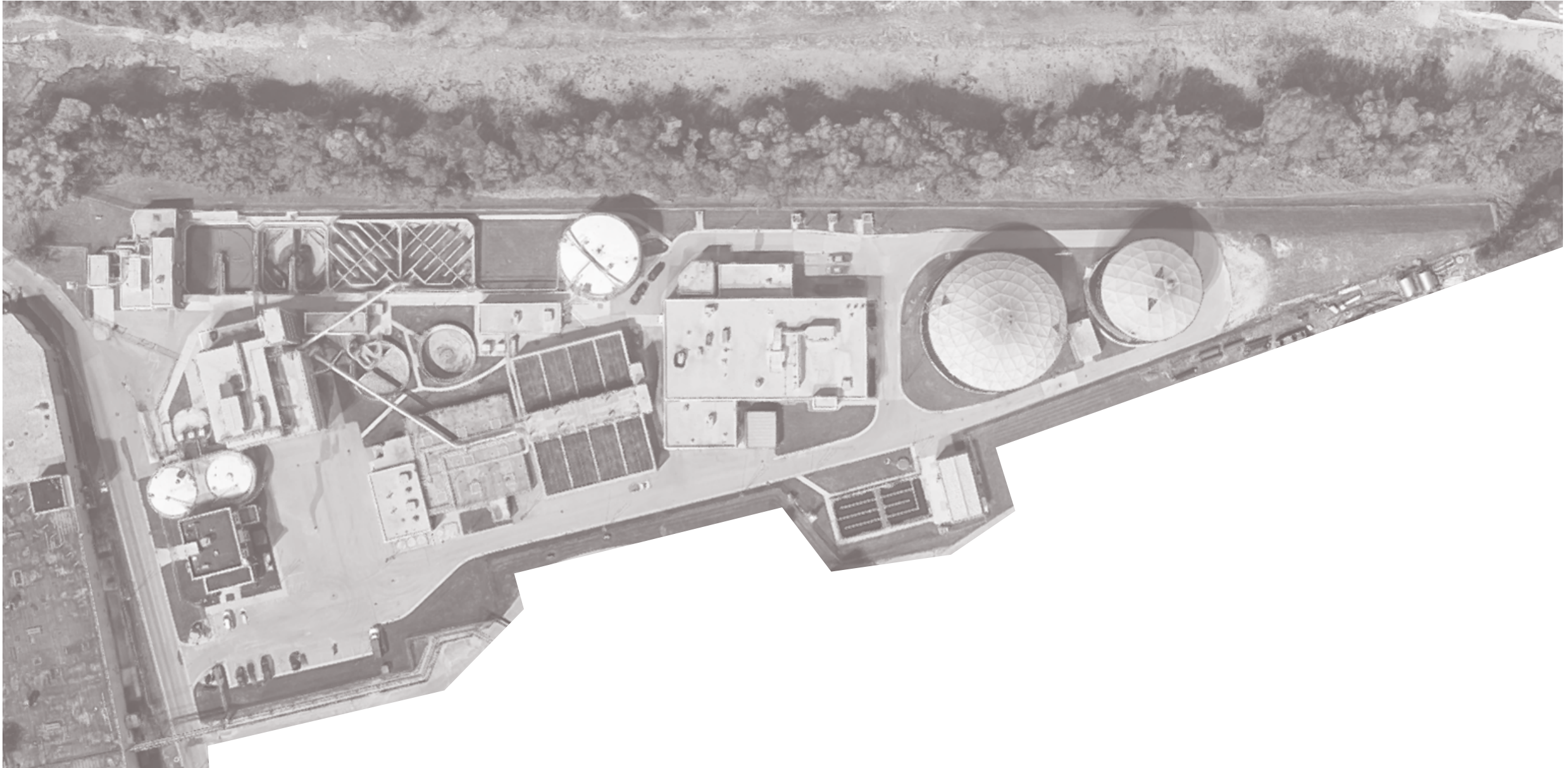


# Effluent Filtration

Heart of the Valley Metropolitan Sewerage District  
Kaukauna, Wisconsin  
September 29, 2020



# Wastewater Resource Recovery Facility (WRRF)



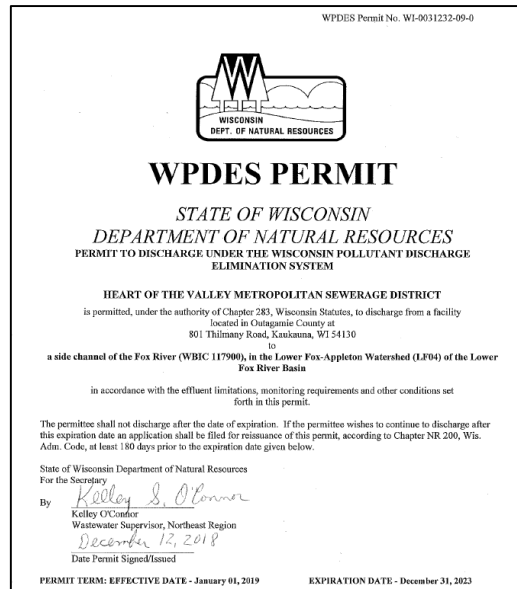
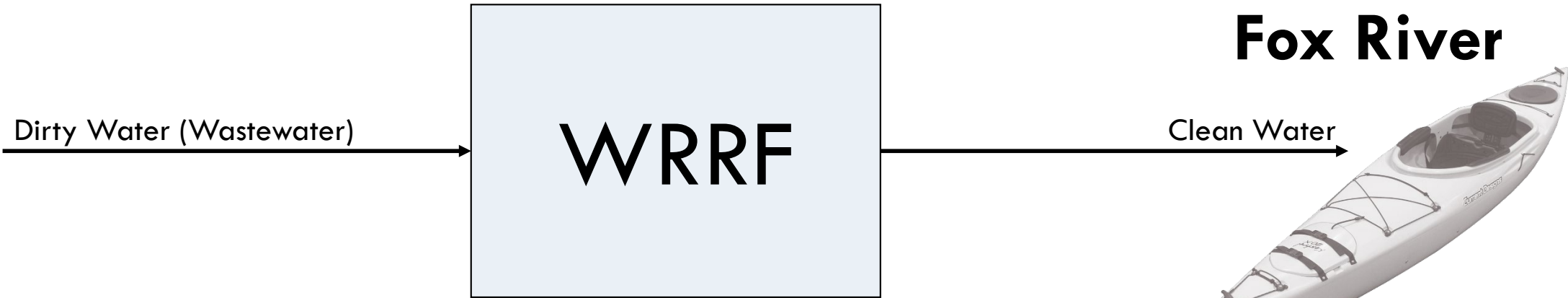


# Wastewater Resource Recovery Facility (WRRF)



No room  
to expand  
the WRRF

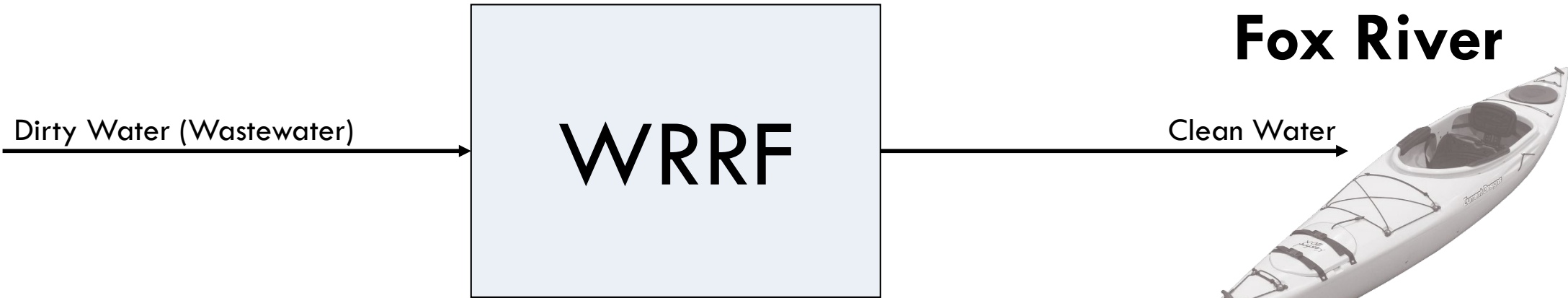
# What Does the WRRF Do?



- Disinfects
- Removes Debris
  - Diapers, Hand Wipes, Sticks, Plastics
- Removes Oxygen-Consuming Material
- Removes Solids
- Removes Ammonia
- Removes Phosphorus



# What Does the WRRF Do?



WPDES Permit No. WI-9031232-09-0

**WPDES PERMIT**

STATE OF WISCONSIN  
DEPARTMENT OF NATURAL RESOURCES  
PERMIT TO DISCHARGE UNDER THE WISCONSIN POLLUTANT DISCHARGE  
ELIMINATION SYSTEM

HEART OF THE VALLEY METROPOLITAN SEWERAGE DISTRICT  
is permitted, under the authority of Chapter 283, Wisconsin Statutes, to discharge from a facility  
located in Outagamie County at  
801 Thimney Road, Neenah, WI 54130  
to  
a side channel of the Fox River (WBIC 117900), in the Lower Fox-Appleton Watershed (LF04) of the Lower  
Fox River Basin  
in accordance with the effluent limitations, monitoring requirements and other conditions set  
forth in this permit.

The permittee shall not discharge after the date of expiration. If the permittee wishes to continue to discharge after  
this expiration date an application shall be filed for reissuance of this permit, according to Chapter NR 200, Wis.  
Adm. Code, at least 180 days prior to the expiration date given below.

State of Wisconsin Department of Natural Resources  
For the Secretary  
By *Kelley S. O'Connor*  
Kelley O'Connor  
Wastewater Supervisor, Northeast Region  
December 12, 2018  
Date Permit Signed/Issued

PERMIT TERM: EFFECTIVE DATE - January 01, 2019 EXPIRATION DATE - December 31, 2023

- Disinfects
- Removes Debris
  - Diapers, Hand Wipes, Sticks, Plastics
- Removes Oxygen-Consuming Material
- Removes Solids **New Limit**
- Removes Ammonia
- Removes Phosphorus **New Limit**



# The TSS Mass Limits

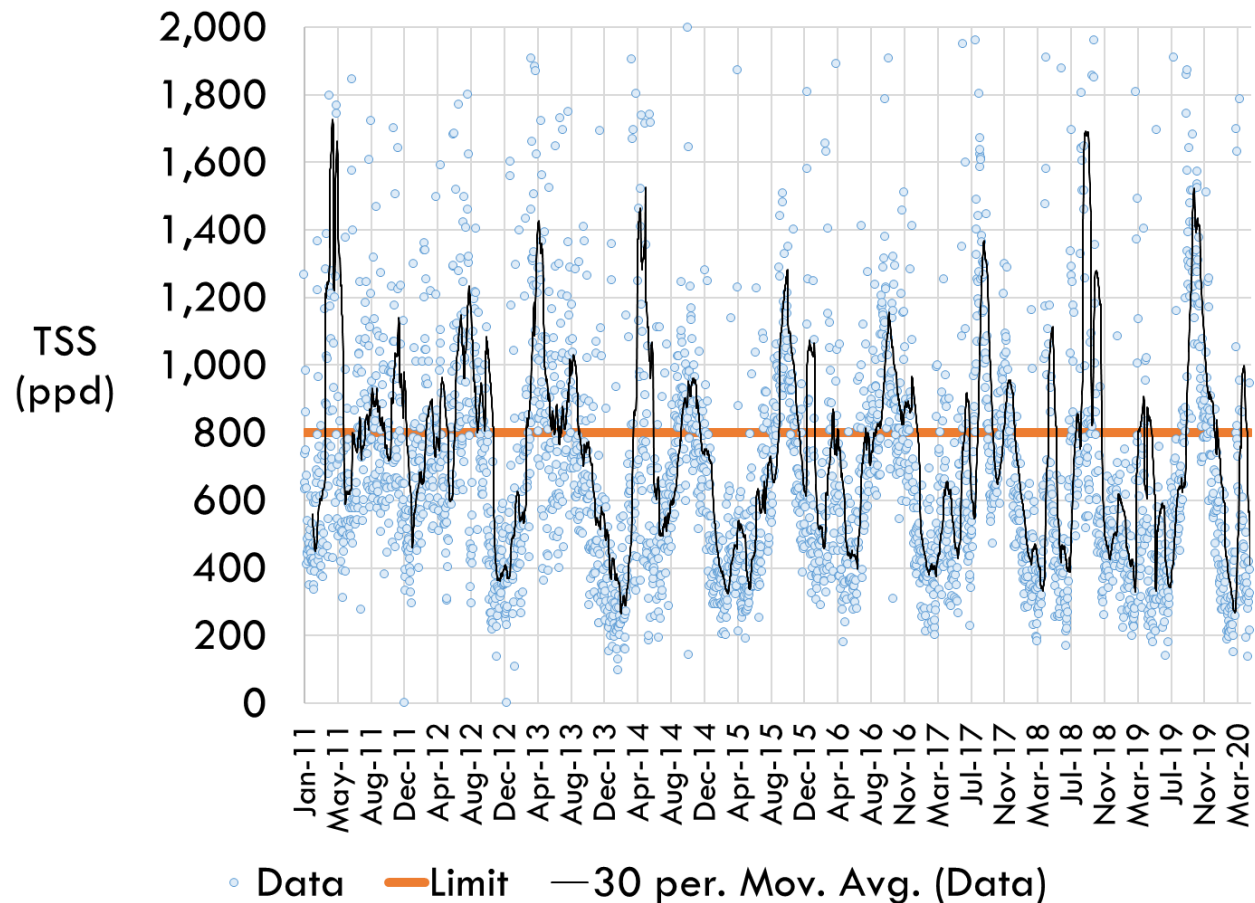
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Total Suspended Solids	Mass	Units
Monthly Average	801	ppd
Weekly Average	1,345	ppd

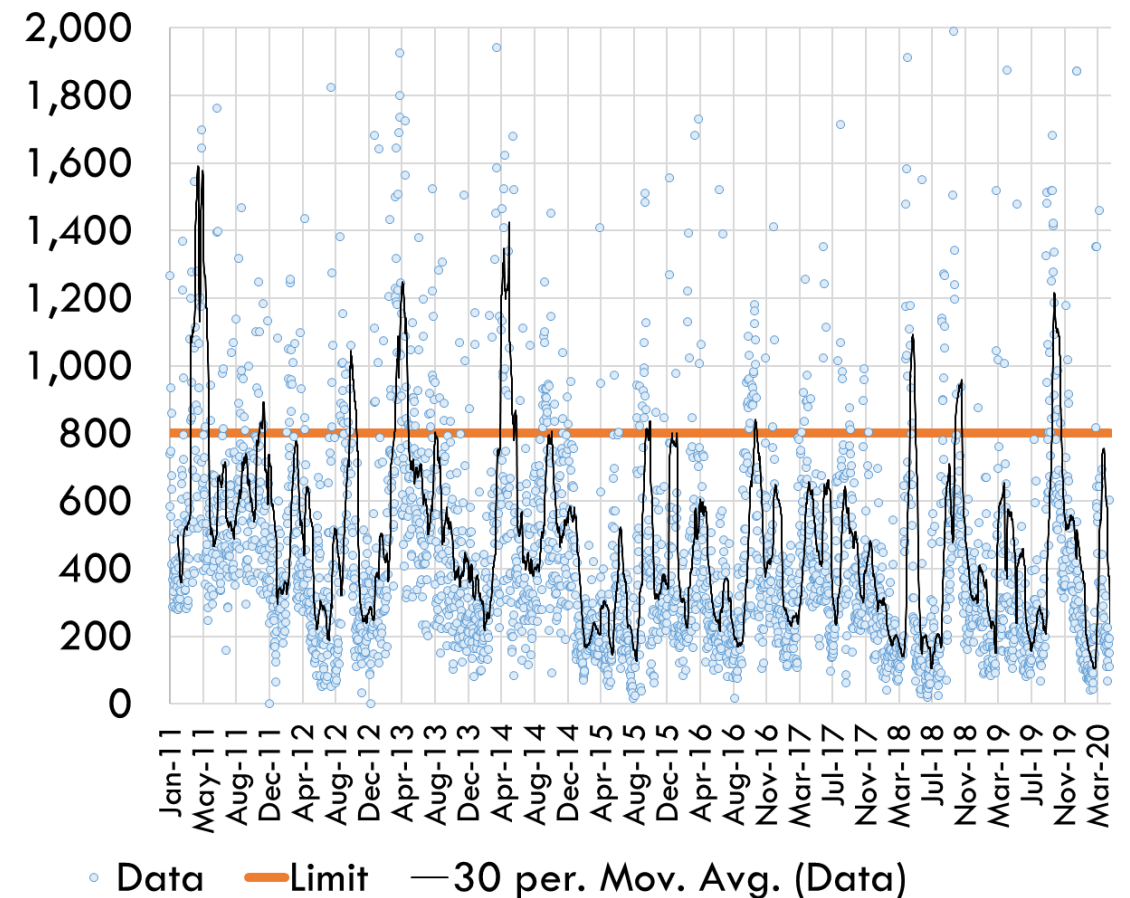
Compliance Date = Now

# Historical TSS Performance

## All Flow to River



## With Fox Energy Withdrawal



# The TP Mass Limits

Total Suspended Solids	Mass	Units
6-Month Rolling Average	10.5	ppd
Monthly Average	31.5	ppd

You Are Here

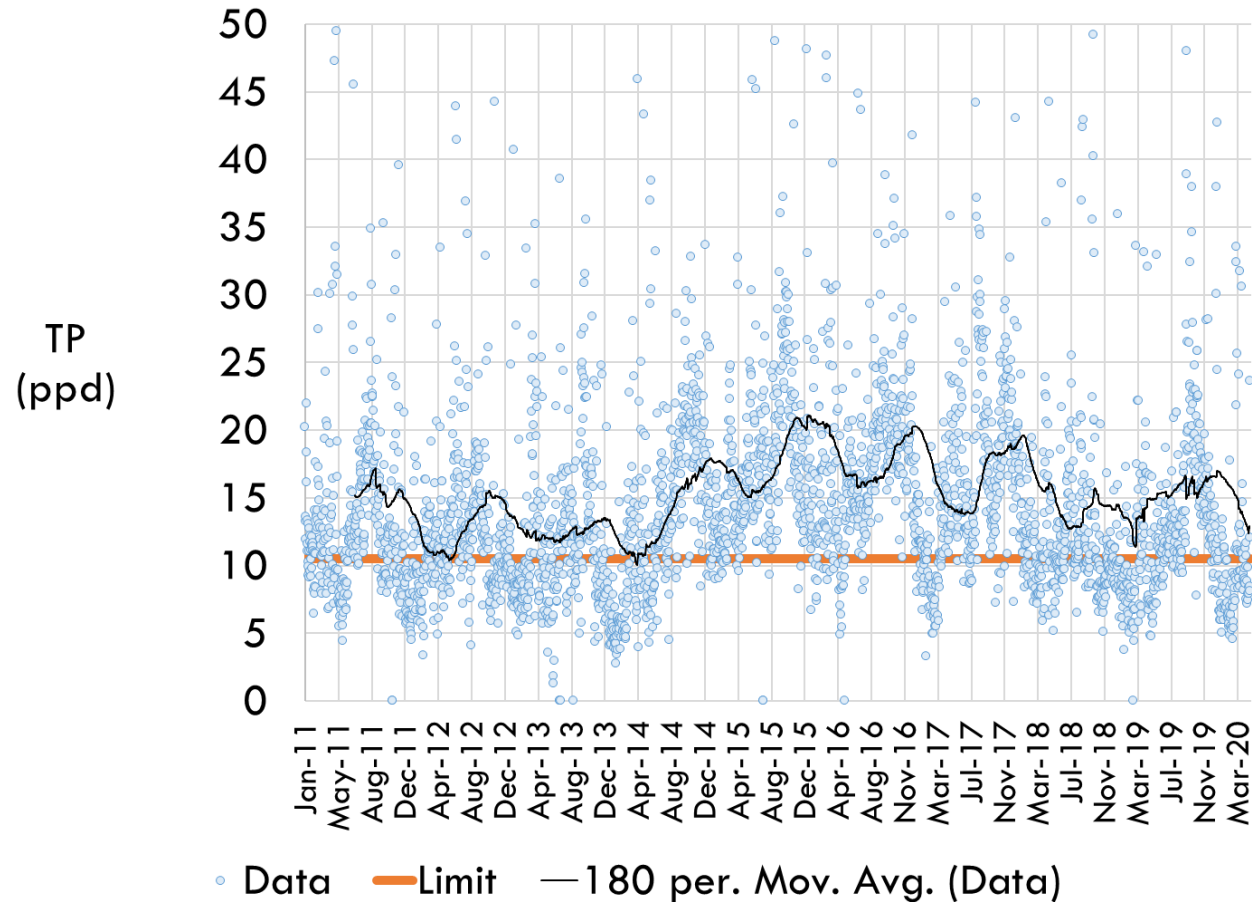
Compliance Date = Jan 1, 2026



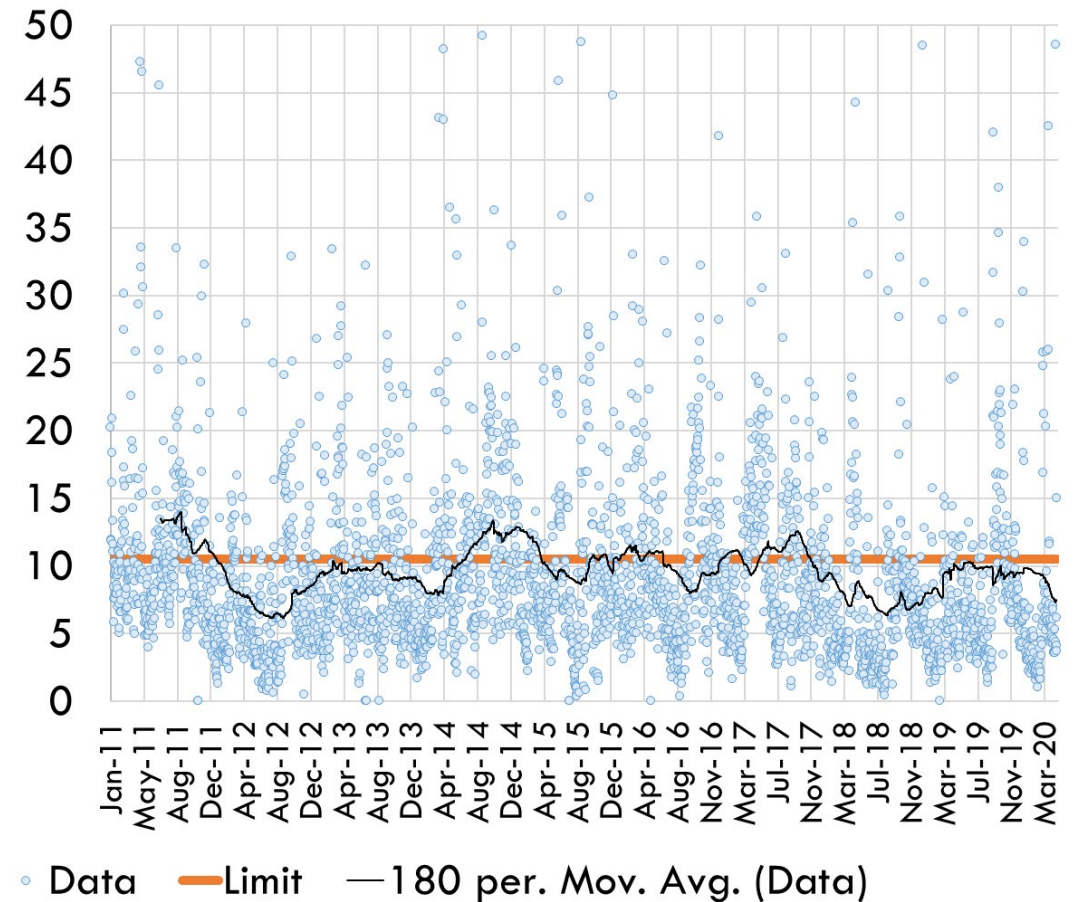


# Historical TP Performance

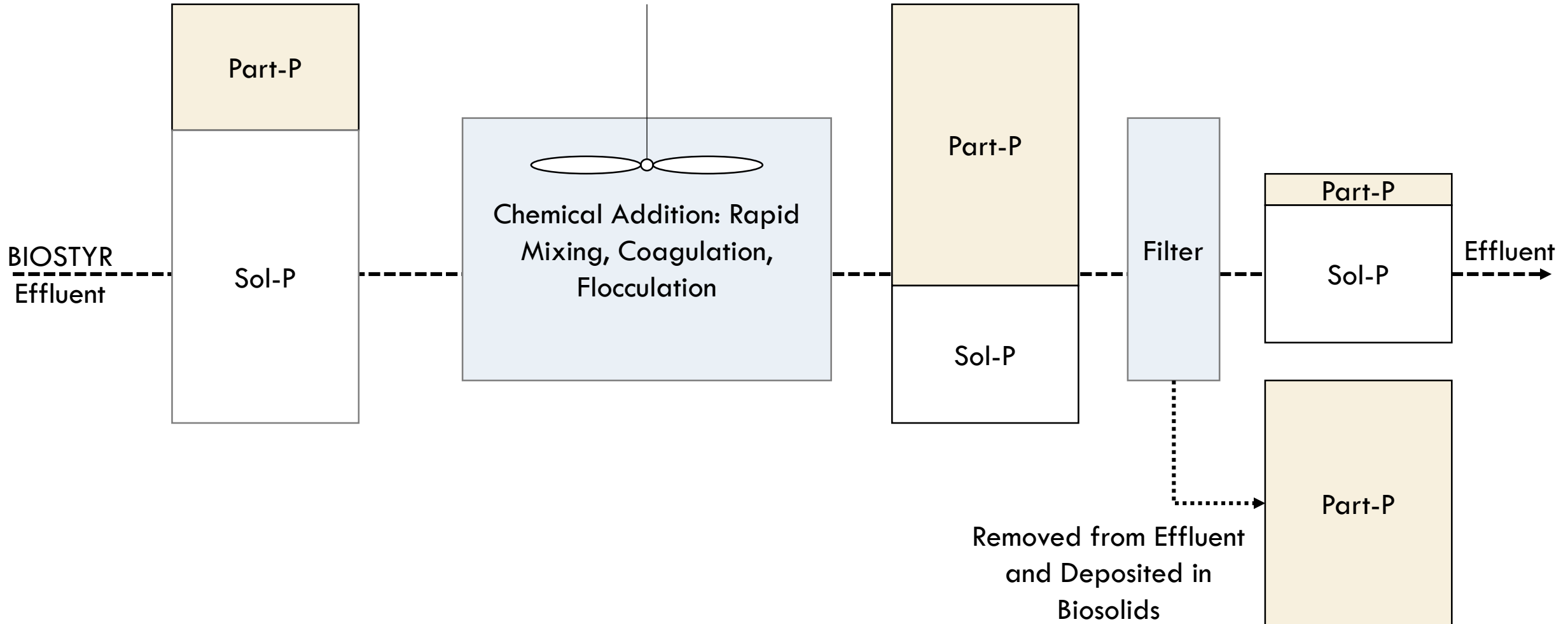
## All Flow to River



## With Fox Energy Withdrawal

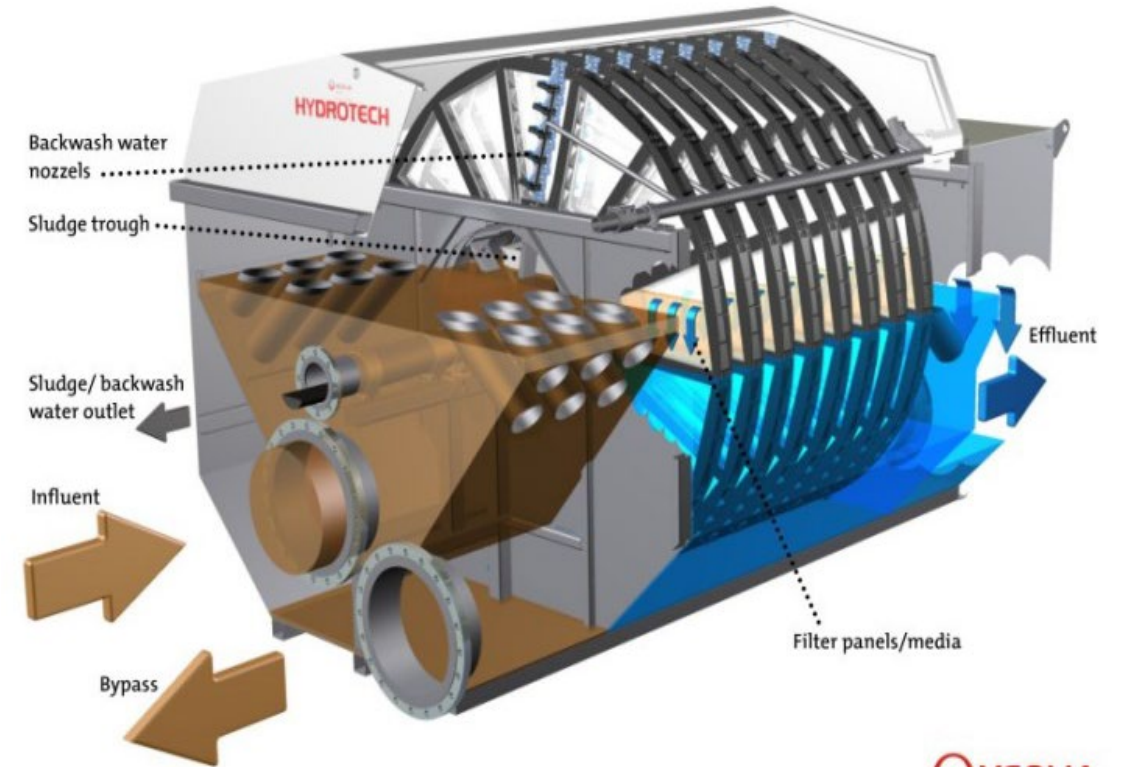
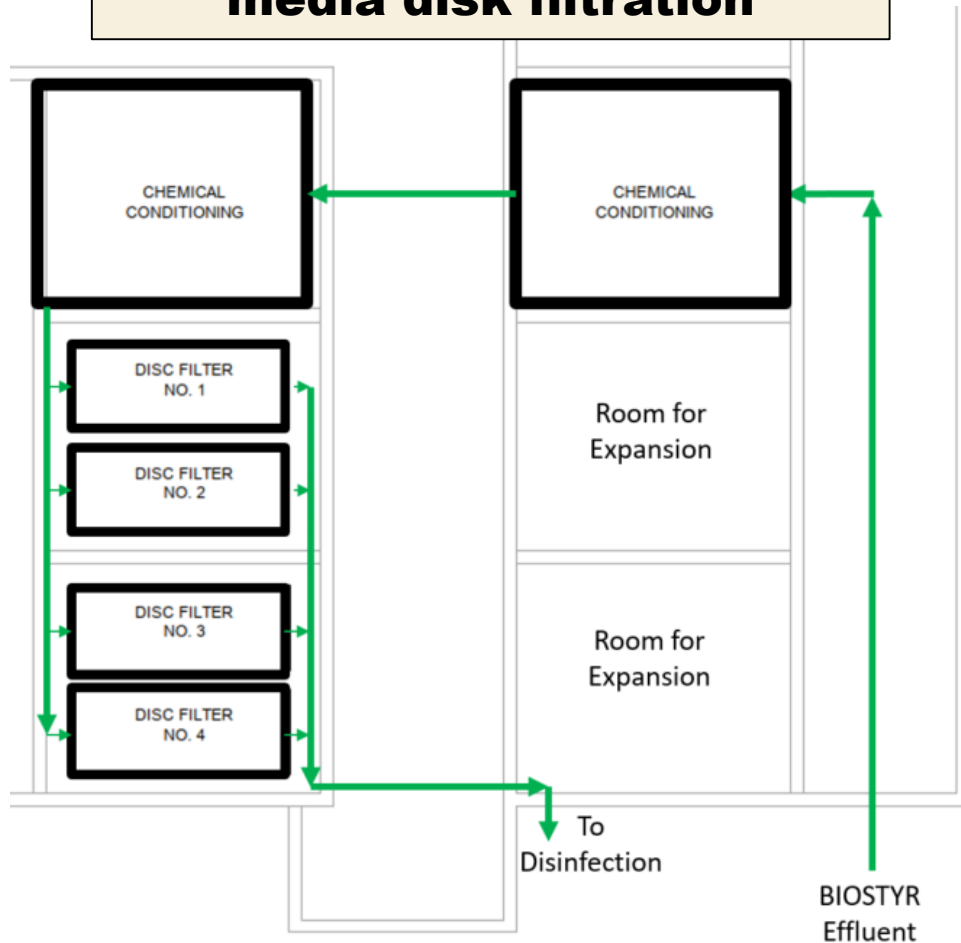


# Compliance Requires Chemical Addition and Filtration



# The Commission and Staff Considered Multiple Options: Cost and Non-Economic Factors

**Most cost effective and favorable alternative: cloth-media disk filtration**

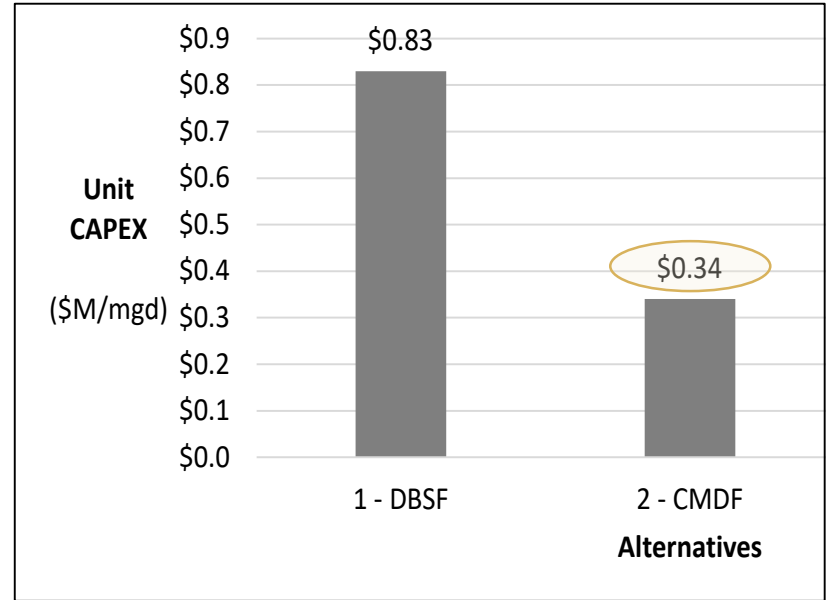


**VEOLIA**



### Capital Cost Opinion (CAPEX)

Major Cost Category	Alternatives	
	1 - DBSF	2 - CMDF
Removal/Demolition	\$387,000	\$387,000
Site	\$420,000	\$345,000
Major Structural	\$849,000	\$525,000
Ancillary Structural [15%]	\$128,000	\$79,000
Major Process-Mechanical	\$2,906,000	\$3,435,000
Ancillary Process-Mechanical [10%]	\$291,000	\$344,000
Electrical	\$600,000	\$550,000
Controls	\$400,000	\$350,000
Mechanical	\$400,000	\$350,000
Construction Subtotal	\$6,380,000	\$6,365,000
Planning-Level Contingency [30%]	\$1,914,000	\$1,910,000
Contractor Overhead and Profit [25%]	\$2,074,000	\$2,069,000
<b>Total Construction</b>	<b>\$10,368,000</b>	<b>\$10,342,000</b>
Engineering [15%]	\$1,556,000	\$1,552,000
<b>Total Project Cost</b>	<b>\$11,923,000</b>	<b>\$11,894,000</b>



### Annual Operating Cost Opinion (OPEX)

Major Cost Category	Alternatives	
	1 - DBSF	2 - CMDF
Electricity: P-Removal System	\$42,000	\$23,000
Flocculant	\$33,000	\$33,000
Coagulant	\$183,000	\$183,000
Biosolids: Improved TSS Removal	\$33,000	\$33,000
Biosolids: Chemical P-Removal Solids	\$6,000	\$6,000
<b>Total Annual Cost</b>	<b>\$295,000</b>	<b>\$276,000</b>

### Present Value Opinion

Major Cost Category	Alternatives	
	1 - DBSF	2 - CMDF
CAPEX	\$11,923,000	\$11,894,000
OPEX	\$4,142,000	\$3,876,000
<b>Total Present Value [20 Years at 3.265%]</b>	<b>\$16,064,000</b>	<b>\$15,769,000</b>

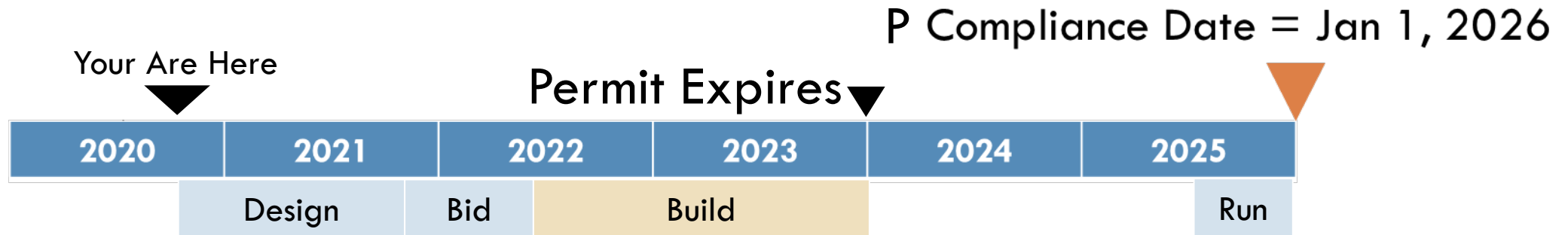
### Non-Economic Criteria

	Alternatives	
	1 - DBSF	2 - CMDF
Reliability: Modular	1	1
Redundancy	0	1
Initial Hydraulic Capacity: Equals Secondary Capacity	0	1
Future Hydraulic Capacity: Simple Expansion	0	1
Backwashing: Attenuated	0	1
Site: Preserves Limited Space	0	1
Operation: Simple	1	1
Operation: Filter Flies	0	1
Maintenance: Simple, Infrequent	0	1
Constructability	1	1
<b>Total Non-Economic Score</b>	<b>3</b>	<b>10</b>



# Implementation Schedule

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Questions/Discussion

Thank You