



# Hayward Water Pollution Control Facility Upgrades

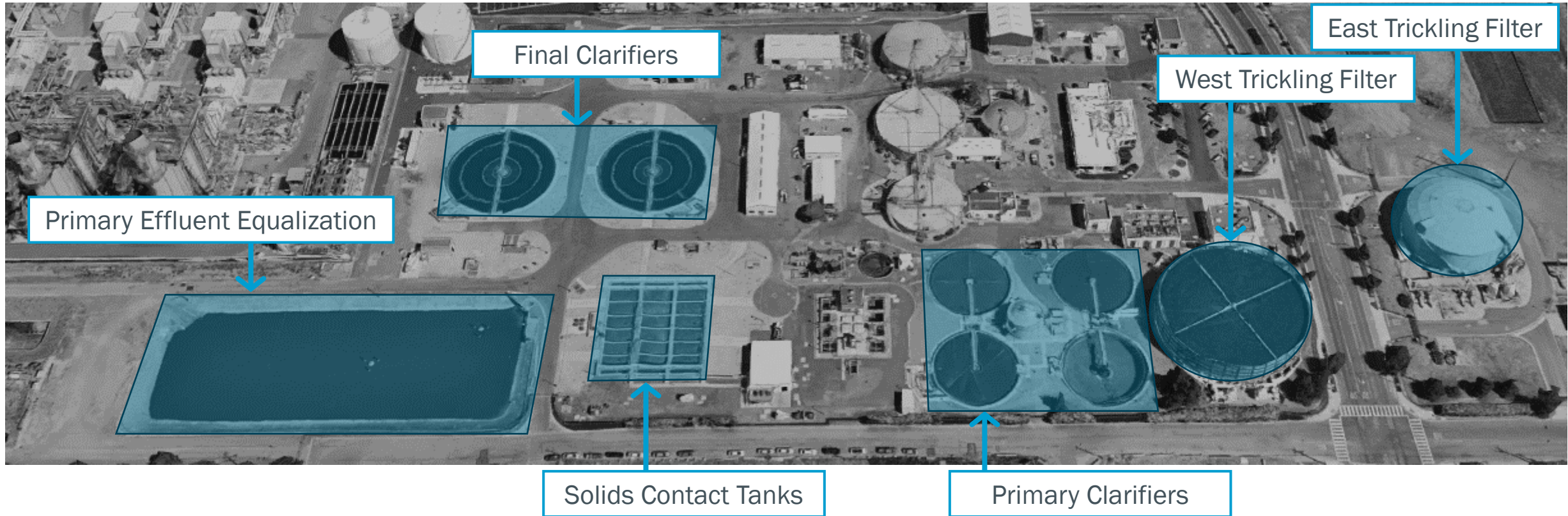
August 29, 2024



# Agenda

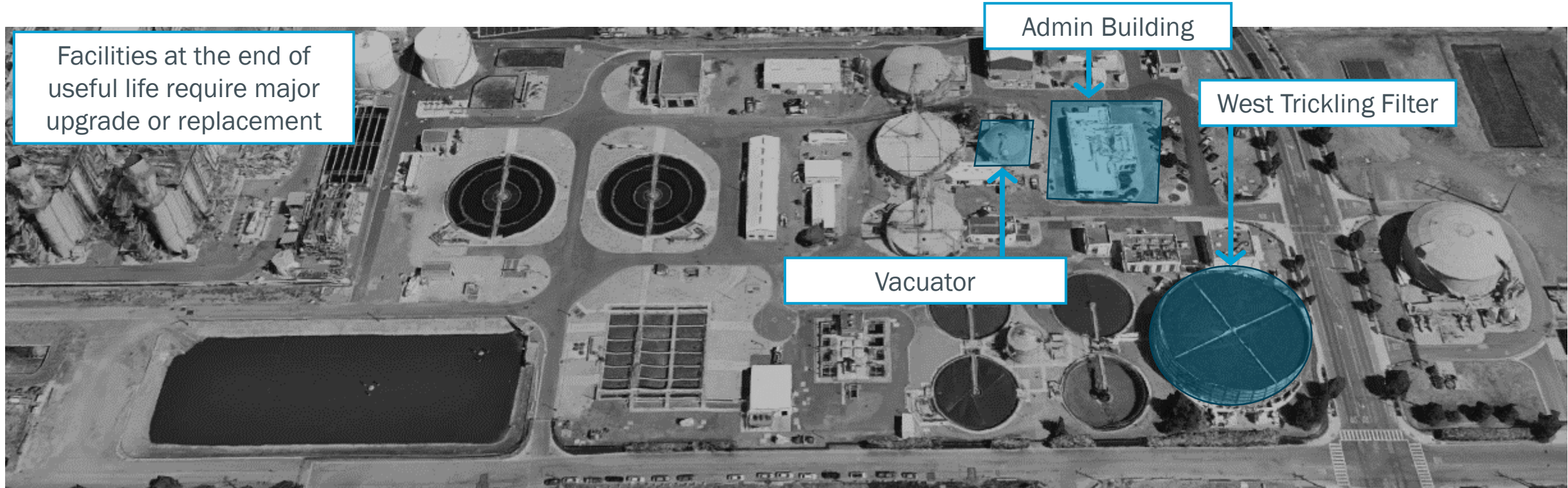
1. Project Drivers
2. Project Overview
3. Integrated Trickling Filter and Step-Feed BNR Process
4. BNR Design

# Existing Plant: Trickling Filter / Solids Contact





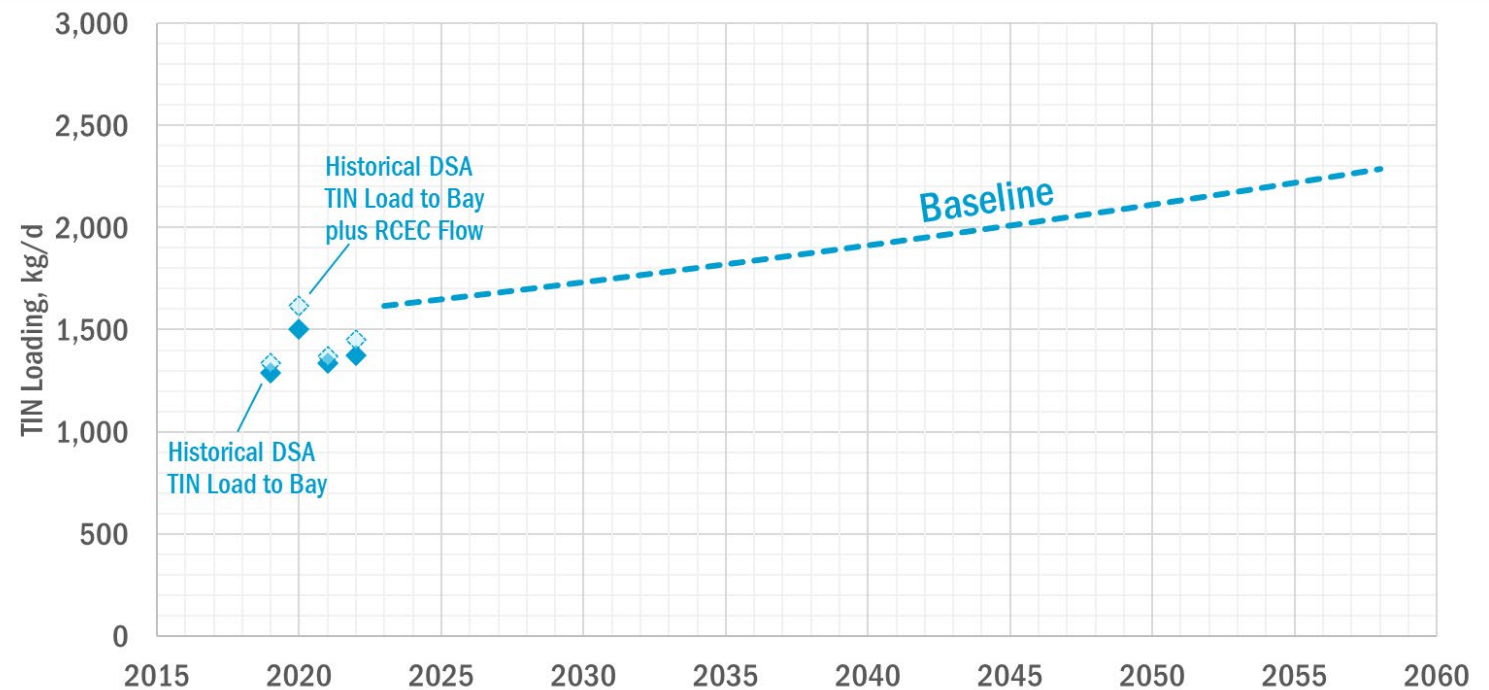
# Driver: Aging Infrastructure



Facilities Plan (2020) recommended demolishing the West Trickling Filter and constructing new BNR basins

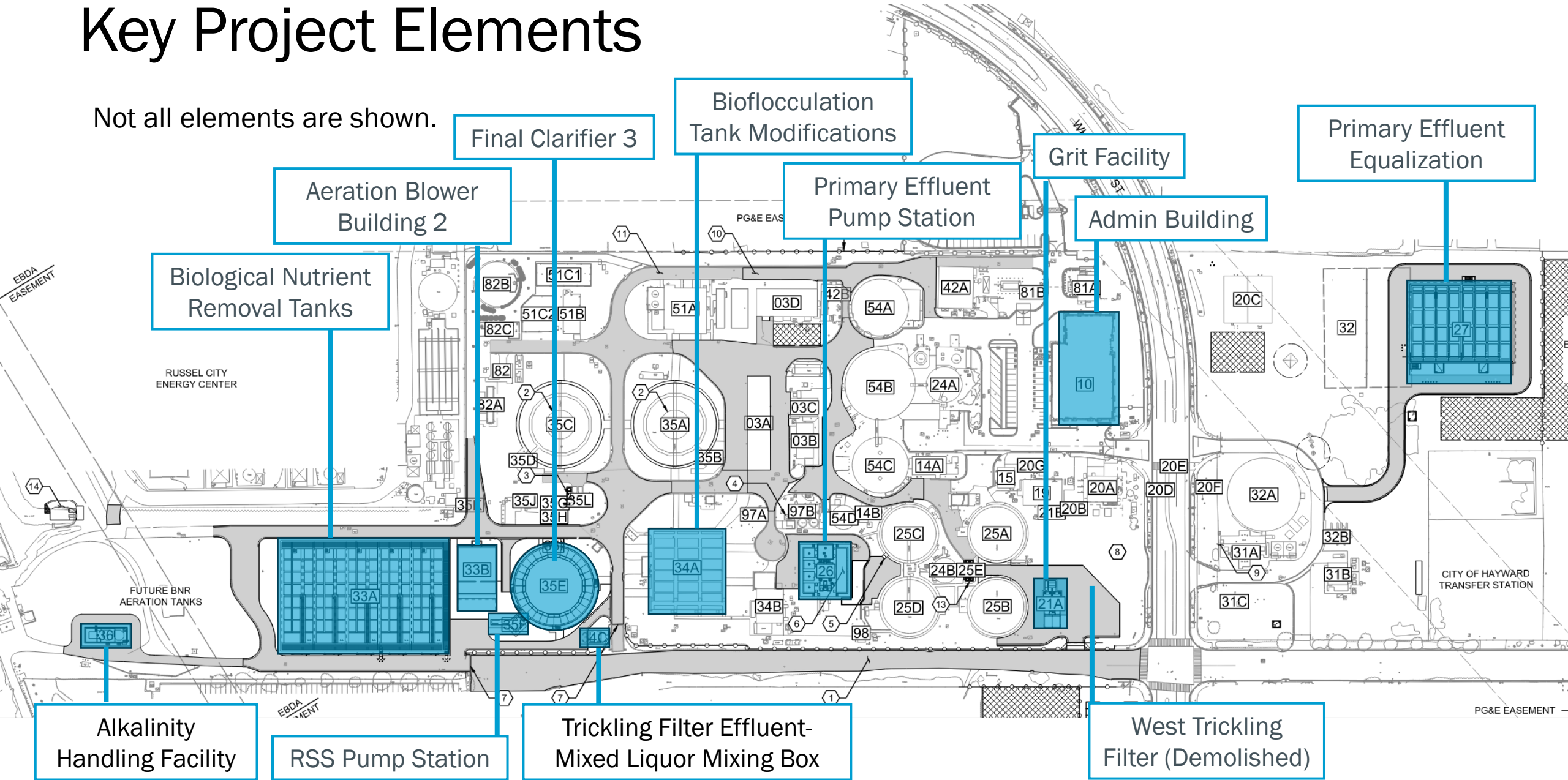
# Driver: Nutrient Limitations

- Project Basis (2022):
  - Early Actor
  - 30% reduction in TIN
- Preliminary Design (2023)
  - City elected to increase BNR volume to target 50% reduction of TIN
- 2024 Watershed Permit limits came during detailed design



# Key Project Elements

Not all elements are shown.

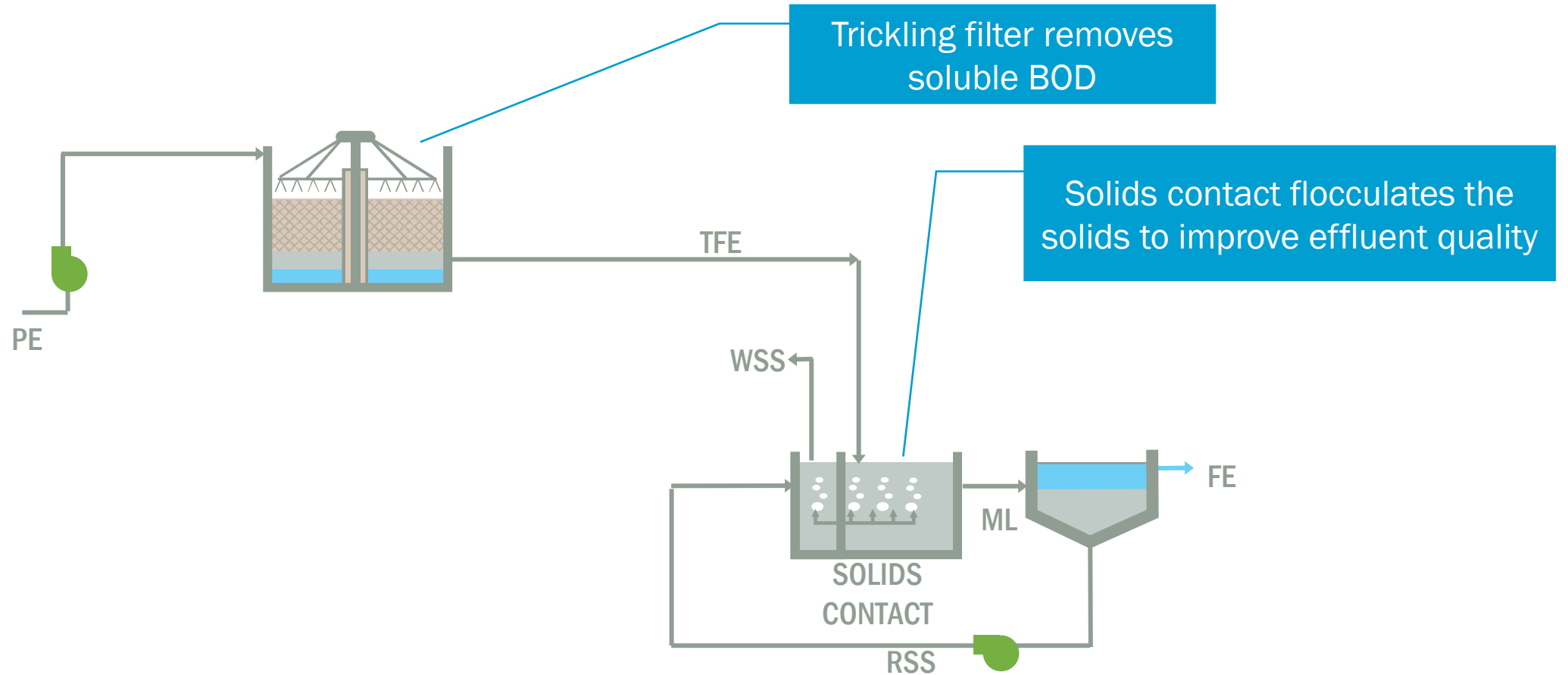


---

# Integrated Trickling Filter and Step-Feed BNR Process

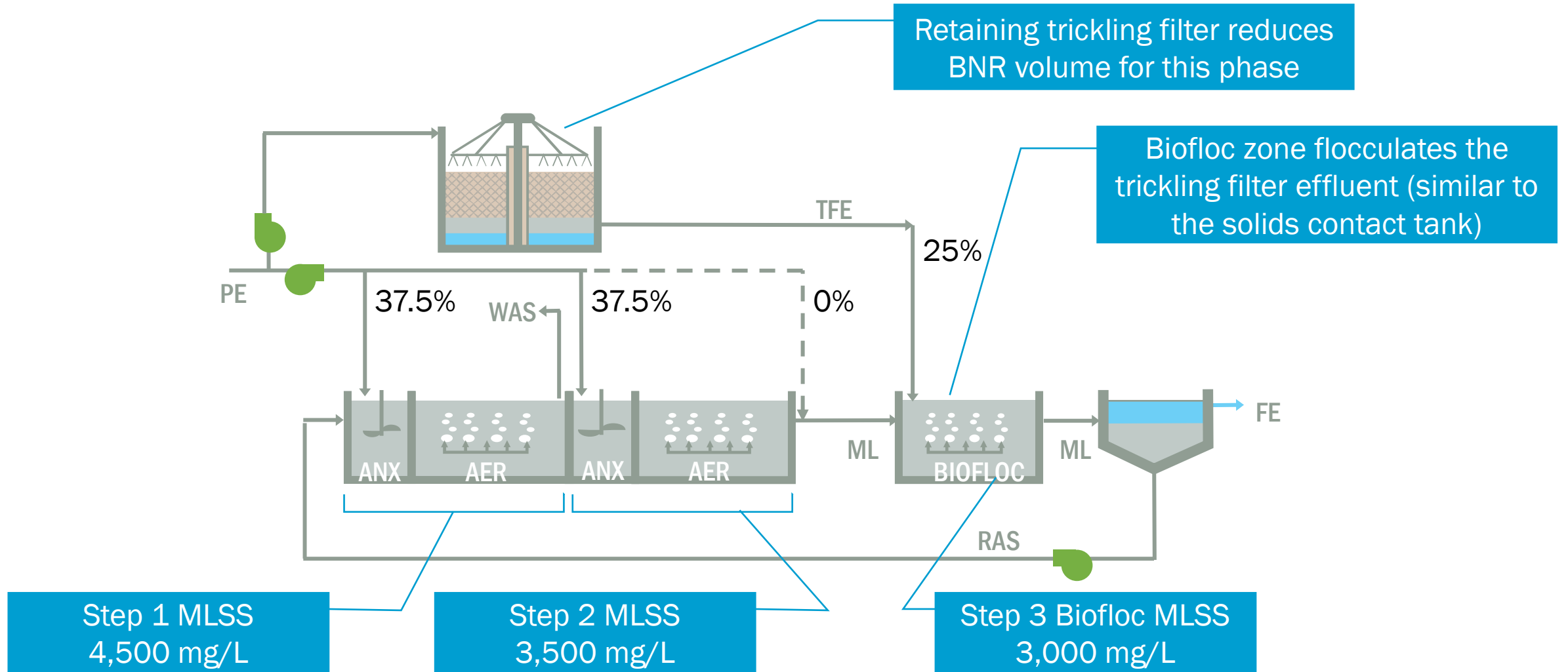


# Trickling Filter Solids Contact

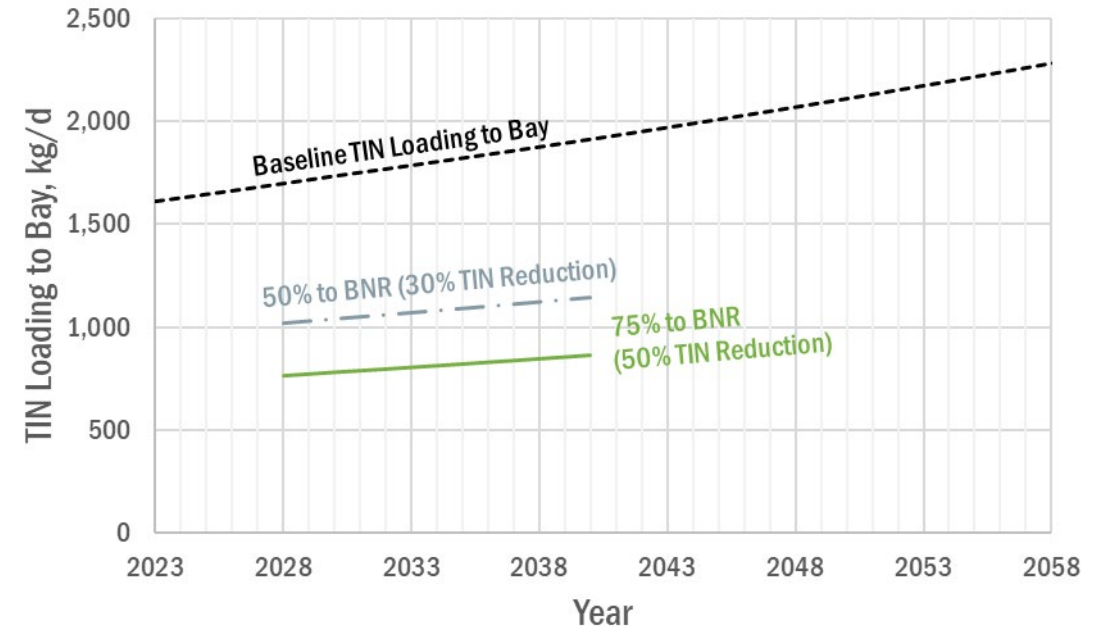
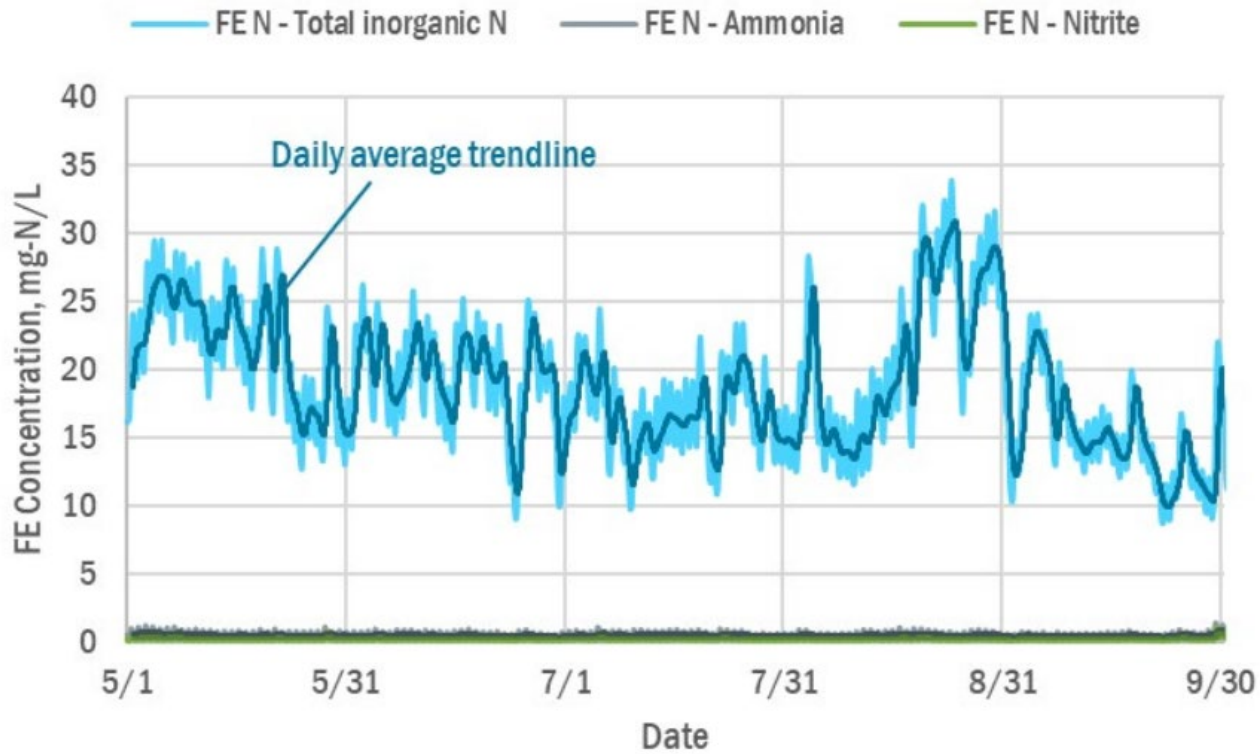




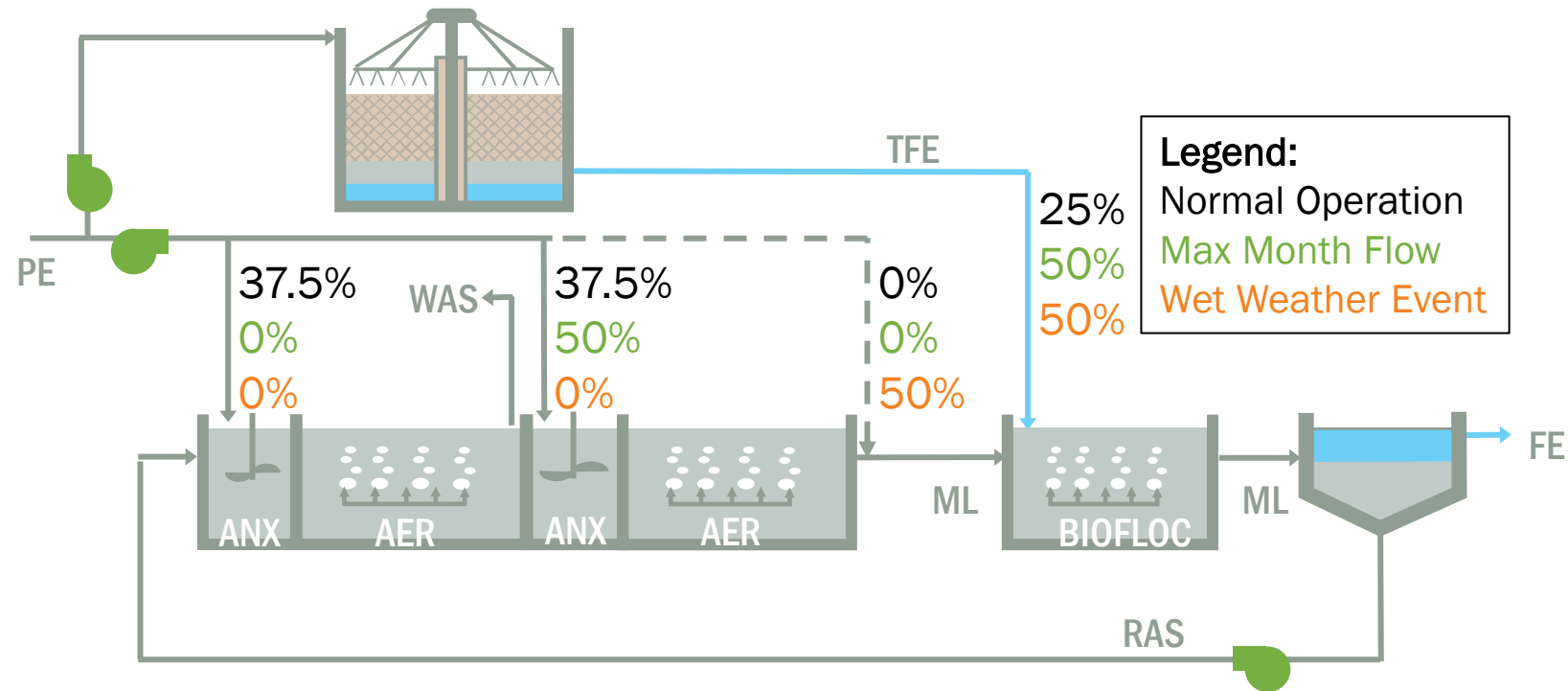
# Integrated Trickling Filter and Step-Feed BNR



# Integrated Trickling Filter and Step-Feed BNR Performance

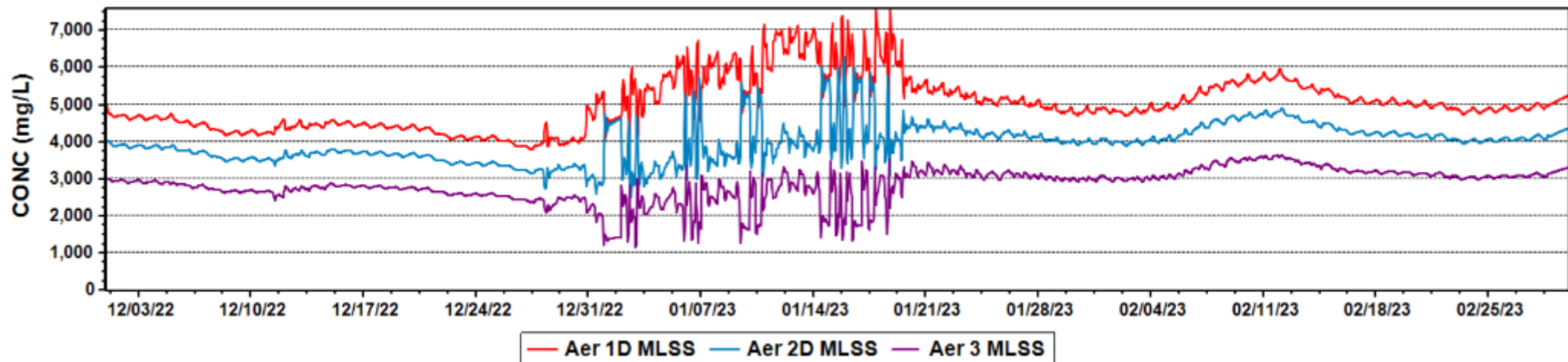


# Integrated Tricking Filter and Step-Feed BNR Wet Weather



# Integrated ETF and Step-Feed BNR Wet Weather

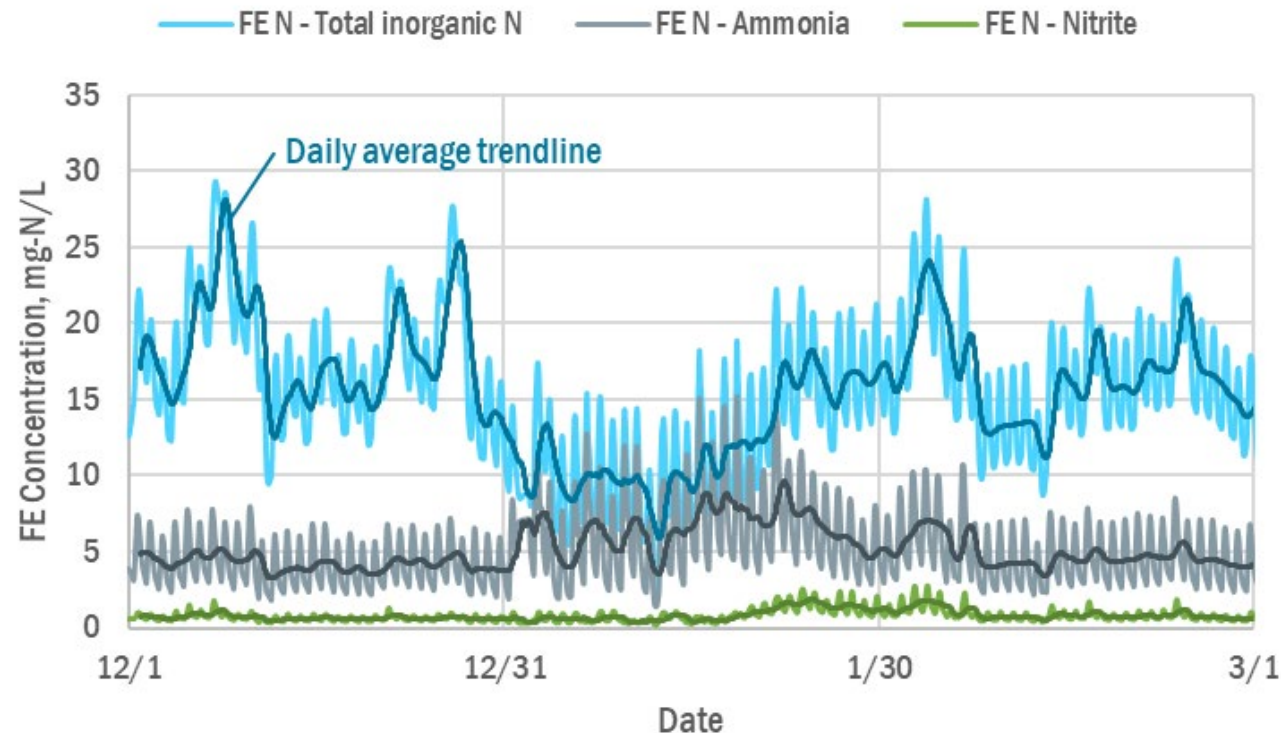
- Dry season average flow: 12.9 mgd
- Peak day flow: 46.3 mgd
- Modeled based on January 2023





# Integrated ETF and Step-Feed BNR Wet Weather

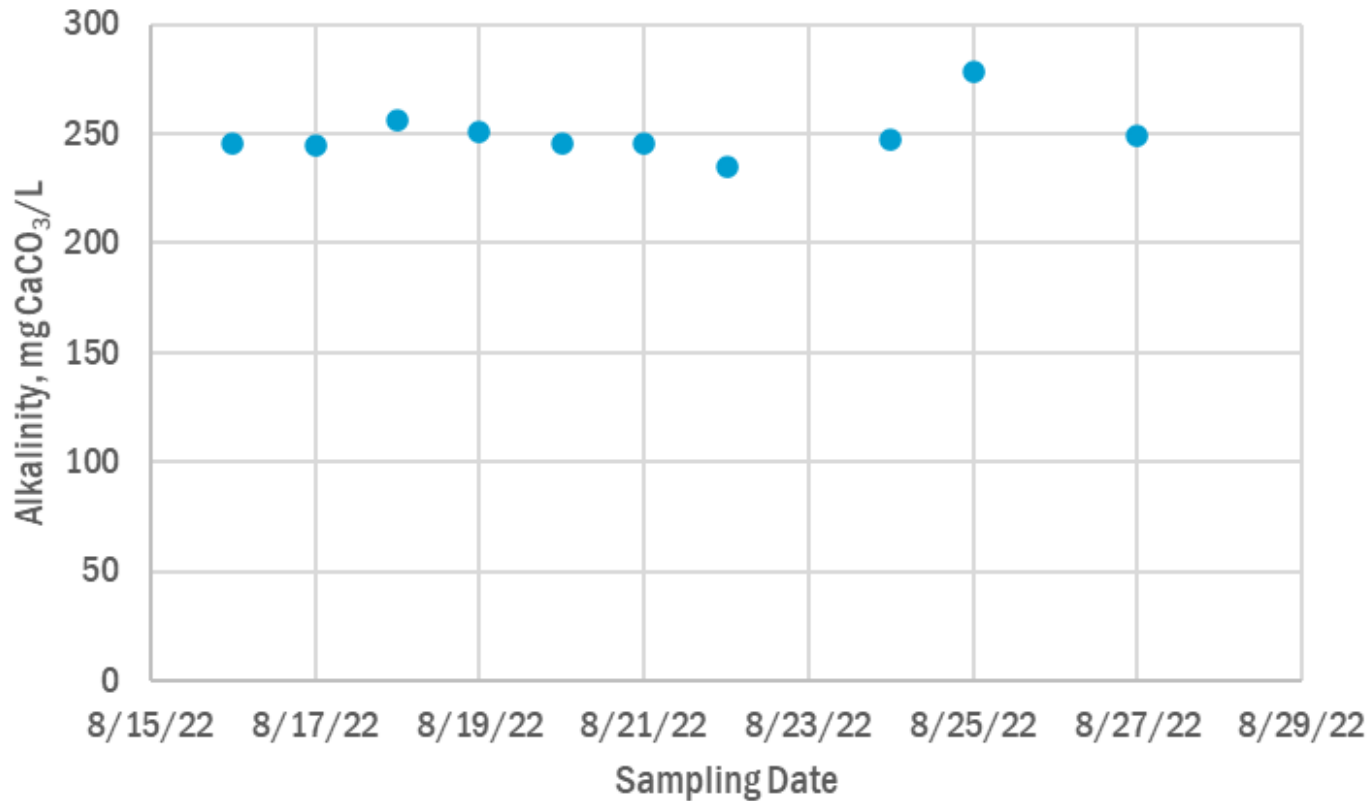
- During peak flows:
  - Higher ammonia
  - Lower TIN concentrations (dilution)



Results shown for all tanks in service during max month flow event

# Hayward Influent Alkalinity

Need 300 to 400 mg/L of alkalinity in the influent



## Conclusions:

Alkalinity addition is required.

---

# BNR Design

**Brown** AND **Caldwell** :





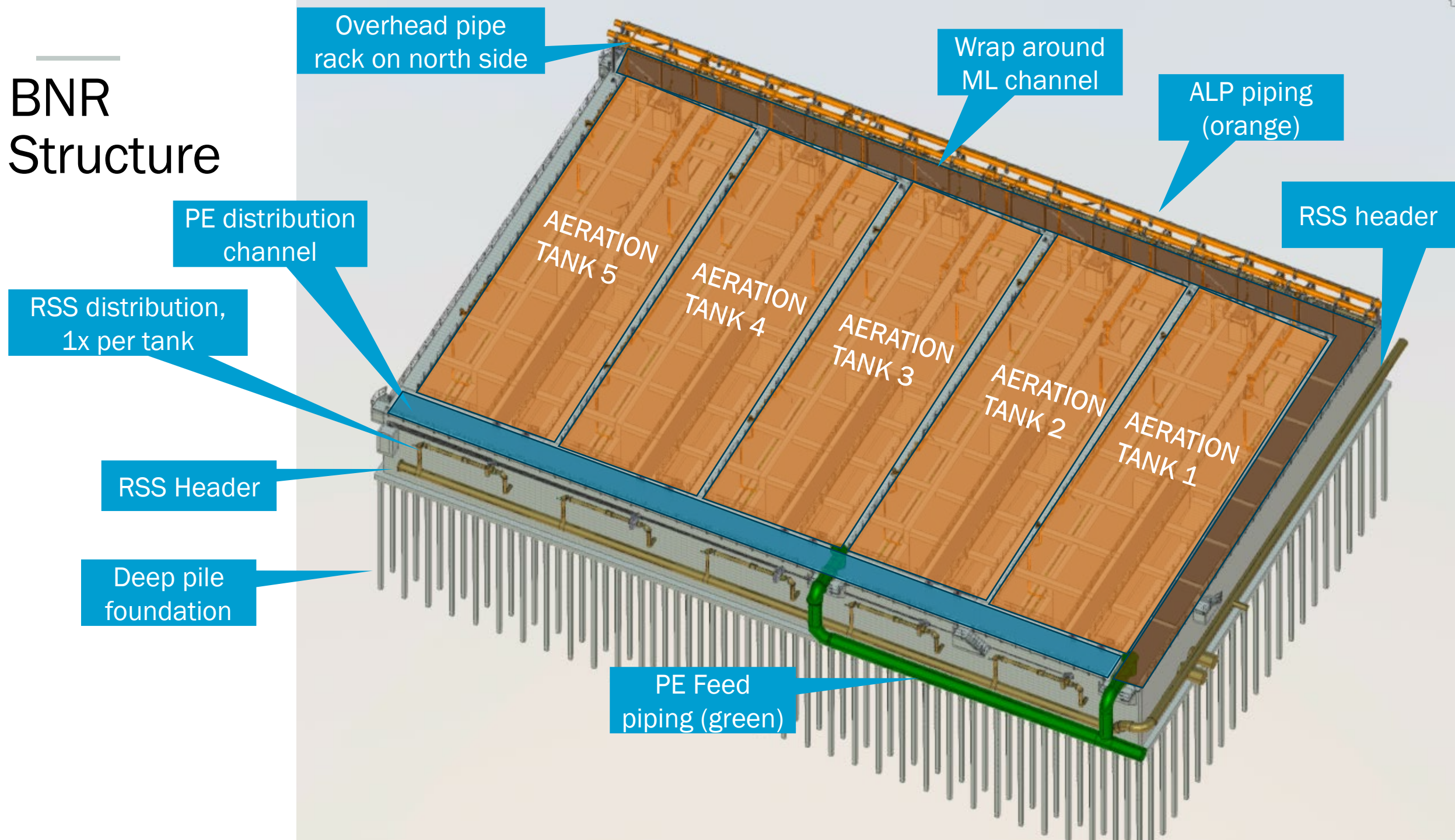


## 1. BIOLOGICAL NUTRIENT REMOVAL TANKS

- 5 x 1 MG Tanks; 22ft SWD
- 30% ANOXIC
- 70% AEROBIC



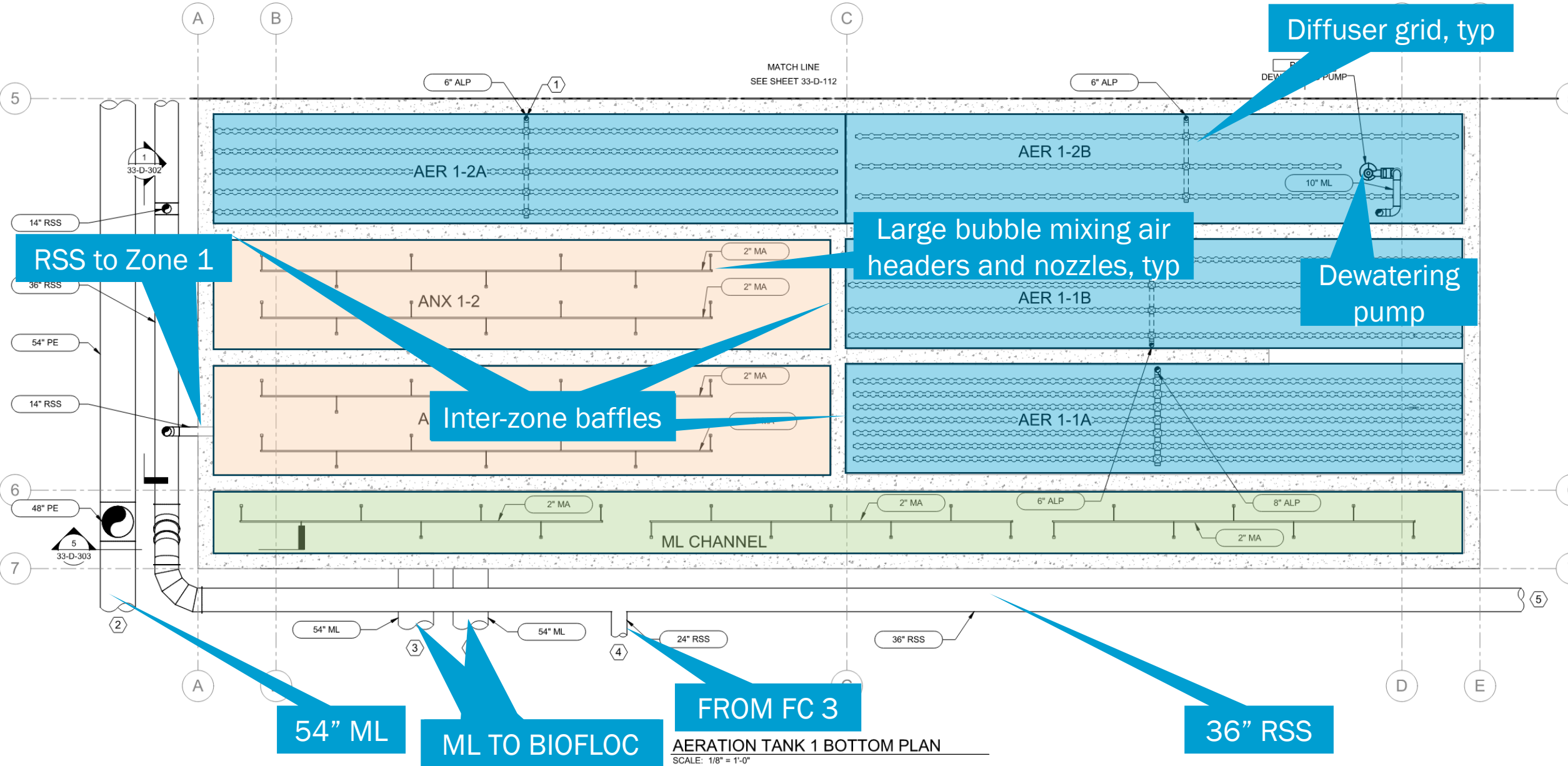
# BNR Structure



# Aeration Tank 1 (TYP)

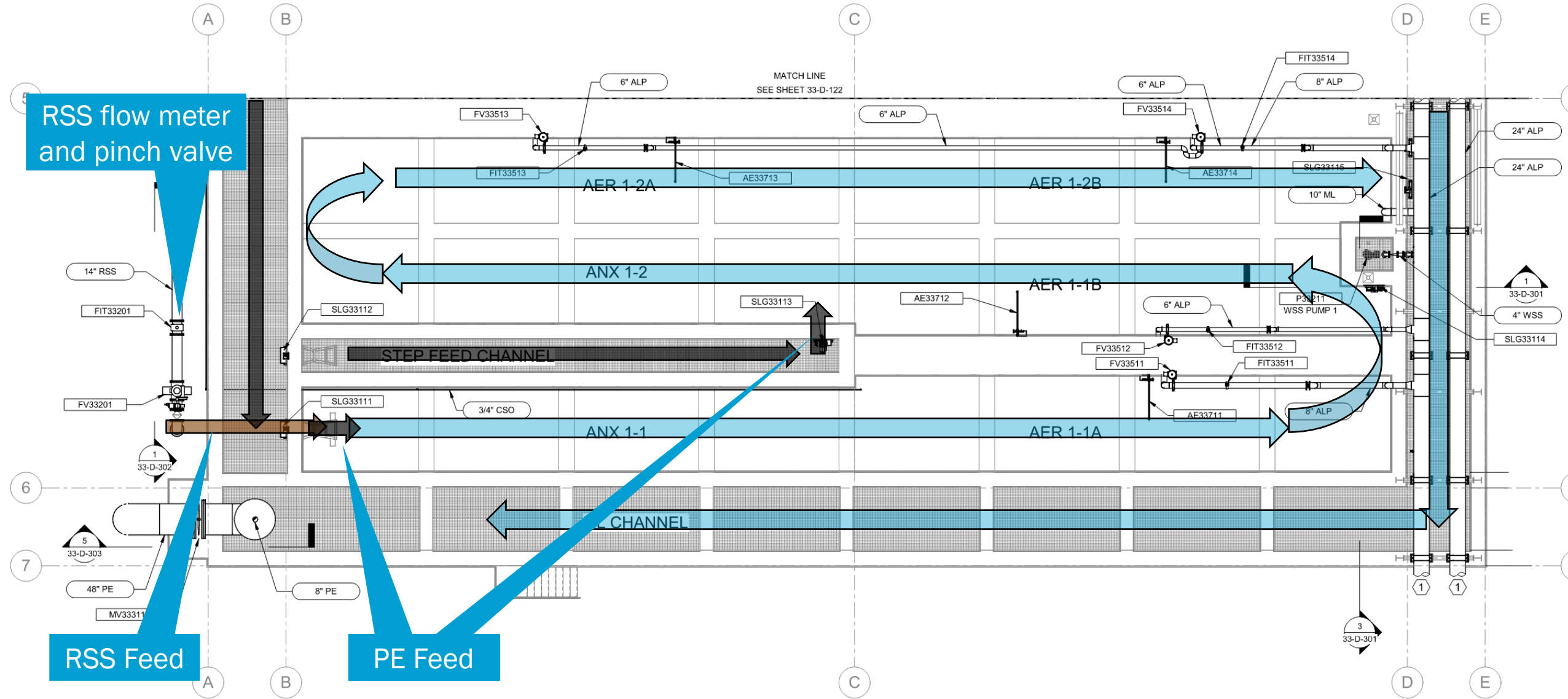
AEROBIC  
ANOXIC

CONVEYANCE



AERATION TANK 1 BOTTOM PLAN  
SCALE: 1/8" = 1'-0"

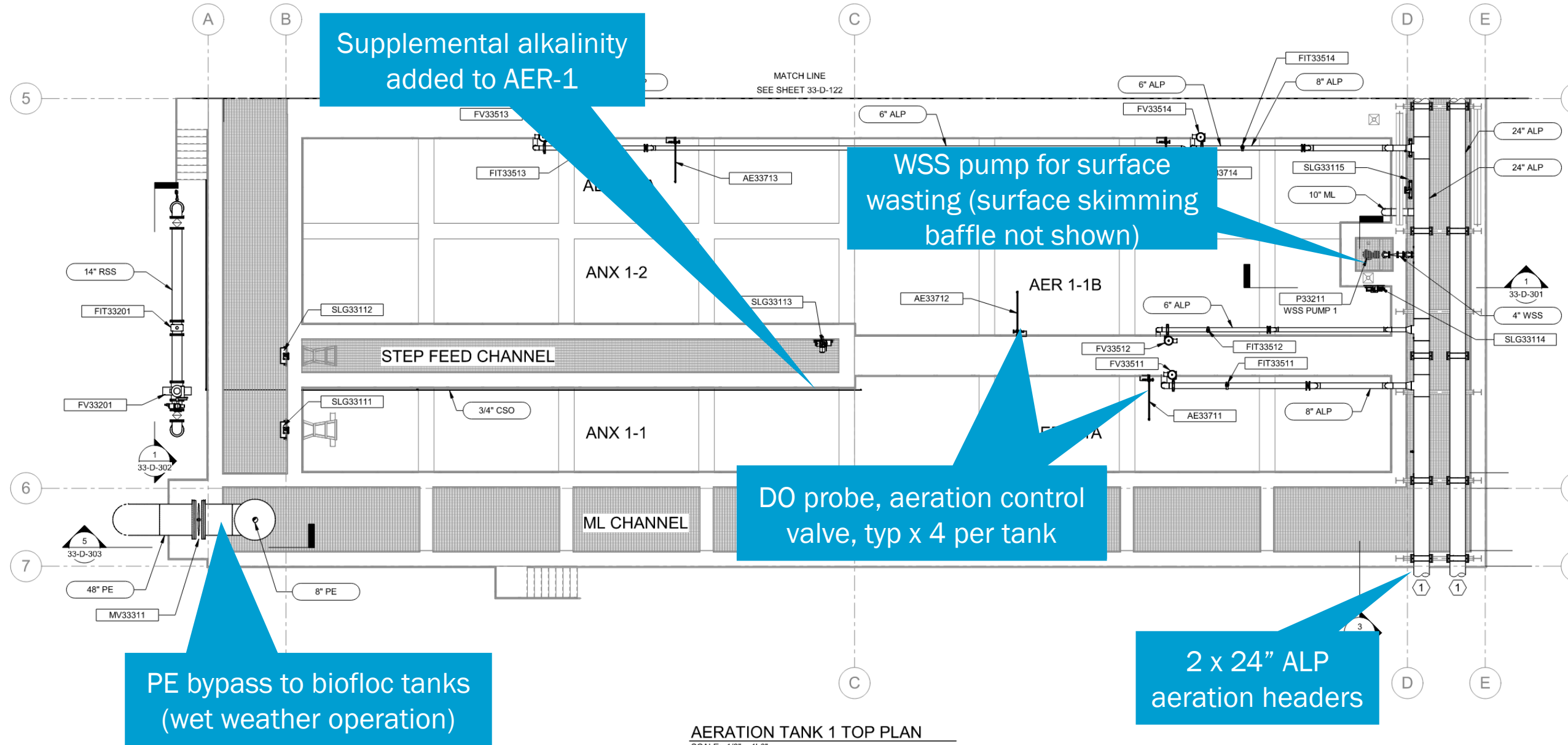
# Aeration Tank Serpentine Flow



AERATION TANK 1 TOP PLAN  
SCALE: 1/8" = 1'-0"



# Aeration Tank Top View



AERATION TANK 1 TOP PLAN  
SCALE: 1/8" = 1'-0"



---

Thank you.

– Questions?



**Brown** AND **Caldwell** :

