

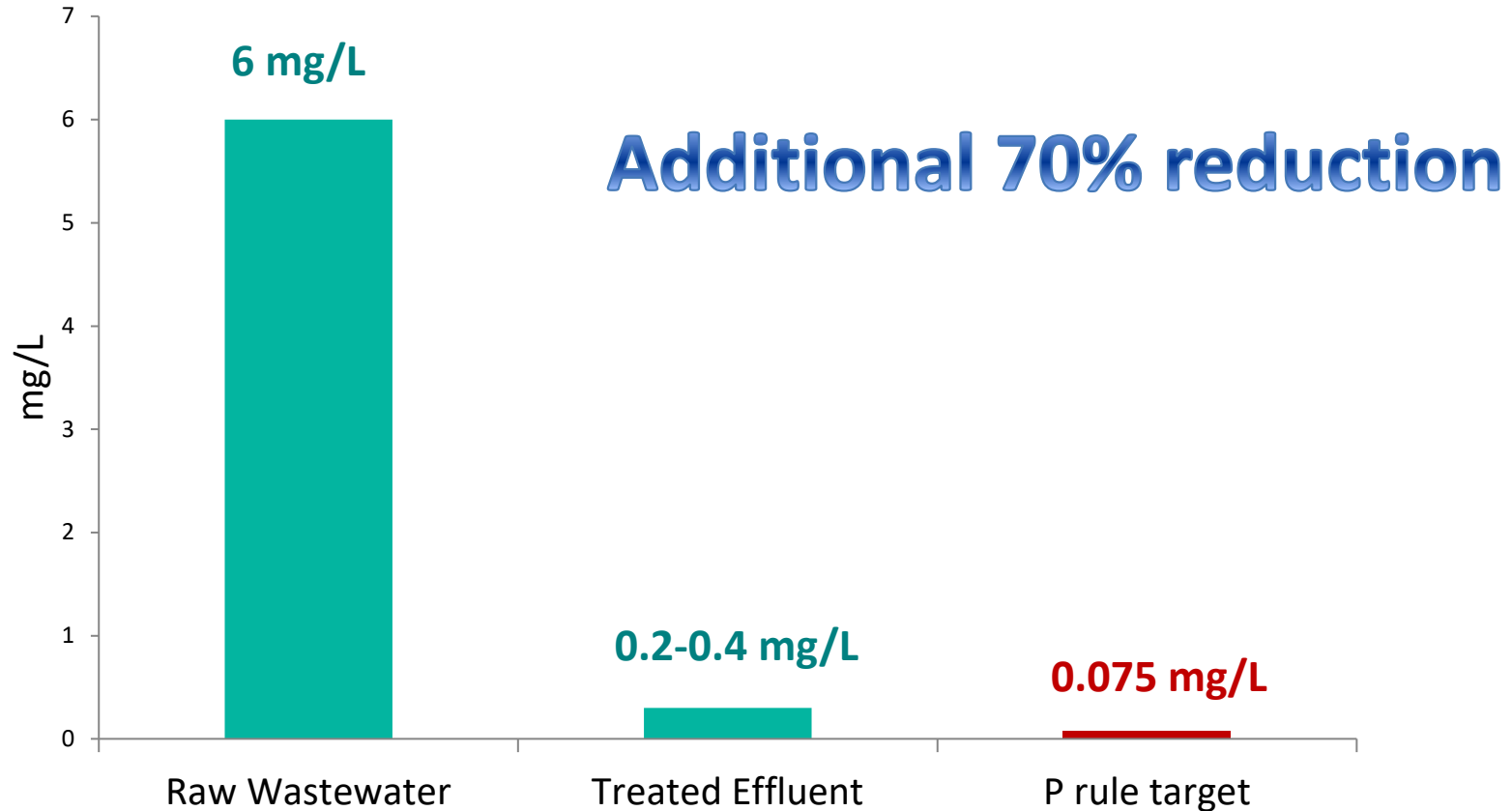
# Badger Mill Creek Update 2021



Madison Metropolitan Sewerage District

# Reductions in phosphorus necessary

## TYPICAL MMSD PHOSPHORUS CONCENTRATIONS





# Scale of Reductions Needed

- 3.5 Million Gallons per day
- Average Concentration: 0.3 mg/l
- Water Quality Standard: 0.075 mg/l
- Current discharge:
  - 6 lbs. of P per day *more* than water quality standard
  - 2260 lbs. of P annually *more* than water quality standard



# Timeline



**complete**

3-31-2021  
Compliance  
Alternatives Status  
update

**Next  
step**

3-31-2022  
Preliminary  
Compliance  
Alternatives Plan,  
if AM or WQT are  
intended, the plan  
must note this.

3-31-2023  
Final Compliance  
Alternatives Plan,  
including  
Watershed AM  
Request, if desired  
approach

3-31-2024  
Progress Report  
on Plans &  
Specifications due

3-31-2025  
Unless AM or  
WQT, Final  
Construction Plans  
due

9-30-2025  
Treatment Plant  
Upgrade initiated,  
if selected  
alternative.





# Next Requirement

3-31-2022

Preliminary Compliance  
Alternatives Plan, if AM or WQT are  
intended, the plan must note this.





# Possible Compliance Alternatives

Treatment

Water  
Quality  
Trading

Adaptive  
Management

Reduce or  
Eliminate  
Flow

Site-  
Specific  
Criterion

Variance



# Eliminated Compliance Alternatives

## **Adaptive Management**

No TMDL

Urbanization

## **Site-Specific Criterion**

Minimal possible  
change to WQS

## **Variance**

Viability (CI example)



# Remaining Compliance Alternatives

**Treatment**

**Water Quality Trading**

**Reduce or Eliminate  
Flow**



# Treatment

- Add tertiary treatment for BMC effluent to remove phosphorus to comply with the WQS.
- Pilot testing completed on four possibilities
- Cost ranges – Capital \$7 million (\$45k O&M) to \$15 million (\$1.3 million O&M)
- Energy increase
- Are there reasons we should continue to pursue





# Water Quality Trading

- Purchase off-setting credits
- State guidance (ratios, point of compliance, averaging)
- Possible future compliance challenges
- Potential partners and ecological enhancement
- **Are there any concerns, opportunities?**





# Modify Flow

- Phosphorus diverted/discharged to Badfish Creek (0-3.6 MGD)
- Criteria for original decision (50 yr master plan, baseflow, etc.)
- Recommendation from the energy study (reduce MMSD carbon footprint)





# Modify Flow

## Considerations:

- Increase req'd pounds & District payment to Yahara WINS
- Future criteria
- Future TMDL requirements
- Reliability
- **Are there reasons to stop looking at this?**





# Possible Compliance Alternatives

## **Tertiary Treatment (BMC Flow Only)**

Expensive

Energy intensive

Reuse possibilities

## **Water Quality Trading**

Viability based on flexibility (point of compliance/ratios, etc.)

Future requirements (TMDL, other parameters (N, Temp, energy))

Ecological enhancement/engagement of partners

## **Reduce or Eliminate Flow**

Current status re: basis of original decision

Future requirements

Energy





# Questions?

- Considering the three options, are there reasons that you want us to pursue a particular option over another?
- Gaps? Fears? Opportunities?





# Next Steps

- Commission input
- Staff will continue to work with partners to evaluate all viable solutions.
- Staff will update Commission
- Preliminary compliance alternatives plan, informed by commission, by March, 2022.





Thank you!

