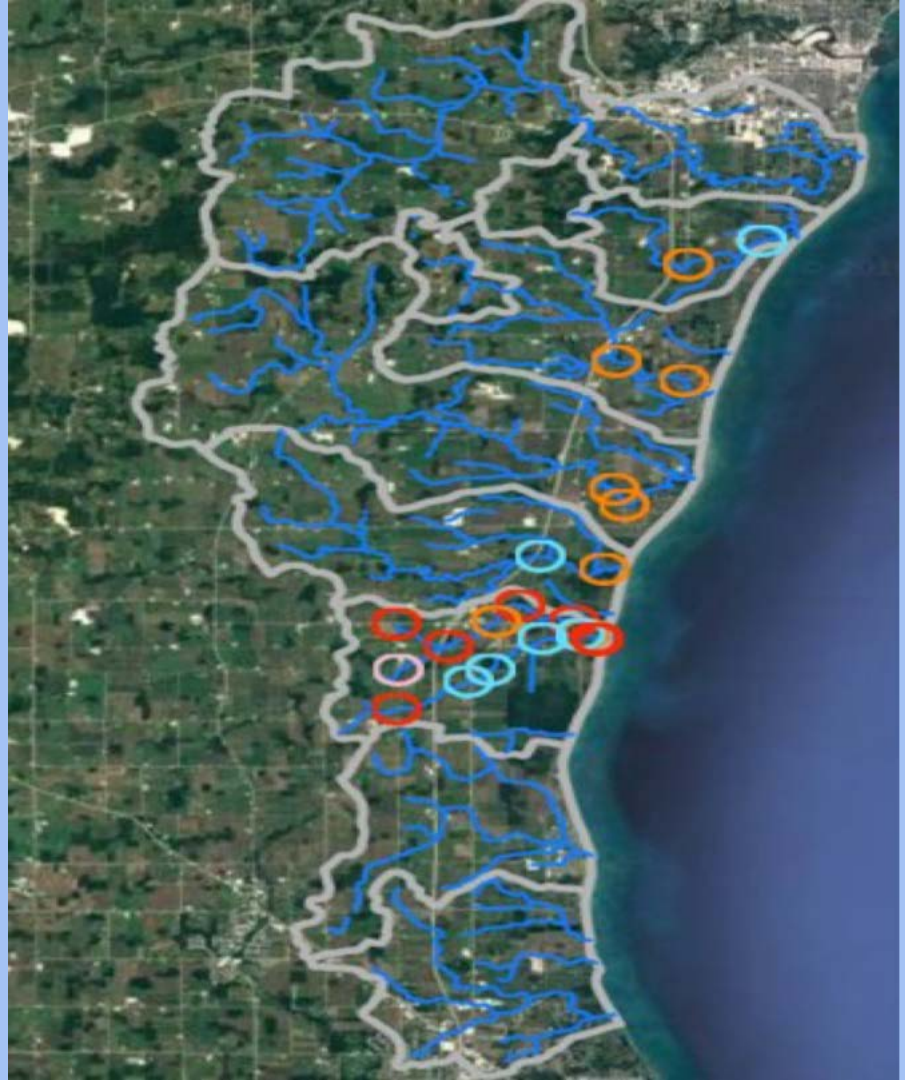
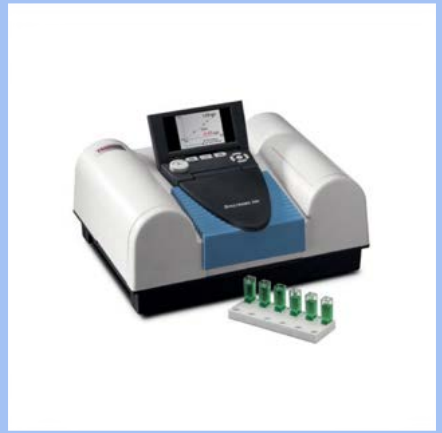
Stream Team 2019

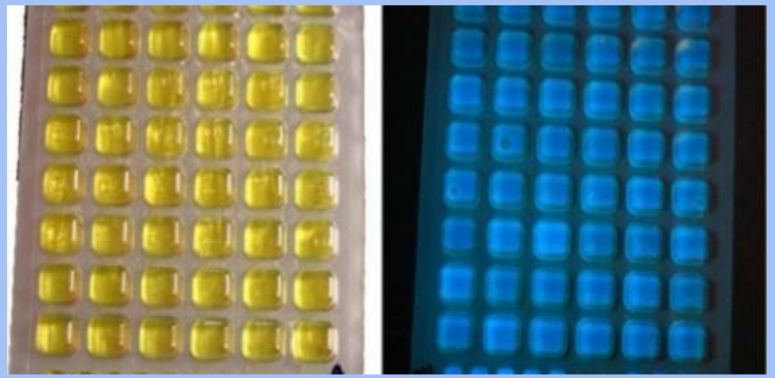
Olivia Claybrook, Makenna Pucker, Kyle Deacy, Jacalyn Crom



Methods and Materials

- Weekly summer sampling
    - As well as after rain events (+.5” of rain)
- Physical parameters
- Chemical parameters
- Biological parameters

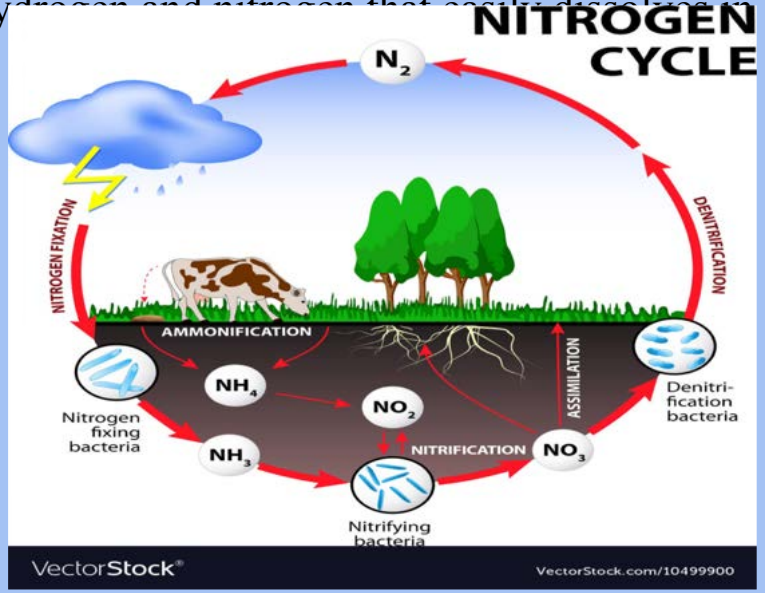




Important Parameters

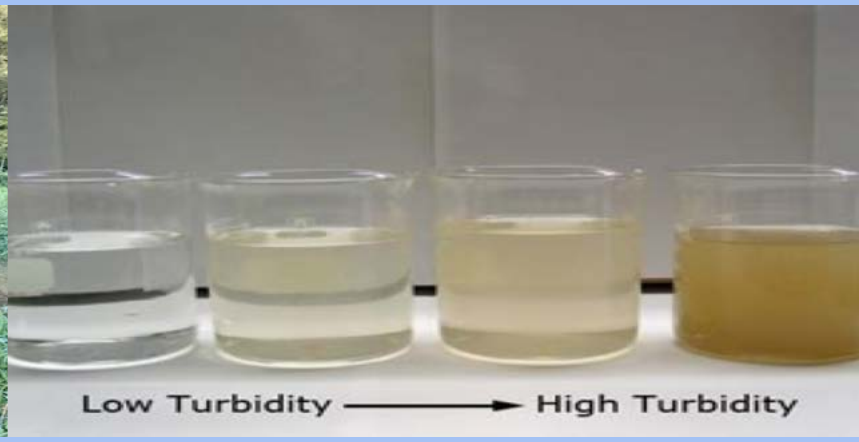
Phosphate: Phosphorus is essential for growth and metabolic reaction in plants in animals, though it is detrimental in large amounts.

Ammonia: A colorless, gaseous compound made from hydrogen and nitrogen that easily dissolves in water. High Ammonia can be hazardous and can be the result from feces from runoff, synthetic fertilizers, and/or the decomposition of plant materials.



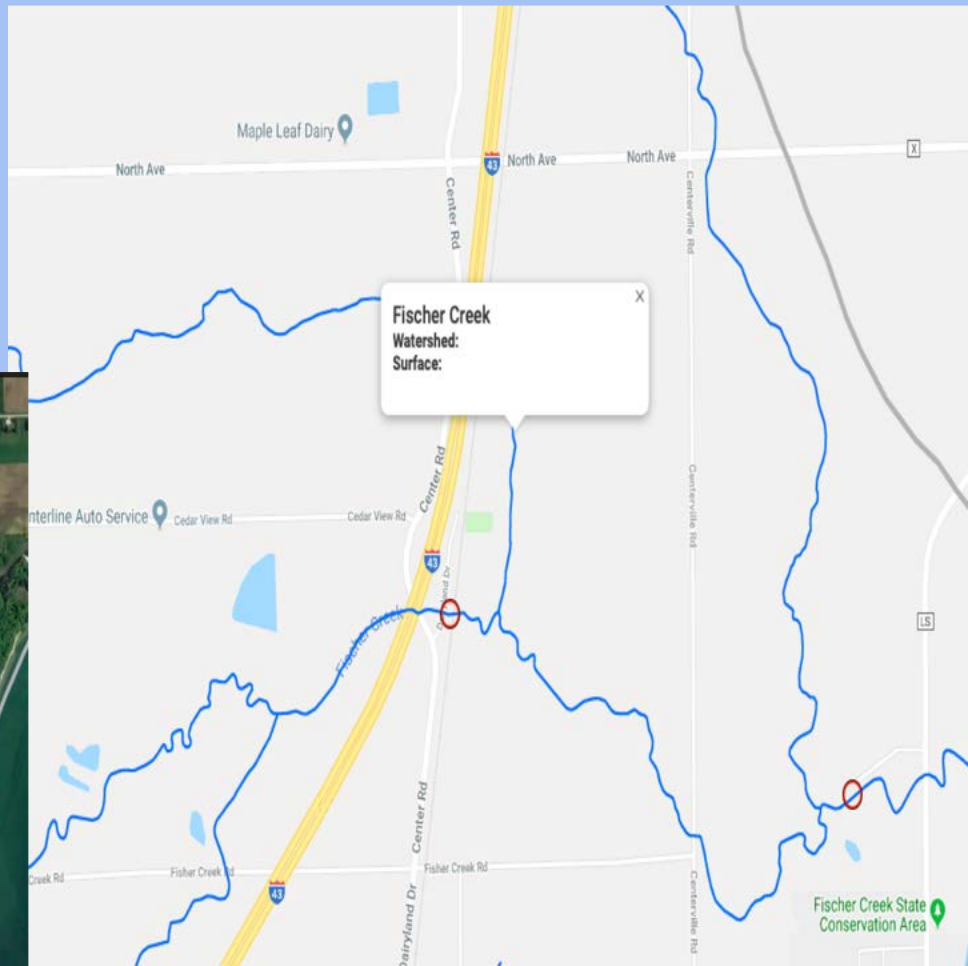
Important Parameters Continued

Turbidity: Particles in water (dissolved or suspended) which scatter light causing a cloudy/murky appearance. High turbidity can negatively affect aquatic life.



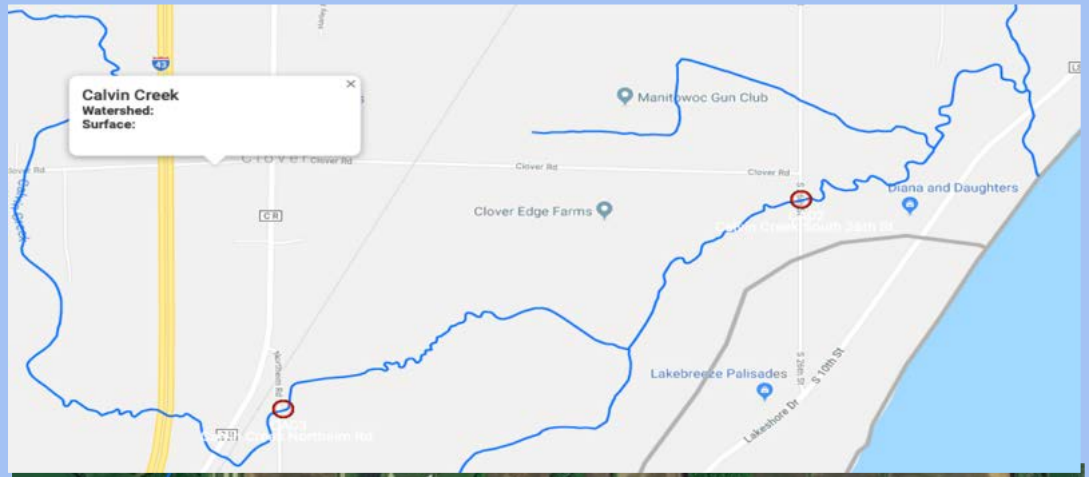
Fischer Creek

- Fischer Creek Dairyland
  - Upstream
- Fischer Creek LS
  - Downstream



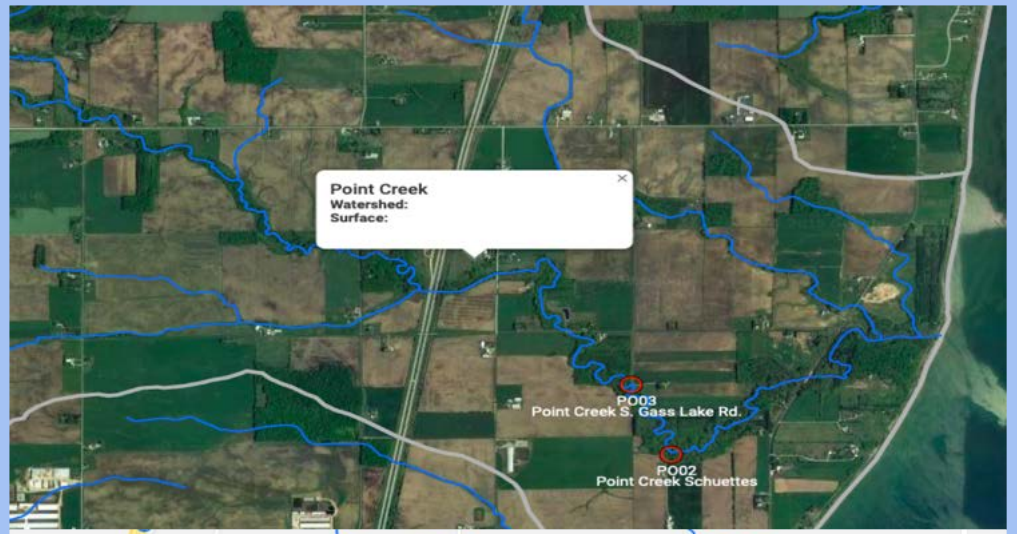
Calvin Creek

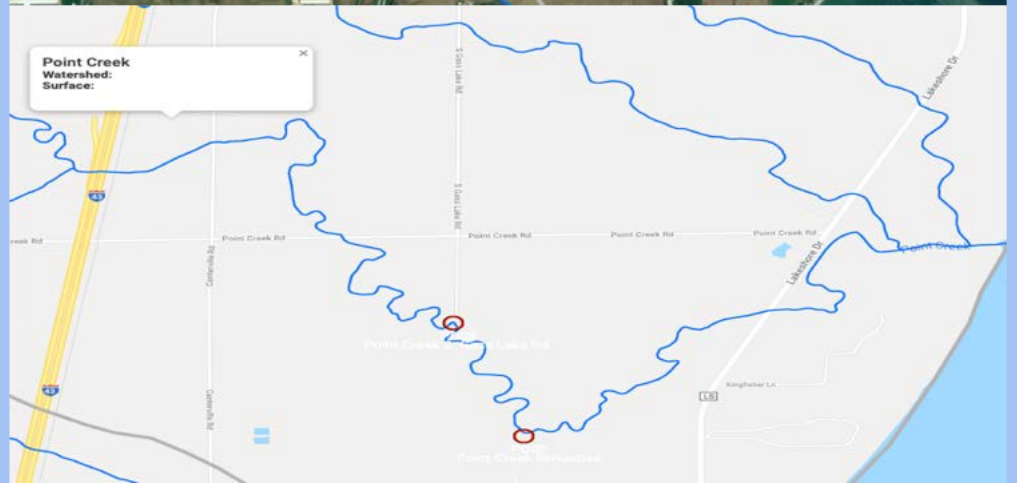
- South 26th St.
  - Downstream
- Northeim Rd.
  - Upstream



Point Creek

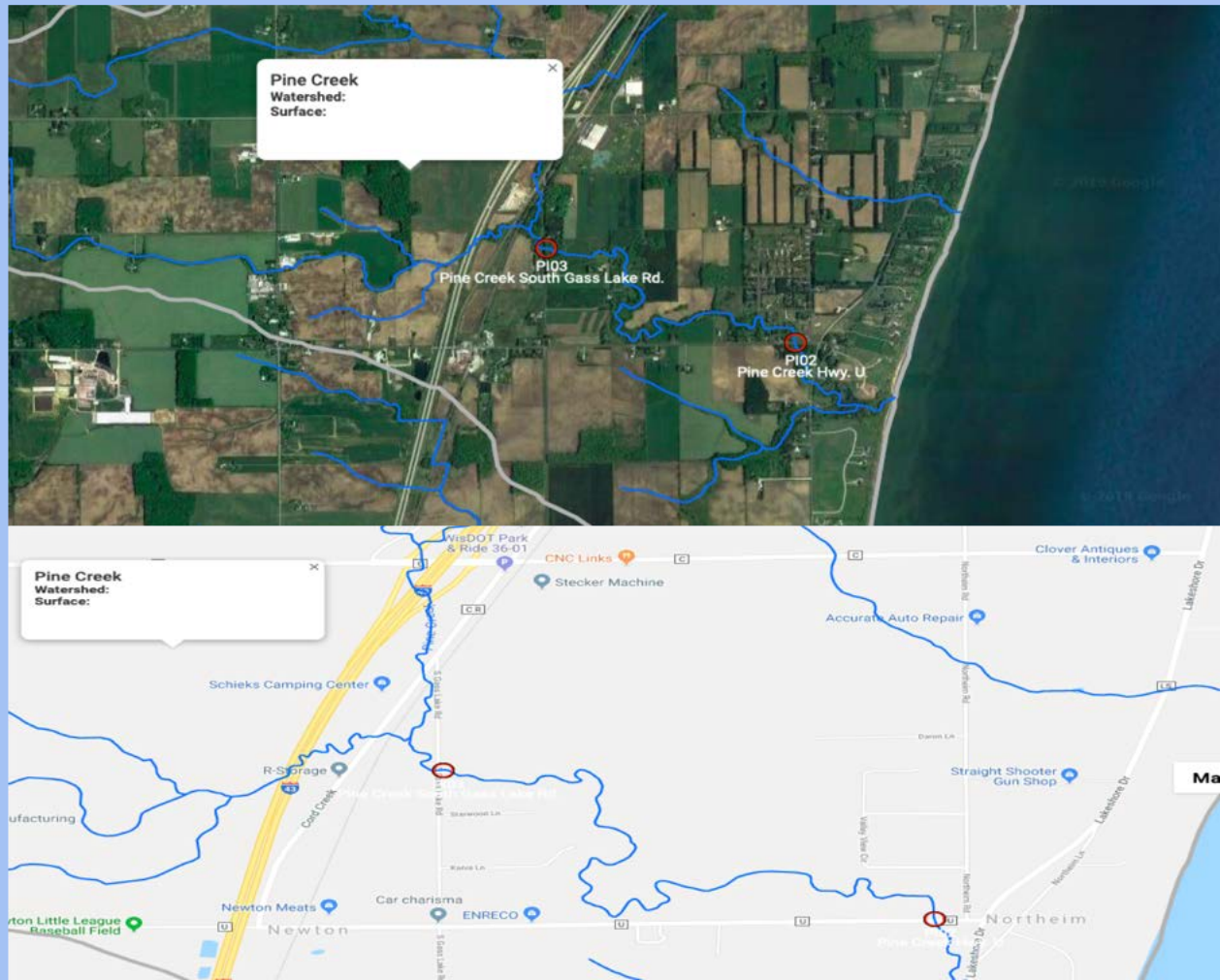
- Point Creek S. Gass Lake Rd
  - Upstream
- Schuette
  - Downstream





Pine Creek

- Pine Creek S. Gass Lake Rd
  - Upstream
- Hwy U
  - Downstream



Centerville Creek

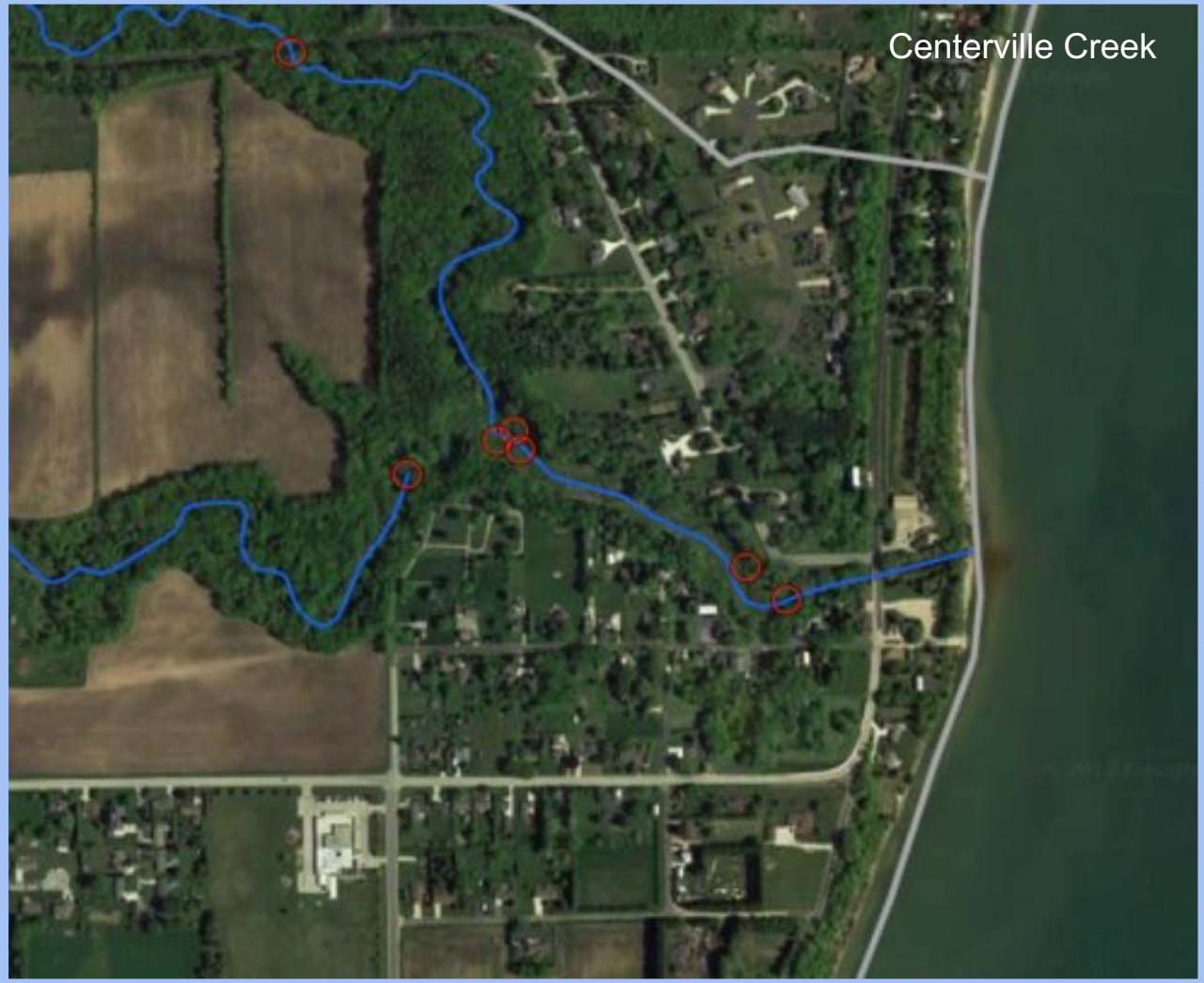
- Union North
- NB Frank
- Washington
- LTC
- NB Dairy
- Confluence
- Union South
- Hwy DL
- Cleveland
- Center
- Cemetery
- Confluence
- Mid
- Dam

North Branch

South Branch

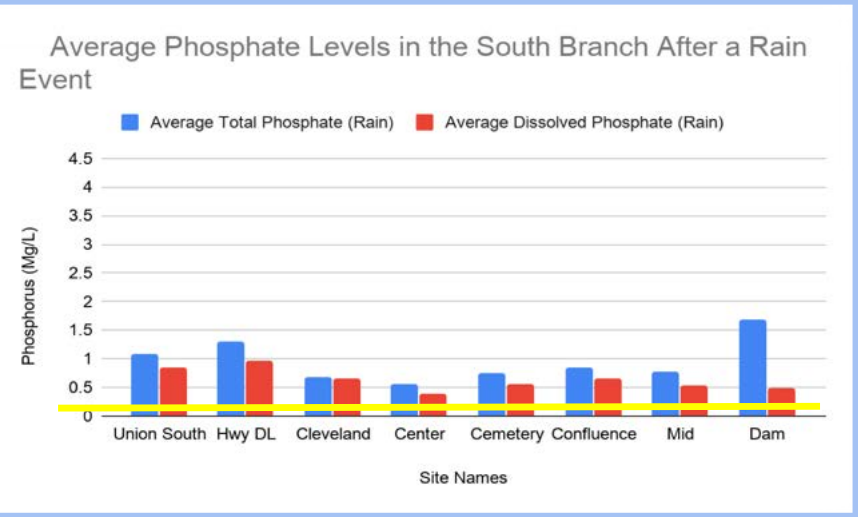
Restoration Map

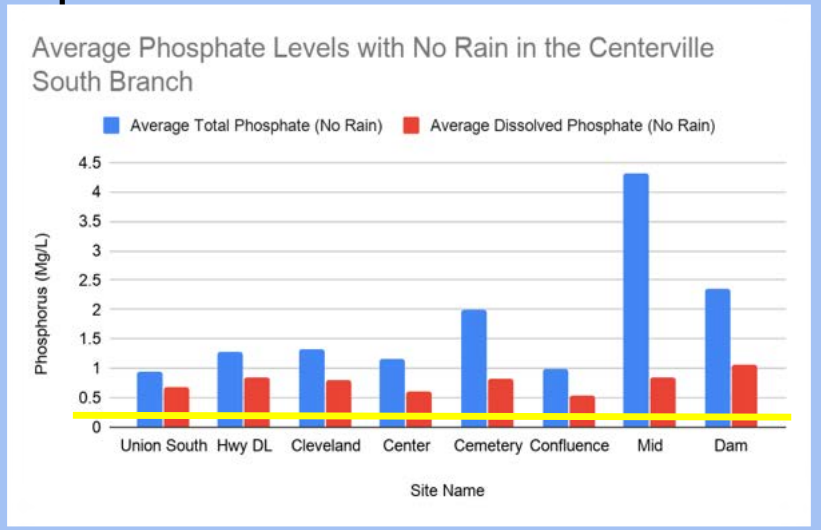
- Dam
- Mid
- Confluence

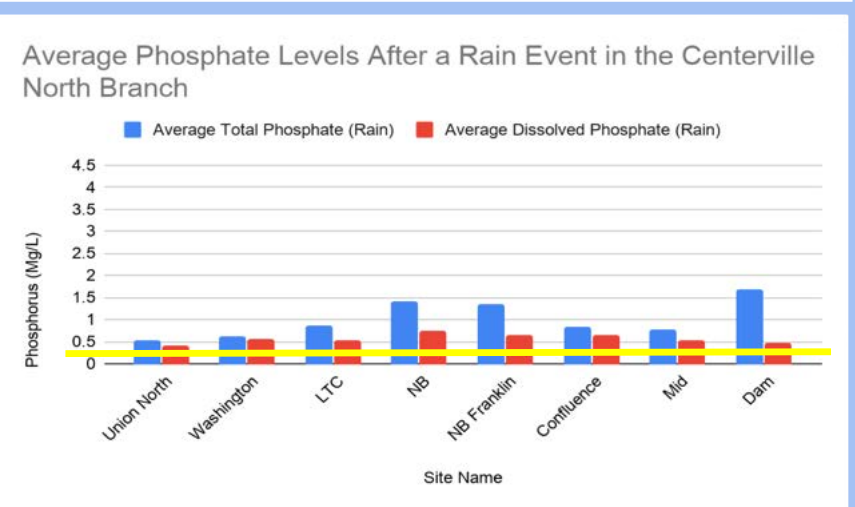


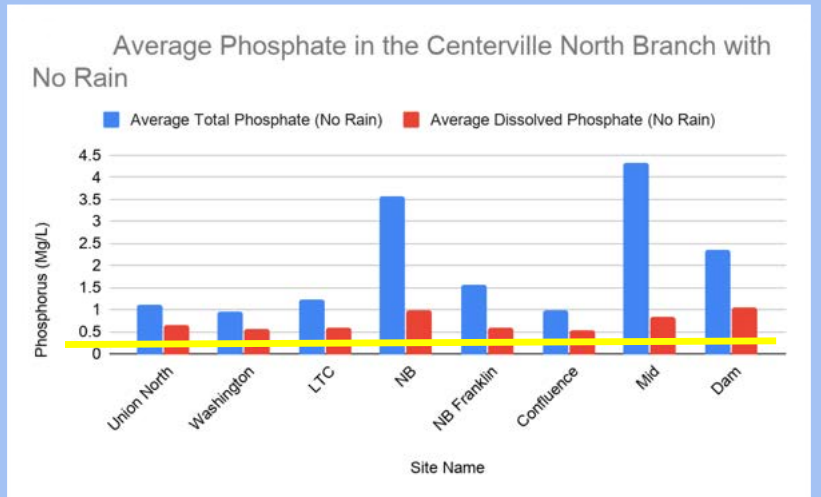
Restoration

Average Phosphate

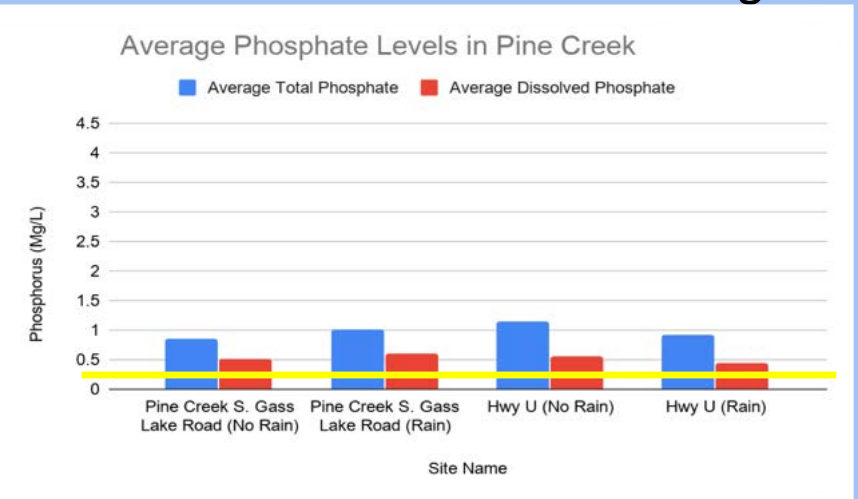


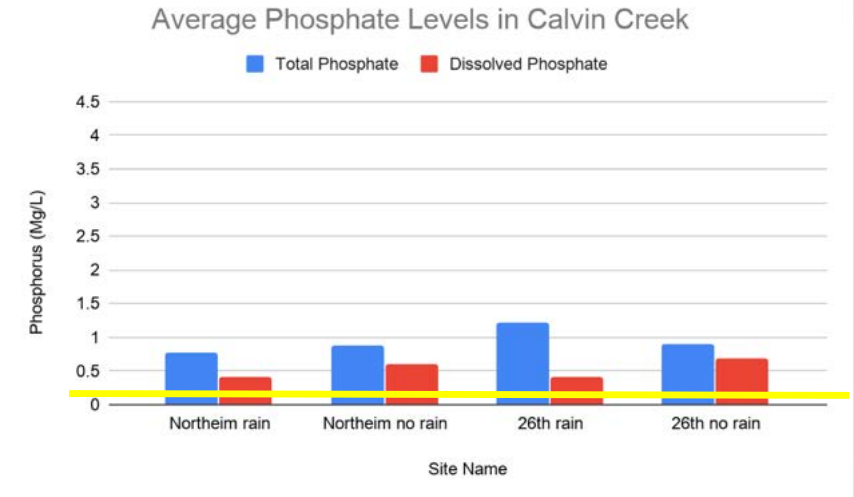


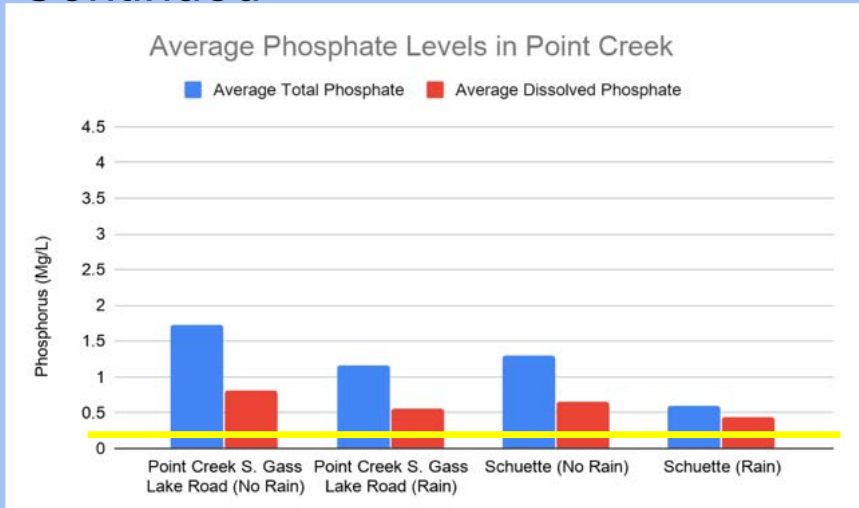


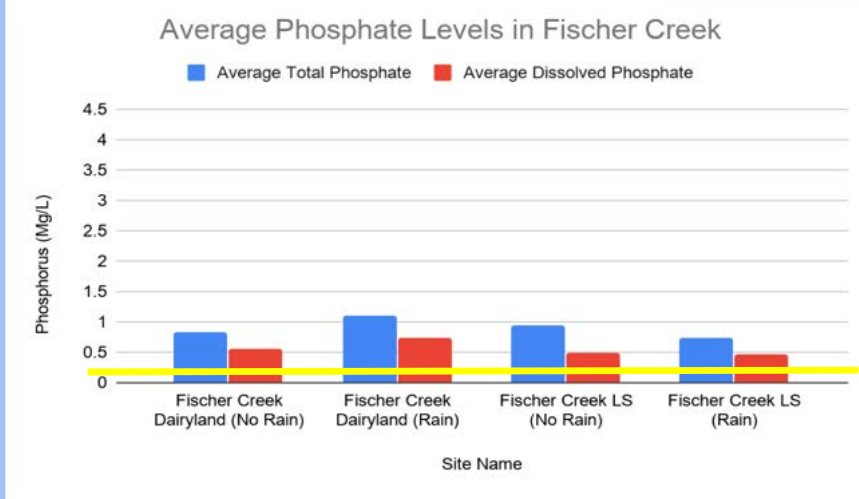


Average Phosphate Continued

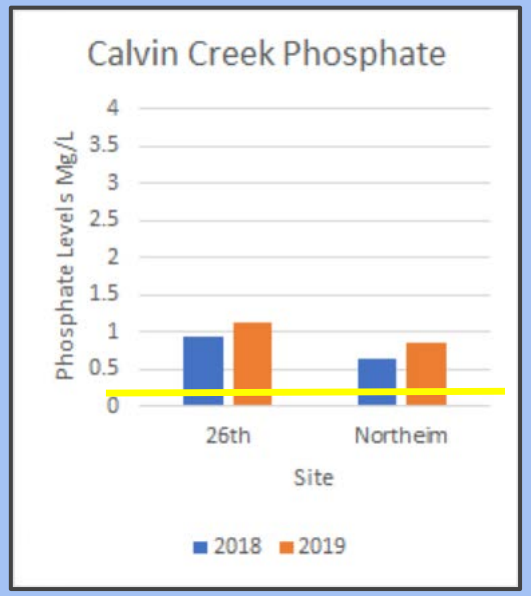


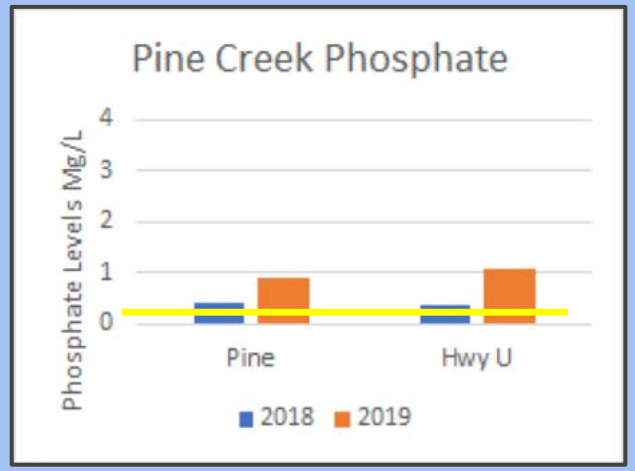


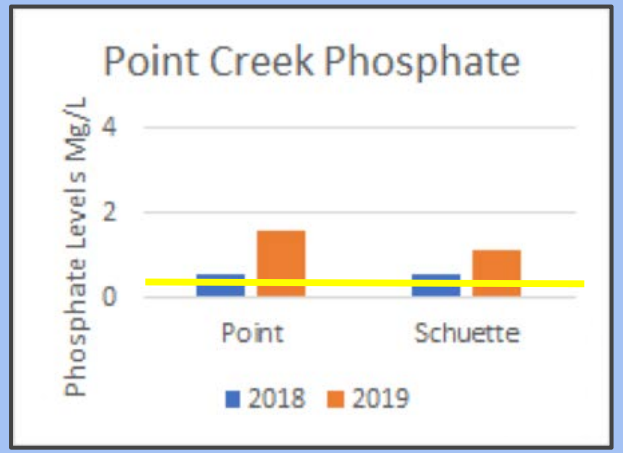


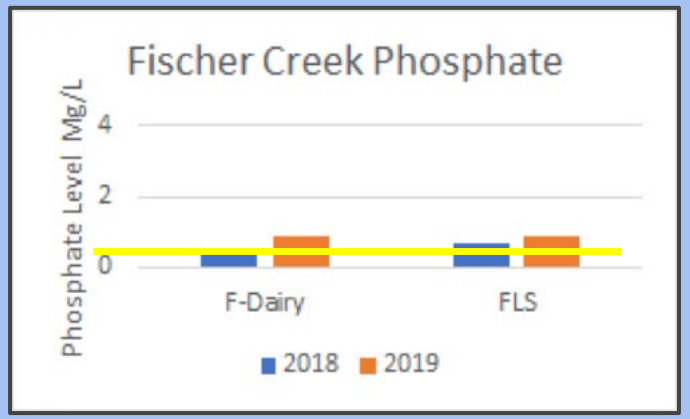


2018 Vs. 2019 Average Phosphate

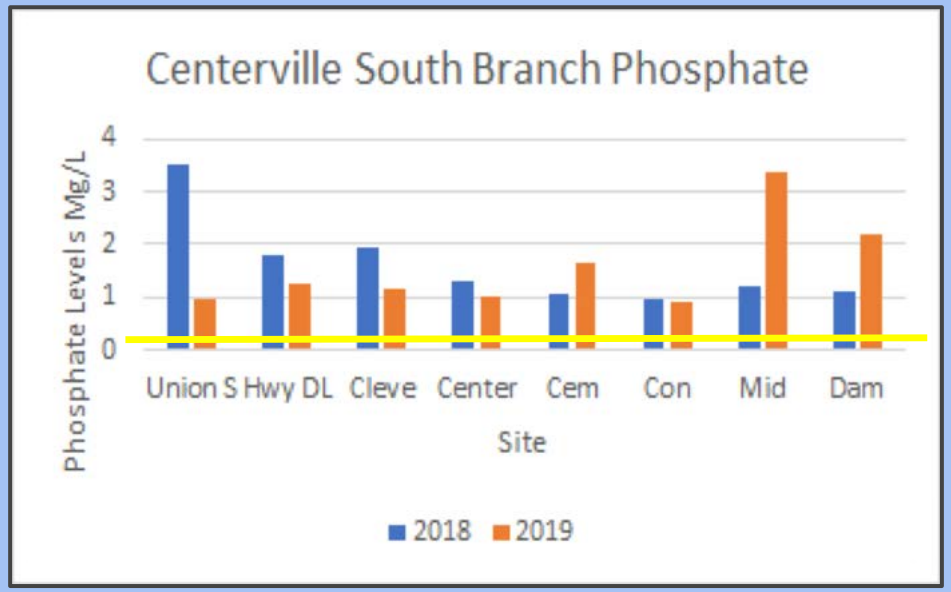


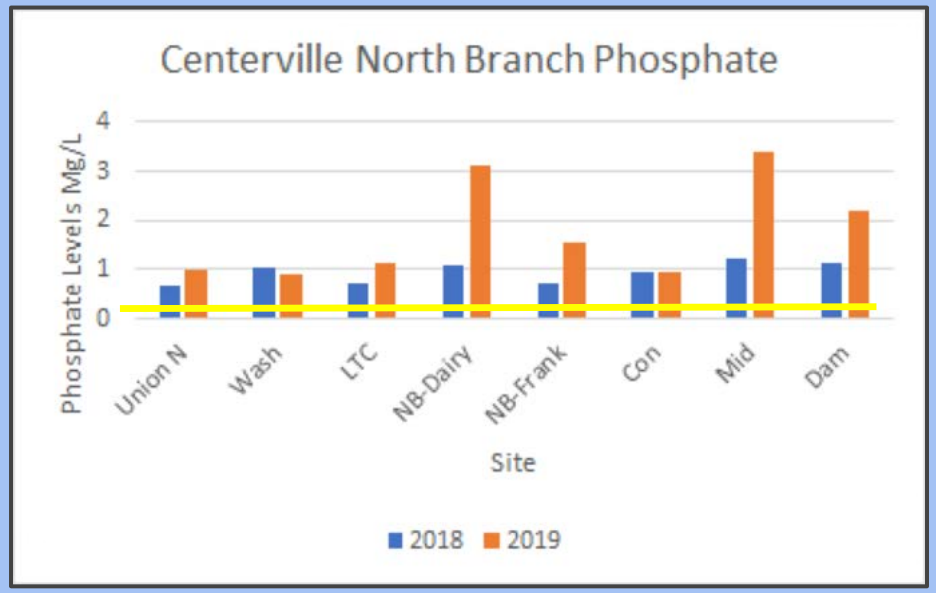




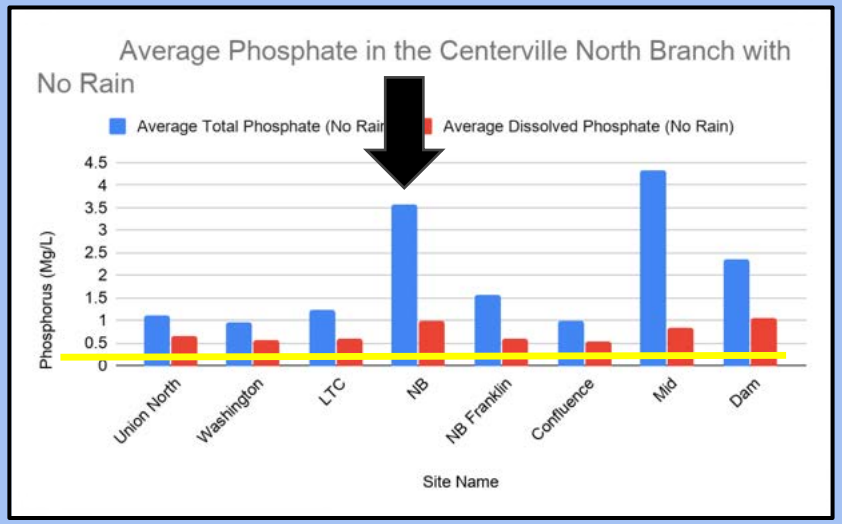


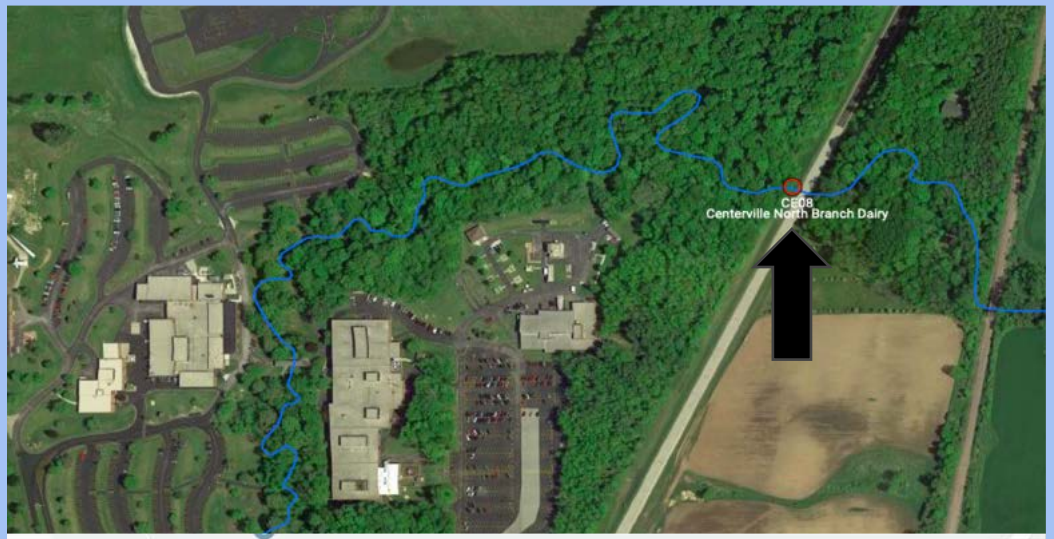
2018 Vs. 2019 Average Phosphate

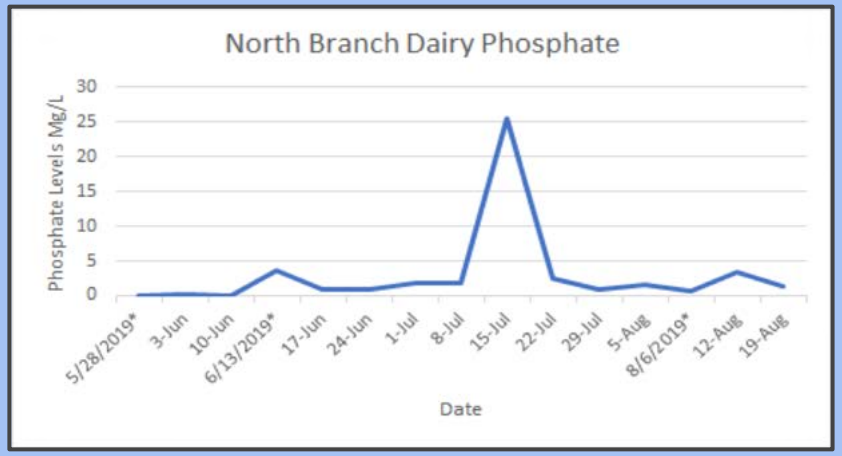


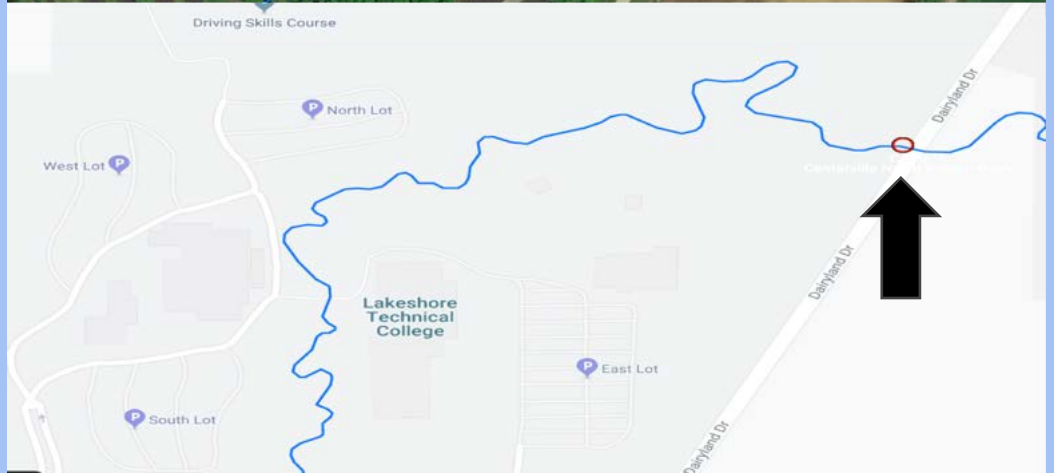


North Branch Dairyland Phosphate Spike

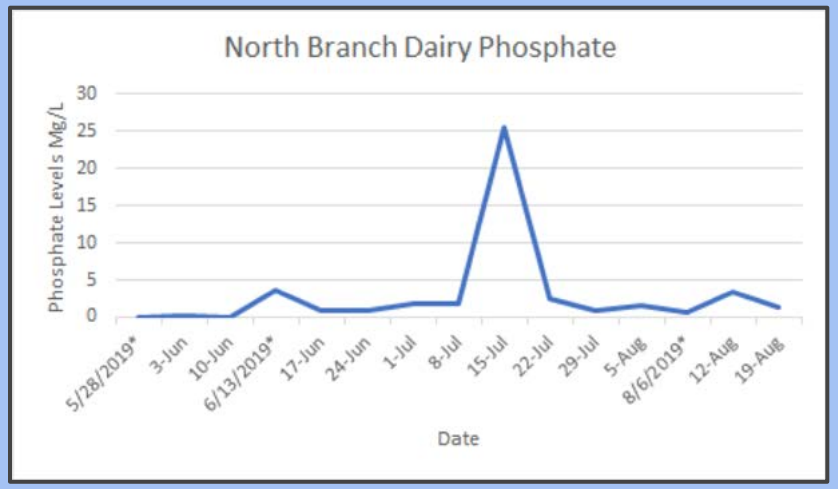


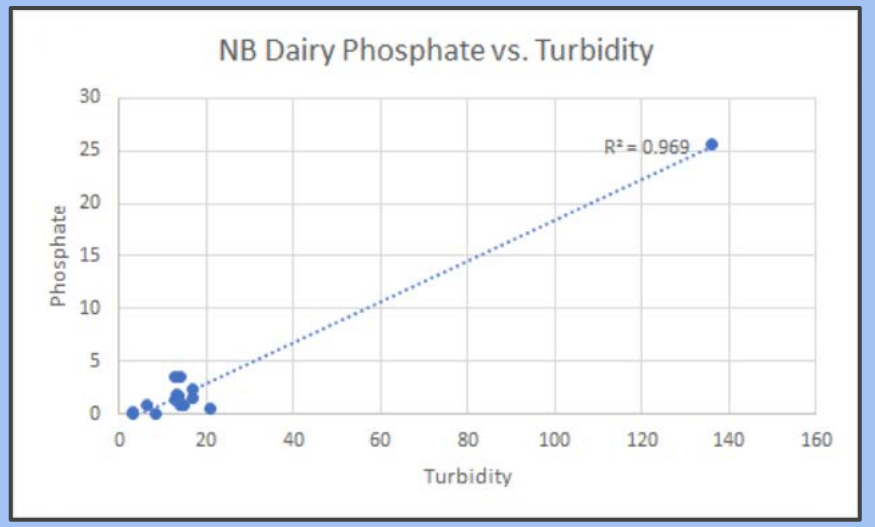


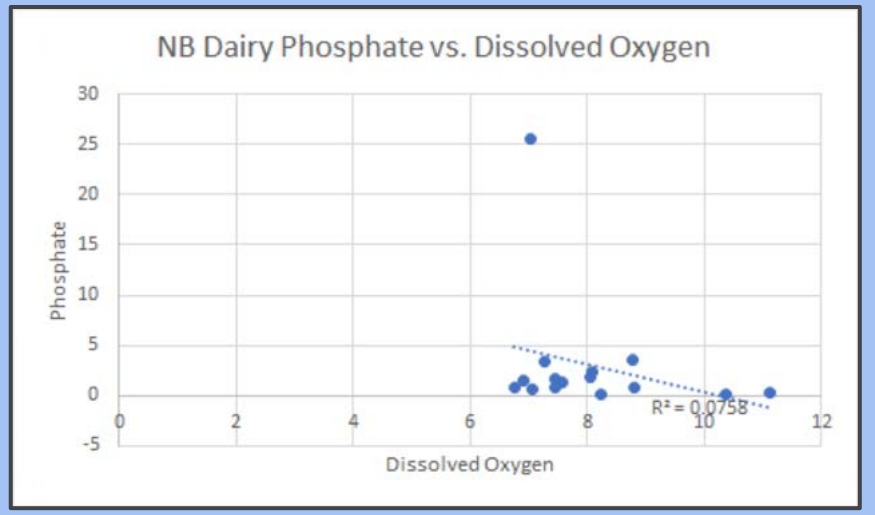




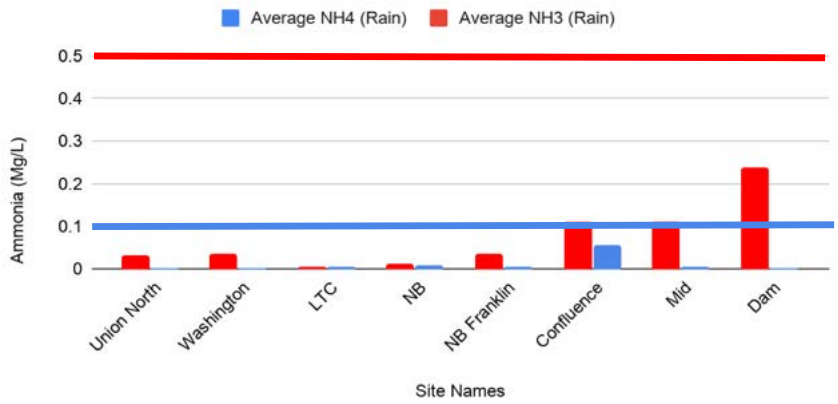
July 15th Comparisons

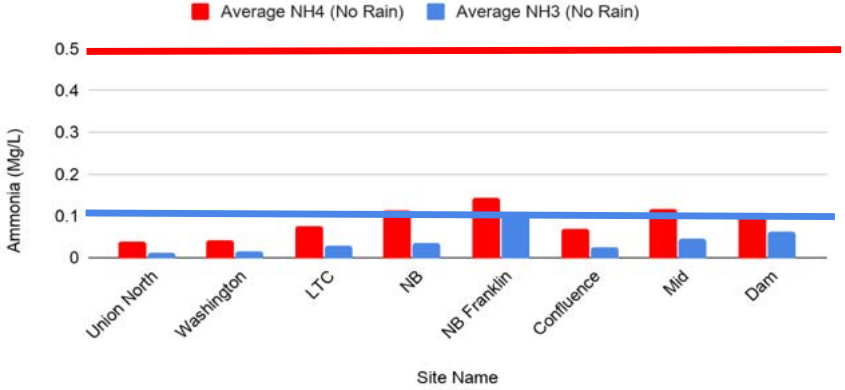


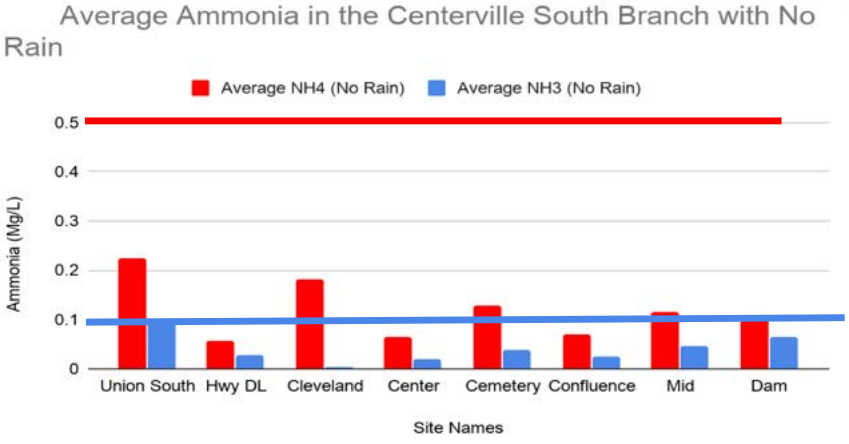


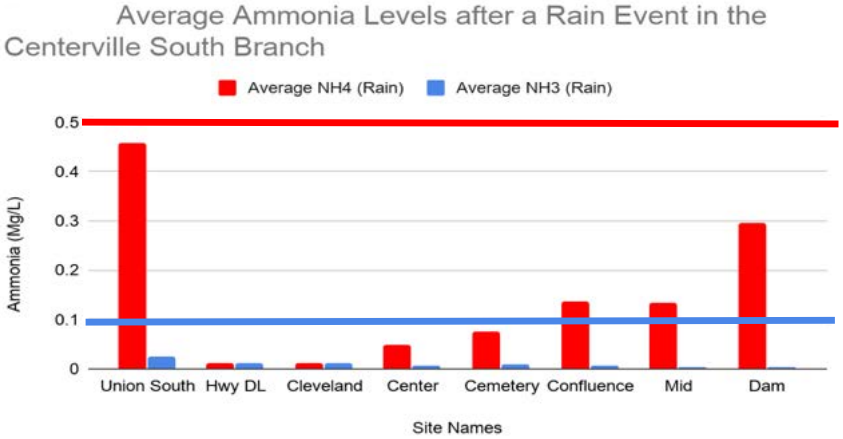


Average Ammonia

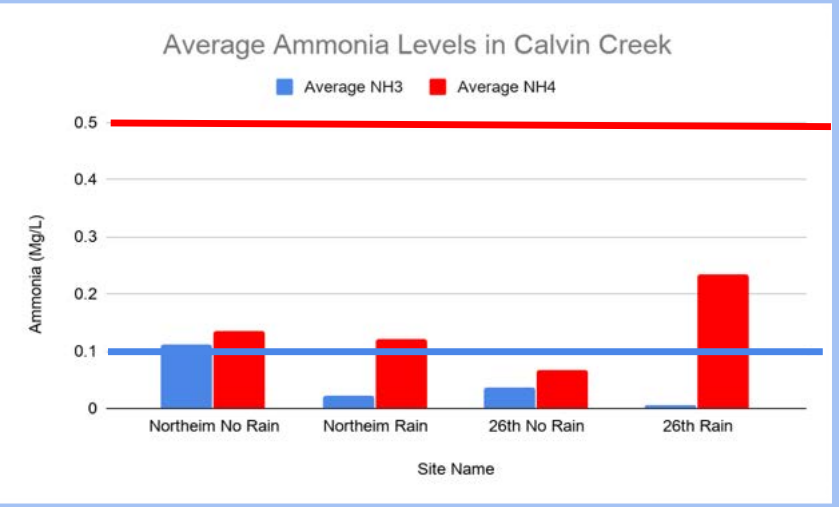


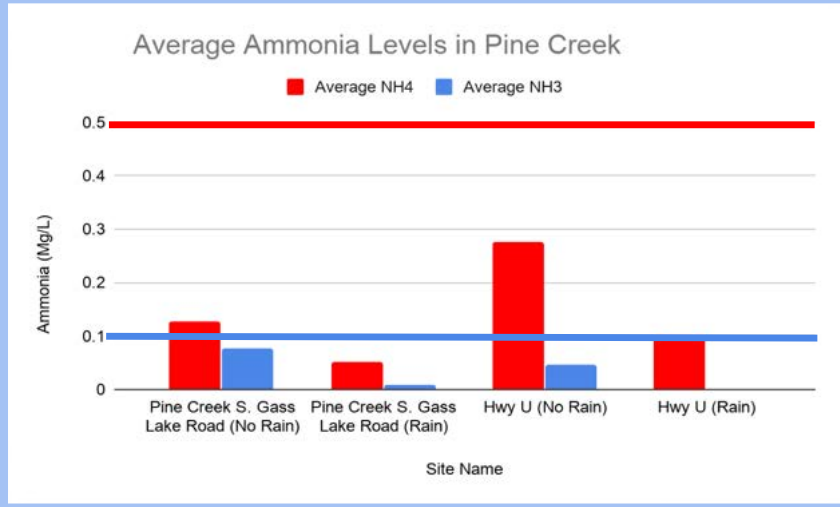


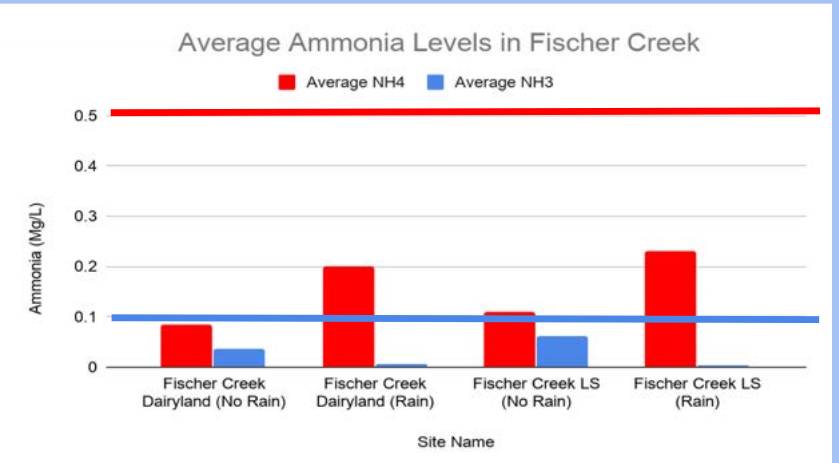


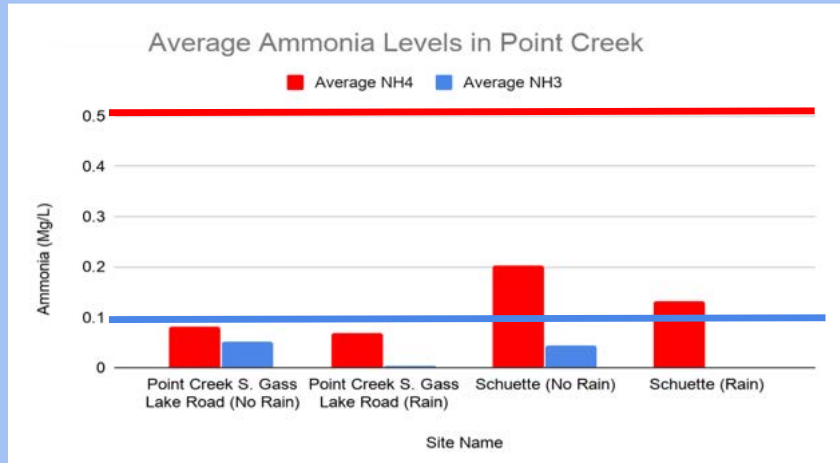


Average Ammonia Continued



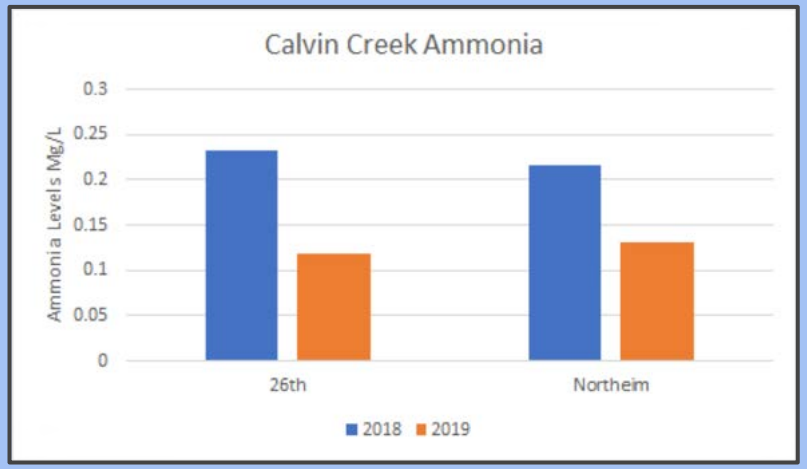


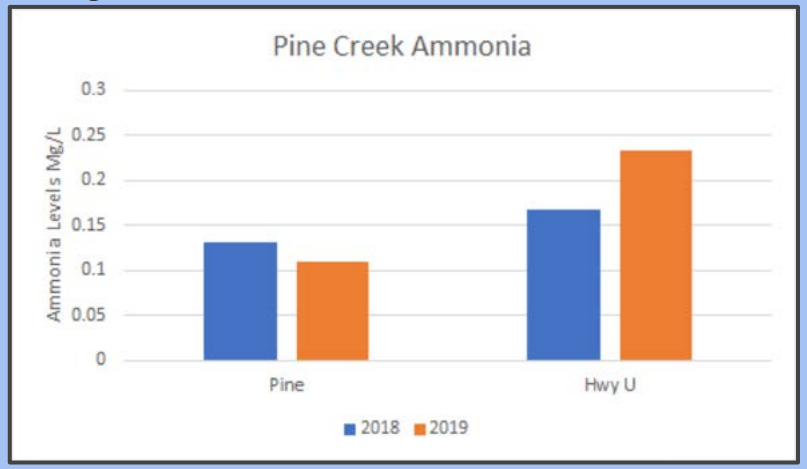


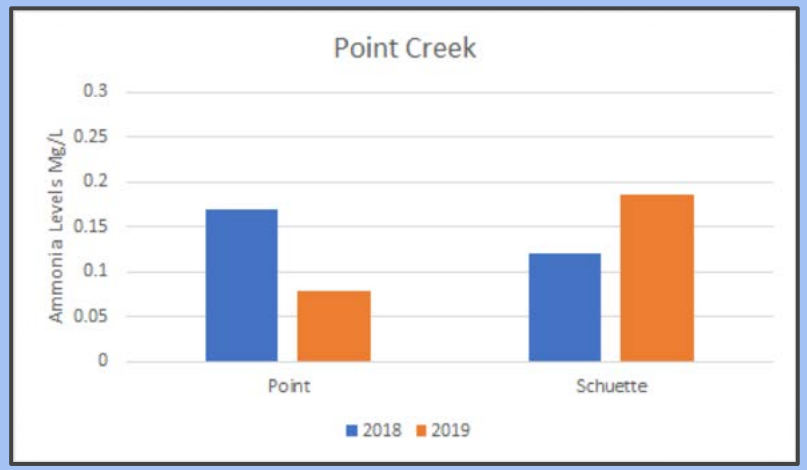


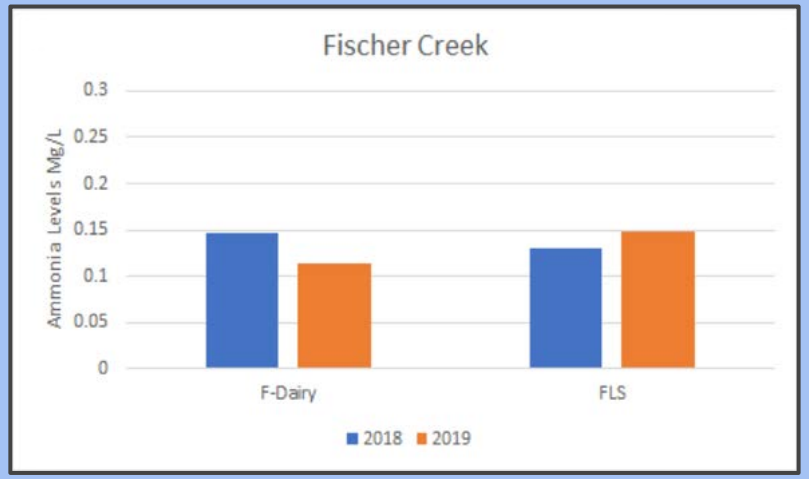
2018 Vs. 2019 Average Ammonia

- Threshold 0.5

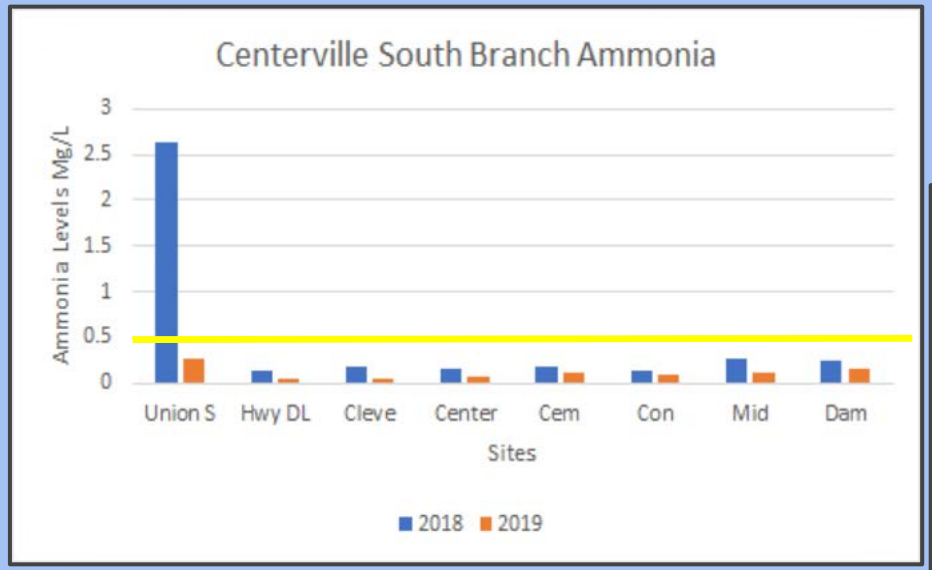


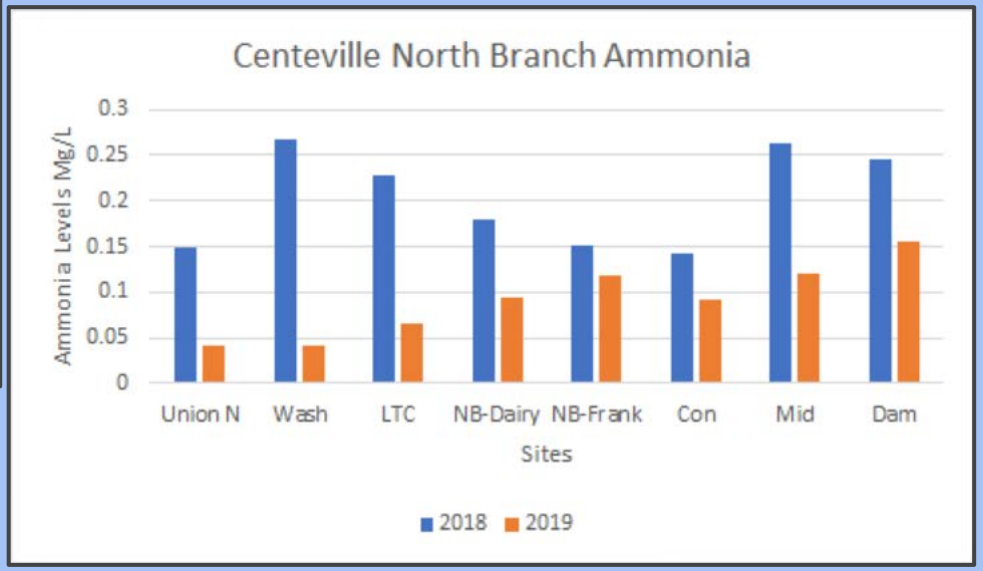




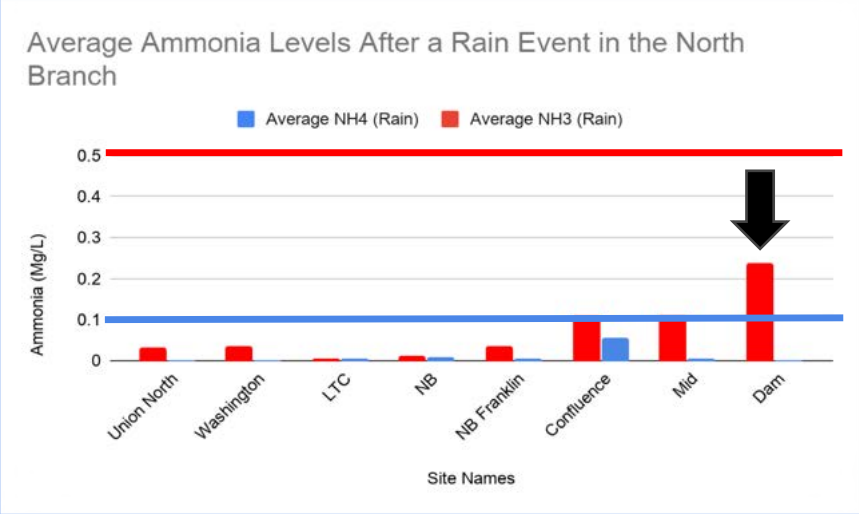


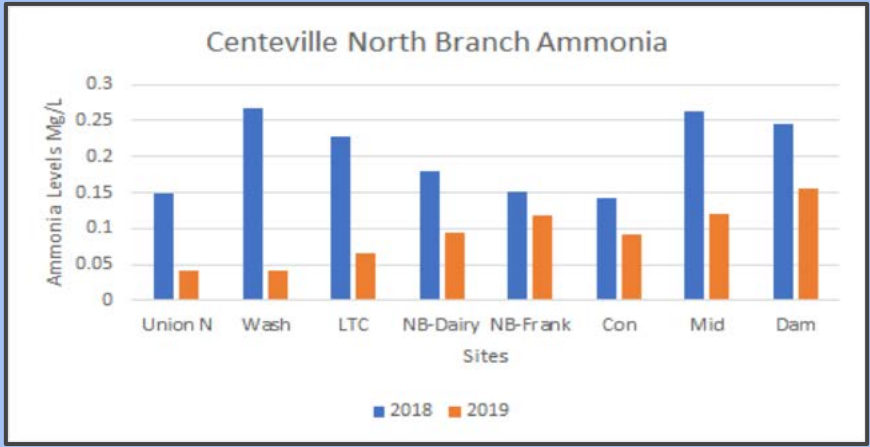
2018 Vs. 2019 Average Ammonia

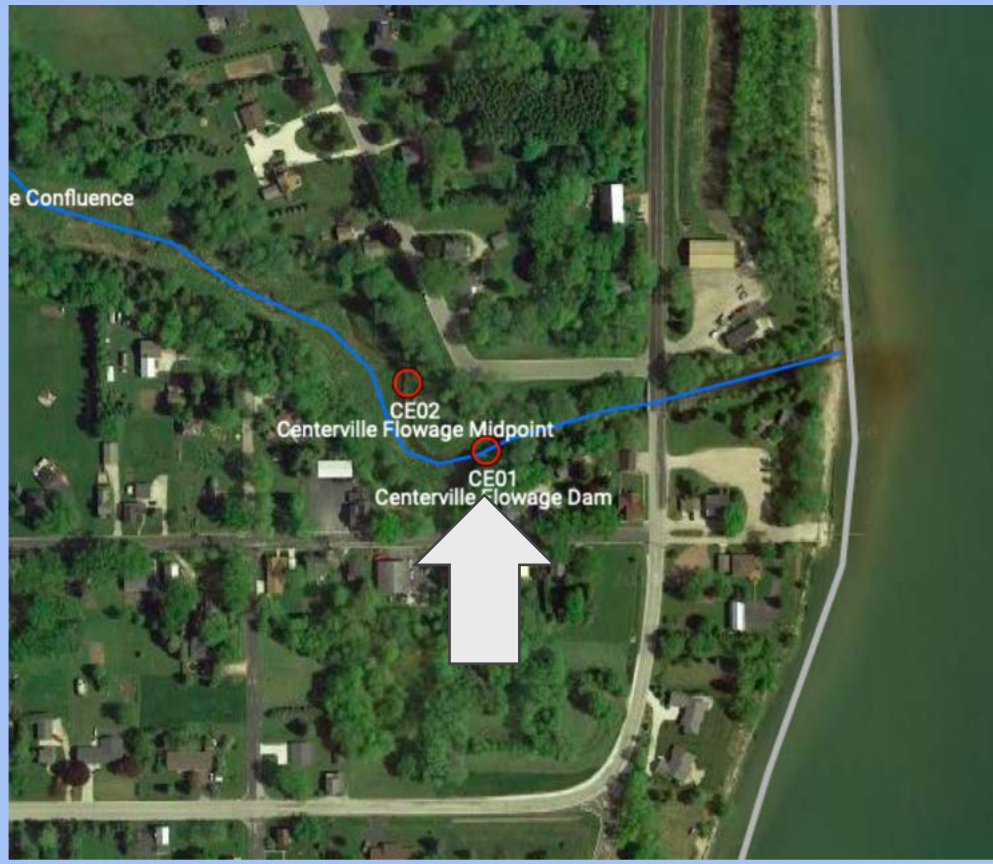




Ammonia Spike at Dam

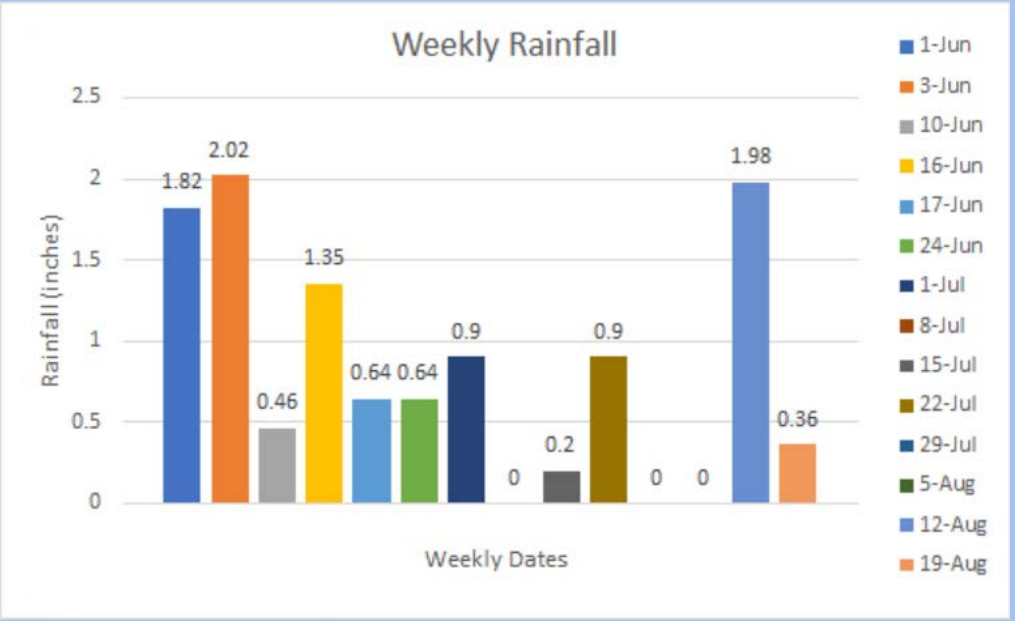




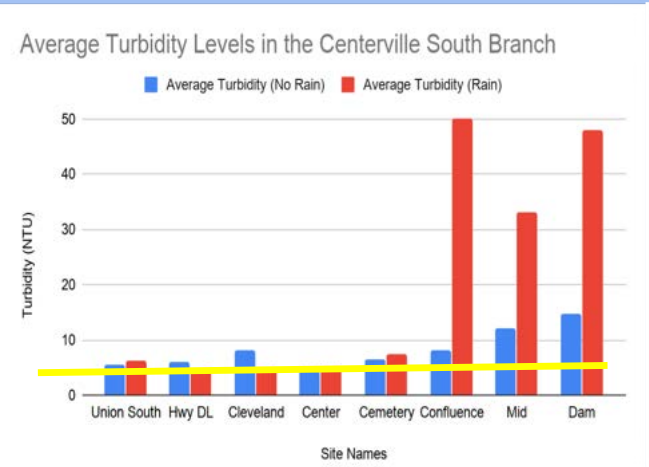


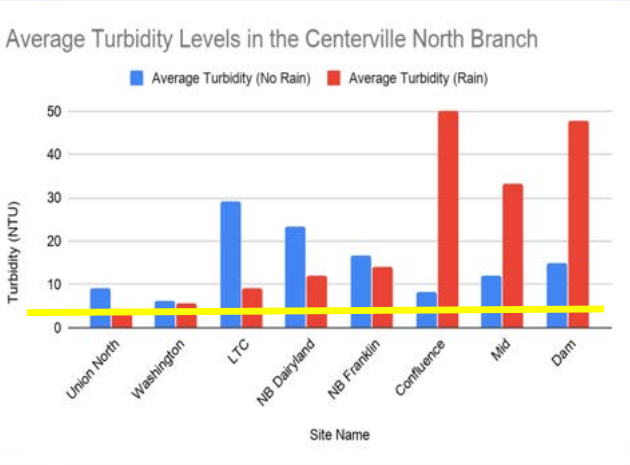
Total Weekly Rainfall

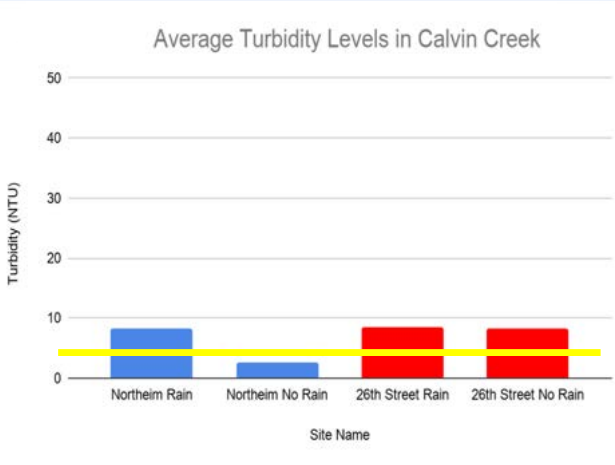
- 8/12 high weekly rainfall which correlates with high phosphate and ammonia

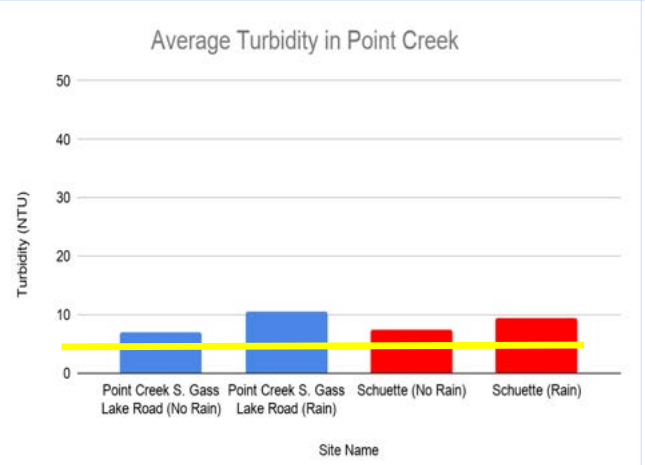


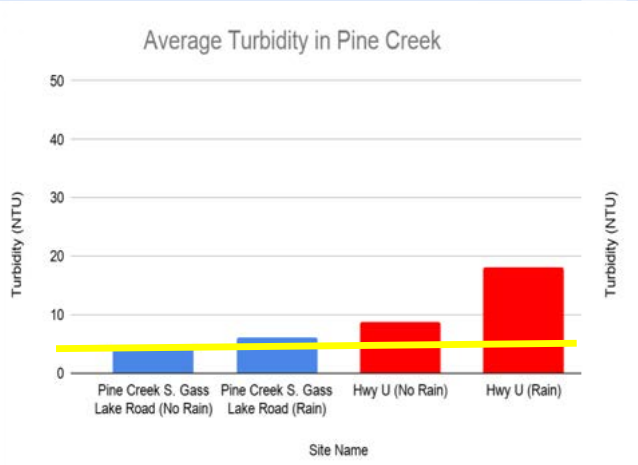
Average Turbidity

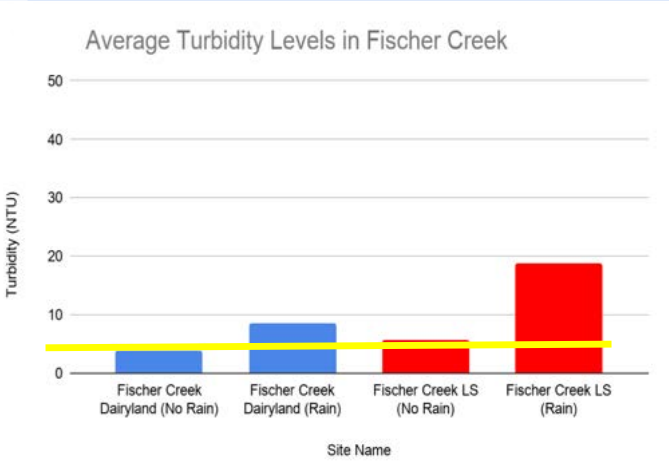




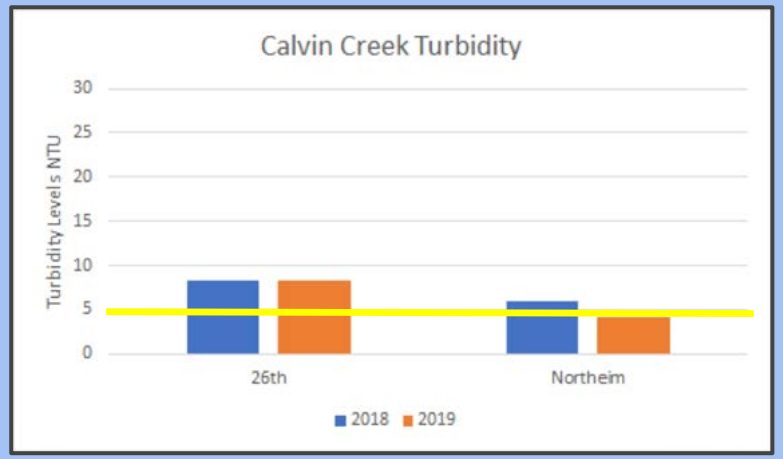


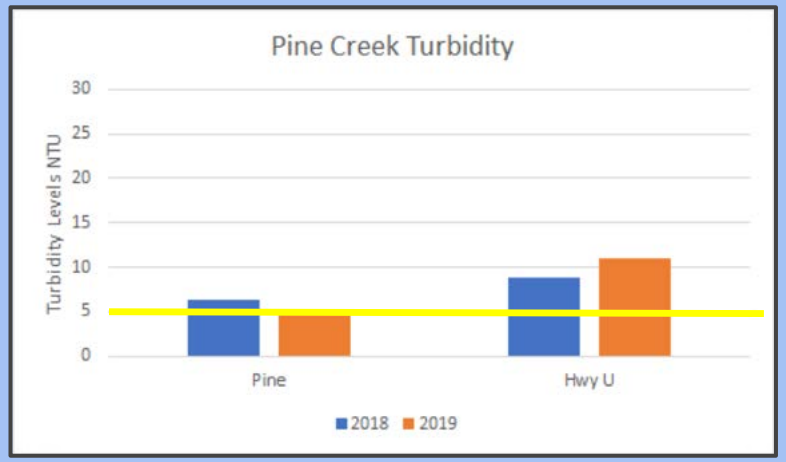


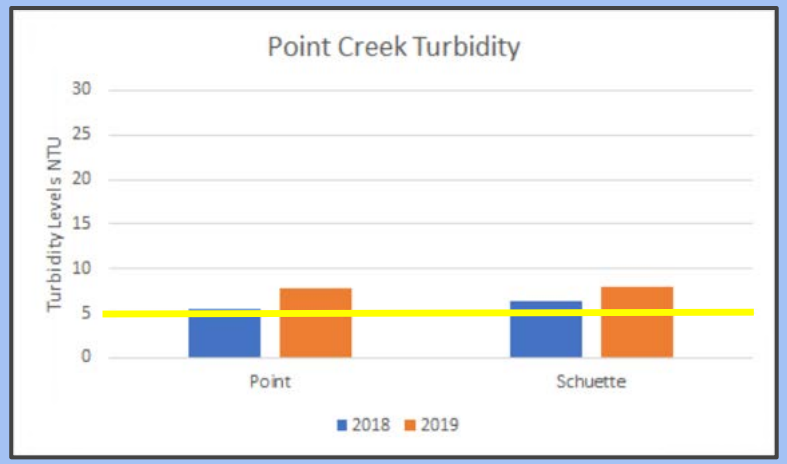


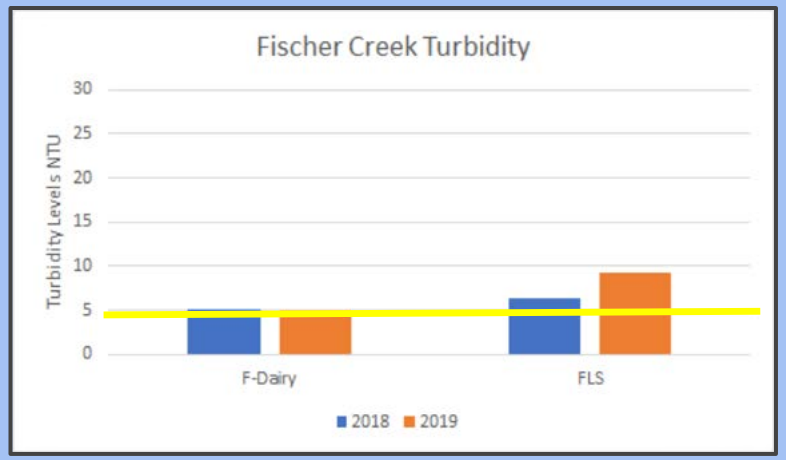


2018 Vs. 2019 Average Turbidity

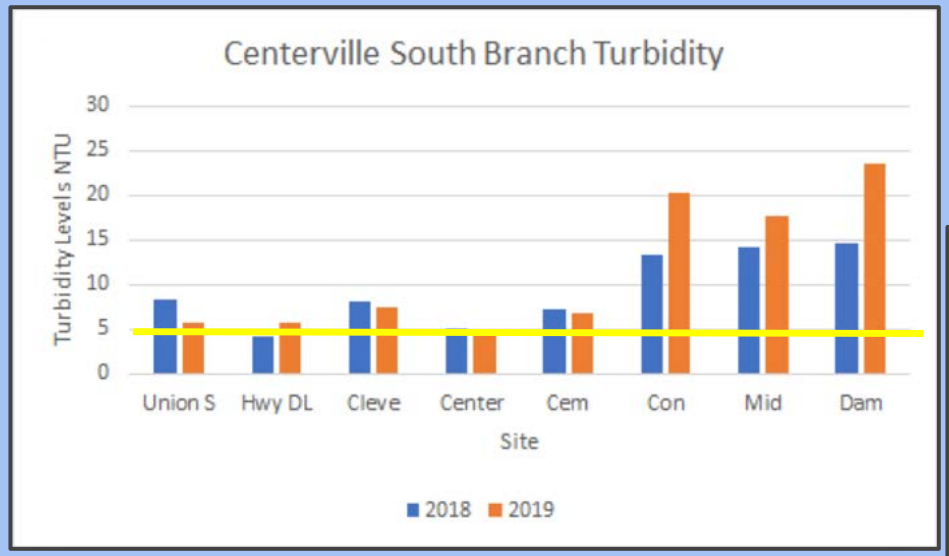


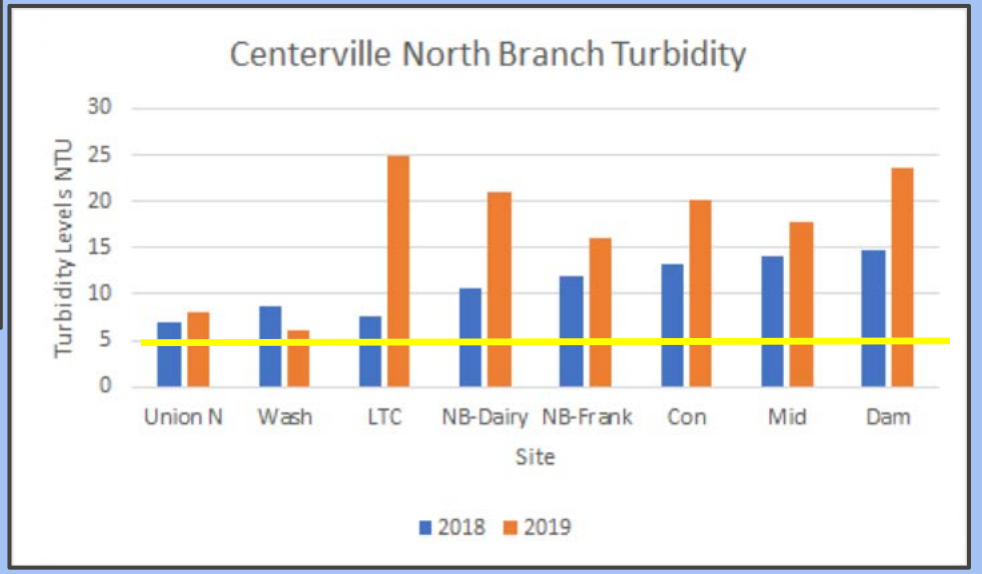




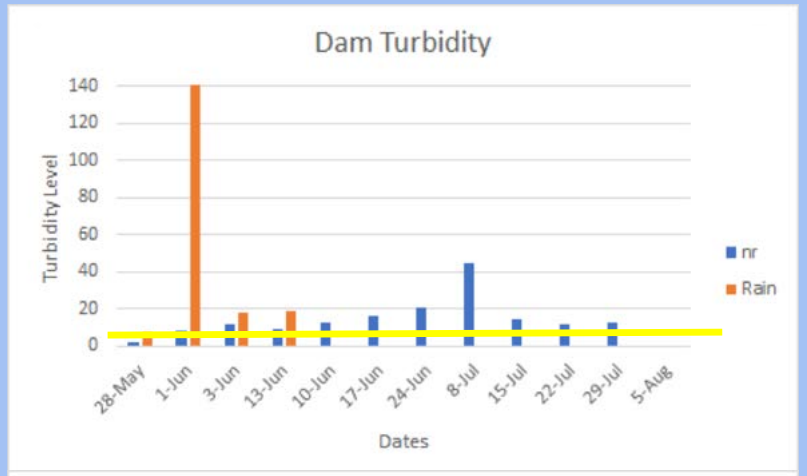


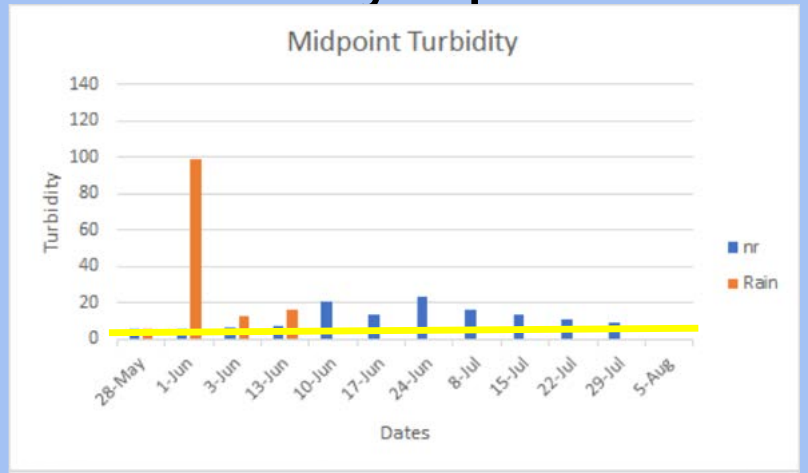
2018 Vs. 2019 Average Turbidity

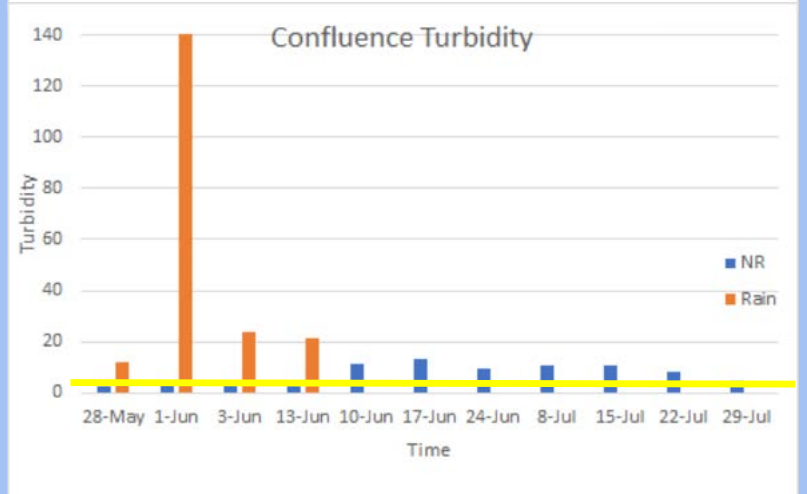


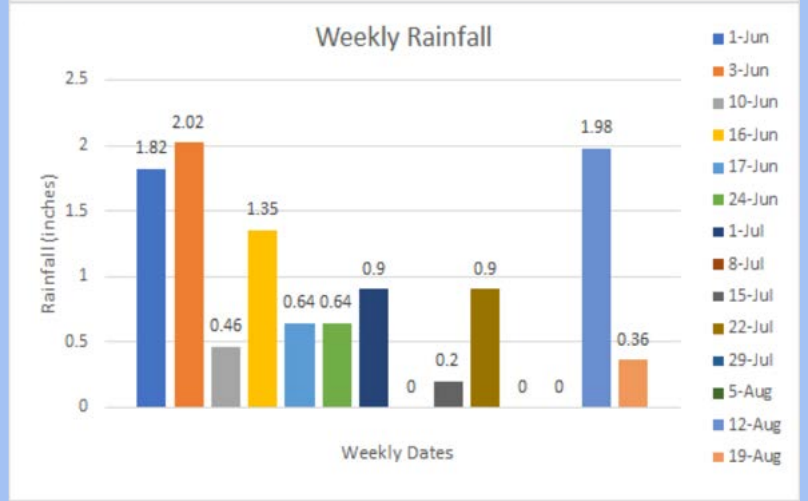


Dam, Mid, and Con Turbidity Spike

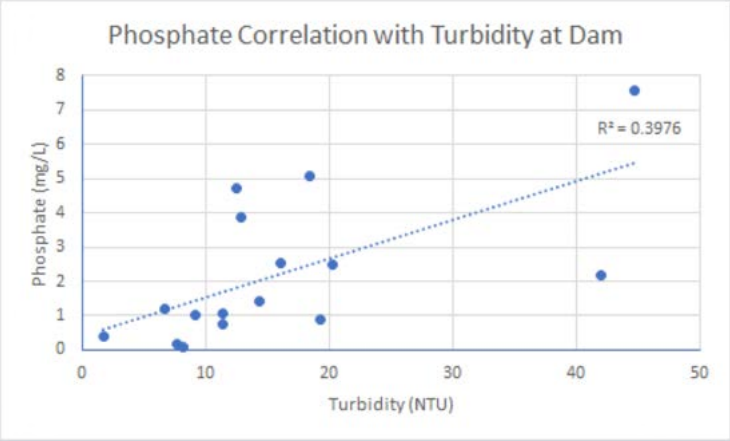


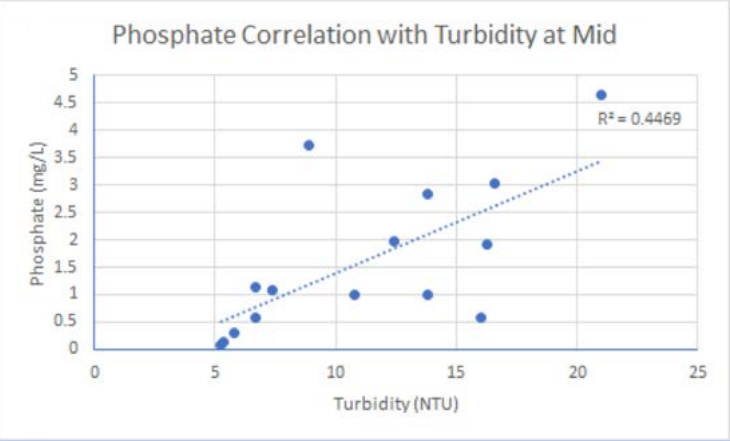


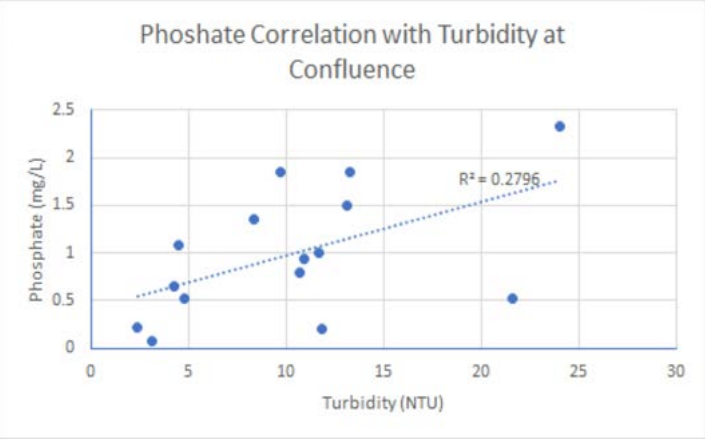




Dam, Mid, and Con Phosphate and Turbidity Correlation



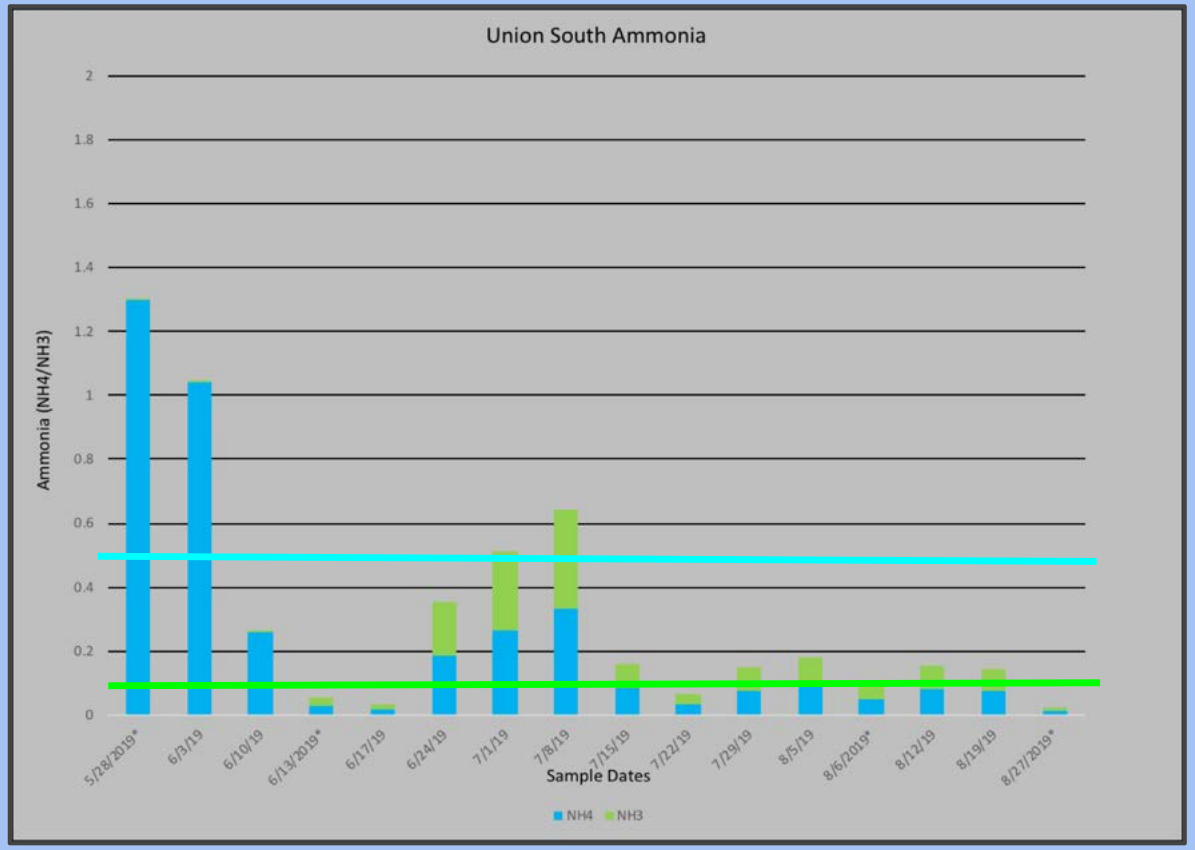





Union South

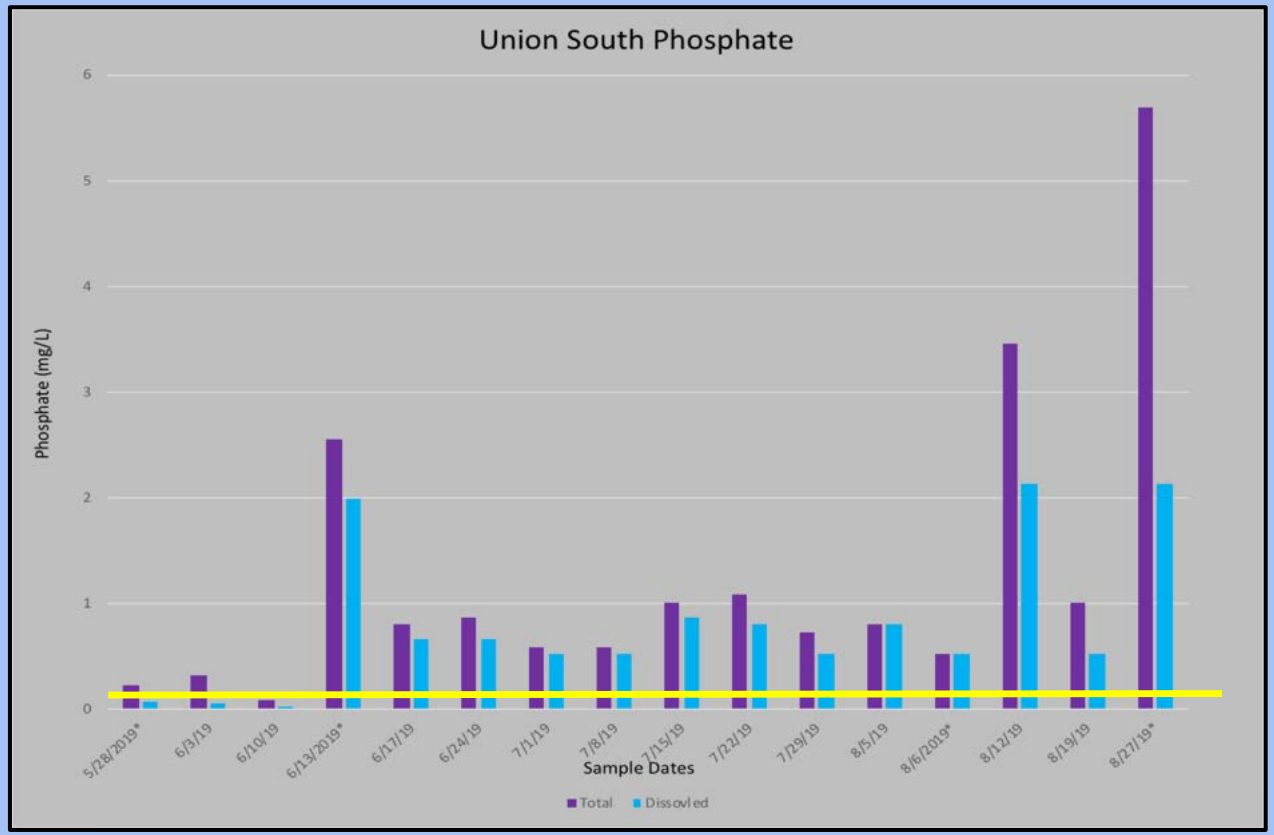
Hot Spot: Union South Ammonia

- NH3 is the directly toxic form of ammonia and harmful to the environment
- Both forms contribute to nutrient pollution
- Difference noted between beginning and end of season
- Note bar colors
- Threshold line is at 0.1 and 0.5



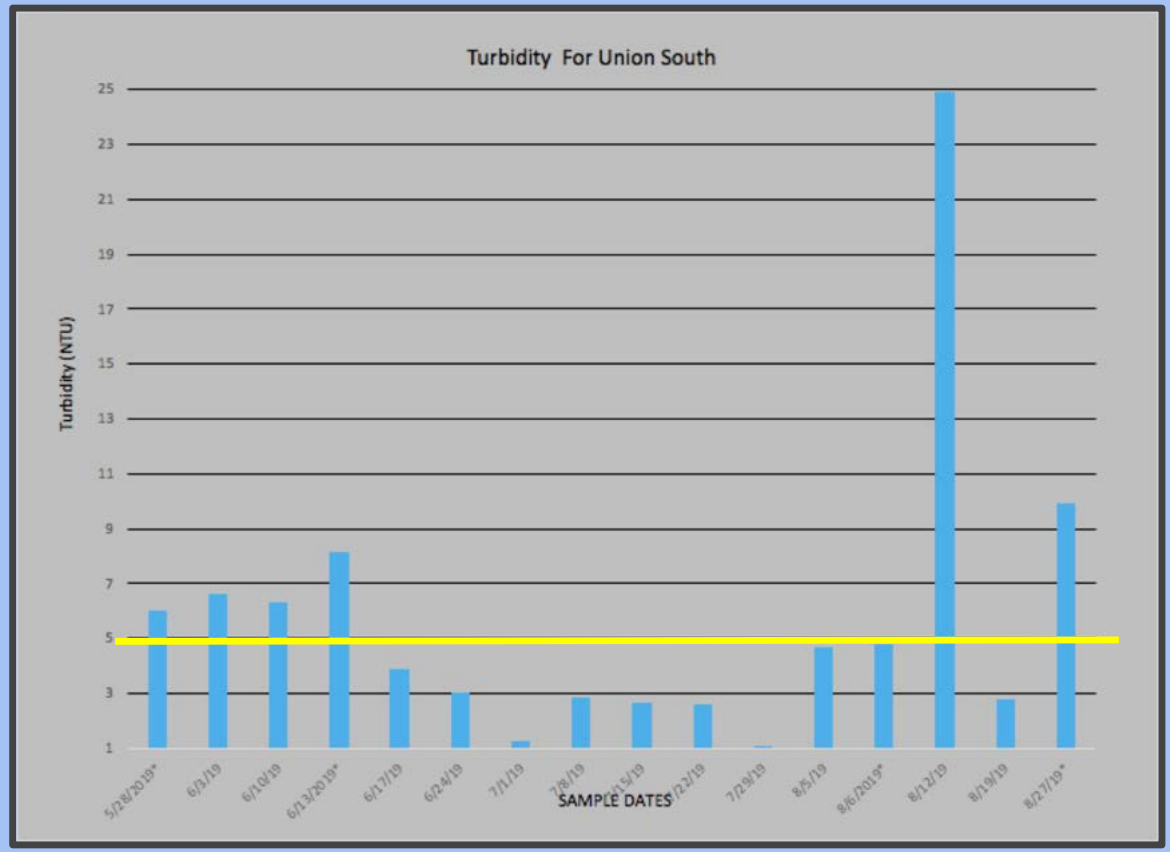
Union South Phosphate

- High levels can be harmful
- Wisconsin DNR threshold for surface water = 0.075 mg/L
- Levels from natural sources which = 0.005mg/L to 0.05mg/L
- Spiked during Rain Events



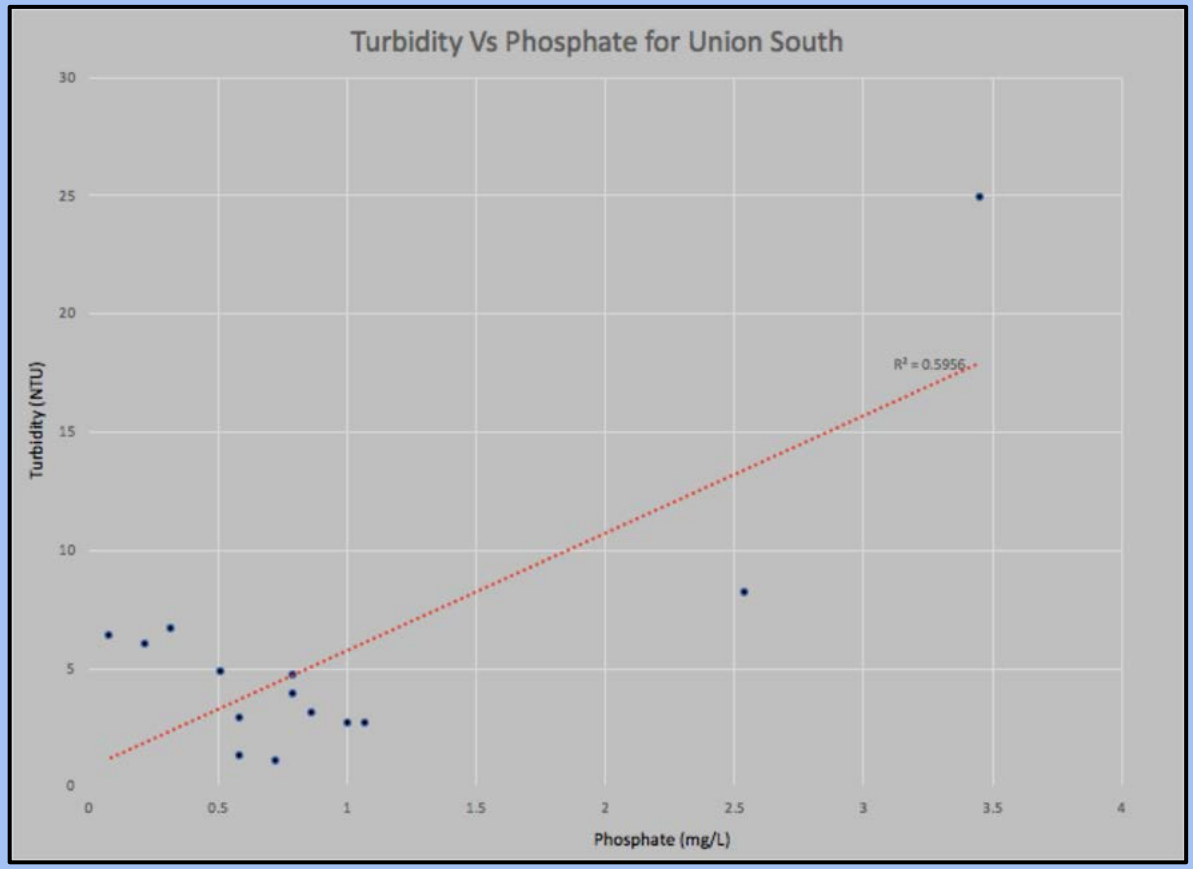
Union South Turbidity

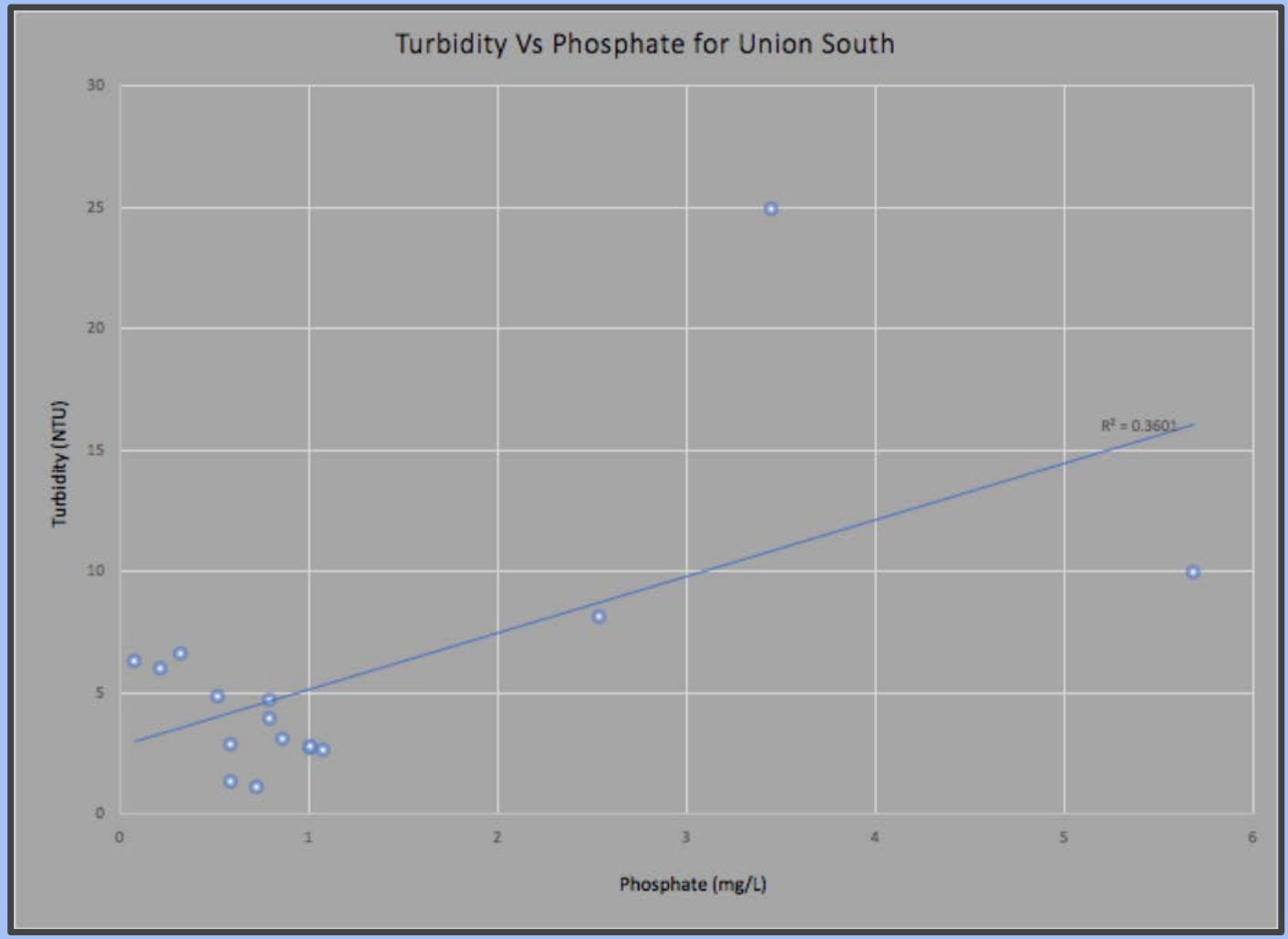
- Too much = unsuitable for aquatic life
- Correlates well with rain events
- Turbidity is caused by dissolved or suspended particles in water, which makes water appear murky or cloudy
- Could be adding to nutrient pollution



Union South: Phosphate Vs Turbidity

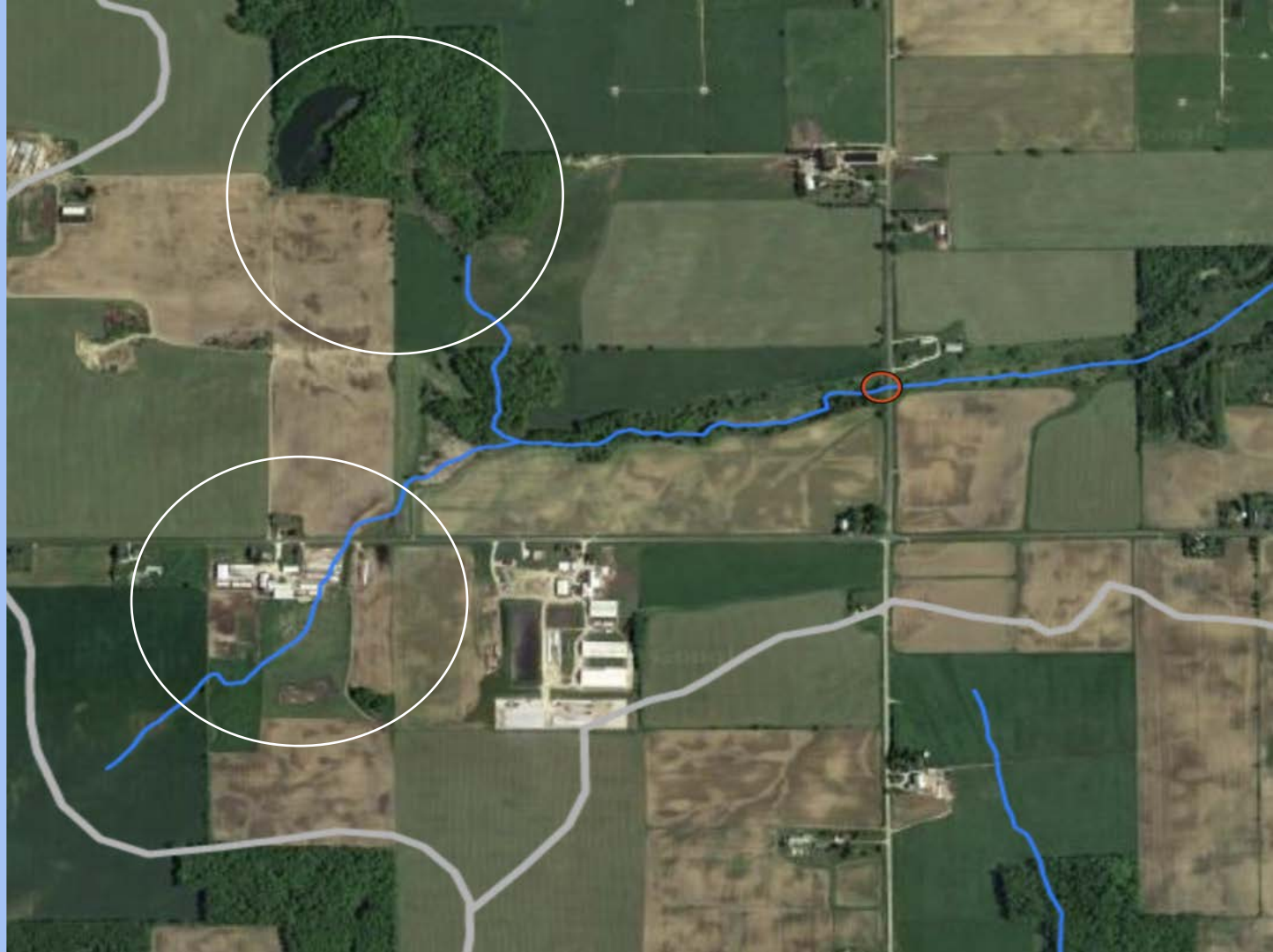
- Shows the relationship between phosphate and turbidity
- Could mean a lot of phosphate is from runoff or erosion during rain events
- In ecological data R^2= 0.5 or greater it shows a good relationship




Turbidity Vs Phosphate for Union South
Turbidity (NTU)
Phosphate (mg/L)
R² = 0.3601
0
5
10
15
20
25
30
0
1
2
3
4
5
6

Union South:

- Closest to head waters.
- There could be a gathering of chemicals which then creates a spike due to rain events and pushing it down stream.
- Few fields around the area, but can’t pinpoint where its coming from



Summary of 2019 Stream Data Collection

- Continuation of problematic areas from previous years
  - Union South - high ammonia
  - Dam/Mid/Con - high turbidity
- New problematic areas arising
  - NB Dairyland - high phosphate

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Conclusion

- Water systems are always changing
    - Continue water sampling and monitoring
- Being Aware

Questions, Comments, Concerns