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Constructed Wetlands

Engineering Natural-Based Systems to Remediate Wastewater

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Nitrogen Contamination: Public Water Enemy #1

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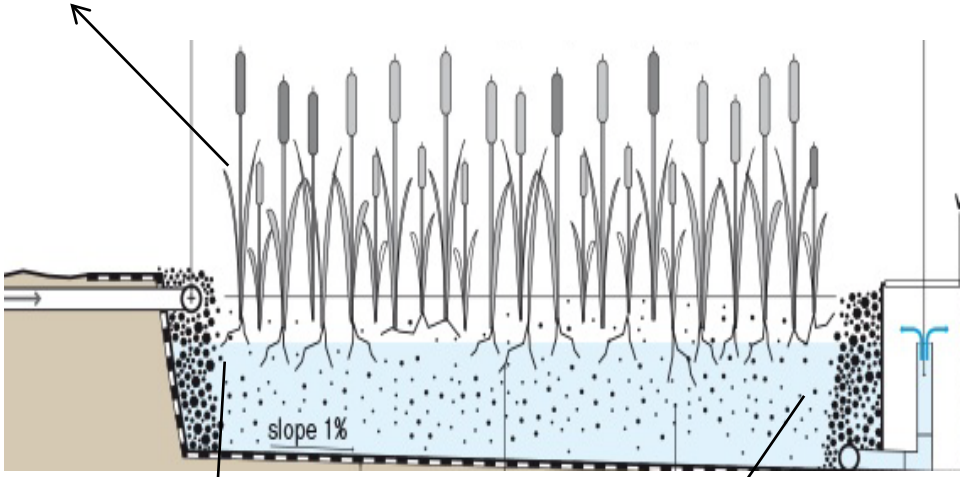
How they work

Plants



Microorganisms

Filling media

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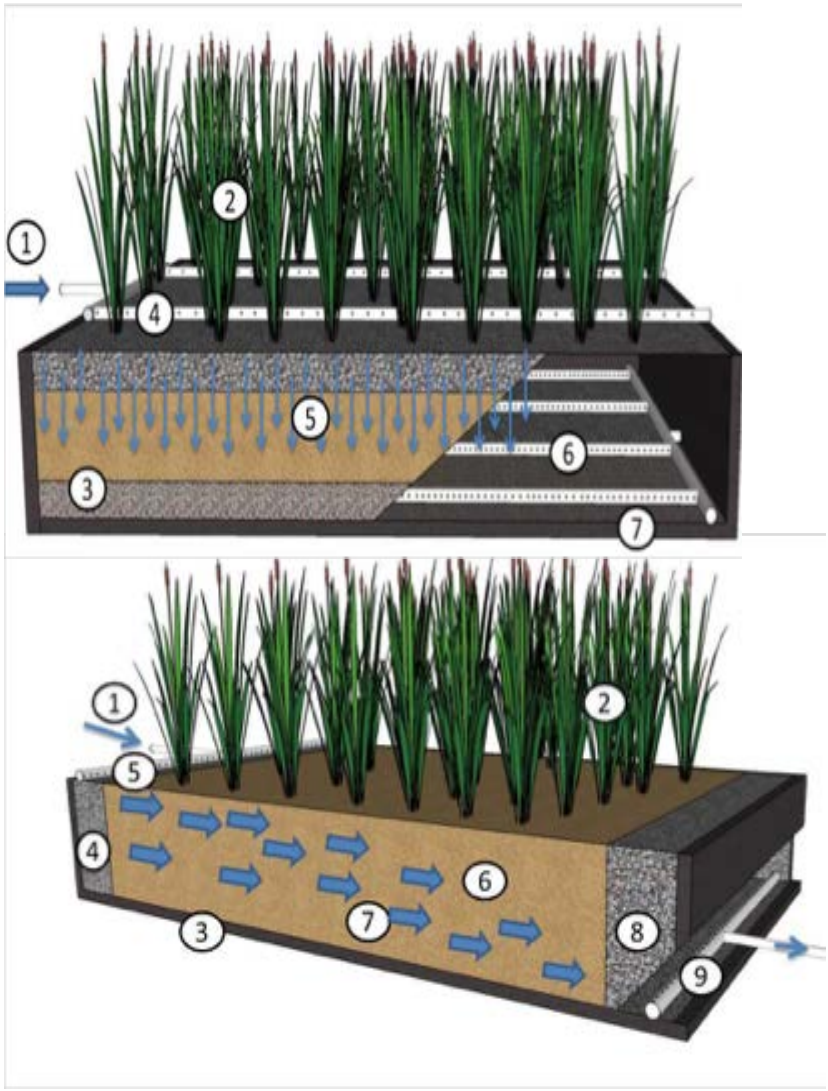
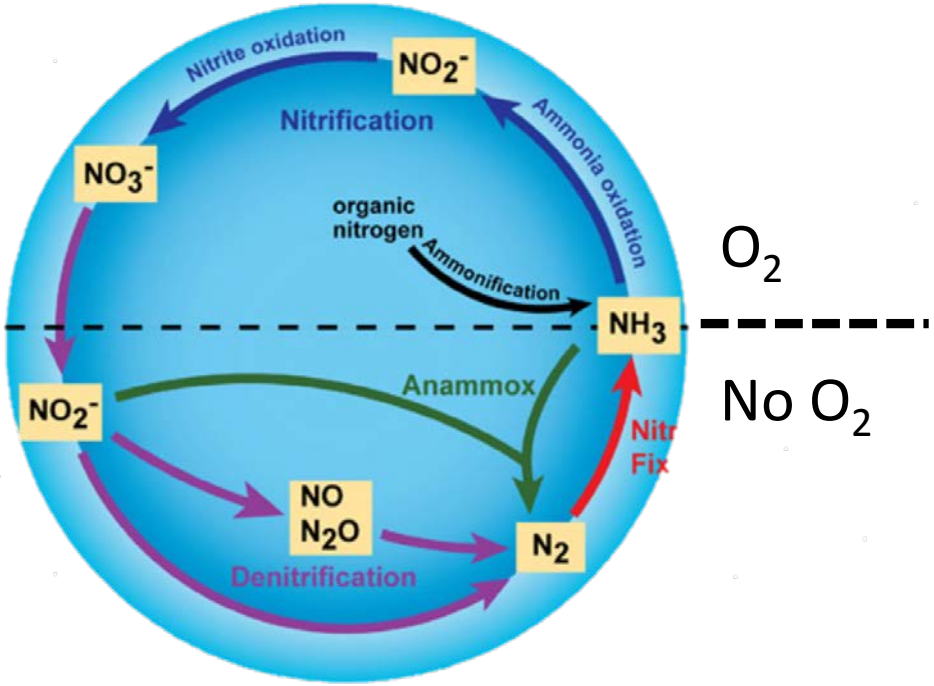
Nitrogen Cycling in Traditional Wetland Configurations





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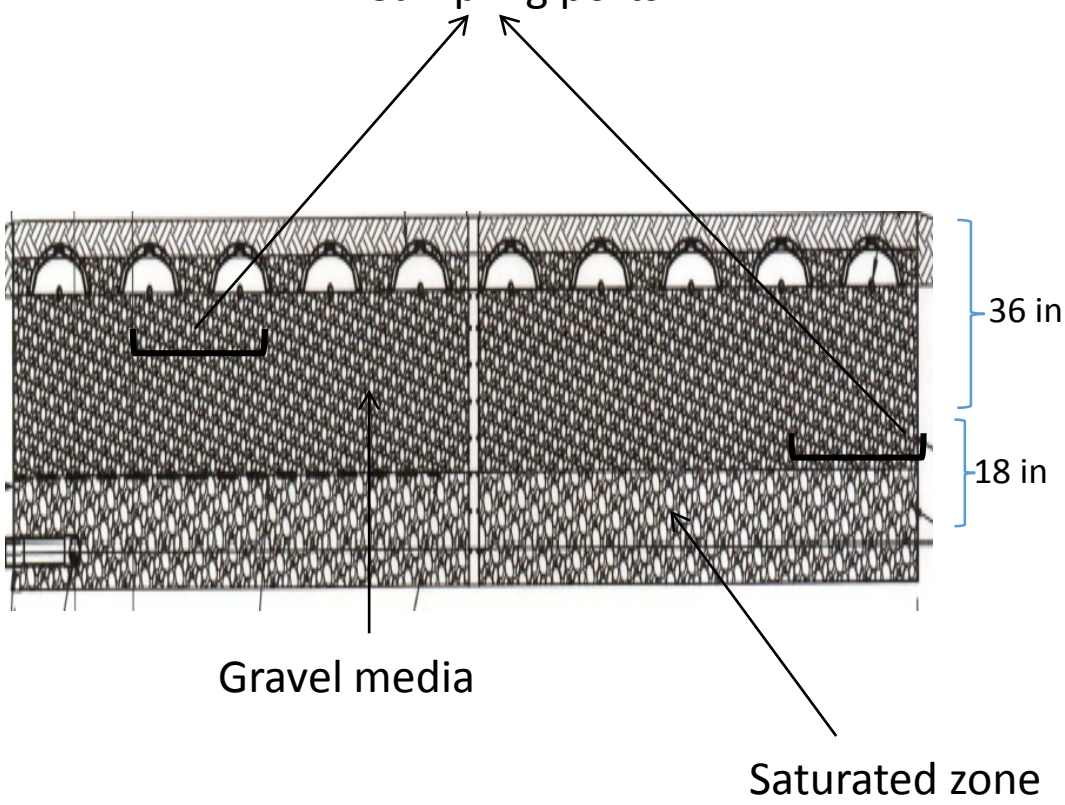
Sylvester Manor: Vegetated Recirculating Gravel Filter

Cross section of recirculating gravel filter



Nutrient and CEC removal
Sylvester Manor, Shelter Island
-In partnership with SCDHS

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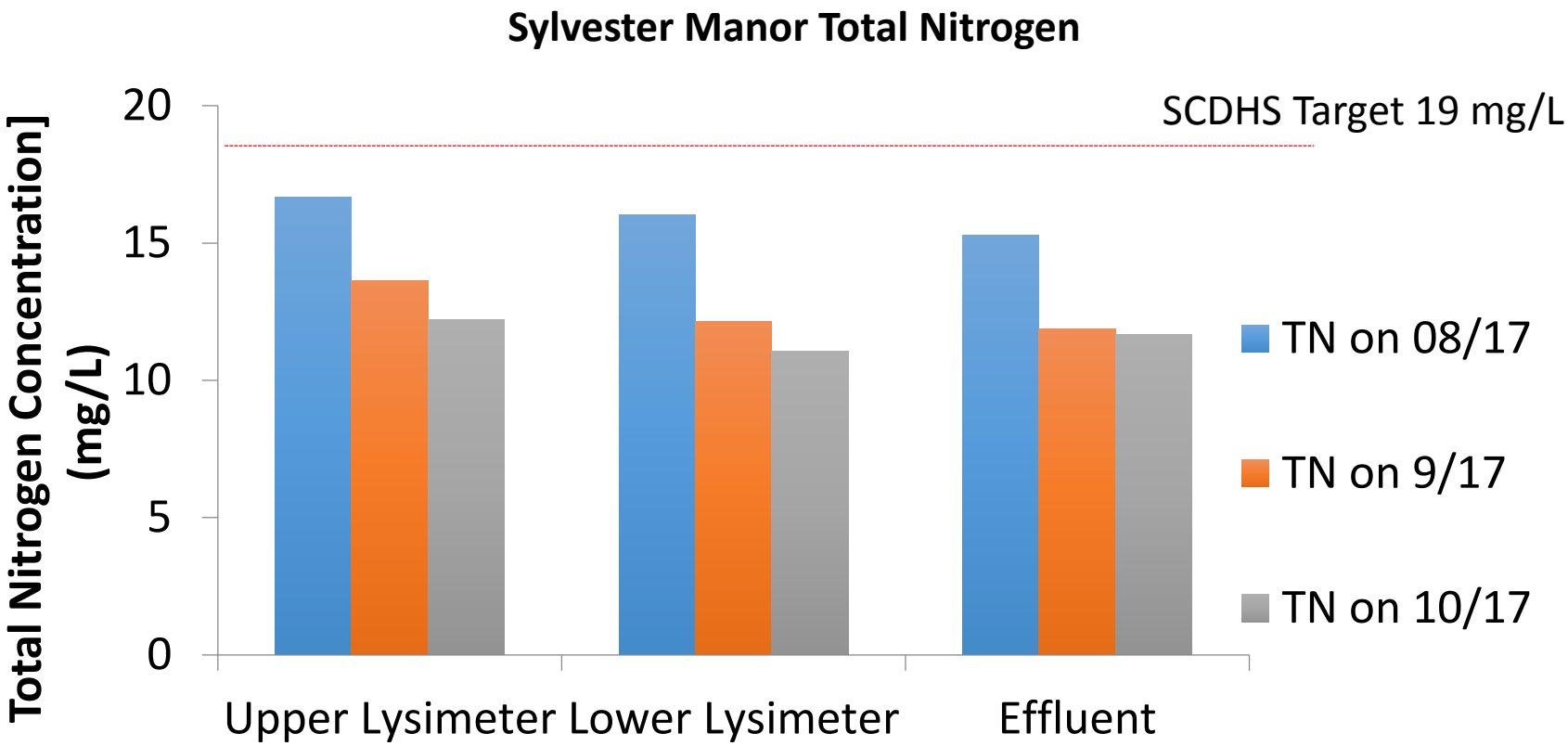
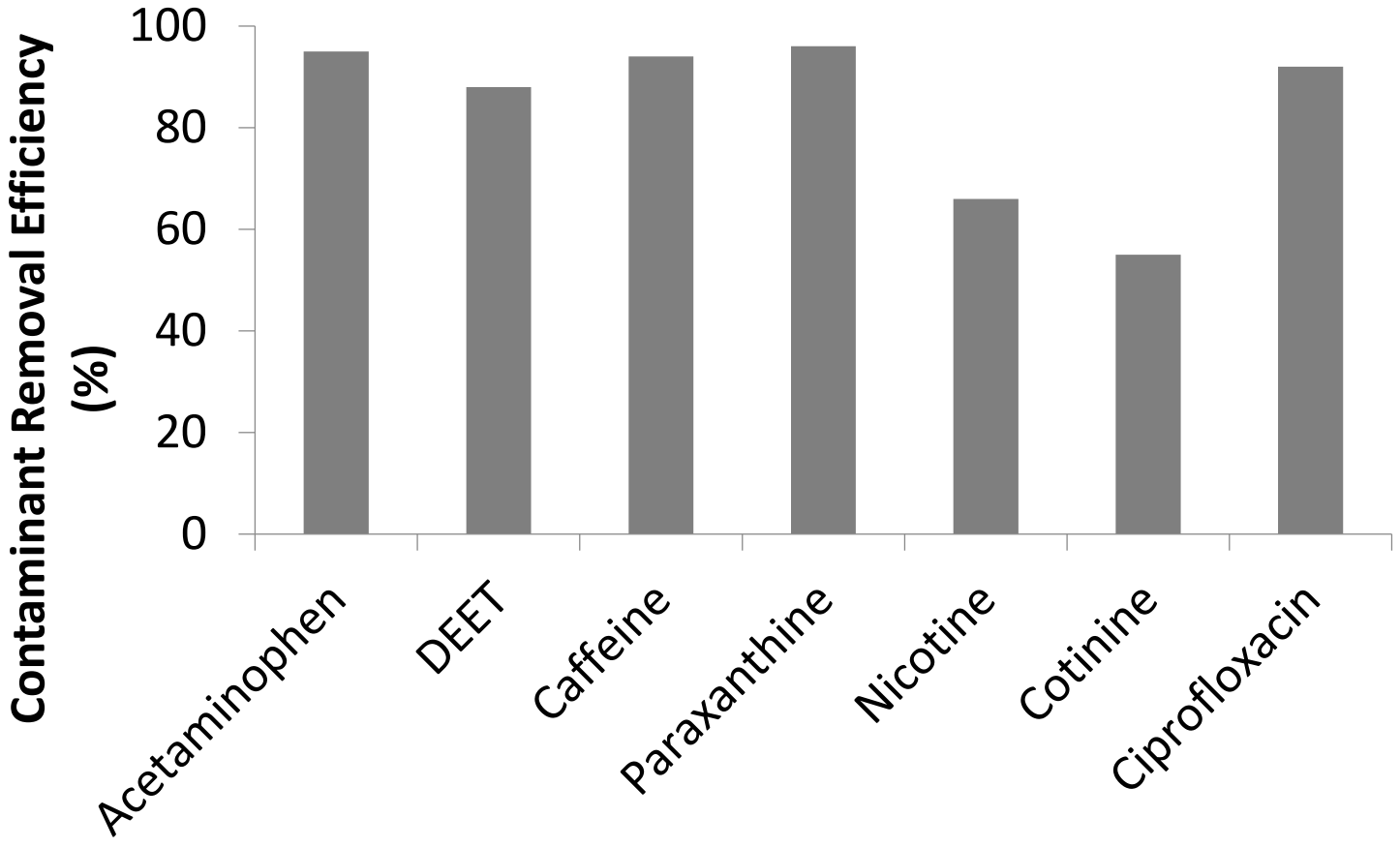
Preliminary Results: Sylvester Manor



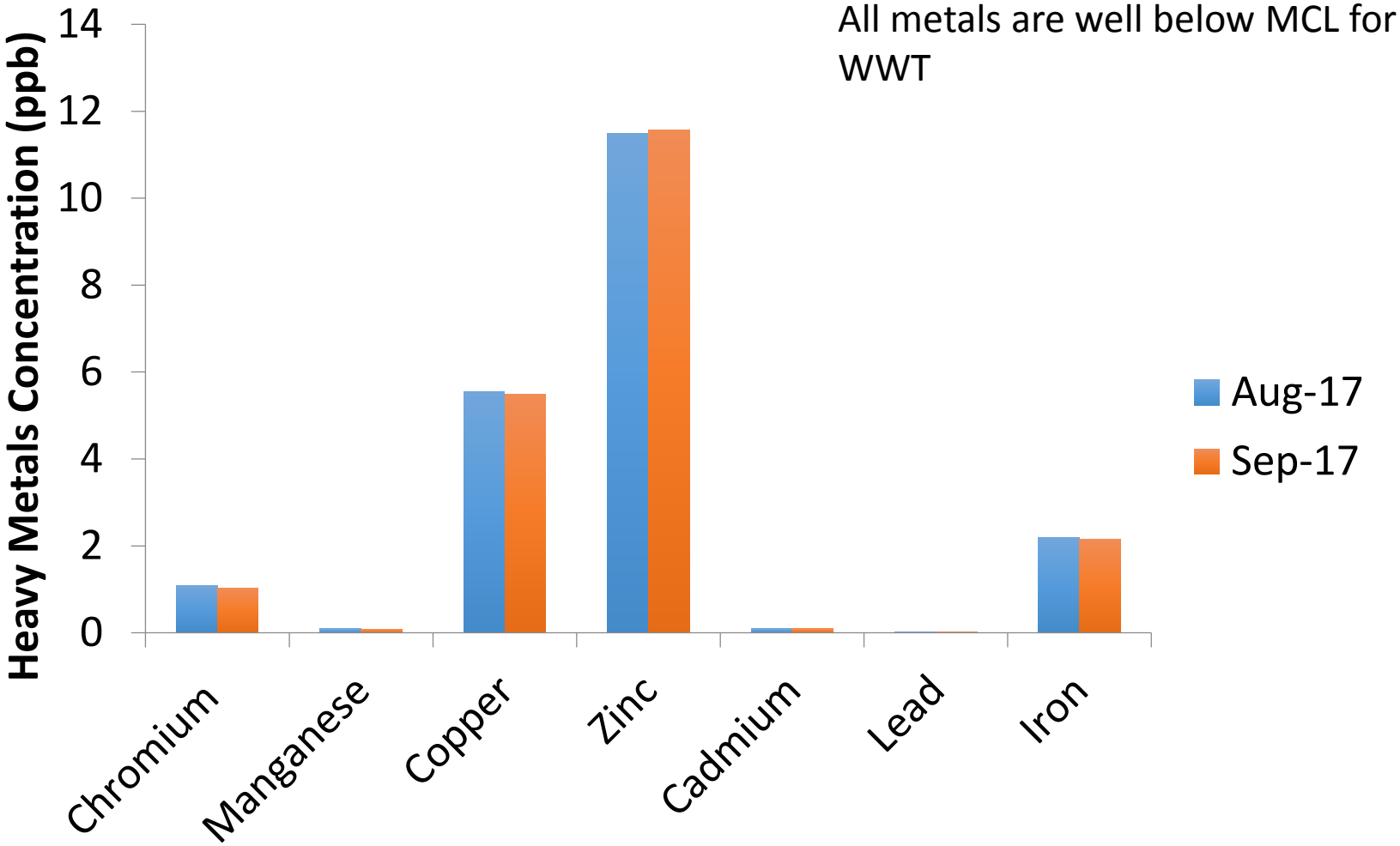
Preliminary Results- PPCPs



Data by Tricia Clyde

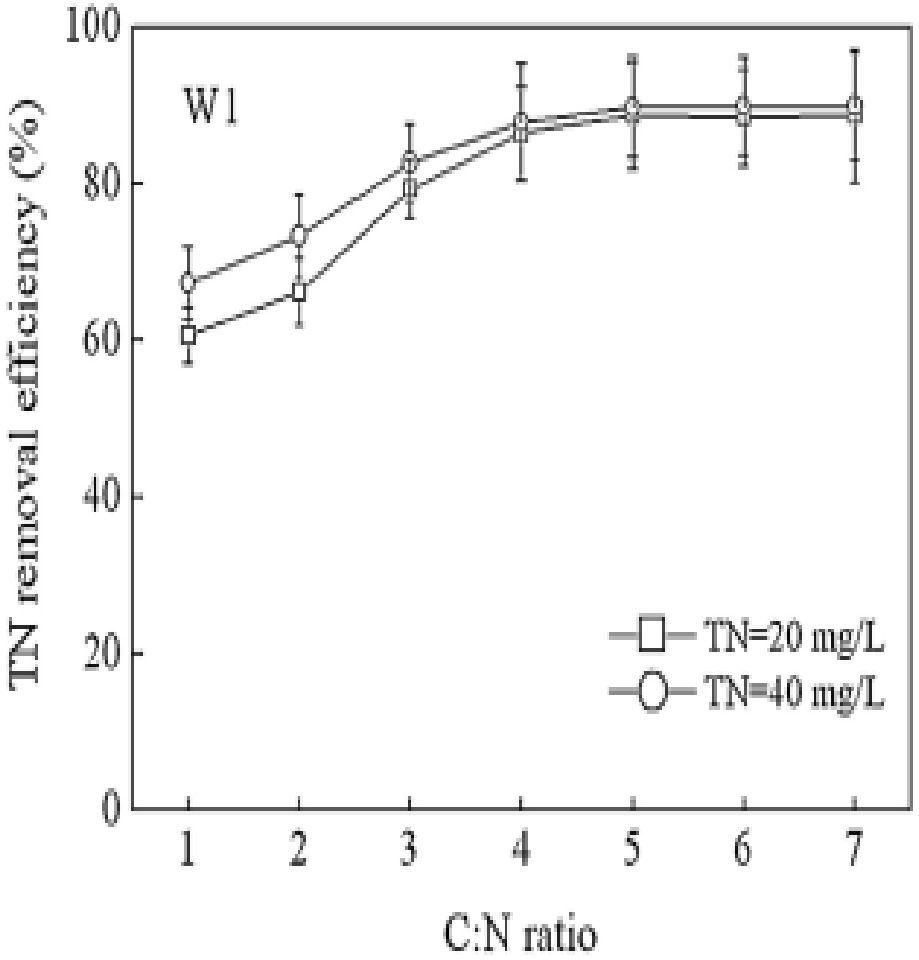
Preliminary Results: Metals

All metals are well below MCL for WWT



Data by Zoe Smith

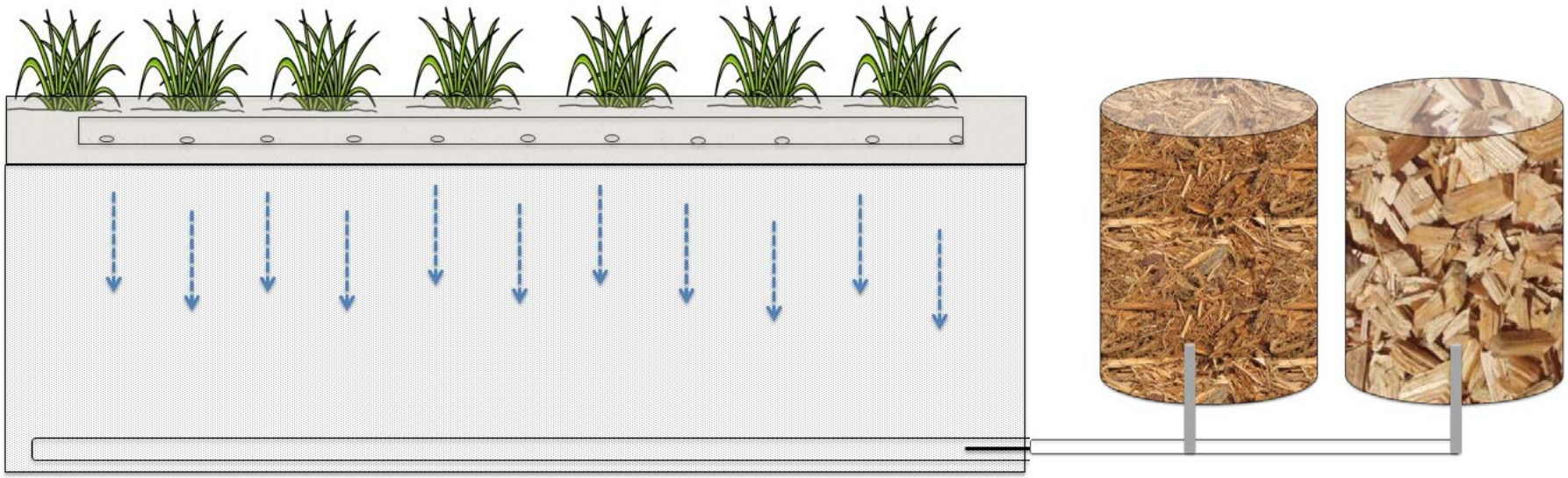
What can we do to enhance system performance? -Better understand what limits N-removal



- Influent C:N impacts TN removal
- In MASSTC wetland mesocosms STE C:N= 1.0-1.6

*Systems are C limited!

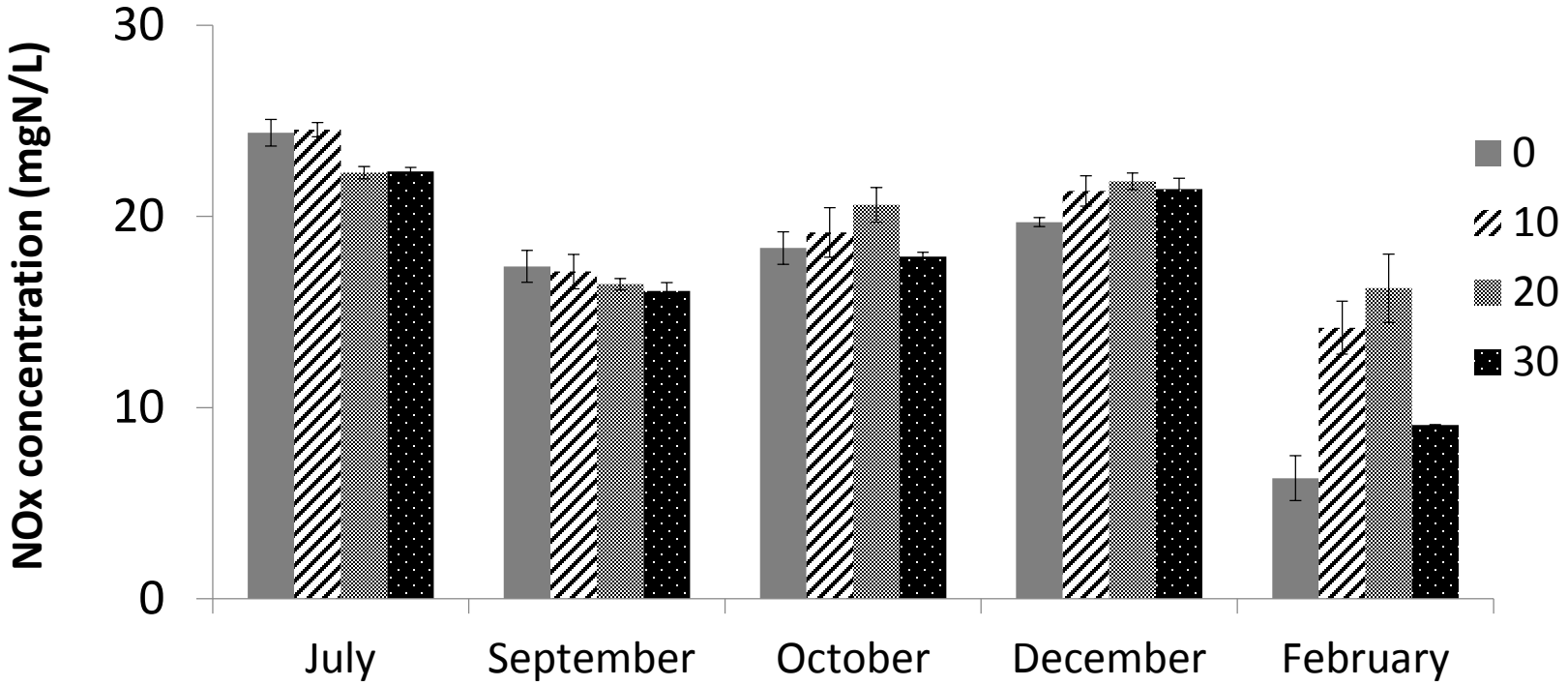
MASSTC: A two stage system



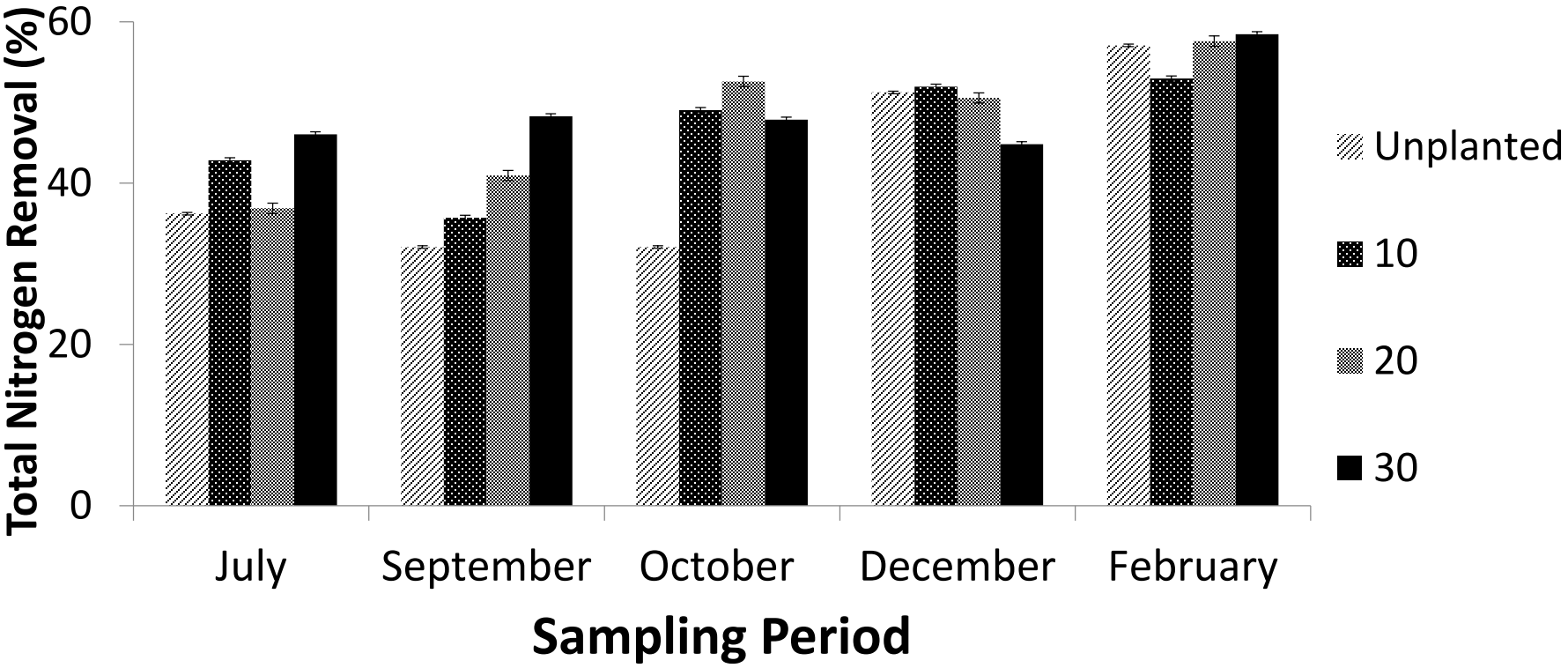
Nitrifiying Vegetated Recirculating Gravel Filter + Denitrifying Media Columns

Performance of MASSTC System

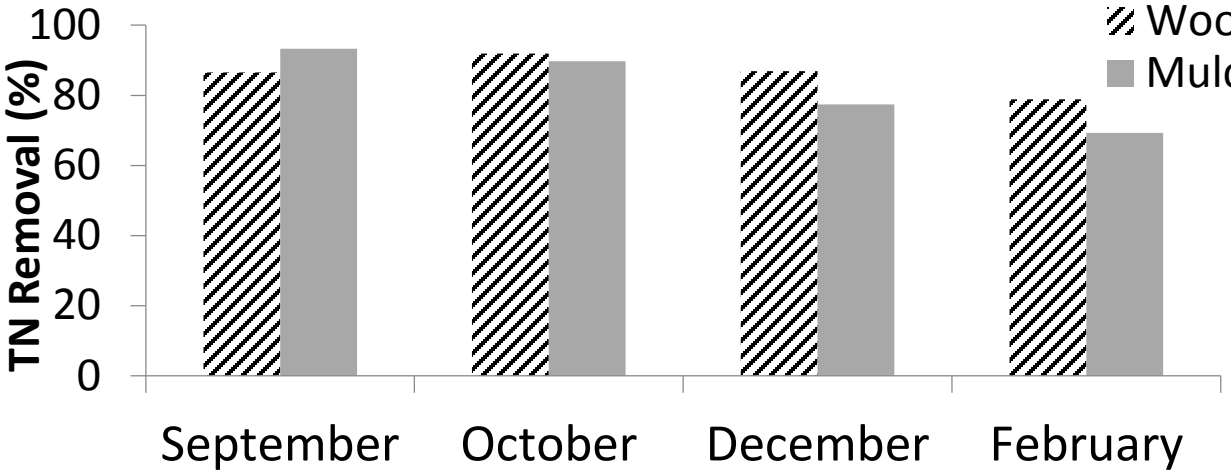
Step 1: Nitrification

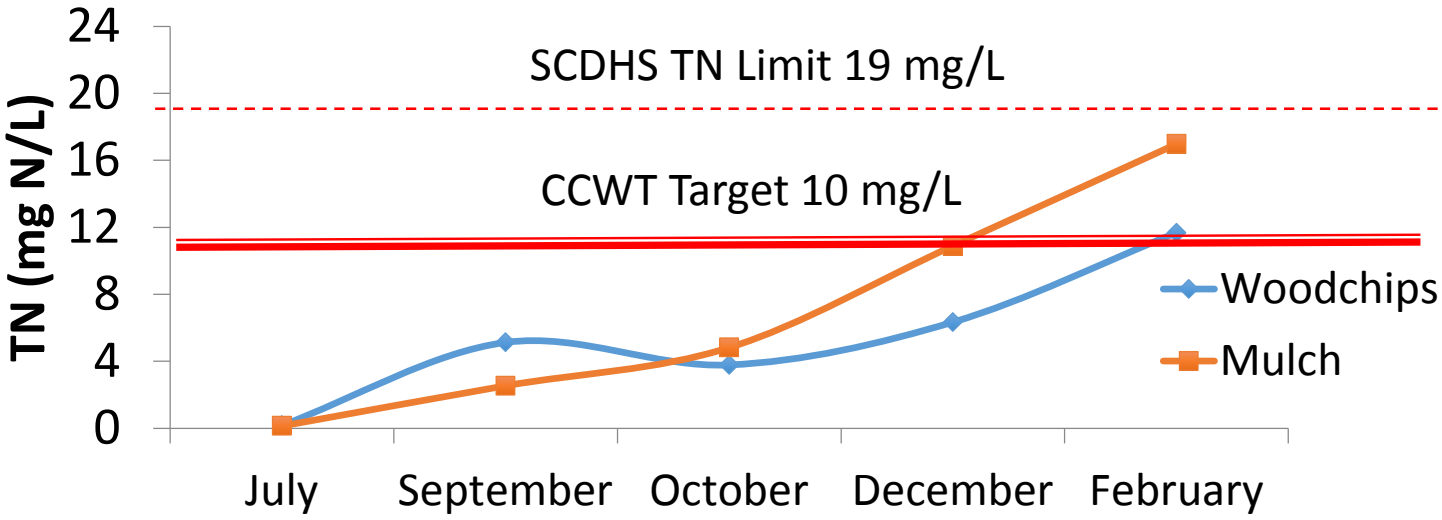


Above and beyond just nitrifying, the system removes N



Step 2: Denitrification





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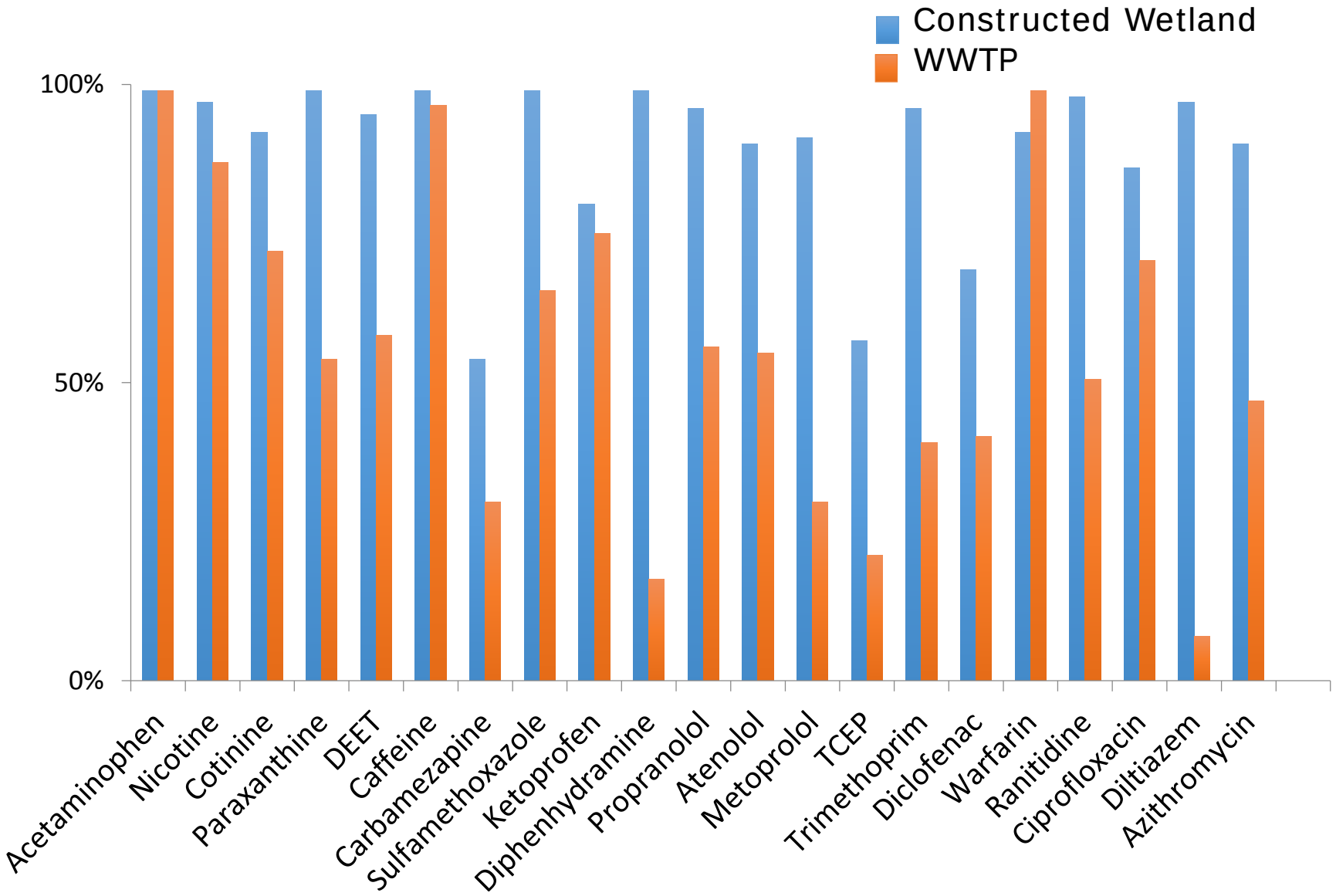
MASSTC PPCP Removal



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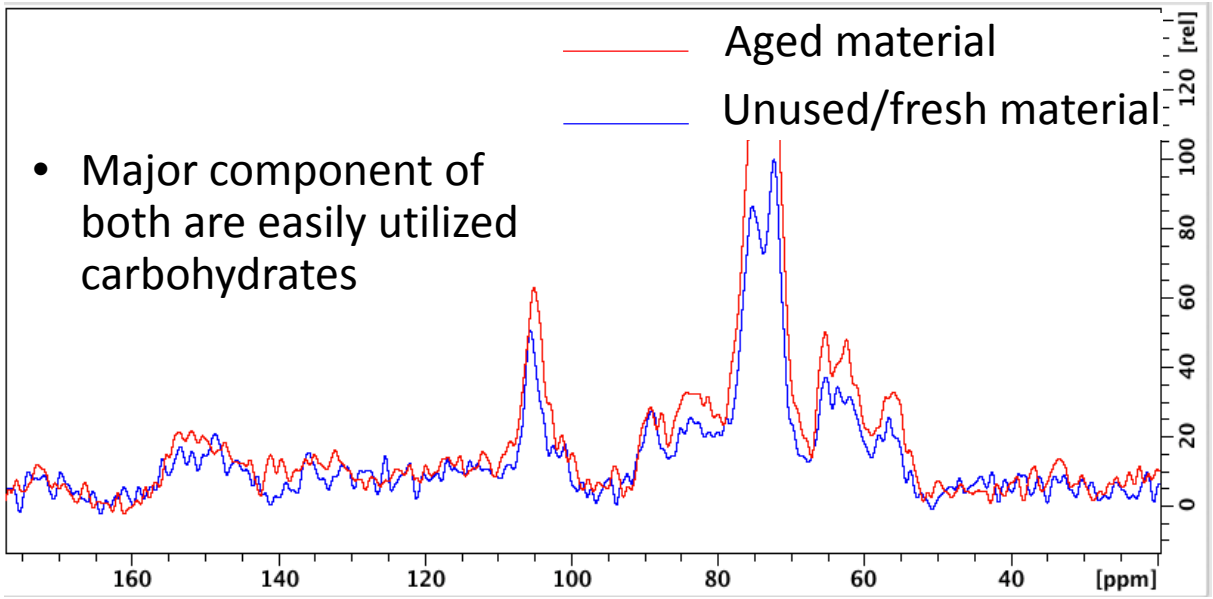
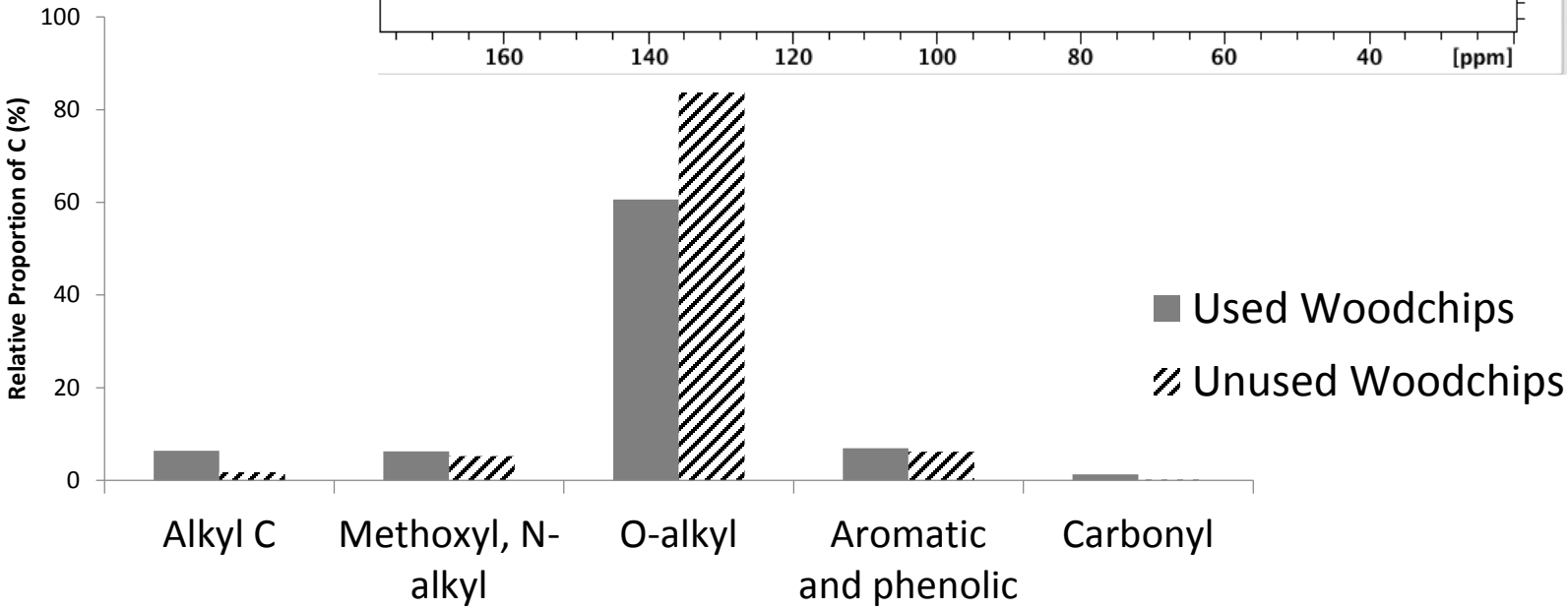
Carbon source longevity





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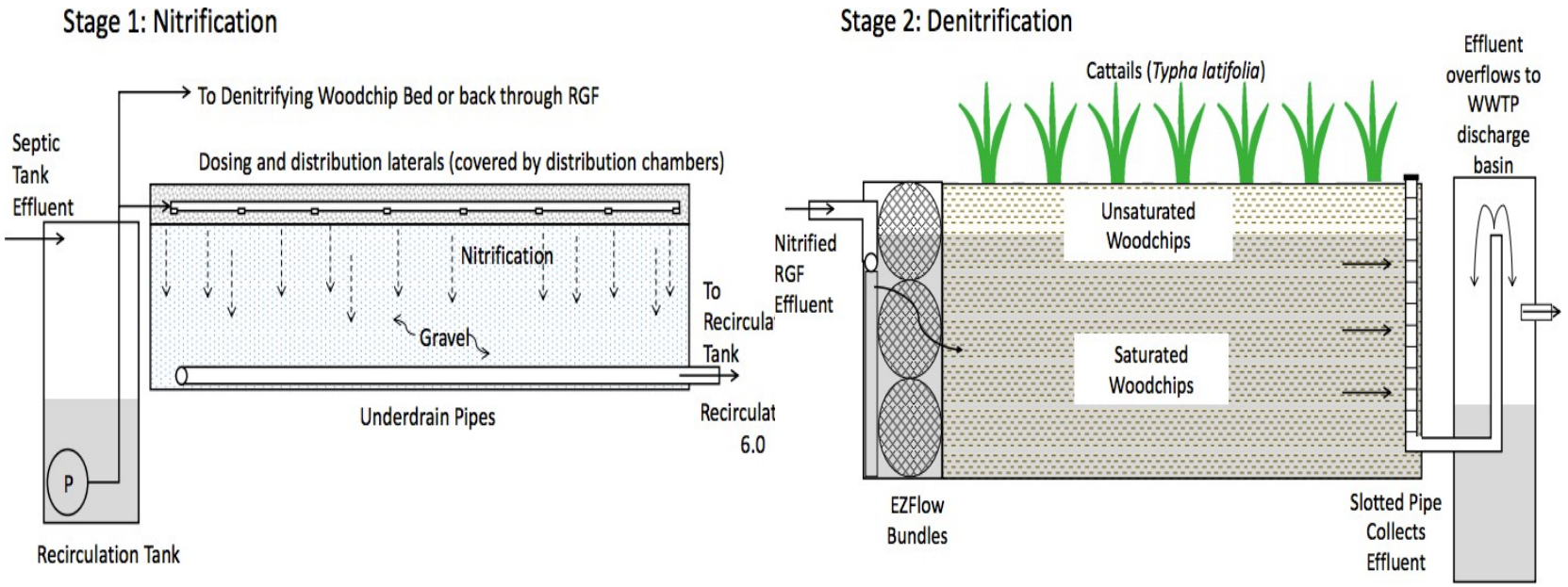
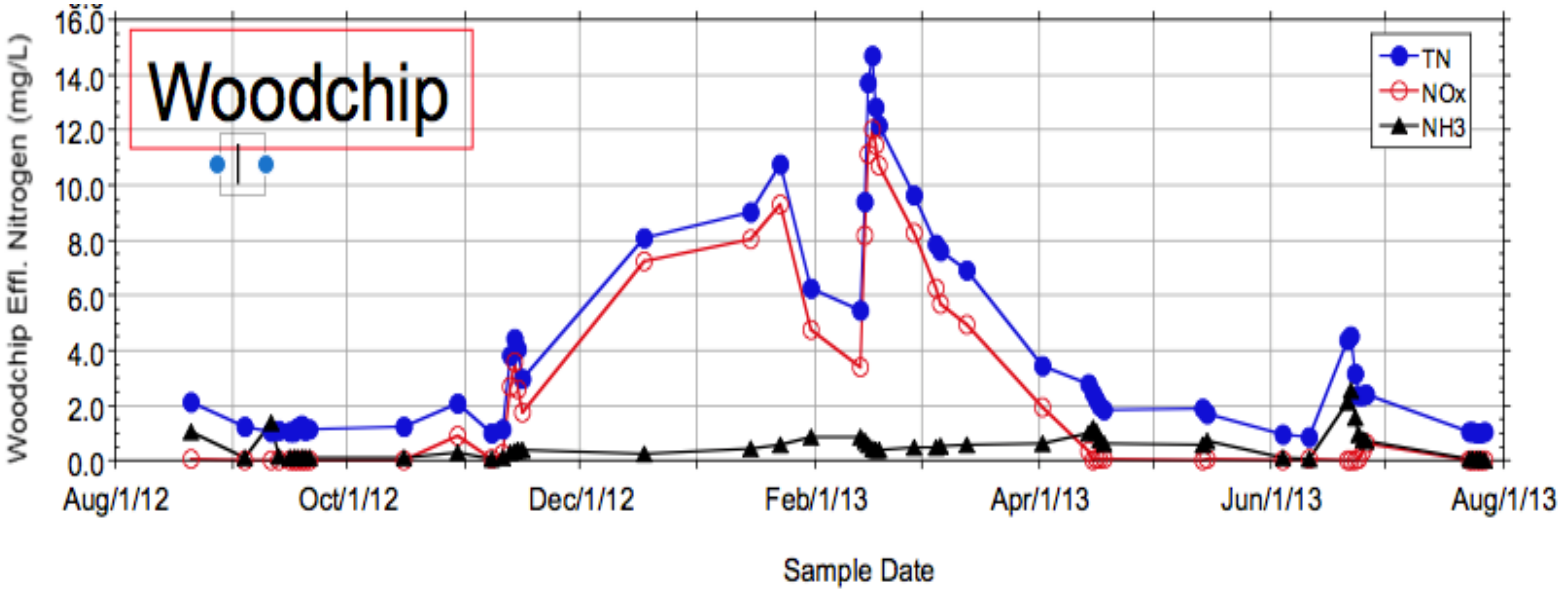
Washington State-SUPPLEMENTAL INFO IN SUPPORT OF WOODCHIPS!





QUESTIONS?