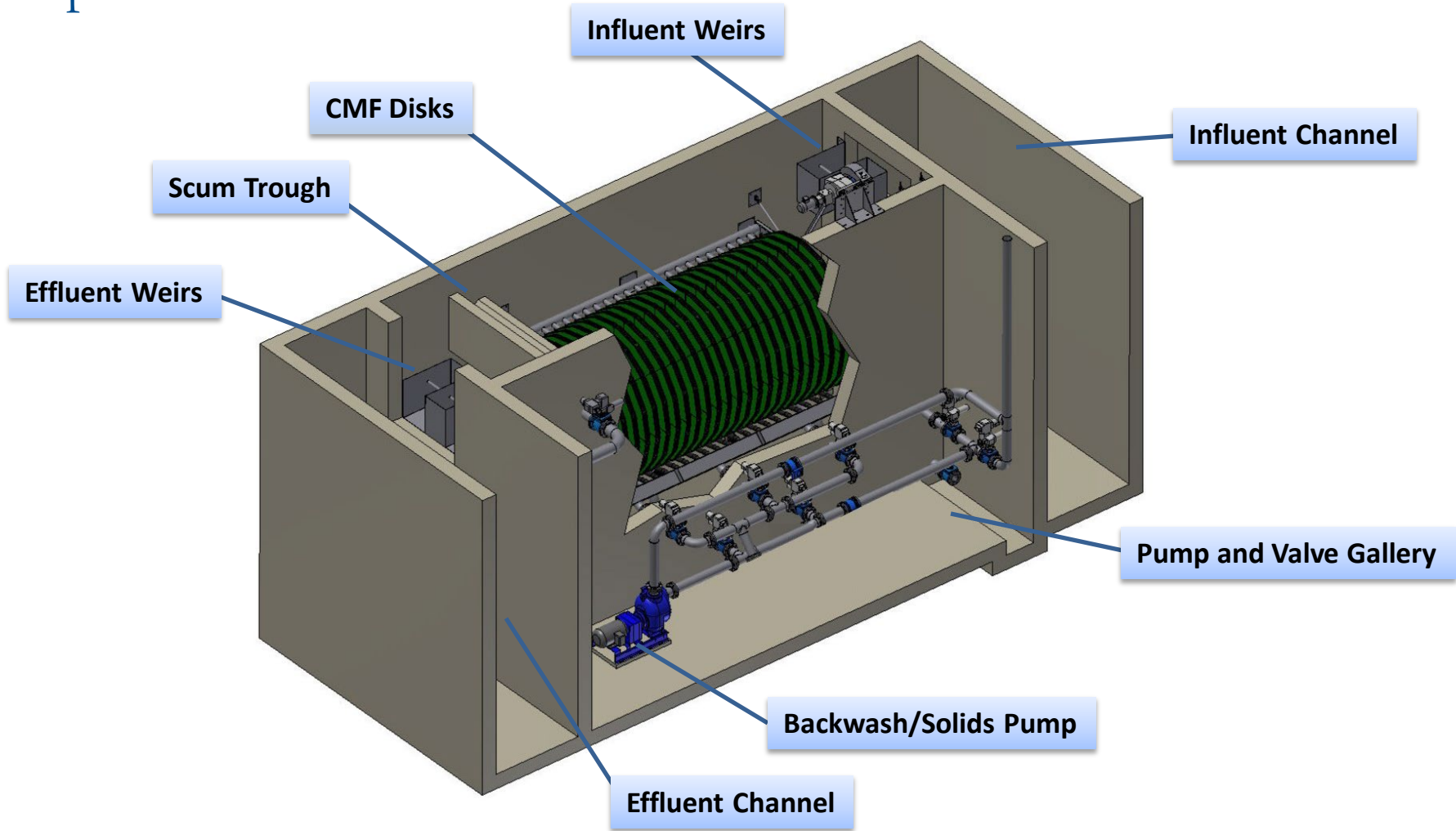
# AquaPrime® / AquaStorm®

## PCMF Operational Sequence



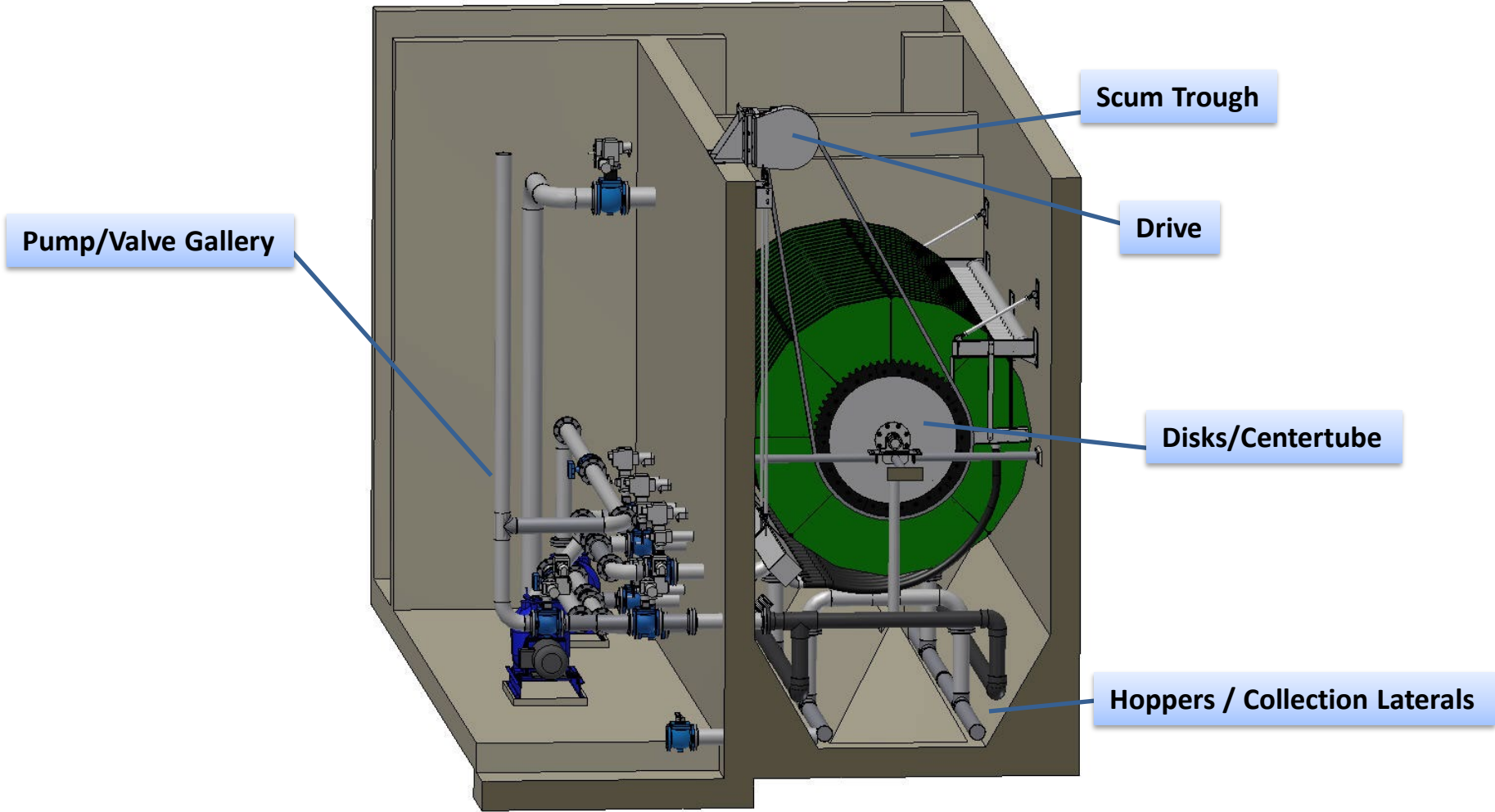
# AquaStorm™

## PCMF Adaptations



# AquaStorm<sup>®</sup>

## PCMF Adaptations



# AquaStorm<sup>®</sup> Procedures

## Startup, Shutdown & Storage

### Startup

- Open Unit Influent Gate
- Allow the tank to Fill
- In Filtration Mode
- Backwashing and Wasting are all automatic.

### Shutdown/Storage

- Close Unit Influent Gate
- Initiation Shutdown Procedure
  - Empty Scum Trough
  - Continuous Backwash
  - Solids Removal
  - Drain remaining water – 1'
- Wash tank down



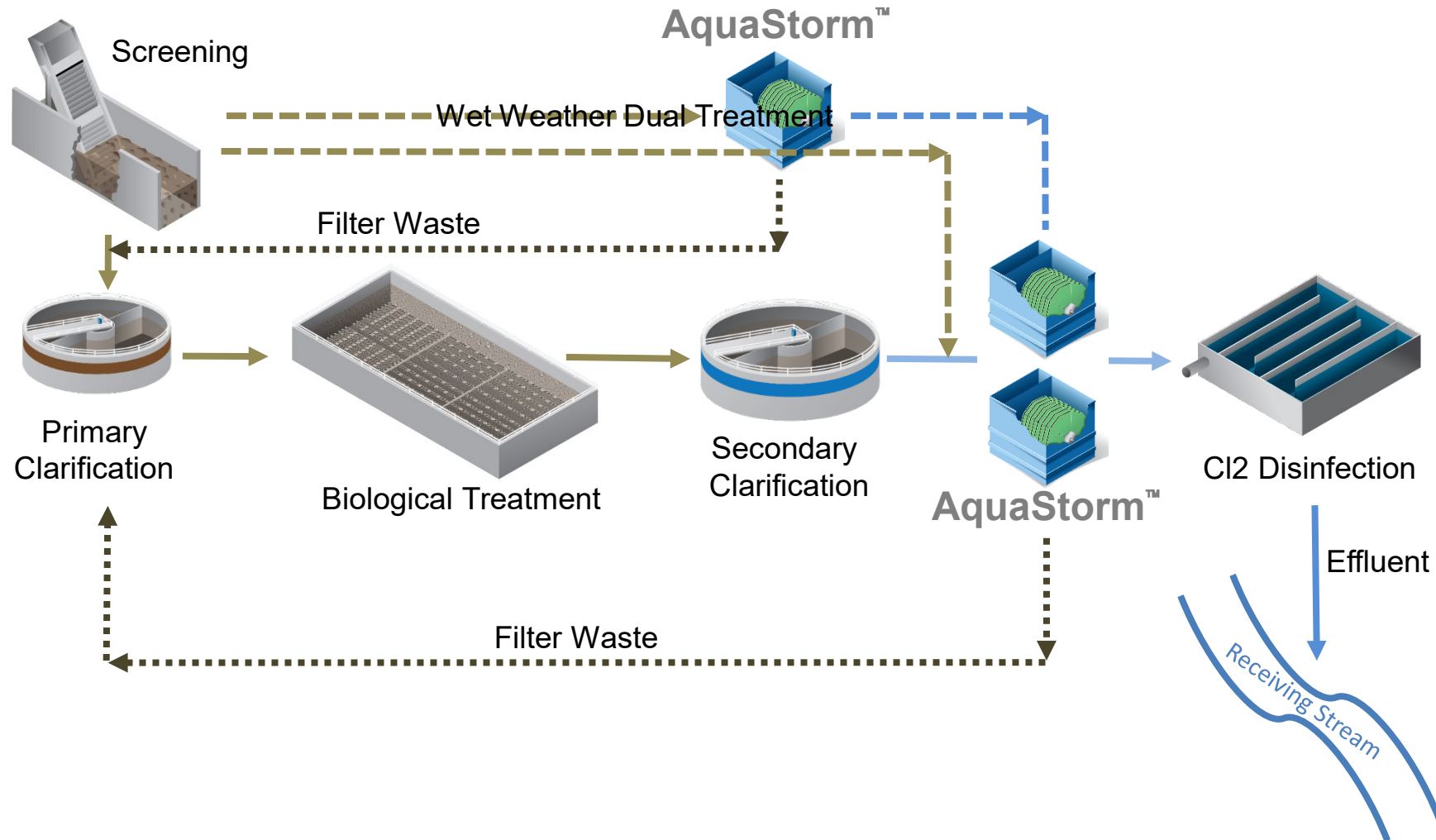
**AquaStorm<sup>®</sup> EHRT**  
**Application within Facilities**

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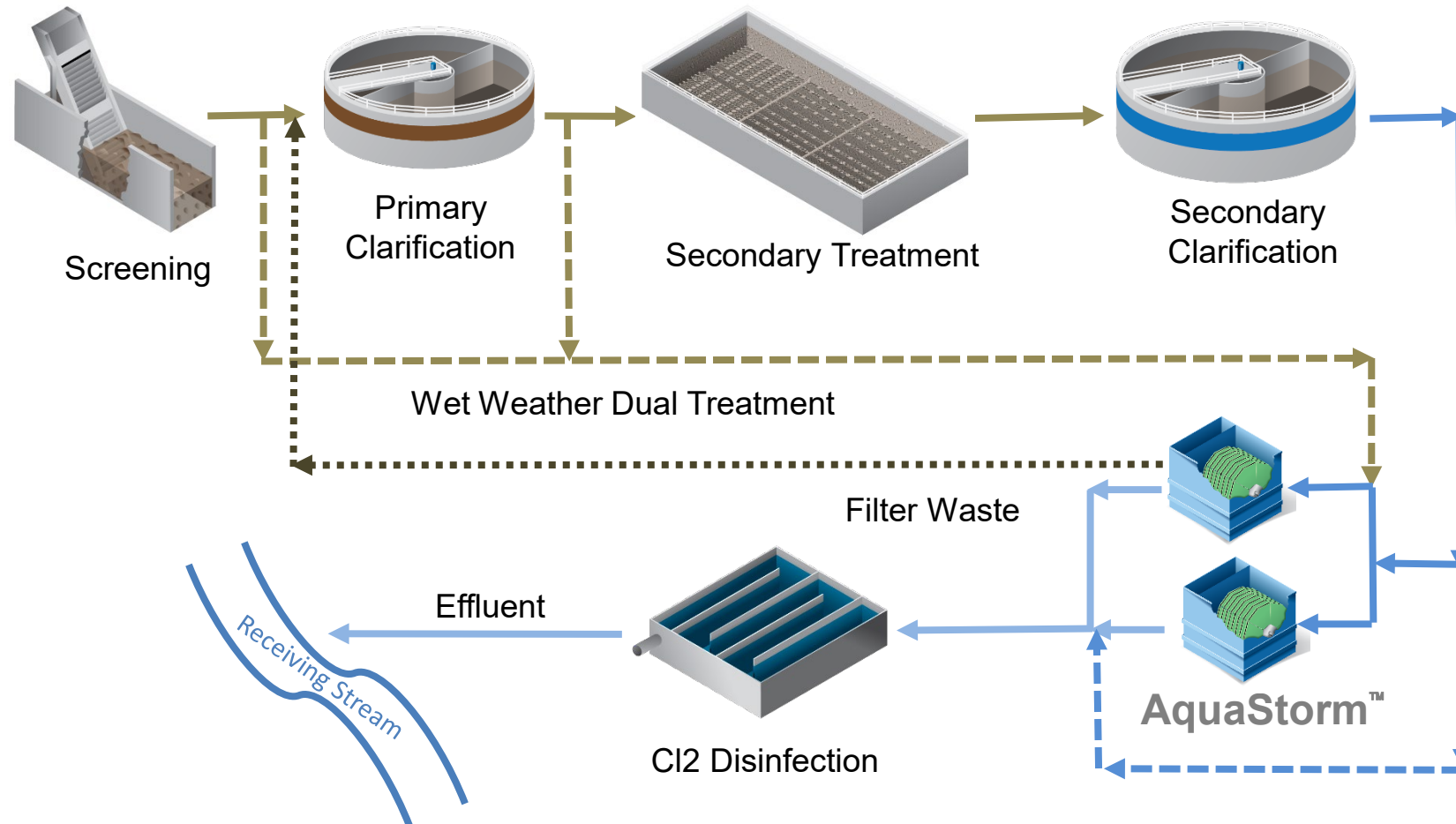
# AquaStorm<sup>®</sup> Locations

## Parallel Side-Stream Treatment



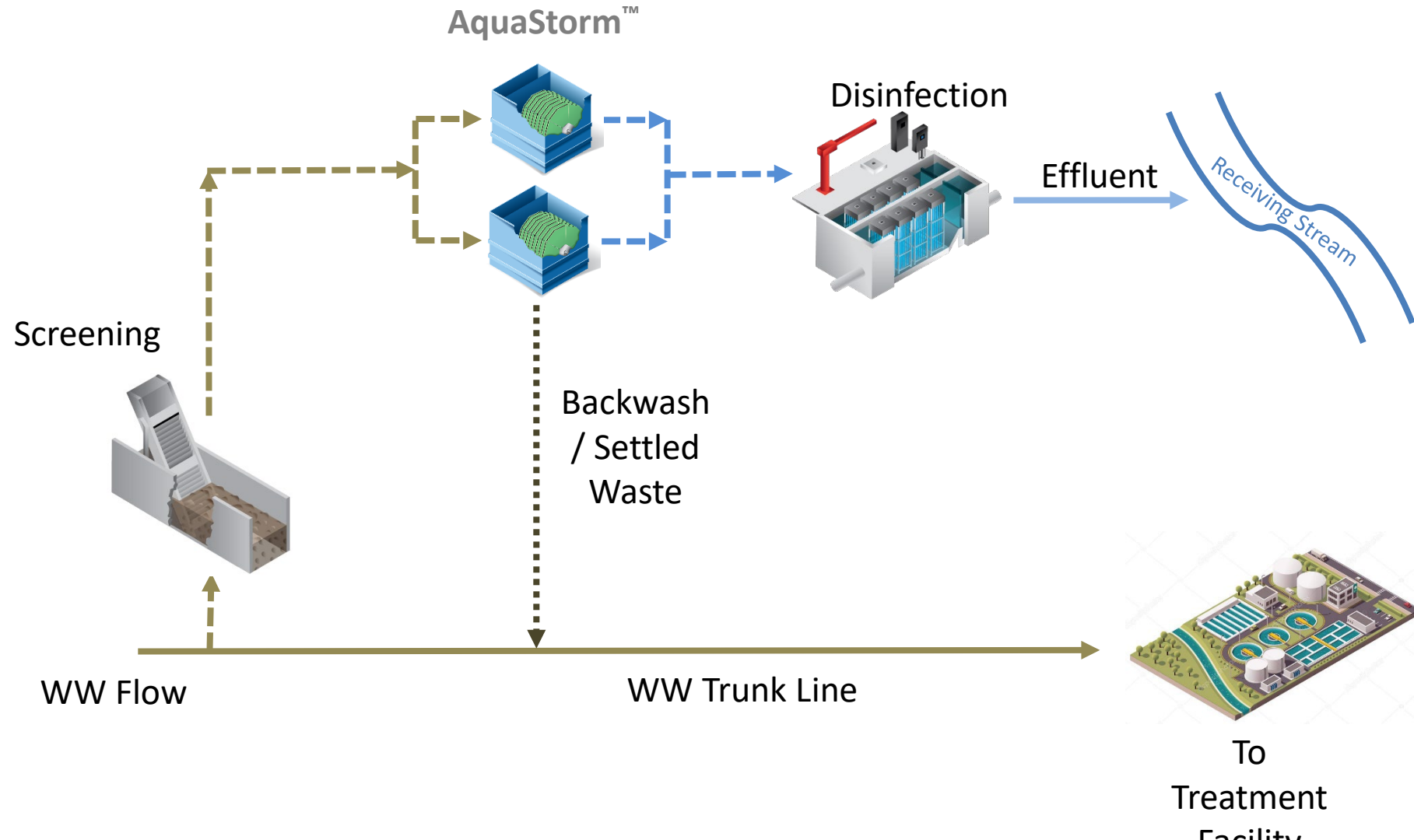
# Tri Treatment Wet Weather

## Dual Stream Treatment



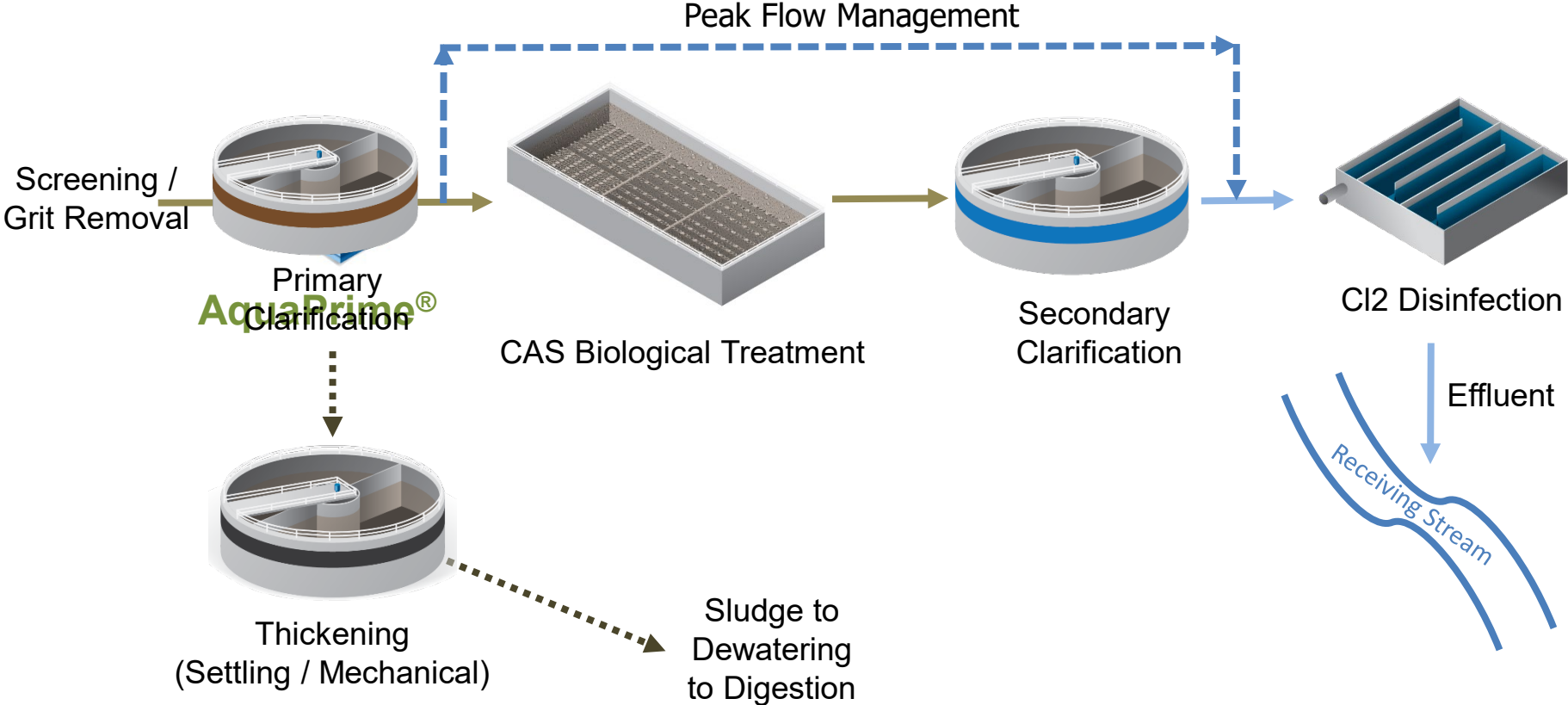
# Remote Wet Weather Treatment

## Typical Auxiliary Arrangement



# Advanced Primary Treatment

## Primary Influent



# Case Studies

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# AquaStorm<sup>®</sup>

## Key Projects



Tertiary/WW Treatment  
SSS  
ADF – 12 MGD  
PHF – 58 / 94 MGD



Tertiary/WW Treatment  
CSO  
ADF – 1.2 MGD  
PHF -14 MGD



Tertiary/WW Treatment  
SSS  
ADF – 12 MGD  
PHF – 139/ 196 MGD



# Rushville WWTP



Location / Startup

- Rushville, IN / Aug 2017

Capacity

- ADF – 1.2 MGD, PHF - 14 MGD

Consultant

- Donohue & Associates

Overview

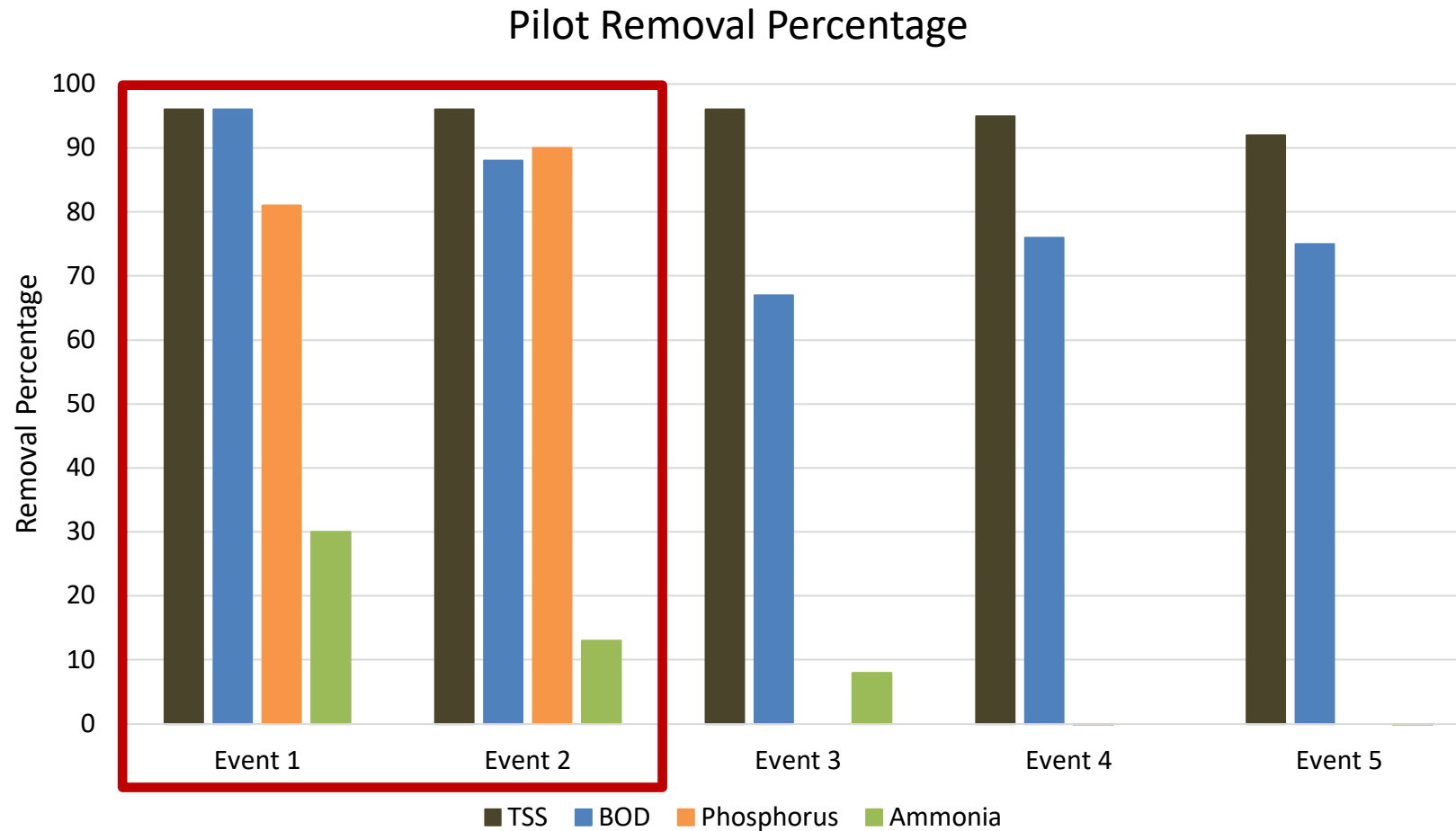
- CSO – AquaStorm – Dual Treatment

Keys to Success

- Dual Treatment Capabilities, Footprint, Water Quality

# Rushville, IN

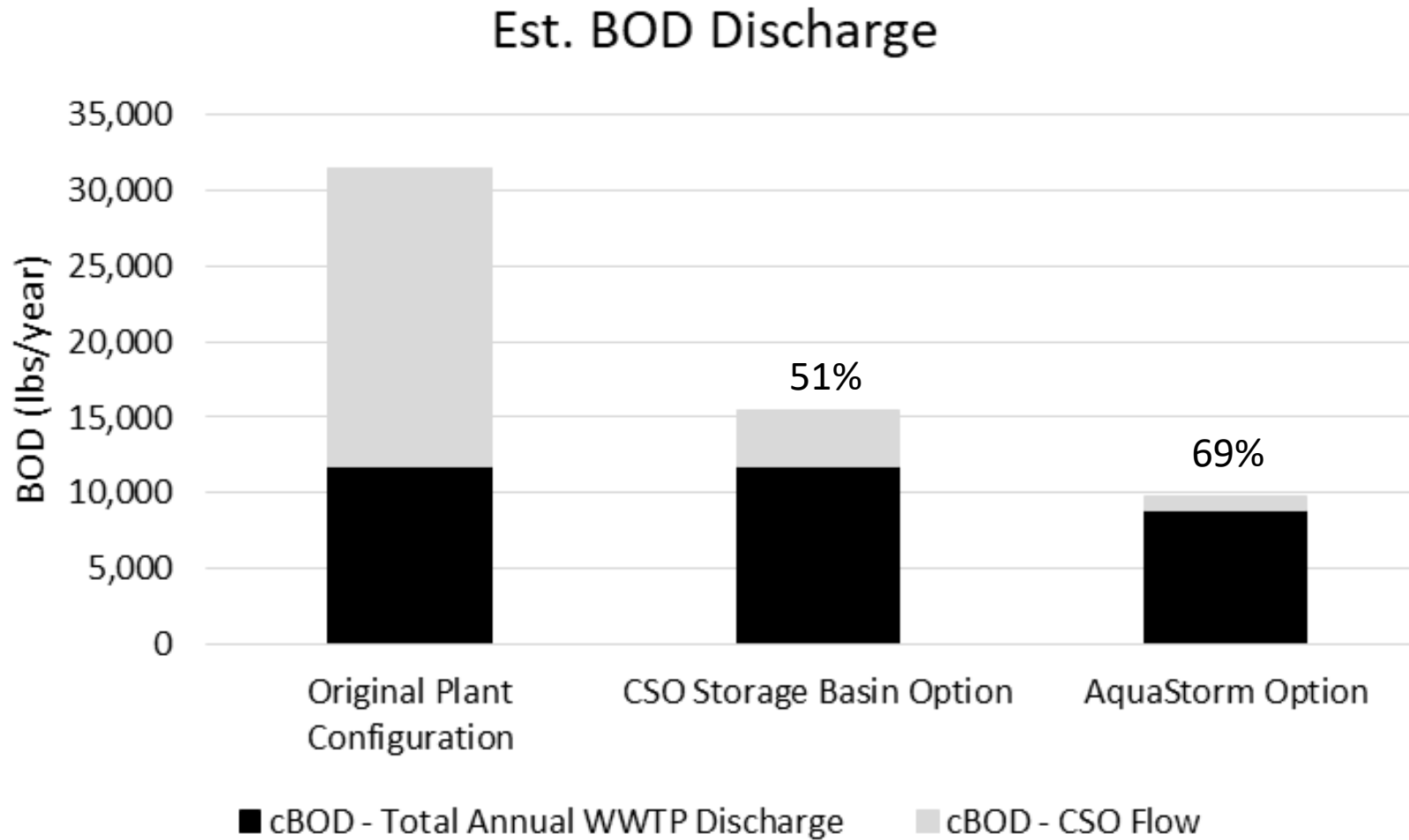
## Pilot Testing





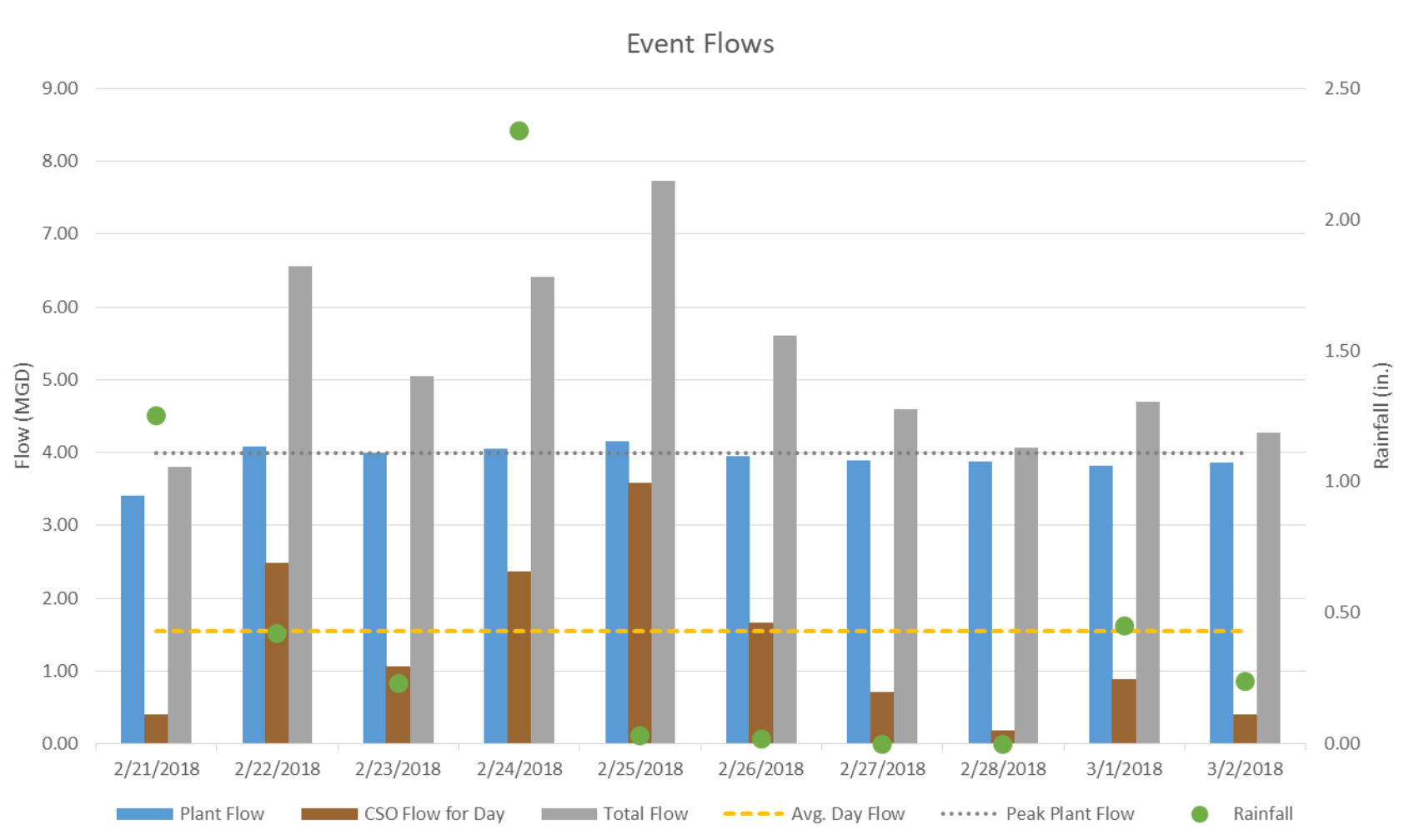
# Storage Basin vs. PCMF

## Environmental Impact



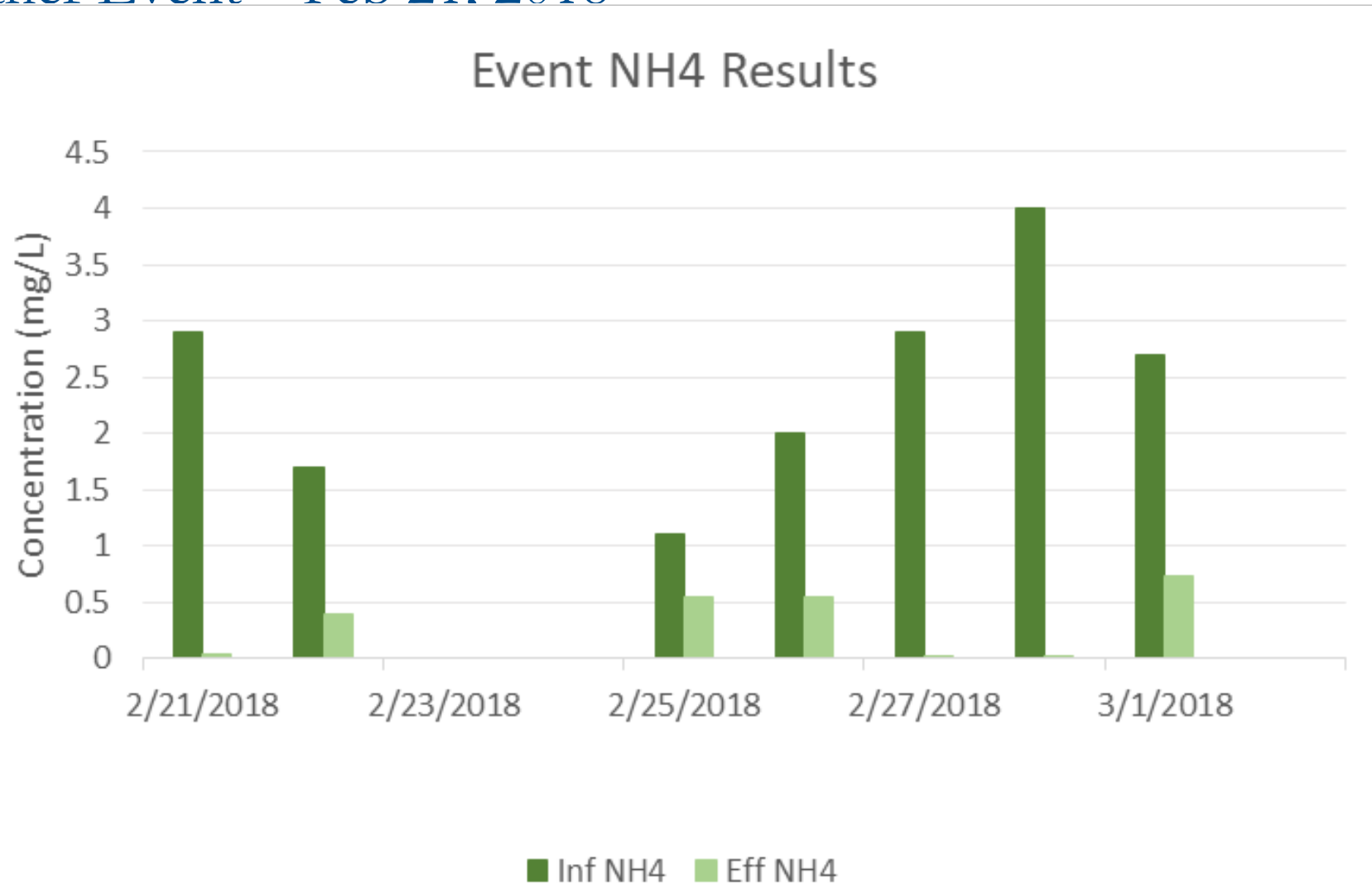
# Rushville Performance

## Wet Weather Event – Feb 21, 2018



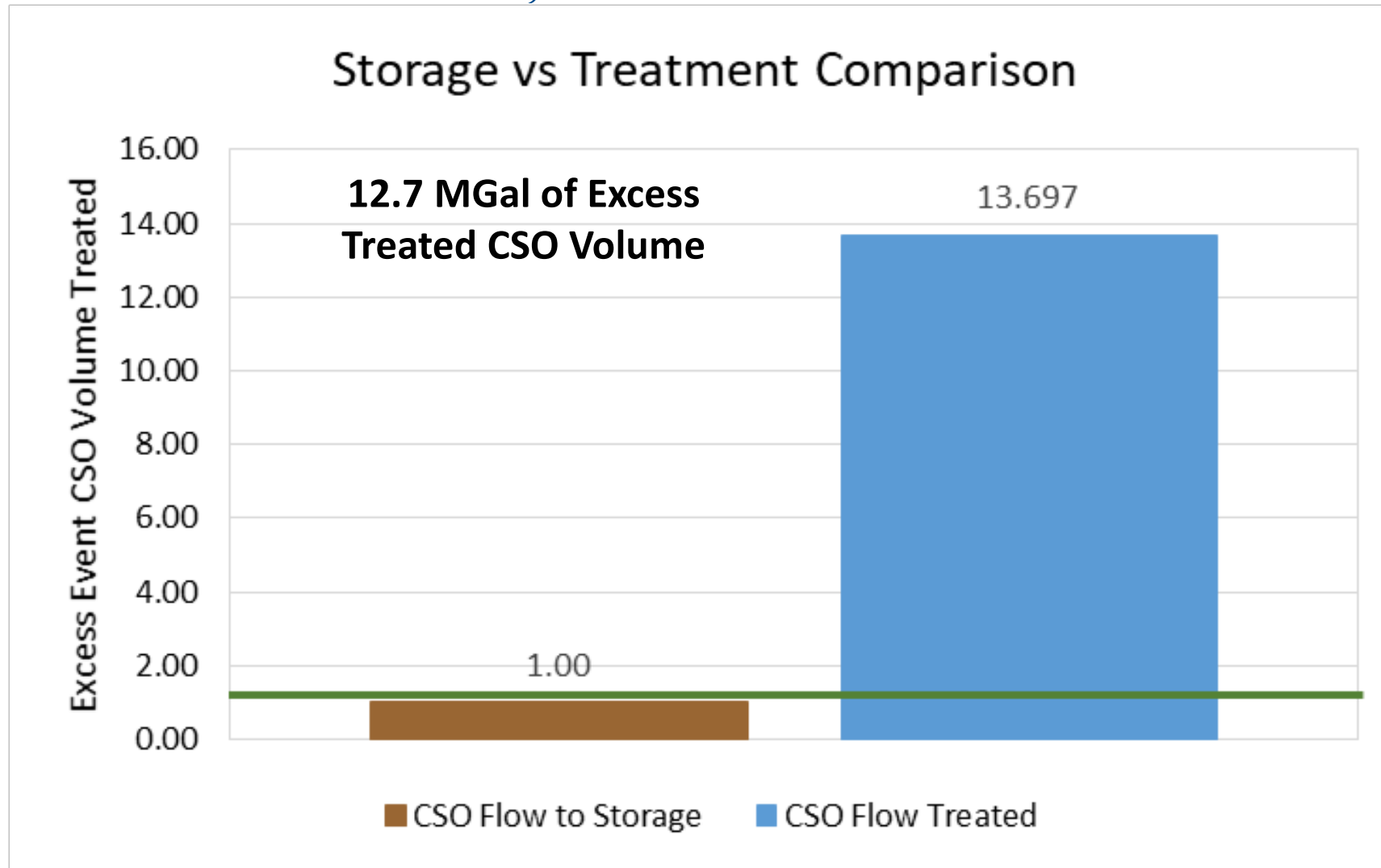
# Rushville Performance

Wet Weather Event – Feb 21, 2018



# Rushville Performance

Wet Weather Event – Feb 21, 2018

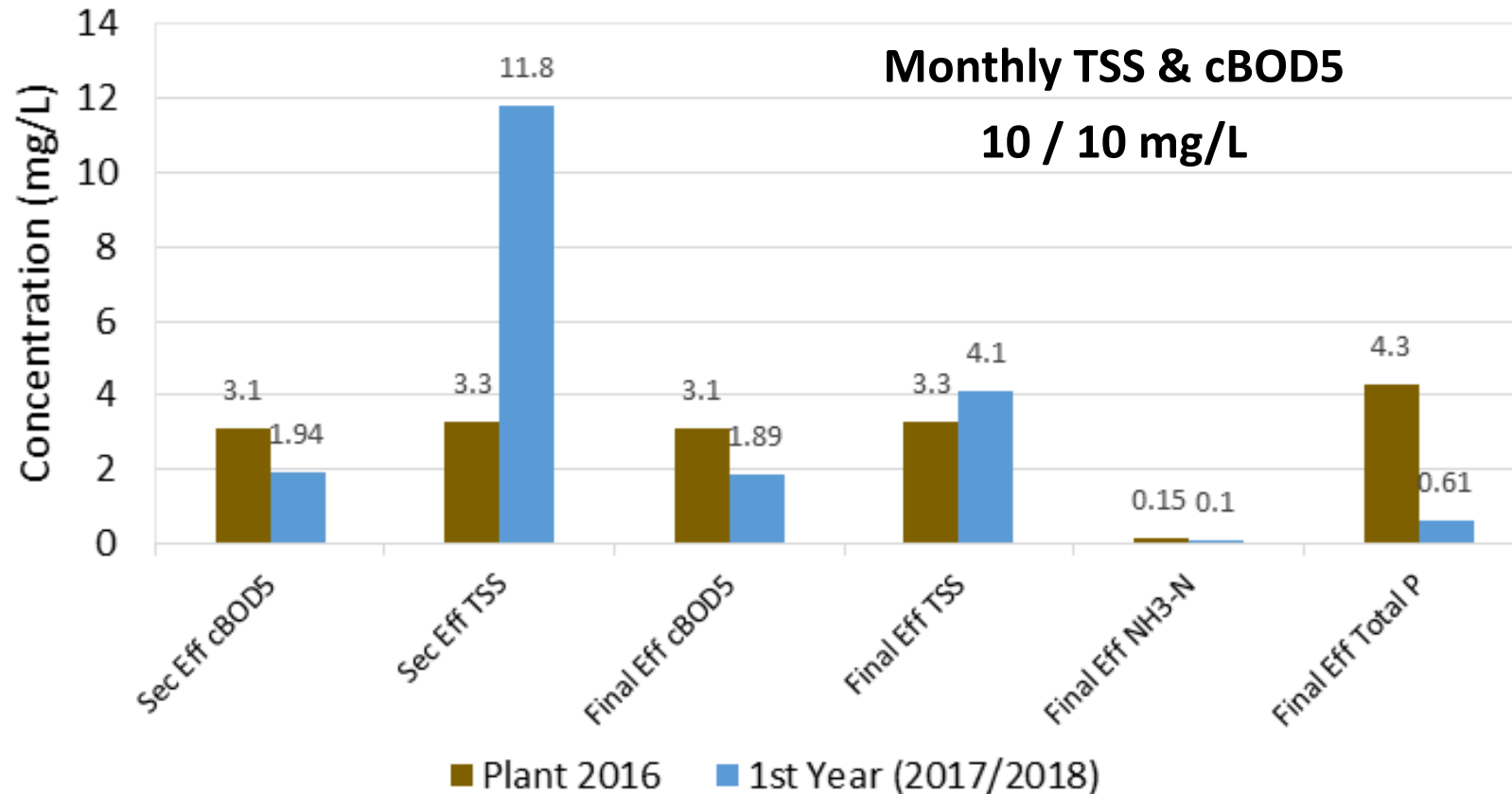


# Rushville, IN Performance

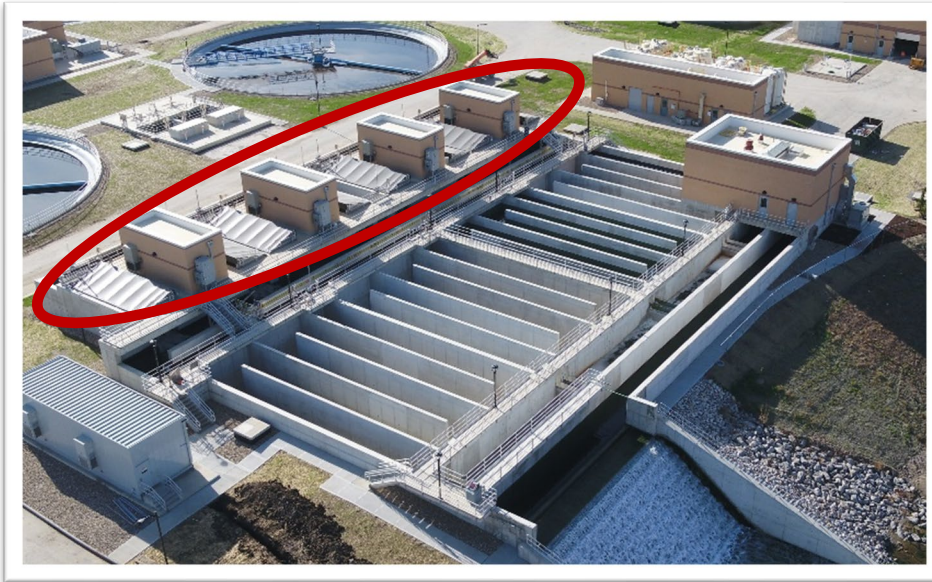
## 1 Year of Operation

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

### AquaStorm Performance Comparison



# Tomahawk Creek WWTP



Location / Startup

- Johnson County, KS / October 2021

Capacity

- ADF – 12 MGD, PHF - 115 MGD

Consultant

- Black & Veatch

Overview

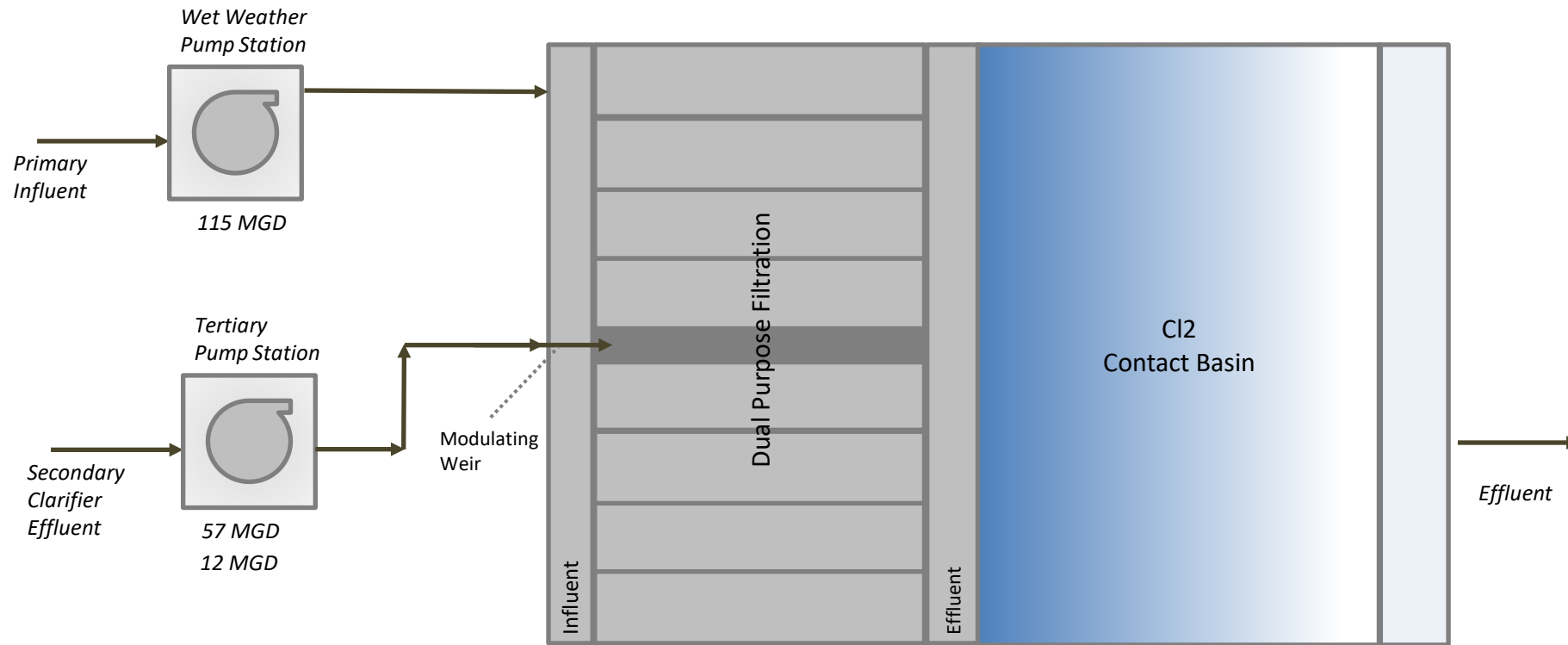
- New Plant - SSO – AquaStorm – Tri Treatment

Keys to Success

- Tri Treatment Capabilities, Footprint, Water Quality

# JCW - Tomahawk Creek WWTF, KS

## Operating Modes & Flows



(8) AquaStorm® Model 108  
w/ 24 Disks

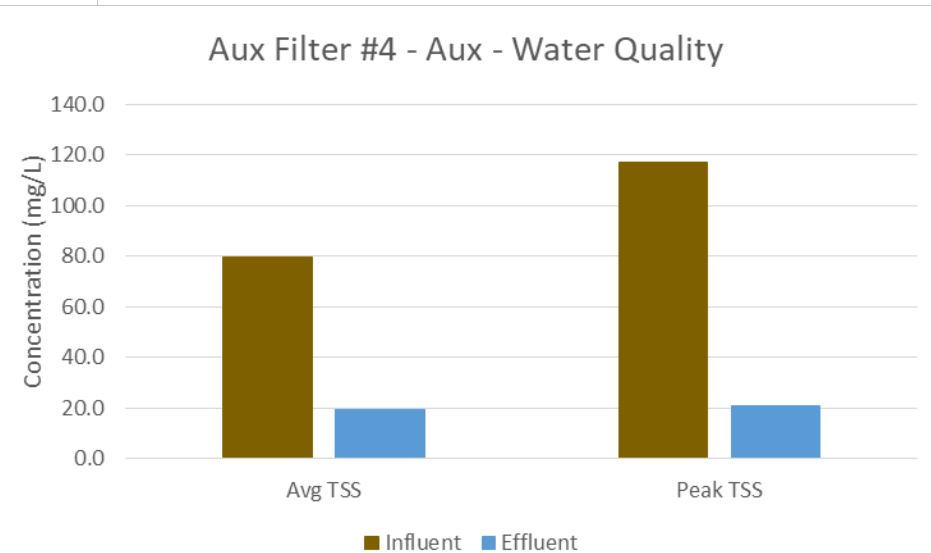
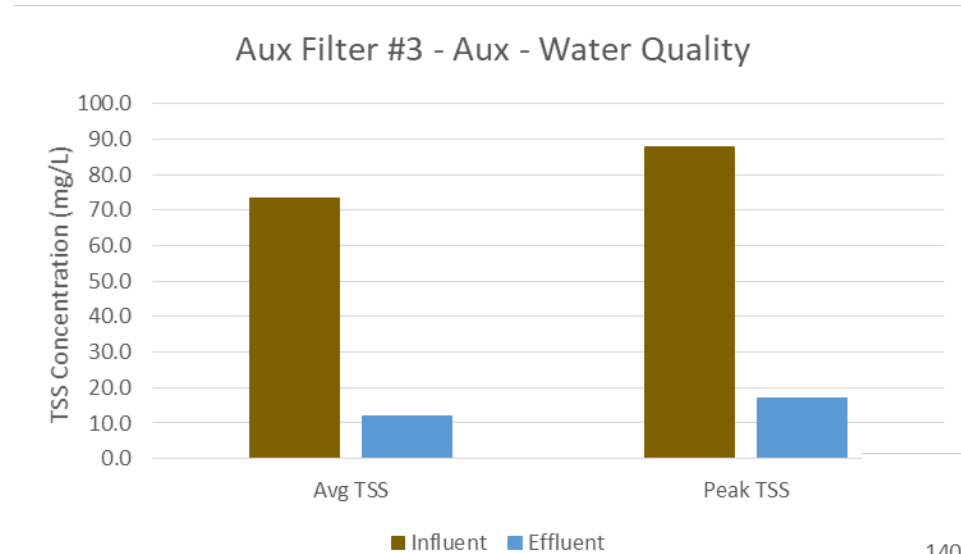
Tertiary Polishing up to 3Q = 57 MGD  
+ Peak Weather EHRT up to 115 MGD

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Peak WWTF Capacity = 175 MGD

# JCW – Tomahawk Creek WWTP, KS

## Performance Test Results





# Adams Field WWTP



Location / Startup

- Little Rock, AR – Adams Field WWTP / August 2021

Capacity

- ADF – 18 MGD, PHF - 58 MGD

Consultant

- Black & Veatch / Hawkins-Weir

Overview

- SSO – AquaStorm – Tri Treatment

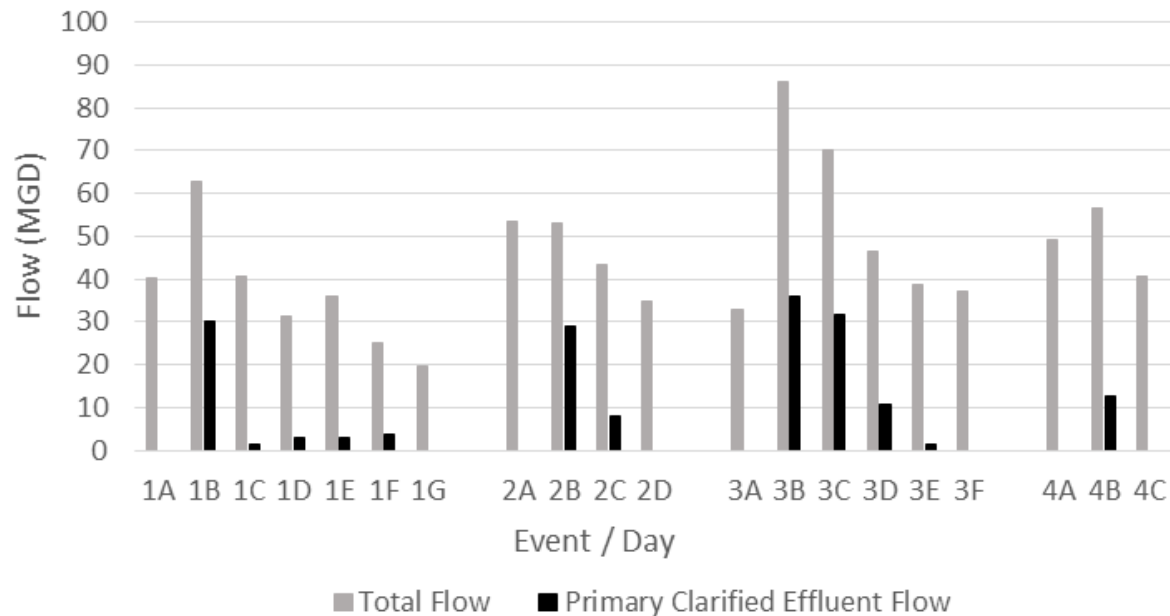
Keys to Success

- Piloting Success
- Tri Treatment Capabilities

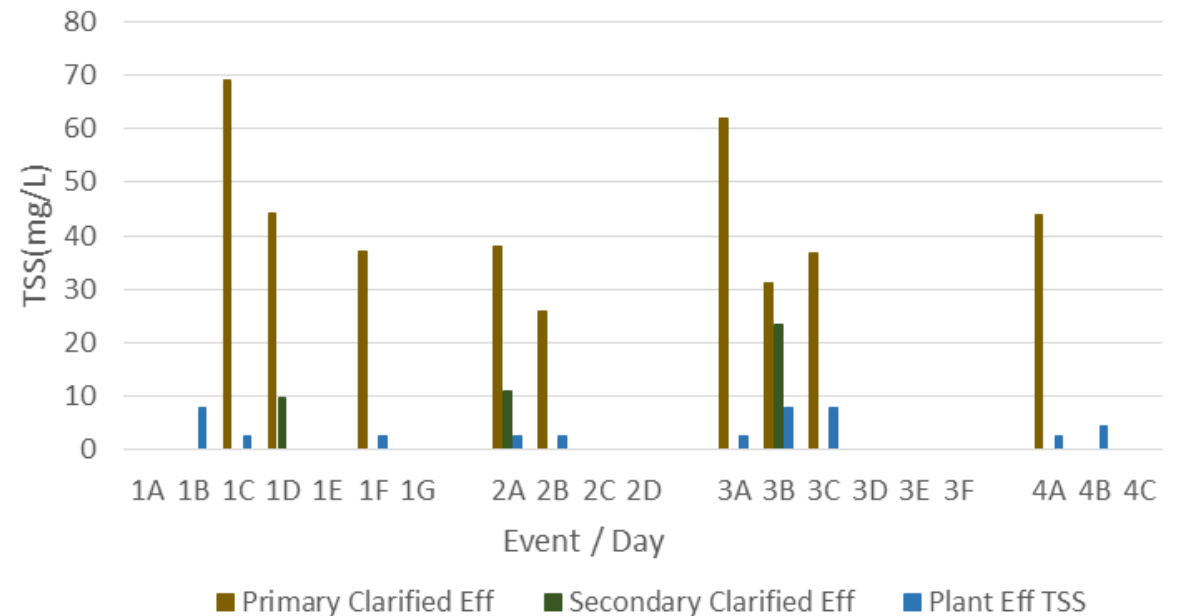
# Adams Field WWTP

## Wet Weather Events

Wet Weather Events Flows



Wet Weather Events - TSS



# Performance

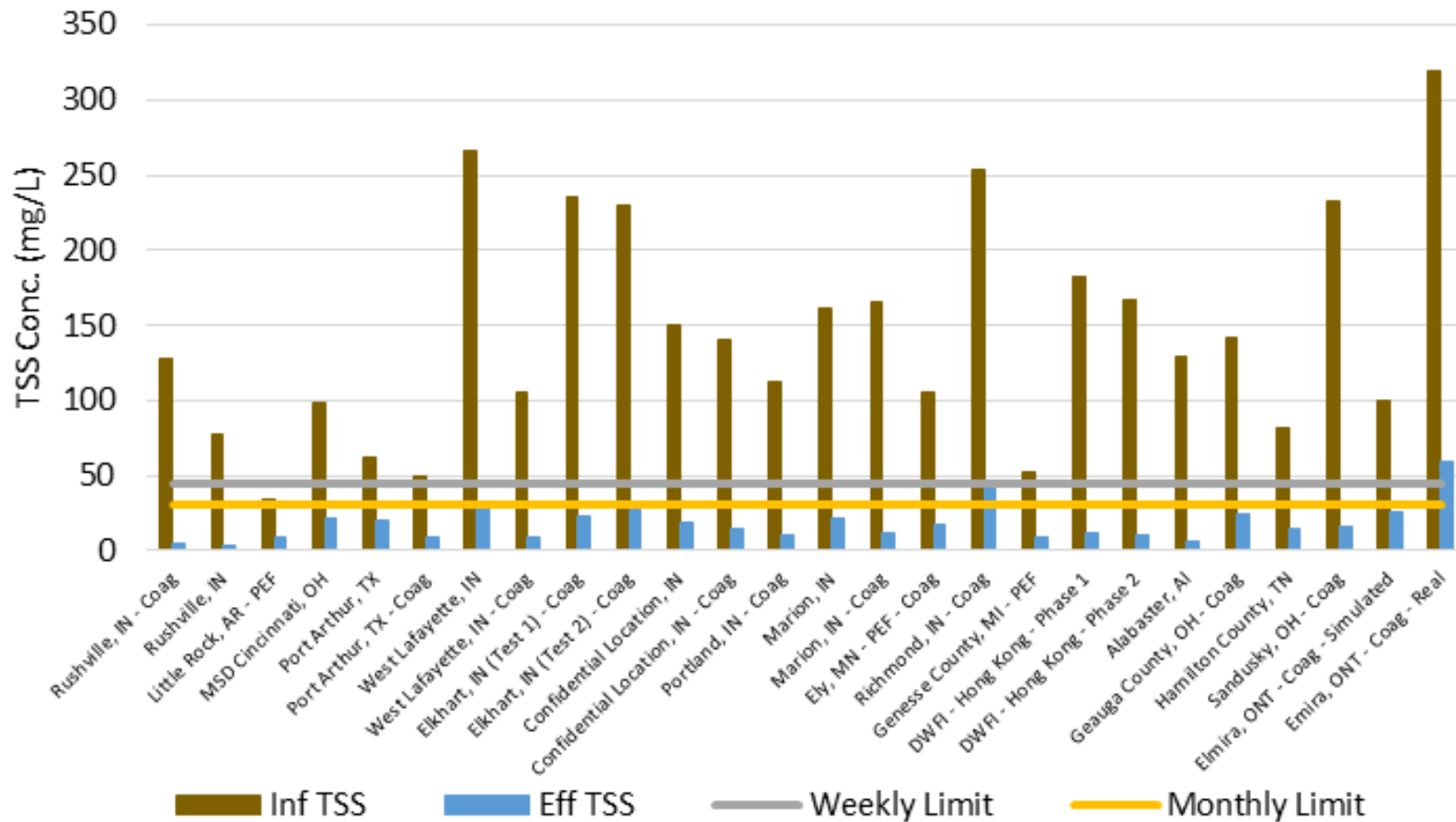
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Wet Weather

# Pilot / Installation Performance

## AquaStorm<sup>®</sup> Water Quality Parameters

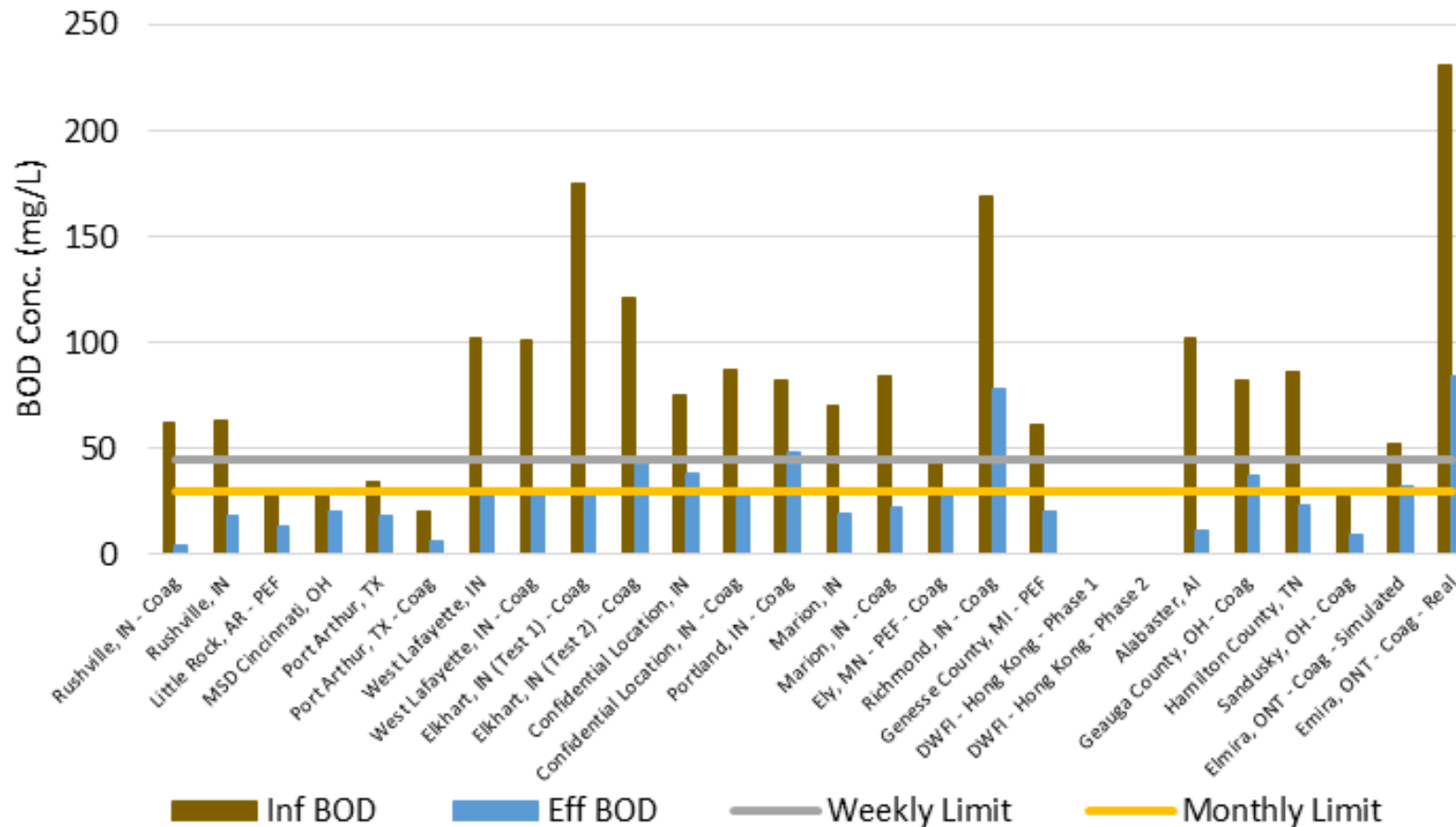
### TSS Removal Efficiency



# Pilot / Installation Performance

## AquaStorm<sup>®</sup> Water Quality Parameters

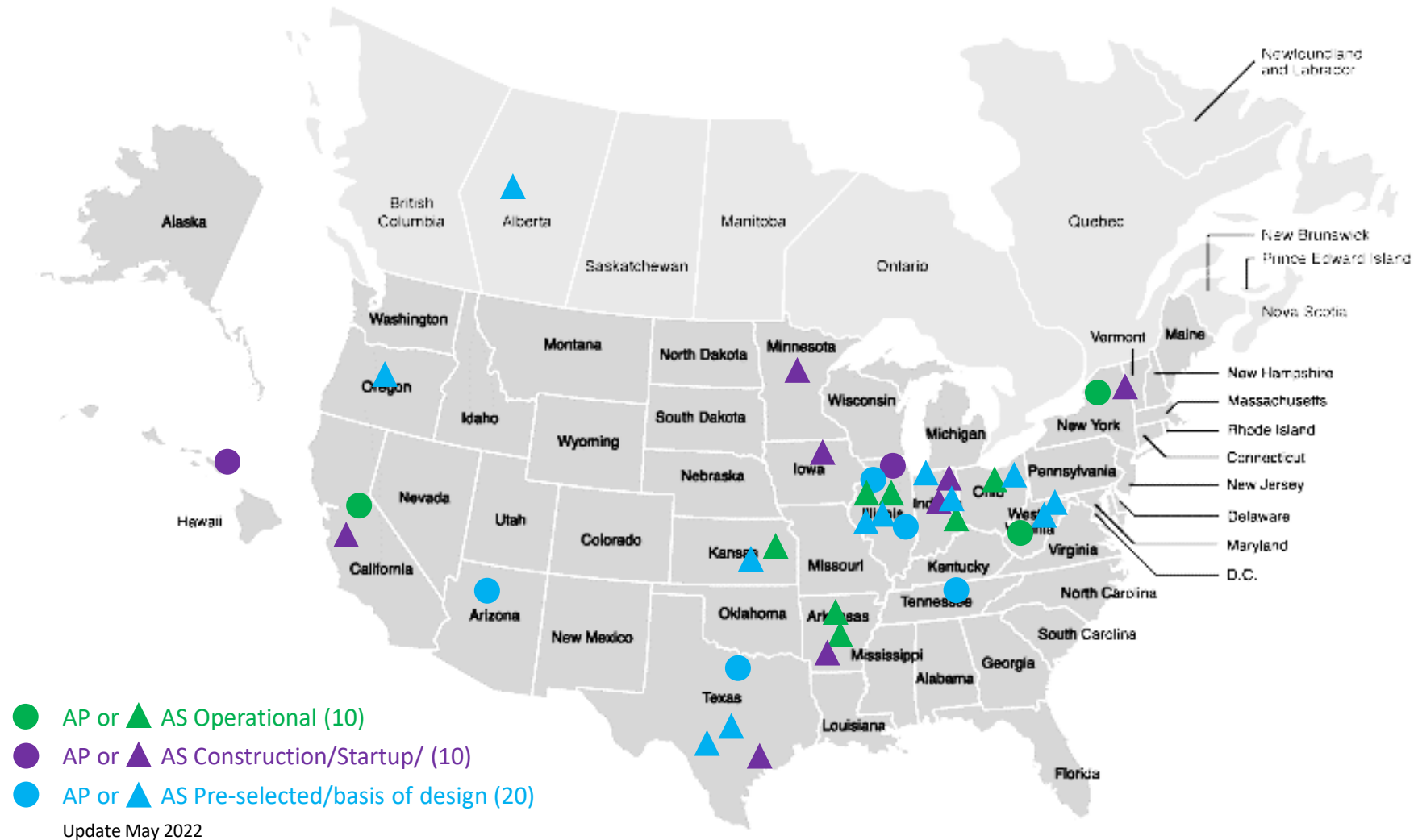
### BOD Removal Efficiency



# Conclusion

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# Installations & References



# AquaStorm<sup>®</sup> PCMF

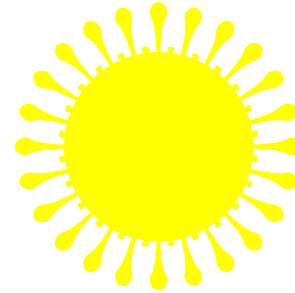
## Conclusions



Wet Weather  
Treatment



High Quality  
Effluent



Disinfection &  
Pathogen Removal



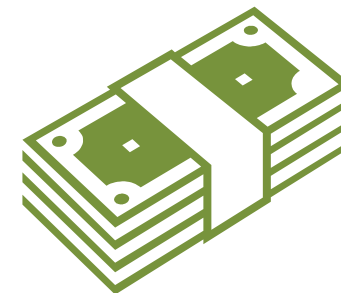
Dual  
Treatment



Simple  
Operation



Footprint  
Savings



Net Present  
Value





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A Metawater Company

# Questions?

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