

2023 Summary Report

Years 2020-2023

Goals of In-House Stream Monitoring:

1. Increase the number of sites sampled
 2. Increase the number of times sampled
 3. Engage with more volunteers through this citizen science project
 4. Monitor for trends in water quality and be more reactive to changes
 5. Collect data and present annually in an easy-to-read format
 6. Reduce the amount of money spent on water sampling but still track what is happening
- 6 sites were selected based on historical testing sites (map attached). Site #1 was abandoned due to no flow – even after heavy rain events. May need to be revisited in 2024.
 - Site #1 – North Tributary – NO DATA
 - Site #2 – Rowing Center (Wilson) - **Volunteer: Ed Brown**
 - Site #3 – 18B (Maxinkuckee Landing) - **Volunteer: Madeleine Slykas**
 - Site #4 - Country Club Golf Course (Curtis) - **Volunteer: Gene Tardy**
 - Site #5 – Kline Levee - **Volunteers: Scott Holaday and Ginny Hahn**
 - Site #6 – South Shore Tributary - **Volunteer: Karl Swedlund**
 - Each site is monitored for (data collection sheet attached):
 - Air Temperature (F)
 - Water Temperature (C)
 - pH
 - Conductivity
 - Phosphorous
 - Dissolved Oxygen
 - Nitrate
 - E.coli – 18B got resolved so very little testing done in 2023
 - Volunteers were assigned a site and responsible for that site all season. They collected samples according to their schedules; therefore, sampling dates are different. The goal was to collect samples 2x/month May – September and 1x per month October – April. The # of samples collected has definitely dropped. **This program would benefit from new volunteers.**
 - Program began in June 2021.
 - “0” entry means the value was zero, no entry means no data collected

Nutrients are good for lawns and gardens. But when they enter the lake in the form of fertilizers, human and animal waste, or yard waste, they make aquatic plants and algae grow too much. Two of the most important nutrients to monitor are phosphorus and nitrogen. They are responsible for the majority of weed and algae growth in the lake.

The primary sources of excess nitrogen and phosphorus are:

[Sources and Solutions | US EPA](#)

- **Agriculture:** The nitrogen and phosphorus in animal manure and chemical fertilizers are necessary to grow crops. However, when these nutrients are not fully utilized by plants, they can be lost from the farm fields and negatively impact air and downstream water quality.
- **Stormwater:** When precipitation falls on our cities and towns it runs across hard surfaces – such as rooftops, sidewalks and roads - and carries pollutants, including nitrogen and phosphorus, into local waterways.
- **Wastewater:** Our sewer and septic systems are responsible for treating large quantities of waste, and these systems do not always operate properly or remove enough nitrogen and phosphorus before discharging into waterways.
- **Fossil Fuels:** Electric power generation, industry, transportation, and agriculture have increased the amount of nitrogen in the air through use of fossil fuels.
- **In and Around the Home:** Fertilizers, yard and pet waste and certain soaps and detergents contain nitrogen and phosphorus and can contribute to nutrient pollution if not properly used or disposed of. The extent of hard surfaces and type of landscaping can also increase the runoff of nitrogen and phosphorus during wet weather.

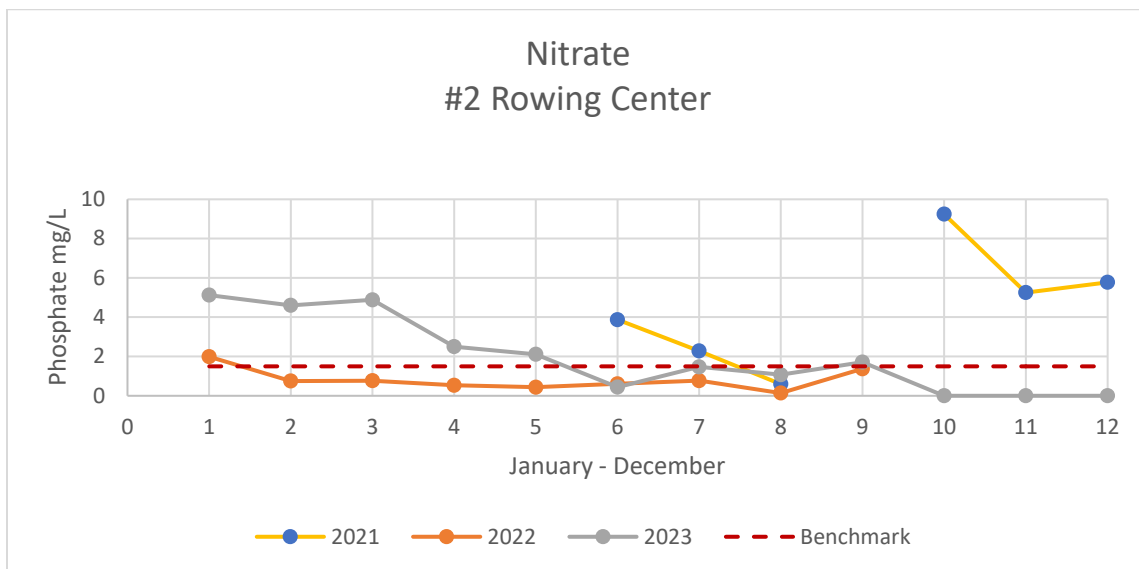
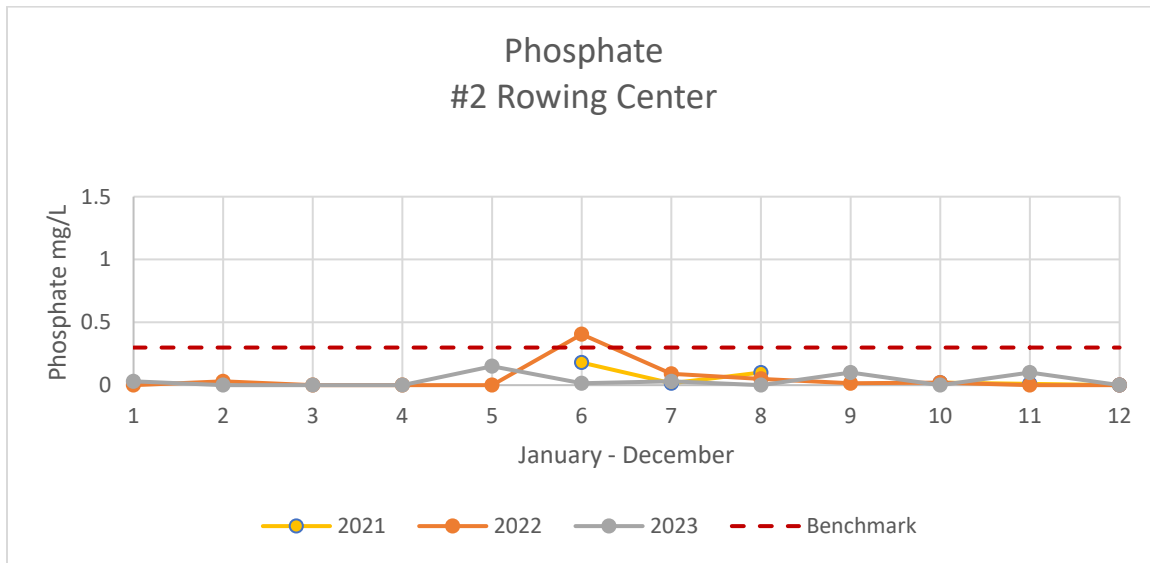
pH and Dissolved Oxygen readings were within acceptable ranges at all sites and not included in this report. Temperature and Conductivity data are recorded but not included in this report.

Keep in mind, this is data collected by volunteers using good equipment, but not certified lab quality. We are monitoring. The real value will come when we have multiple years' worth of data and can begin to see trends.

Moving Forward:

- Need to recruit some new volunteers as 3 dropped out in 2023.
- Nitrate probe has proven to be difficult. It requires constant calibration to ensure accurate results. Switched to nitrate strips in October, which don't give as precise results. Need to resolve this issue.
- How many times per month do we want to test?
- Incorporate storm drain testing?

Site #2 – Rowing Center (Wilson Wetland upstream)

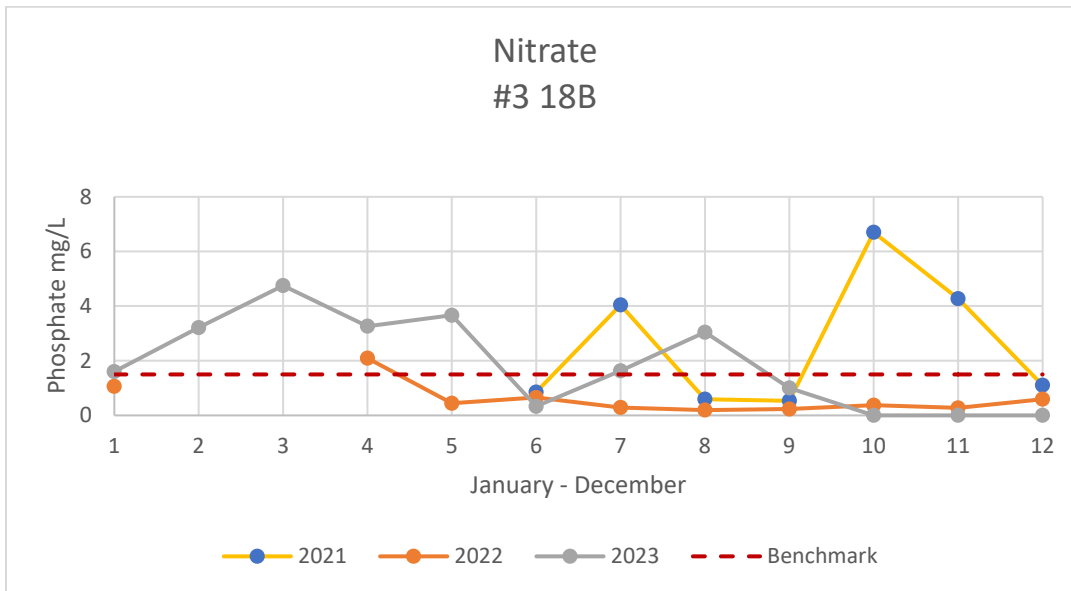
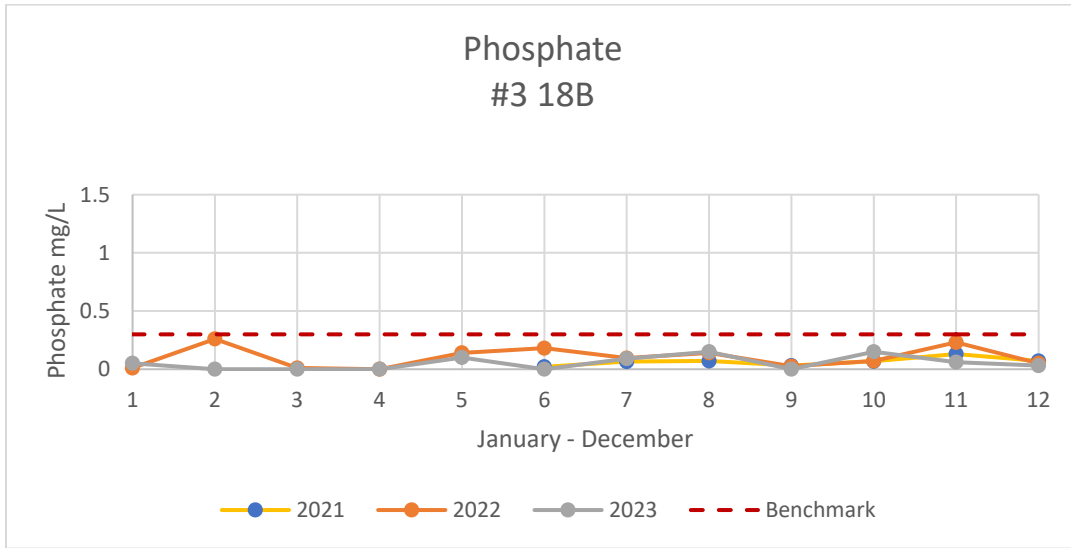


Conclusion: Phosphorus numbers would not indicate that there is a problem at this site. However, the Hot Spots study revealed significant erosion upstream that needs to be addressed.

A discussion with the facilities manager at Culver Academies included the sedimentation at the mouth of this tributary causing issues with launching the Ledbetter. LARE grant application for stream restoration design study submitted January 2024.

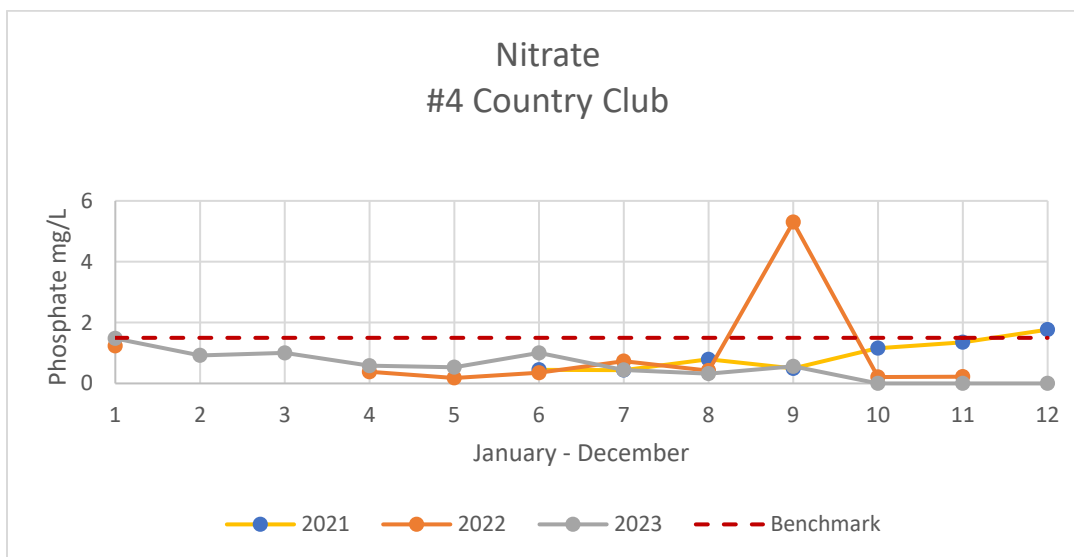
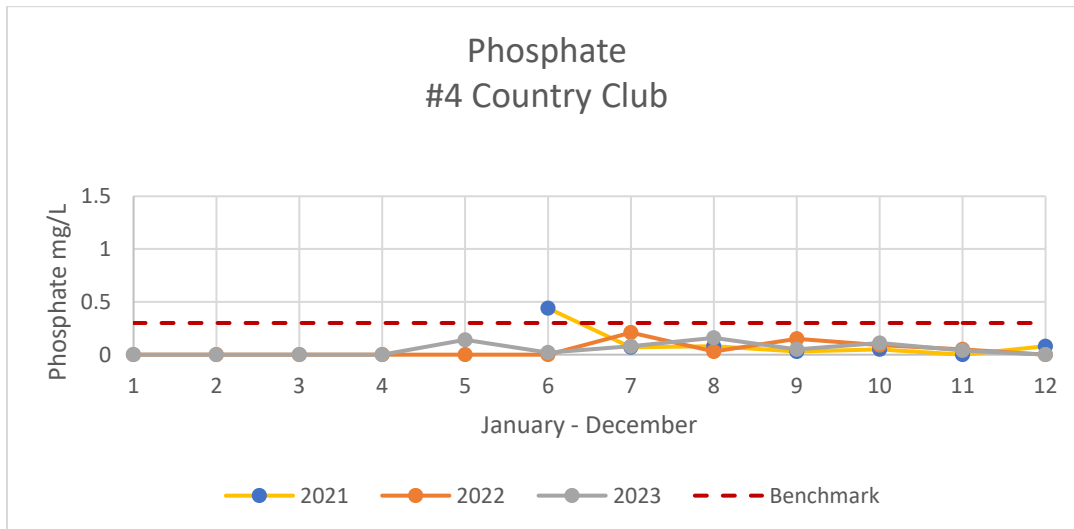
Definitely an area of concern.

Site #3 – 18B (Maxinkuckee Landing)



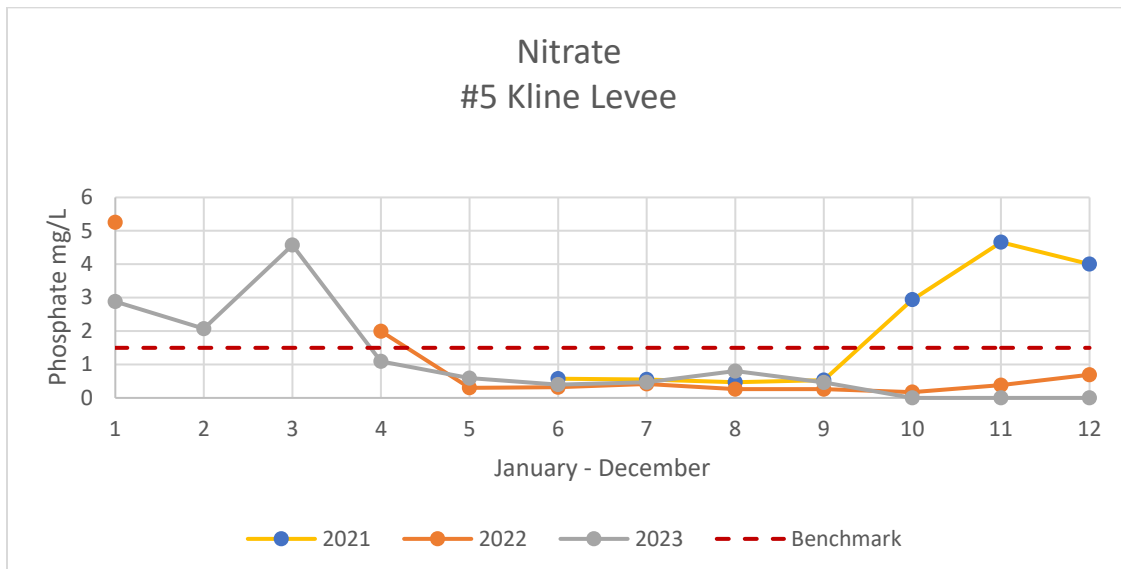
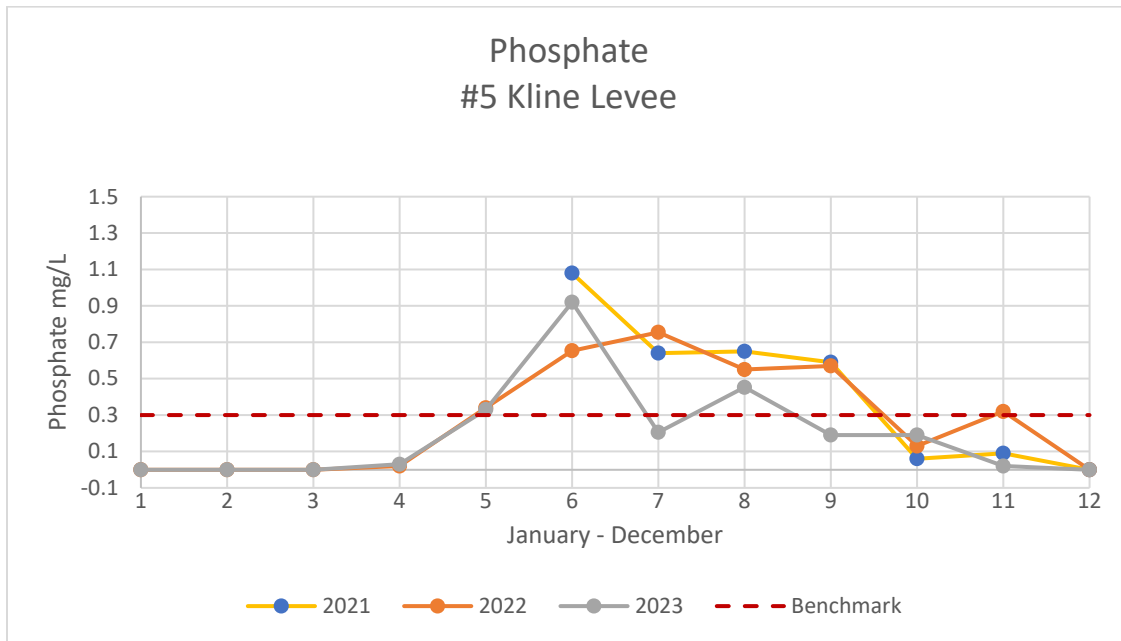
Conclusion: Two houses along 18B were connected to the sewer district in summer 2022 which seemed to resolve the E. coli issue. Phosphate readings at this site are consistently under the target level. Seems to be a nitrate issue, but since the readings are all over the place, it may be the probe. Needs further data.

Site #4 – Country Club (Curtis Wetland upstream)



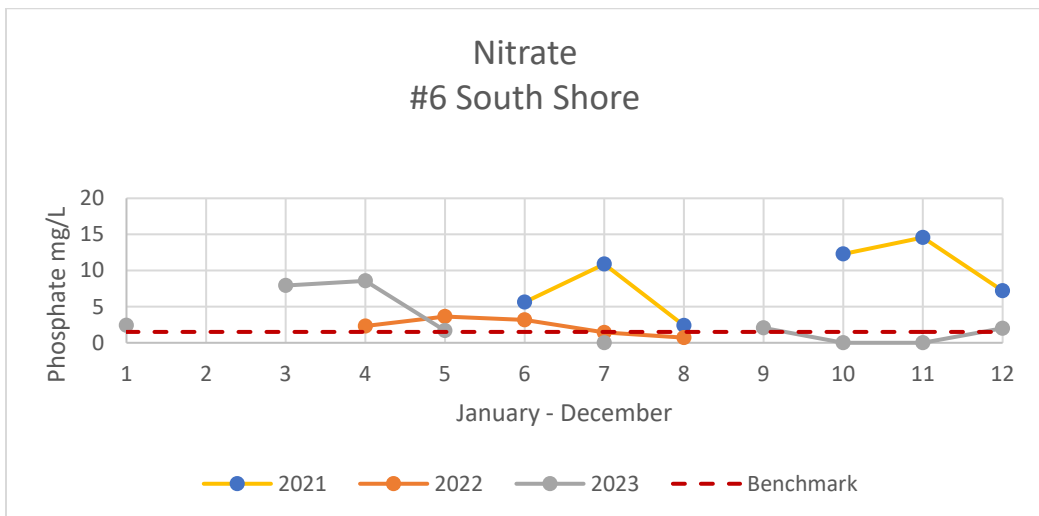
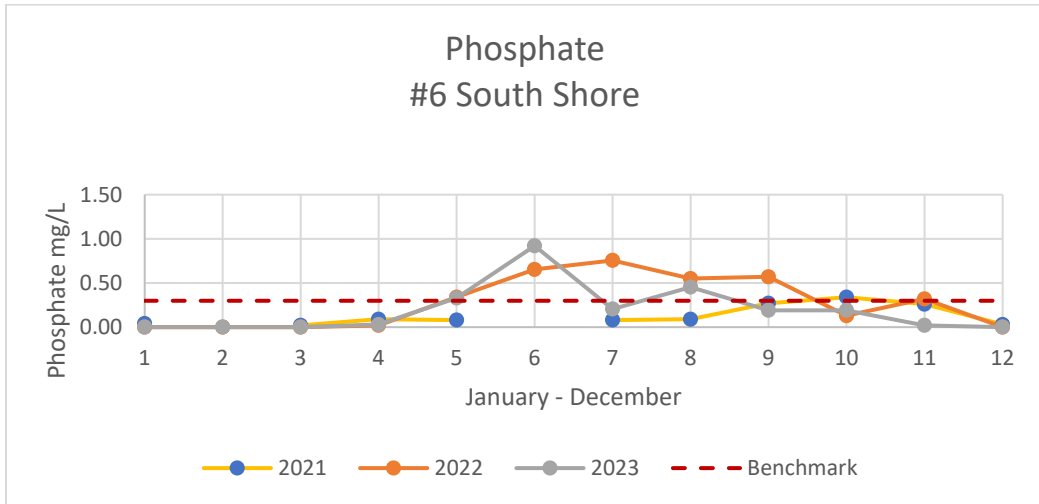
Conclusion: One weird data point in 2022 but other than that, the data indicates that the Curtis wetland is doing its job and the Country Club is not adding to the pollutant load between the wetland and the lake. The Hot Spots study supports this conclusion. I would classify this as a low priority area for any projects.

Site #5 – Kline



Conclusion: Sweeten’s study, completed 2022, shows elevated levels of Phosphorus leaving the levee and something to be addressed. Nitrogen in the fall/winter is typical due to no vegetation during this time. Something worth tracking as golf course and agriculture practices may be contributing. However, fall 2023 did not show elevated levels when we switched from probe to strips. Inconclusive.

Site #6 – South Shore



Conclusion: This is a minor stream, sometimes with no flow at all. For that reason, I would classify this stream as low priority, even with the elevated nutrient inputs. There may be opportunities for upstream projects, however the impact to the lake would probably be relatively low.

Tributary Testing Sites

Write a description for your map.

Site #2 - Academy Rowing

Site #1 - Academy

Site #3 - 18 B

Site #4 - Golf Course

Lake Maxinkuckee




Lost Lake

Site #6 - South Shore

Site #5 - Kline Levee Outflow

Google Earth

Legend

-  Kline Levee
-  Lake Maxinkuckee
-  Site



1 mi

