TEXAS ASSOCIATION OF CLEAN WATER AGENCIES

TACWA

A CLEAR COMMITMENT TO TEXAS WATERS

EPA's Blending Policy and the Future of Wet Weather Management at WRRFs

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FREESE AND NICHOLS

July 26, 2019

Outline

- **EPA's Blending Policy**
  - Background
  - Regulatory History & Upcoming Policy
- **Case Study – Wet Weather Blending**
  - **Port Arthur Main WRRF - Background**
    - Current Treatment Process
    - Wet Weather Management Approach
  - **Pilot Testing of Cloth Media Filtration System**
    - AquaPrime Filtration System
    - Pilot Testing Results
  - **Conclusion**

EPA's Blending Policy

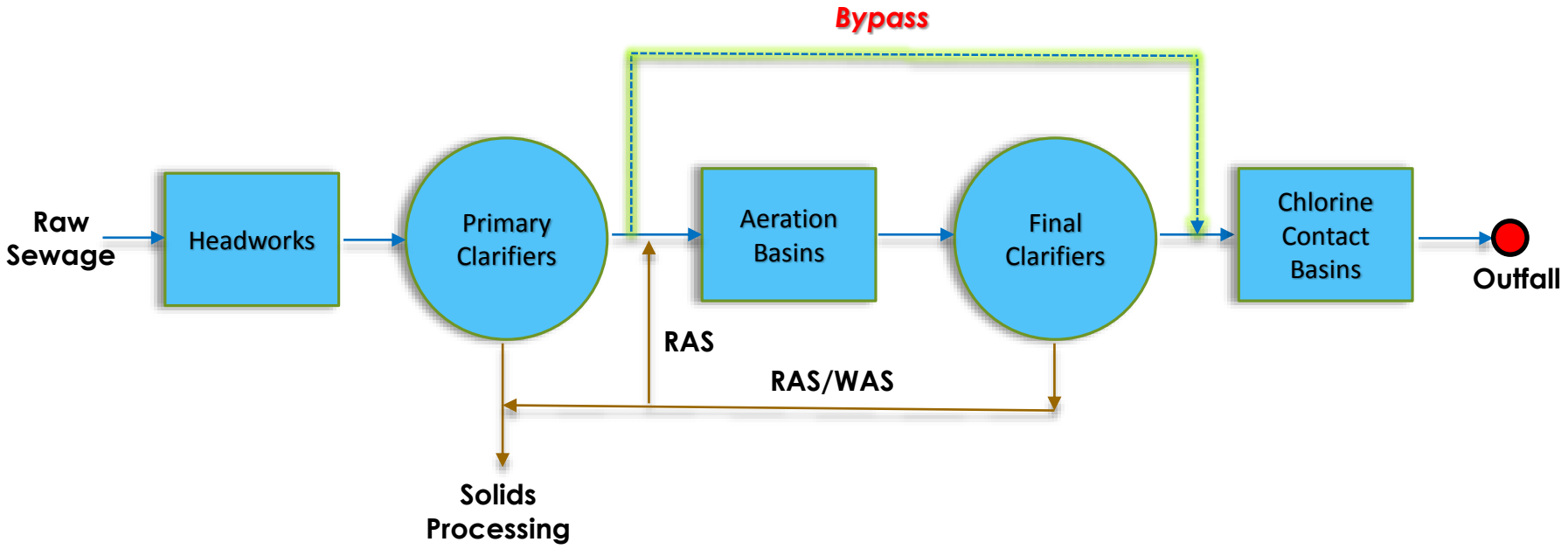
Background

- Clean Water Act (CWA) – Forbids Discharge of Any Pollutant to Navigable Waters from Any Point Source
- National Pollutant Discharge Elimination System (NPDES) Permit
- Effluent Limitations Apply at ***"End-of-Pipe"***
- Secondary Treatment Regulations ***Do Not Specify Type of Treatment Process***

EPA's Blending Policy

Bypass (40 CFR Section 122.41(m))

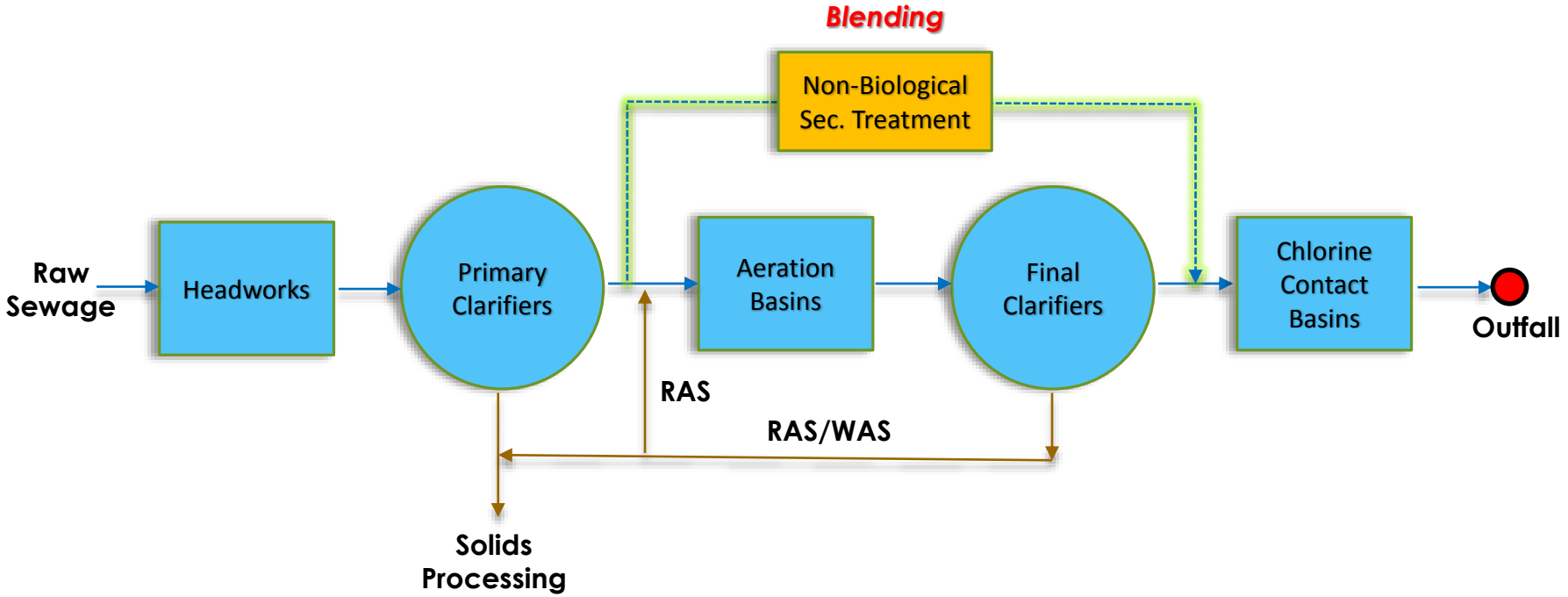
- Definition: Intentional ***diversion*** of waste streams from any portion of treatment facility
- Bypass is ***Prohibited*** unless unavoidable to prevent loss of life, personal injury, severe property damage, or no other feasible alternative



EPA's Blending Policy

Blending

- Definition: Channeling a portion of the "peak wet weather flows" through non-biological unit and re-combining with flow from biological secondary treatment before disinfection and discharging.

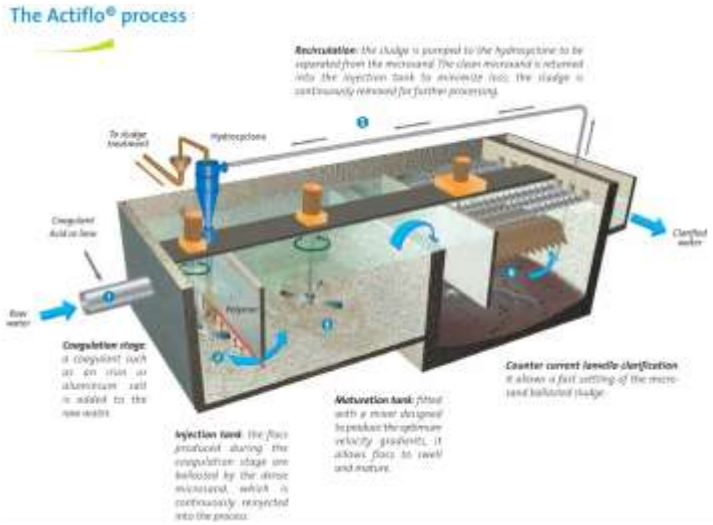


Blending = Prohibited Bypass } **In Separate Sanitary Sewer Systems**

EPA's Blending Policy

Blending

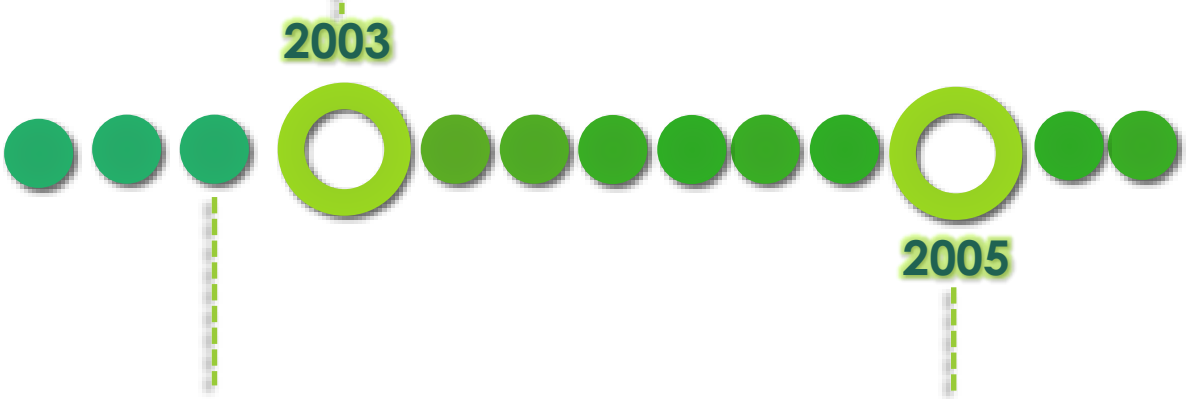
- Excessive Peak Flows During Wet Weather Events
- Adverse Effect on Biological Secondary Treatment Unit:
  - Exceed capacity
  - Solids "wash-out"
  - Sensitive to Large Deviation in Flow Volume
- Blending Technologies:
  - More Effective than Biological Processes in Treatment of Peak Flows
- Reduce Sanitary Sewer Overflows



EPA's Blending Policy

- Blended flow **must meet final effluent limitations**
- Must provide **at least primary clarification**
- Blending only when flow **exceeds biological treatment unit capacity**
- Collection system be properly operated and maintained

EPA Issues Proposal "Blending is Not a Prohibited Bypass"



Prior to 2003 EPA's Policy on Prohibition of Blending is Unclear

EPA Abandons 2003 Proposal

EPA's Blending Policy

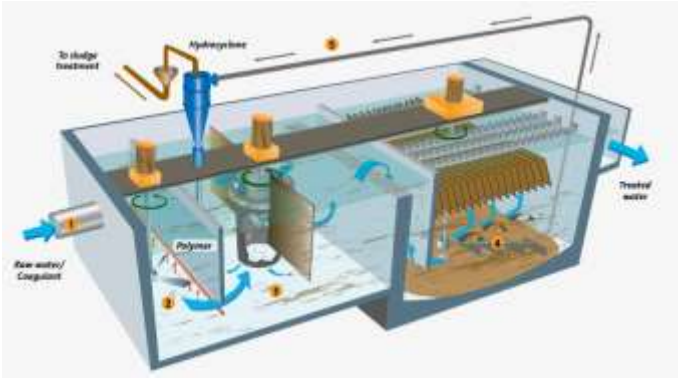
Iowa League of Cities
Request EPA clarification for use ACTIFLO for peak flow treatment

March 2011

EPA Issues Letter Declaring:

- **Use of ACTIFLO – Prohibited Bypass**
- **ACTIFLO is not a satisfactory secondary treatment unit**

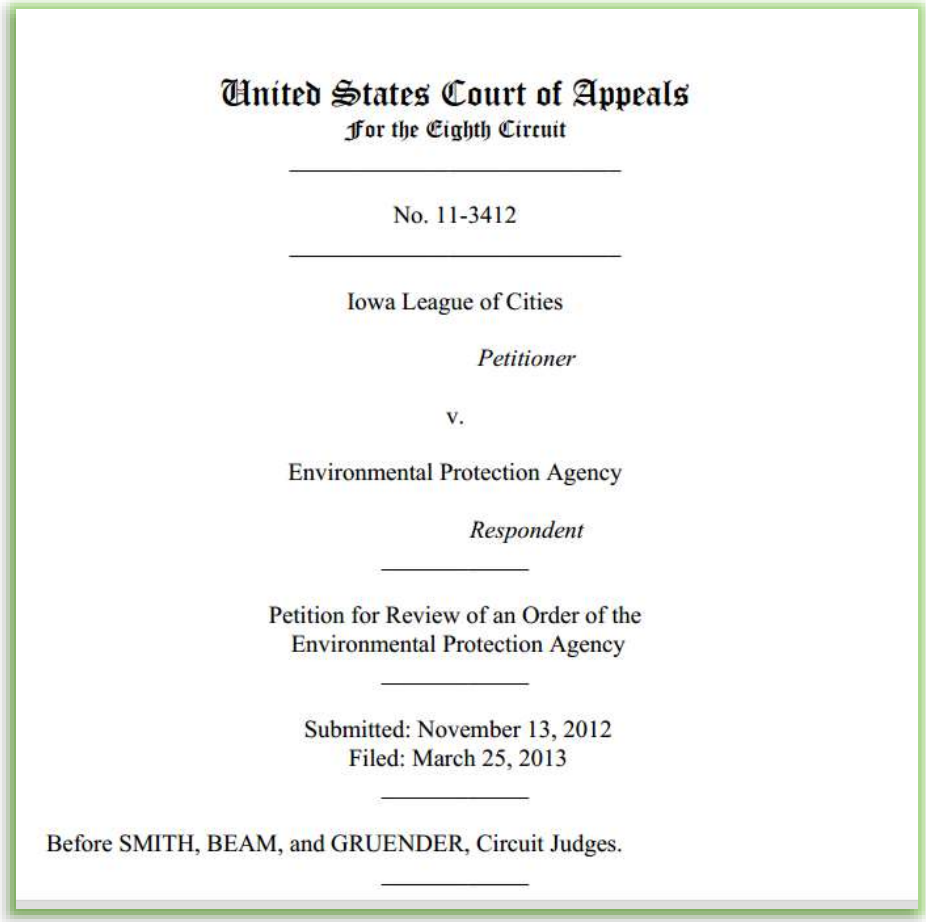
September 2011



ACTIFLO: Physical/Chemical Secondary Treatment System

EPA's Blending Policy

Iowa League of Cities Files Lawsuit Again EPA in Court of Appeals 8th Circuit



United States Court of Appeals
For the Eighth Circuit

No. 11-3412

Iowa League of Cities

Petitioner

v.

Environmental Protection Agency

Respondent

Petition for Review of an Order of the
Environmental Protection Agency

Submitted: November 13, 2012
Filed: March 25, 2013

Before SMITH, BEAM, and GRUENDER, Circuit Judges.

EPA's Blending Policy

Iowa League of Cities Files Lawsuit Again EPA in Court of Appeals 8th Circuit

November 2011

March 2013

US Court of Appeals 8th Circuit Declares EPA's Blending Policy Invalid

EPA's petition for rehearing denied. EPA decided not to petition US Supreme Court

July 2013

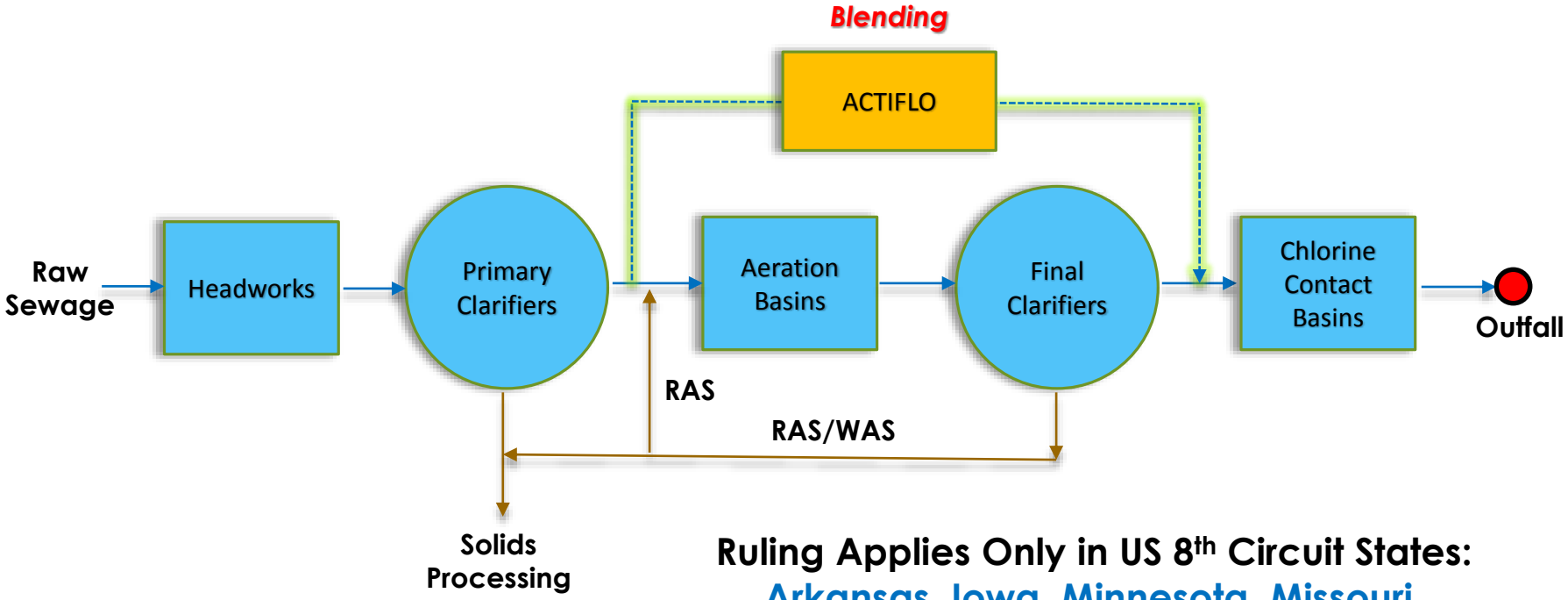
EPA's 2005 policy prohibiting blending:

1. Exceeds statutory authority under Clean Water Act (CWA)
2. Violates Administrative Procedures Act (APA)

EPA's Blending Policy

US 8th Circuit Court Ruling on Blending

- Blending ≠ Prohibited Bypass
- Use of non-biological secondary treatment of peak flow is legal

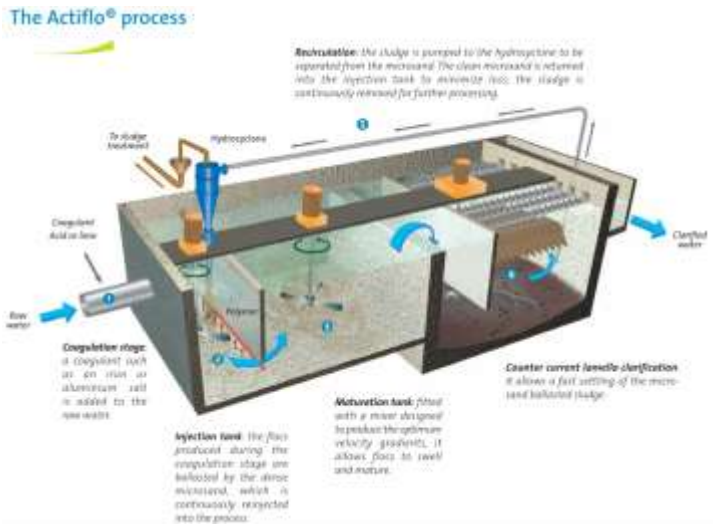


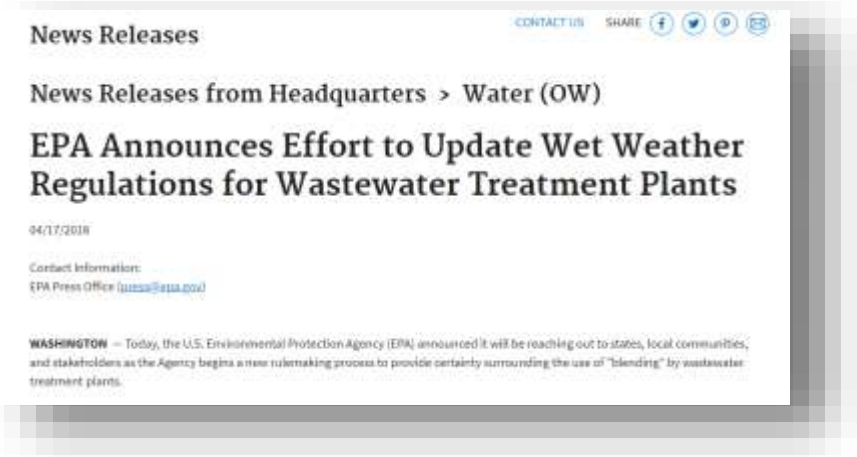
Ruling Applies Only in US 8th Circuit States:
Arkansas, Iowa, Minnesota, Missouri, Nebraska, North Dakota, South Dakota

EPA's Blending Policy

Opponents Argument Against Blending

- Allowing blending undermines incentive to reduce I/I in collection system
- Public health impact:
  - A few studies show higher levels of some pathogen (Giardia and Crypto) during blending compared to dry weather events





EPA Announces New Rulemaking for Wet Weather Management

April 2018

Public Input Period

October 2018

Stakeholder Meetings/Public Listening Sessions

(EPA, NGOs, Utilities, NACWA, WEF, Engineers, Public Health Experts)

Proposed Draft Rule on Blending

Fall 2019

Public Comment Period

Fall 2020

Final Rule on Blending

EPA's Blending Policy

What can we expect in the new blending policy?

- Clarification on the definition of bypass and blending
- Allow blending of peak flows in sanitary sewer systems
- Solids removal and disinfection will be required for blended flow
- Blended effluent must limit final permit limits
- Compliance measured at final outfall and not at any point within the treatment plant

Case Study: Use of Cloth Media Filtration Systems for Wet Weather Management

CITY OF PORT ARTHUR, TEXAS

MAIN WRRF

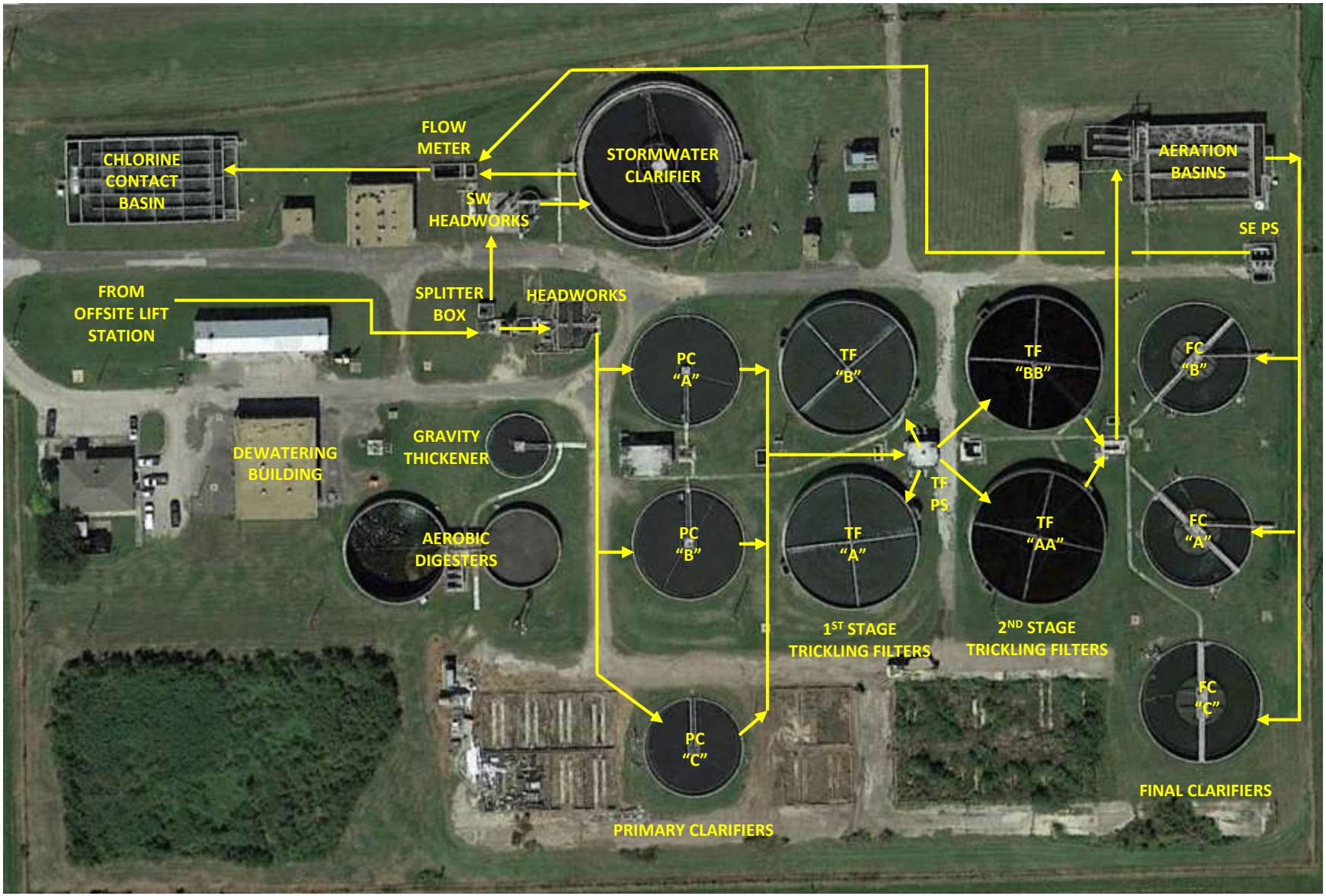
City of Port Arthur – Main WRRF

- Original Build – **1960**
- Major Improvements – **1981, 1991**
- Average Daily Flow (ADF) – **9.2 MGD**
- 2-hour Peak Flow – **45 MGD**
- Discharge Limits:
  - BOD – **20 mg/L**
  - TSS – **20 mg/L**
  - Enterococci – **35 CFU**

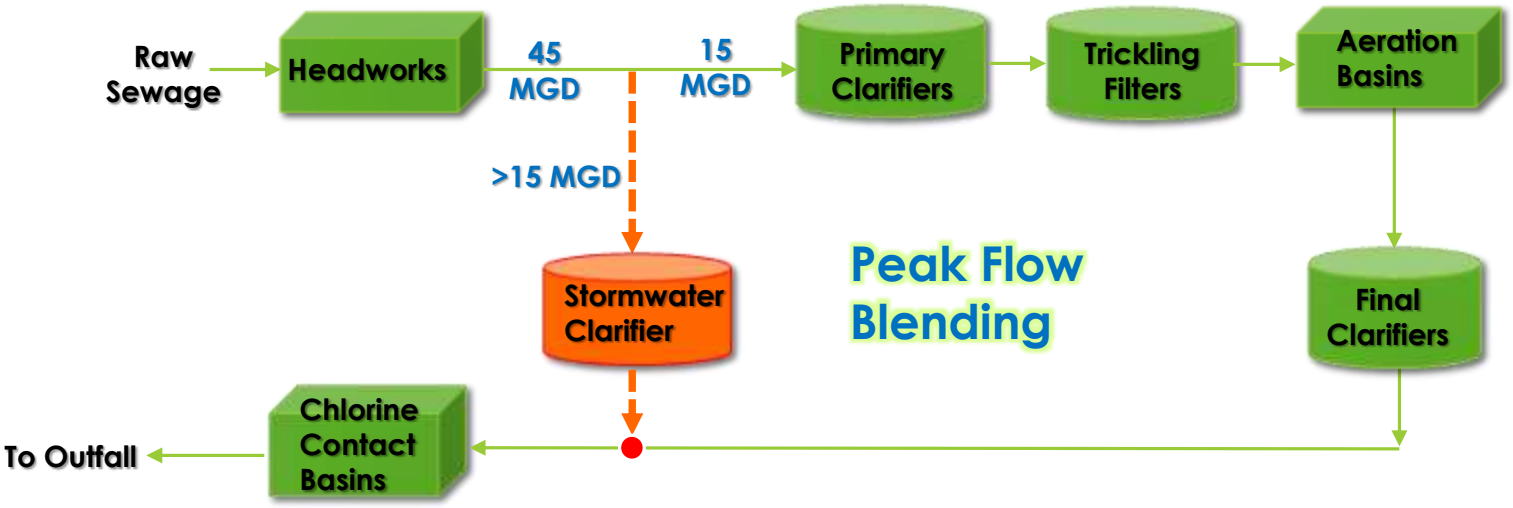
- Main Treatment Process:
  - **Primary Clarification**
  - **Trickling Filter/Activated Sludge**
  - **Chlorine Disinfection**

- Wet Weather Process:
  - **Clarification**
  - **Chlorine Disinfection**

Main WRRF – Current Treatment Process



Current Wet Weather Management



- **Catastrophic Failure of Stormwater Clarifier** – due to Failure of Hydrostatic Pressure Relief Valve

Port Arthur Main WRRF

Wet Weather Management Approach

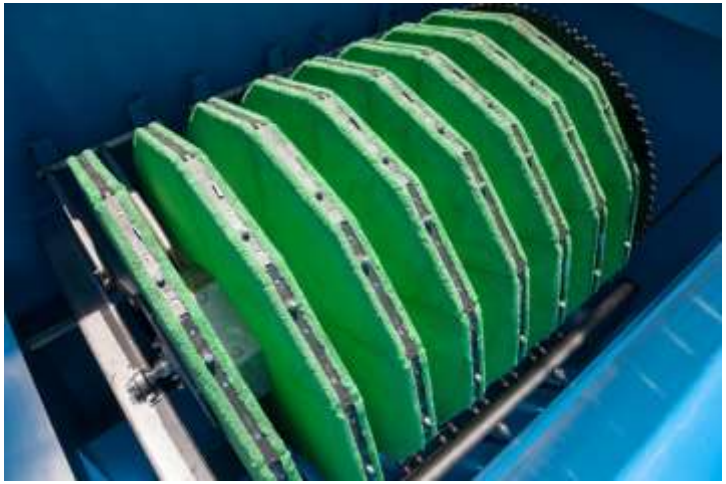
Avg. Daily Flow – 9.2 MGD 2-hr Peak Flow – 45 MGD

Flows > 15 MGD

Stormwater Clarifier

Clarification

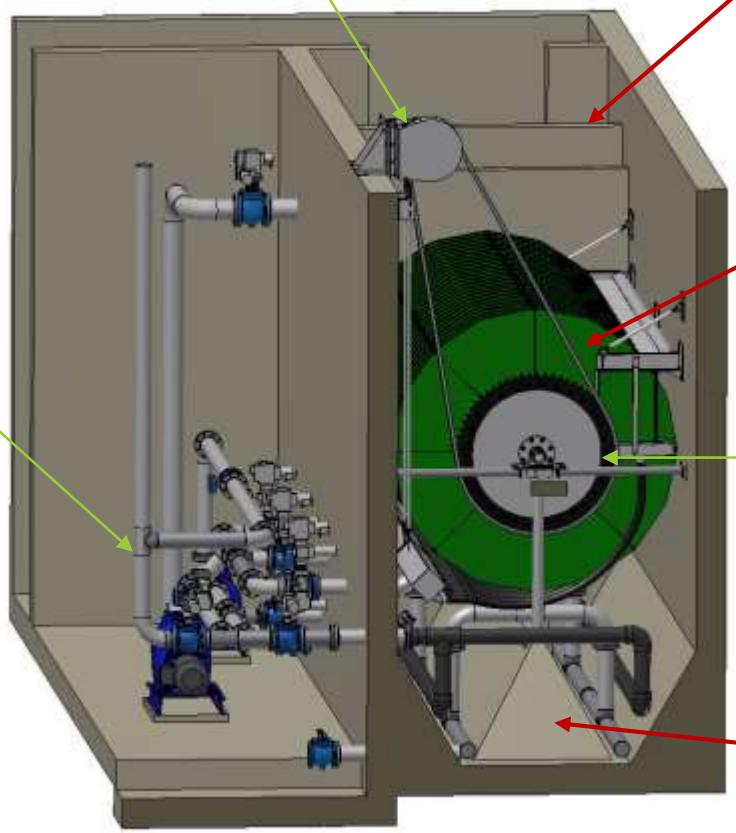
AQUA-AEROBIC SYSTEMS, INC.
A Metawater Company



AquaPrime® Filters

Filtration

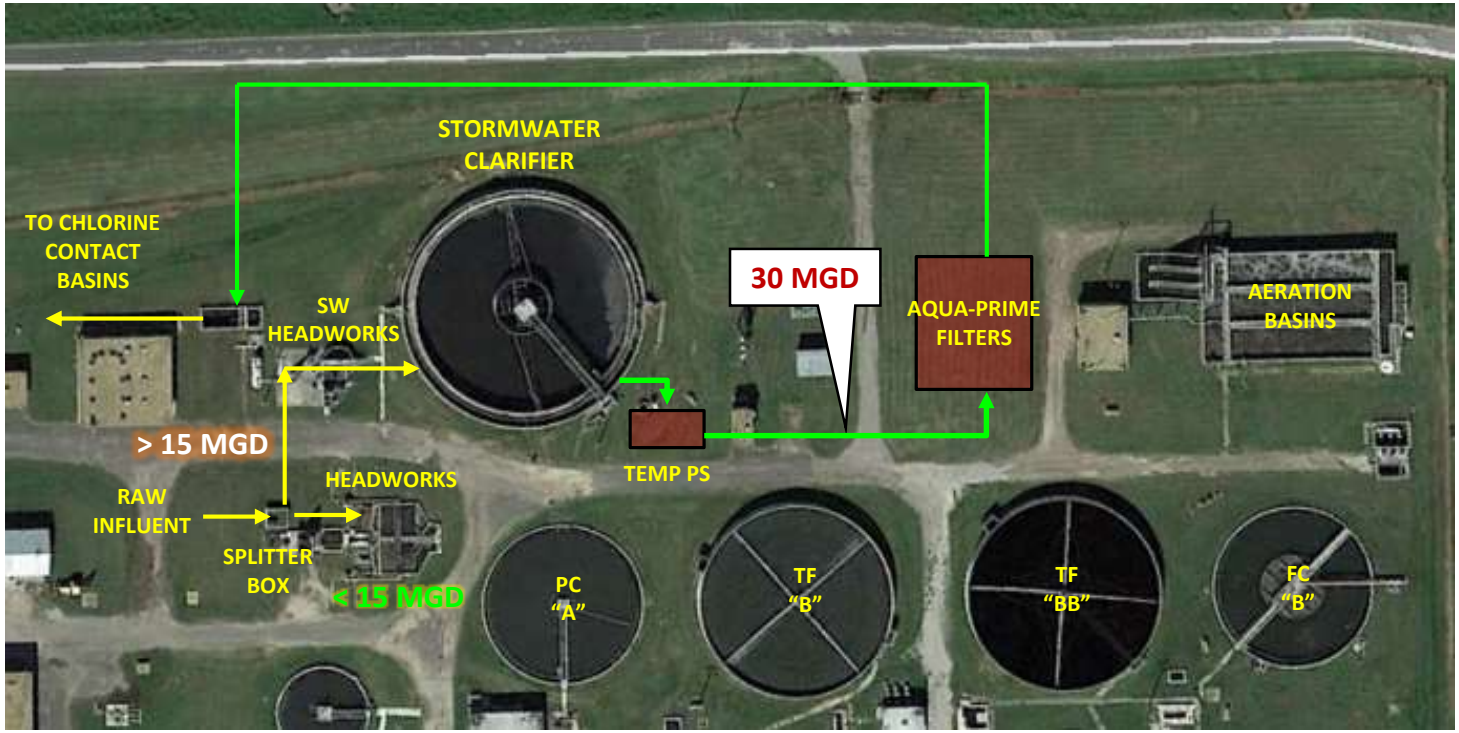
AquaPrime® Filtration System



Courtesy: Aqua-Aerobic Systems, Inc.

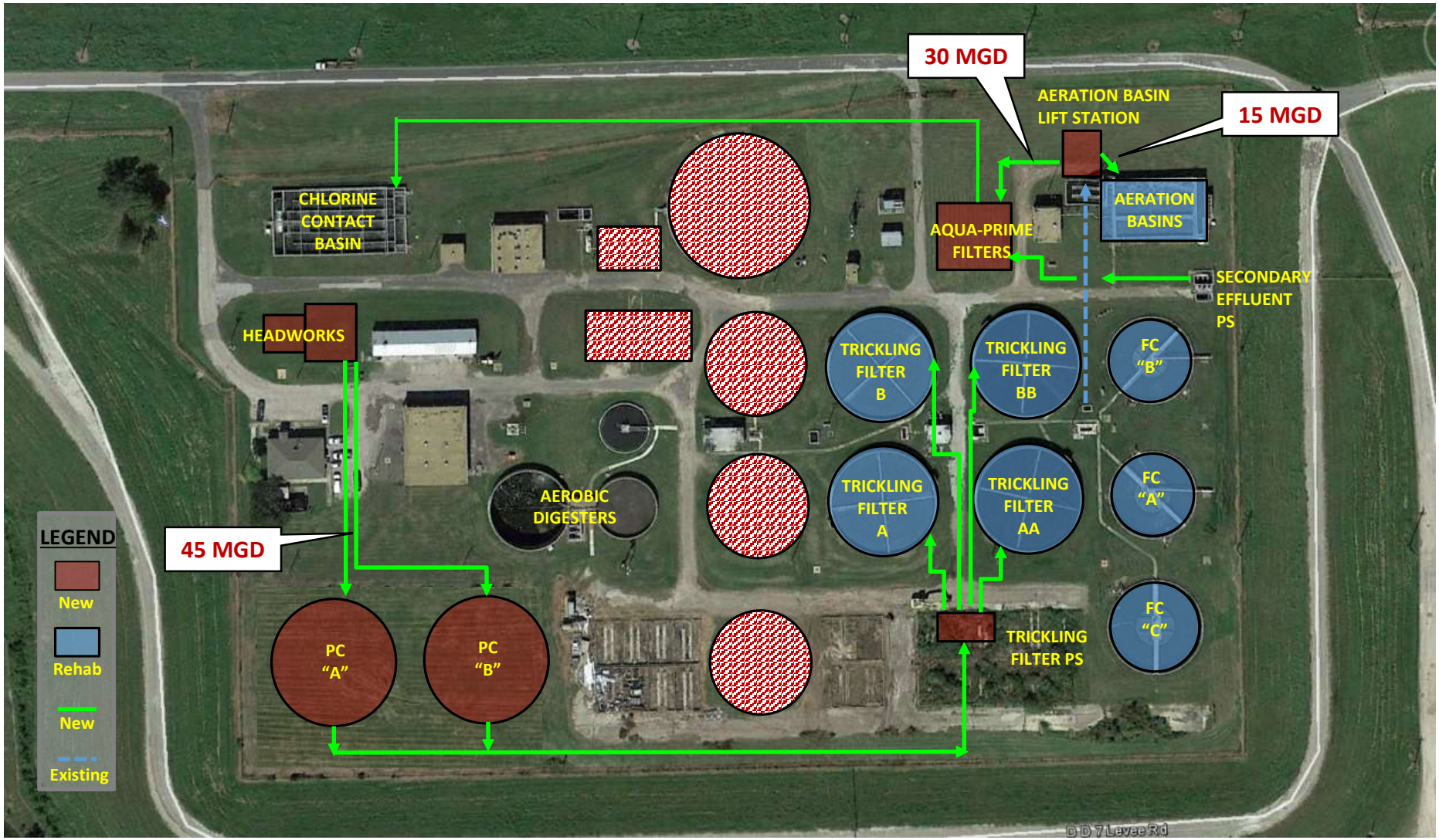
Implementation of AquaPrime® Filtration system at Port Arthur Main WRRF

Main WRRF Improvements – Initial Phase



Flow stream to AquaPrime® Filters: Screened Raw Influent

Main WRRF Improvements – Final Phase



Flow stream to AquaPrime® Filters: TF Eff., Final Clarifier Eff.

AquaPrime® Filtration System – Pilot Testing

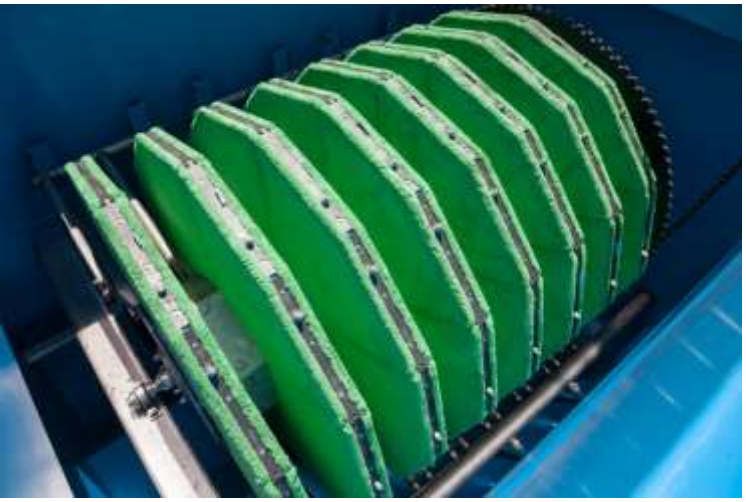
Pilot Testing: Ten (10) consecutive weeks

AquaPrime® Filtration System – Pilot Testing

May 14 – July 20, 2018

Week No.	Flow Stream	
1	Primary Clarifier Effluent	Wet Weather Mode
2	Primary Clarifier Effluent	
3	Primary Clarifier Effluent Trickling Filter Effluent (First Stage)	
4	Trickling Filter Effluent (First Stage)	
5	Trickling Filter Effluent (First Stage) Trickling Filter Effluent (First Stage) + Secondary Effluent	
6	Trickling Filter Effluent (First Stage) + Secondary Effluent Secondary Effluent	
7	Secondary Effluent	Tertiary Treatment Mode
8	Raw Influent (Screened)	Primary Treatment Mode
9	Raw Influent (Screened) + ACH	
10	Raw Influent (Screened) + ACH Primary Effluent + ACH/Ferric	

AquaPrime® Pilot Testing Results – Conclusion

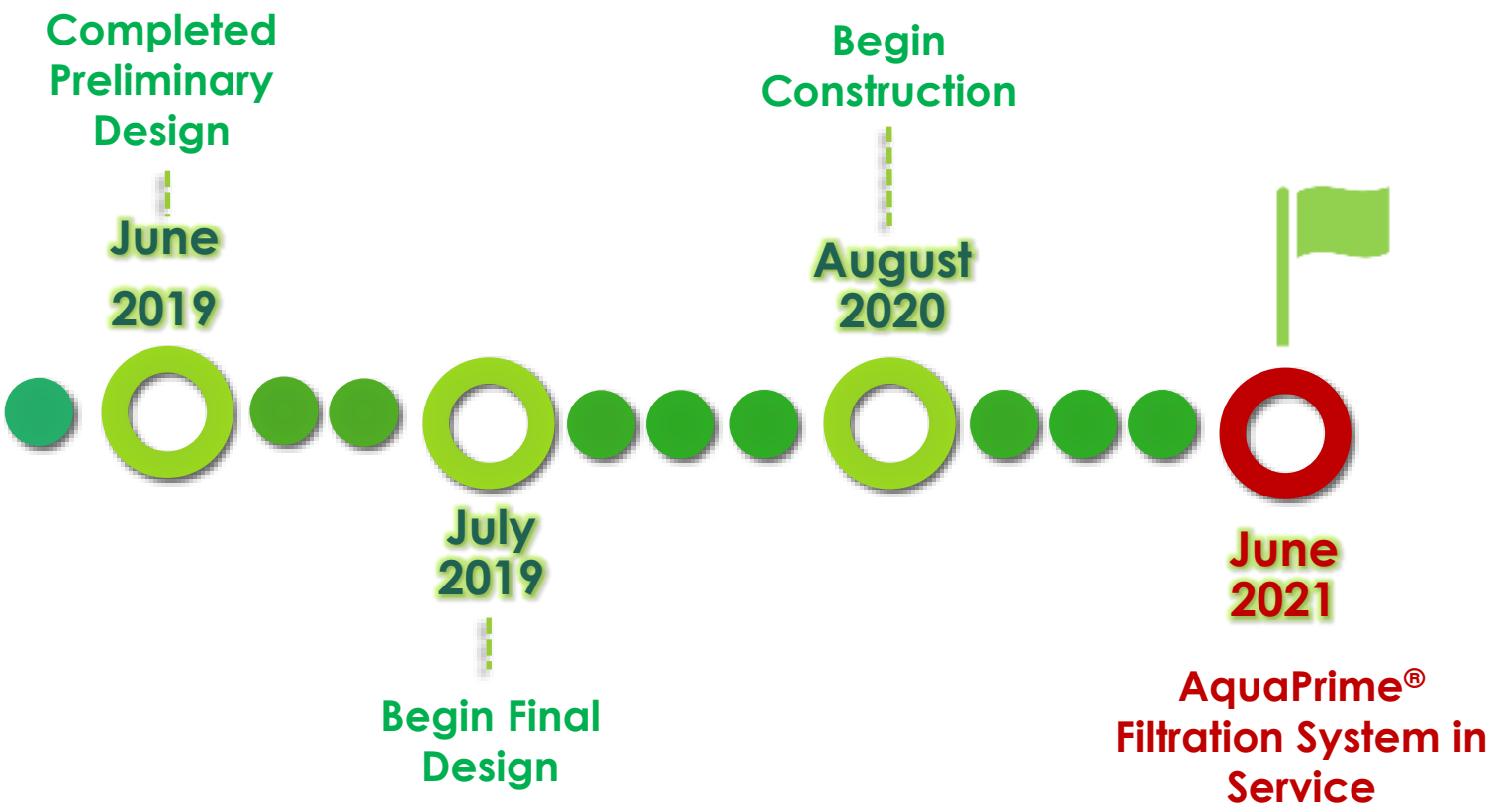


- ✓Better performance in BOD, TSS removal than clarifier
- ✓Consistent effluent TSS limit even at high loadings
- ✓Consistent performance in primary filtration, wet weather mode and tertiary filtration modes
- ✓Performance enhanced with small dose of coagulant (ACH or Ferric)

Flow Stream	% BOD Removal (Avg.)	Avg. Effluent BOD Conc. (mg/L)	% TSS Removal (Avg.)	Avg. Effluent TSS Conc. (mg/L)
Raw Influent	44%	26	63%	23
Raw Influent + ACH	54%	20	78%	12
Primary Effluent	30%	61	40%	29
Primary Effluent + ACH	56%	12	67%	15
Trickling Filter Effluent	29%	21	53%	8
Secondary Effluent	33%	4	92%	2
TF + Sec. Effluents	42%	11	80%	4

Port Arthur Main WRRF Improvements

Project Timeline



Questions?

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