



FINDLEY LAKE
Watershed Foundation
LAKE STEWARDS SINCE 1949

Social Media Posts addressing:
Why is the proposed sewer system a critical first step of a comprehensive approach for long-term improvement of Findley Lake water quality...

Post – August 21, 2023 – A

In the next few weeks, we're going to be posting about why the proposed sewer system is a critical first step as part of a comprehensive approach for long-term improvement of Findley Lake water quality. We're going to answer your questions as to what is phosphorus and why is it bad for the lake, what is external and internal loading, and how do we read these reports everyone is talking about. I hope we answer all your questions and help you make an informed decision on the sewer project. Please feel free to ask questions in the comment section and we will answer as best we can.

#VOTEYES #FLSEWERPROJECT



Post – August 21, 2023 – B

Q: What is phosphorus and why is it bad for Findley Lake?

A: Phosphorus (P) is a naturally occurring element that exists in minerals, soil, living organisms and water. P is a critical nutrient for all life. However, too much phosphorus can cause increased growth of algae and large aquatic plants, which can result in decreased levels of dissolved oxygen – a process called eutrophication. High levels of phosphorus can also lead to algae blooms that produce algal toxins which can be harmful to human and animal health. #VOTEYES
#FLSEWERPROJECT

Link: <https://www.epa.gov/national-aquatic-resource-surveys/indicators-phosphorus>

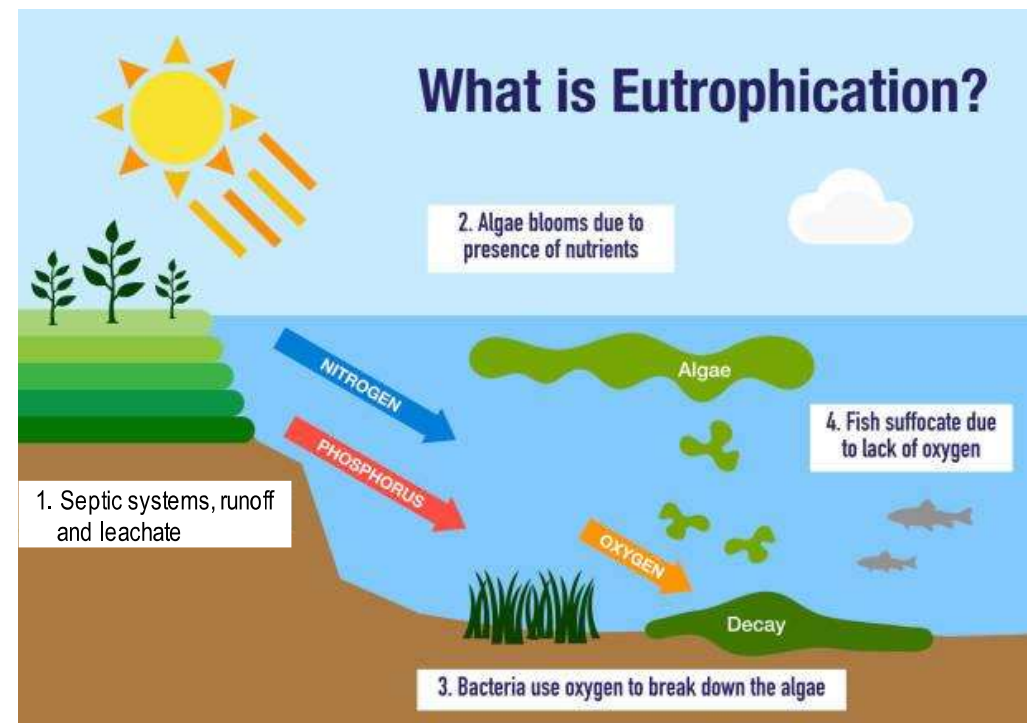


Post – August 21, 2023 – C

Did you know that in excess quantities, phosphorus can lead to water quality problems such as harmful algal growth, excessive aquatic plant growth and eutrophication, which is the excessive richness of nutrients in a lake that causes a dense growth of plant life and death of animal life from lack of oxygen.

Findley Lake has excess quantities of phosphorus, and we need to do something about it now. #VOTEYES #FLSEWERPROJECT

Link: <https://www.epa.gov/national-aquatic-resource-surveys/indicators-phosphorus>



Post –August 24, 2023 - A

Q: What is Eutrophication and how does that affect Findley Lake?

Eutrophication is the process in which a water body becomes overly enriched with nutrients, leading to the plentiful growth of simple plant life. This video gives a great explanation of what it is and how it can affect a body of water. Essentially, Findley Lake is getting too many nutrients, mainly Phosphorus, and it's causing algae and aquatic plants to grow in abundance.

#VOTEYES #FLSEWERPROJECT

Link:

<https://www.youtube.com/watch?v=Pko6n4o8Ri8>



Post – August 24, 2023 – B

Did you know that Eutrophication is what's causing Findley Lake to be overgrown with algae?

It starts when runoff containing fertilizer or animal waste or septic system effluent is released into the lake, increasing nutrients in the water. The nutrients are food for algae, making them grow and reproduce quickly, creating a thick green bloom on the water surface. This bloom blocks the sun, killing plants under the water. Then, bacteria start to break down the dead plants releasing even more nutrients into the water, increasing this cycle. And the bacteria with an endless supply of food, reproduce into much larger numbers and eventually consume all the oxygen in the water. You know what happens when there is eventually no oxygen in our lake water... We need to help stop this by taking out one of the major sources; septic tank effluent.

#VOTEYES #FLSEWERPROJECT

Link: <https://www.youtube.com/watch?v=6LAT1gLMPu4>



Post – August 28, 2023 – A

Q: What is INTERNAL LOADING and how does that affect Findley Lake?

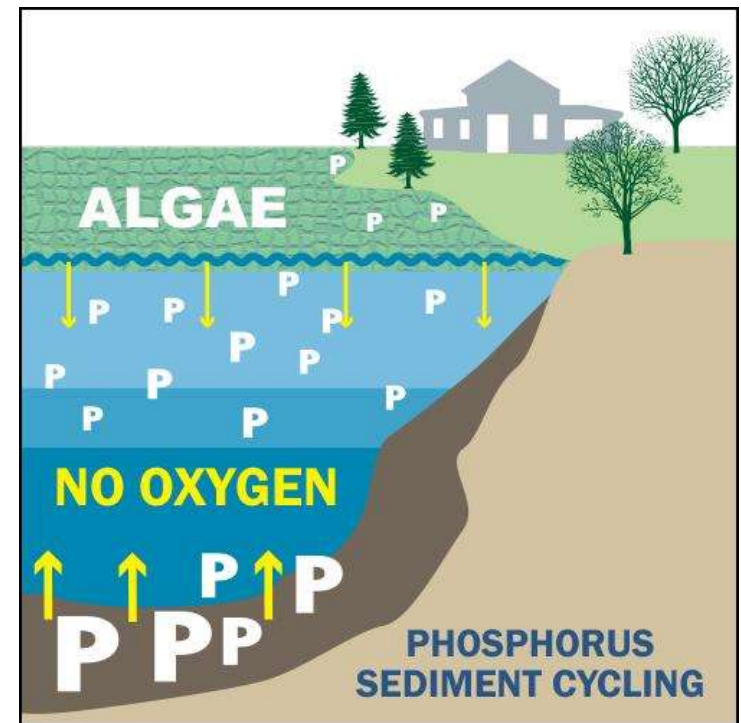
Internal loading is a process where Phosphorus, that has entered the lake from external sources, is taken up by aquatic plants and algae that then die and create sediment/muck. Phosphorus in the lake sediment is then released into the lake when the water surrounding the sediments becomes anoxic (deficient in oxygen).

The estimated annual internal loading of Phosphorus in Findley Lake is 498 lbs./yr. This can trigger harmful algal blooms which in addition to being potentially toxic, decrease light transmission and can further decrease the oxygen levels in the water.

But internal loading is only half the story....

#VOTEYES #FLSEWERPROJECT

Link: [https://findleylakewf.org/images/uploads/files/2021-12-Lake Evaluation and Recommendations Princeton Hydro.pdf](https://findleylakewf.org/images/uploads/files/2021-12-Lake%20Evaluation%20and%20Recommendations%20Princeton%20Hydro.pdf)



Post - August 28, 2023 – B

Q: What is EXTERNAL LOADING and how does that affect Findley Lake?

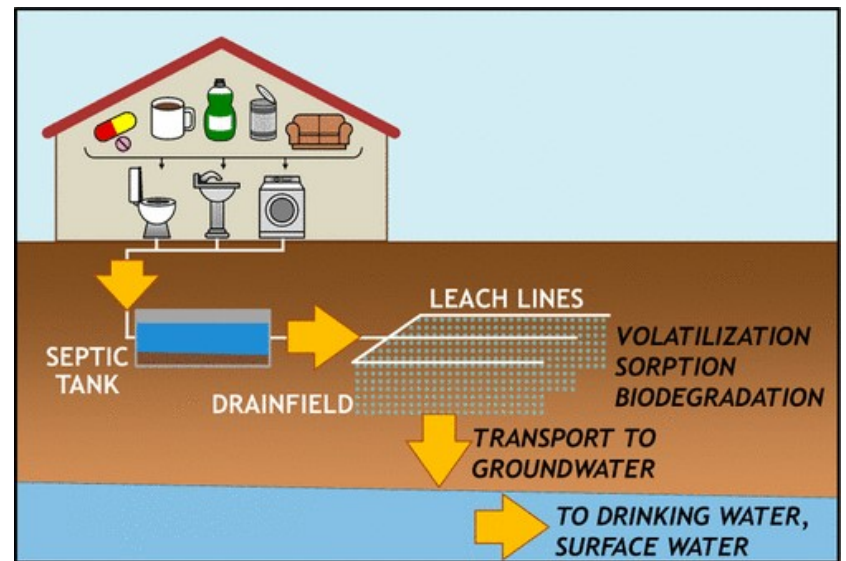
External loading is all the sources of nutrients that enter the lake from outside the lake. External sources of Phosphorus and the estimated lbs./year entering the lake include septic systems (425 lbs./yr.), runoff from croplands (330 lbs./yr.), pastures (62 lbs./yr.), forests (11 lbs./yr.), developed land (3 lbs./yr.), and stream bank erosion (0.4 lbs./yr.), and groundwater (108 lbs./yr.).

There is no way to achieve the target loading of 242 lbs./yr. without eliminating septic systems.

#VOTEYES #FLSEWERPROJECT

Link:

https://findleylakewf.org/images/uploads/files/2008_TMDL_Report.pdf

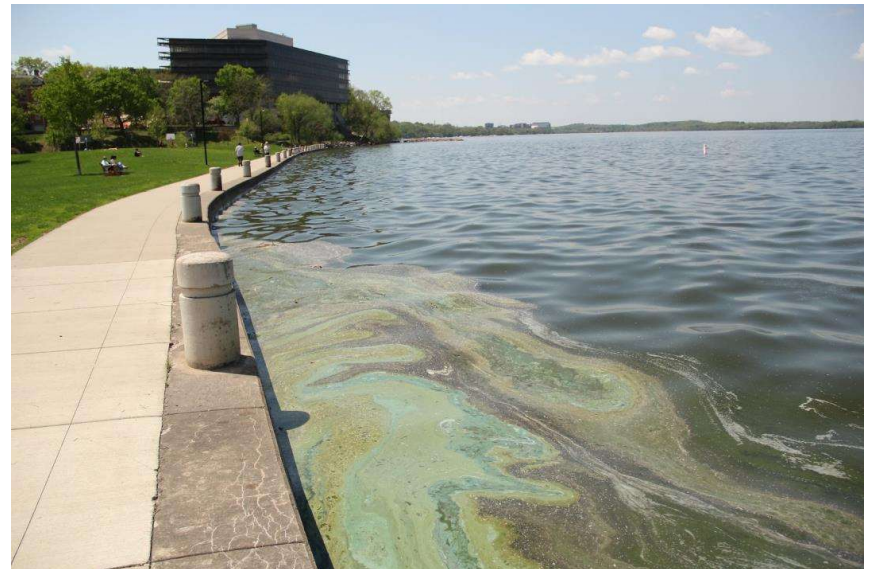


Post - August 31, 2023 – A

Did you know that phosphorus and other nutrients come from what's called internal and external loading?

Both internal loading (when nutrients are introduced into the water from the lake sediment), and external loading (when nutrients enter the lake from the watershed – i.e., primarily from septic systems, agricultural runoff) to lakes, are important to the water quality of the lake. High levels of phosphorus cause excessive algae growth and prolific aquatic weed growth – which diminish the Findley Lake water quality. #VOTEYES #FLSEWERPROJECT

Link: <https://www.cleanlakesalliance.org/phosphorus/>



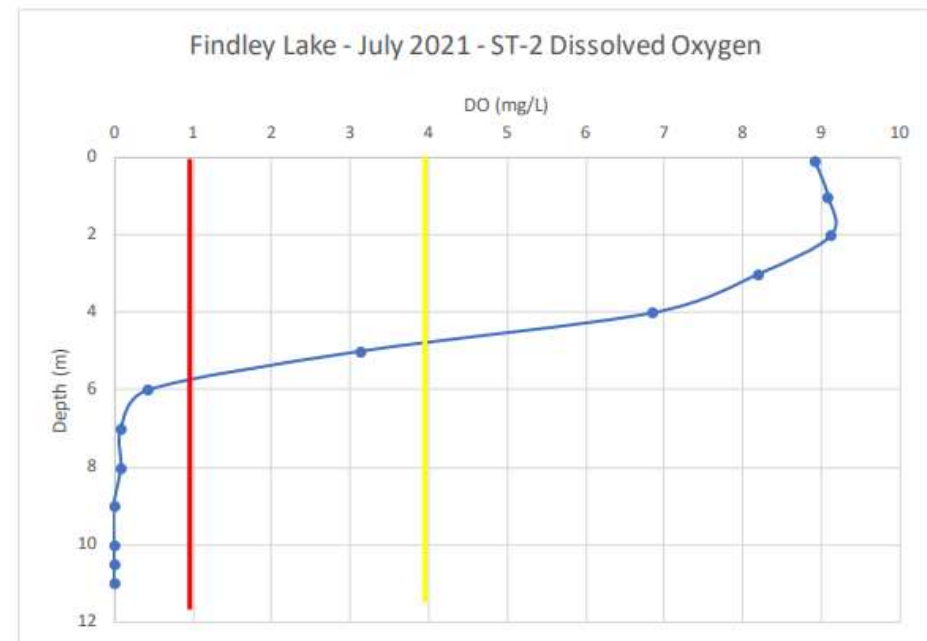
Post - August 31, 2023 – B

Q: Why do we need to fix the internal loading of P in Findley Lake ?

A: Internal loading is 35% of Findley Lake's phosphorus problem. The main cause is the lack of oxygen in water deeper than 6 meters. This lack of oxygen triggers the release of nutrients and metals from the sediment on the floor of the lake, essentially serving as an internal pump of phosphorus which fuels algal growth during the summer months. This can be minimized by implementing aeration/ mixing, nutrient inactivation (i.e., Alum addition) and/or by dredging deeper portions of the lake.

BUT, we also do need to note that the phosphorus got into the sediment initially from an external source. #VOTEYES
#FLSEWERPROJECT

Link: [https://findleylakewf.org/images/uploads/files/2021-12-Lake Evaluation and Recommendations Princeton Hydro.pdf](https://findleylakewf.org/images/uploads/files/2021-12-Lake%20Evaluation%20and%20Recommendations%20Princeton%20Hydro.pdf)



Post – September 5, 2023 – A

Q: What are the external loading sources of phosphorous in Findley Lake?

A: External loading is 65% of Findley Lake’s phosphorus problem. This is mainly caused by septic systems (which is 45% of that), cropland runoff (35%) and groundwater from natural sources and developed land (12%). Best practices to control cropland runoff from the most significant farm in the watershed are already in place, so deleting the septic system source is the only way to ever get to the target load of 242 lbs/yr of Phosphorus.

Here is a report prepared for the U.S. EPA and New York DEC showing the various sources of external loading.
#VOTEYES #FLSEWERPROJECT

Link:

https://www.findleylakewf.org/images/uploads/files/Findley_2021.pdf

Table 6. Total Annual Phosphorus Load Allocations for Findley Lake¹

Source	Total Phosphorus Load (lbs/yr)			% Reduction
	Current	Allocated	Reduction	
Agriculture	392	114	278	71%
Developed Land*	46	28	18	40%
Septic Systems	425	0	425	100%
Forest, Wetland, Stream Bank, and Natural Background	76	76	0	0%
LOAD ALLOCATION	939	218	721	77%
Point Sources	0	0	0	0%
WASTELOAD ALLOCATION	0	0	0	0%
LA + WLA	939	218	721	77%
Margin of Safety	---	24	--	---
TOTAL	939	242	721	77%

1 - Note: The values reported in Table 6 are the annually integrated values. The daily equivalent values are provided in Appendix C.

* Includes phosphorus transported through surface runoff and subsurface (groundwater)

Post – September 5, 2023 – B

Q. How do we address external loading?

There are many ways, but to eliminate the biggest external source of phosphorus we have to say yes to the sewer project.

Part of a comprehensive plan...There are 3 ongoing projects for the Town to determine the feasibility and effectiveness of other control measures, both addressing internal loading (in-waterbody control of nutrients), and external loading (stormwater retrofits and stream culvert repair and replacement). But we'll never achieve improved water quality over the long term without implementing a sewer system – no matter what else we do. #VOTEYES #FLSEWERPROJECT



Post – September 7, 2023

Q: Why do we have to address both internal loading and external loading at Findley Lake?

A: Both are continually feeding the phosphorous problem in Findley Lake. By implementing only solutions to solve internal loading we could significantly reduce the amount of phosphorus released during the summer, but it would do nothing about the estimated 425 lbs. of phosphorus entering the lake from septic systems each year. By implementing only solutions to solve external loading we would do nothing about the 498 lbs. of phosphorus being released from the sediment each year. By addressing both, the quality of Findley Lake will be much improved for generations to come.

#VOTEYES #FLSEWERPROJECT



Post – September 11, 2023 – A

Q: Have you read the reports addressing both internal loading and external loading at Findley Lake?

A: There is a lot of great information in these reports outlining the various sources for internal loading and external loading of phosphorus into Findley Lake. Here are the reports and a summary of each. #VOTEYES #FLSEWERPROJECT



Post – September 11, 2023 – B

There is a lot of talk about reports. Have you seen them?

There is a report by Princeton Hydro that addresses our internal loading problem and a Total Maximum Daily Load (TMDL) report that outlines the external loading sources of phosphorus into our lake. The TMDL report sets a target maximum load for P from external sources and individual targets and reductions for each source. The reduction target for septic systems is 100% - elimination. We can't reach the TMDL for the lake from external sources without a sewer system. Here are the reports and a summary of each. I highly recommend the read! #VOTEYES #FLSEWERPROJECT



Post – September 14, 2023

Q: Why must we implement the new sewer system now?

A: A sewer system is only the first step in a comprehensive plan for long-term water quality improvement that will include other external controls and internal controls. One huge incentive that the DEC has to offer is matching grant money for the other projects. But... The New York DEC has made it clear in an email to us that scoring on grant applications for other projects depends on going forward with sewers now. In their words: “There needs to be a strong demonstration that landside sources of phosphorus (like from septic) are controlled before DEC will fund any type of in-waterbody practices.” We ask for a “Yes” vote. Without it, we’ll likely need to self-fund all future projects. #VOTEYES #FLSEWERPROJECT

“There needs to be a strong demonstration that landside sources of phosphorus (like from septic) are controlled before DEC will fund any type of in-waterbody practices.”

Conclusion: Sewers are Crucial for Long-Term Water Quality of Findley Lake

We have significant and ongoing impairment of Findley Lake's water quality.

The TMDL and Princeton Hydro reports show that both internal loading and external loading are continually feeding the phosphorous problem in Findley Lake that is resulting in excessive weed growth and algal blooms. Our use of Findley Lake is already impaired and without significant changes, it will continue to get worse. Internal loading produces about 498 lbs./yr of P releasing from bottom sediments but we need to note that the P got into the sediment initially from an external source. External loading is the cause of 939 lbs./yr of P entering the lake with the septic systems being the largest chunk of that – currently at 425 lbs./yr.

For long-term improvement of the lake water quality, we need comprehensive solutions that address both internal loading and external loading.

Internal controls such as aeration, alum (if allowed by NY DEC), dredging, and continued use of weed harvesting to remove P within the biomass from the watershed can address a significant part of the problem. But, NY DEC grant funding for these options will only be considered after we address external sources (primarily septic systems). And if we only address the internal sources the lake will never get below the TMDL for P, which means we will forever have excessive weed growth and algae issues.

Examples of key external source controls include: erosion and sediment control using stormwater retention ponds, best management practices for agricultural runoff (note that the largest farm in our watershed already employs management practices that are monitored by the state – so not much more is likely to be gained here), and sewers.

So, what if we eliminated all internal sources and external sources except septic systems? We would still have 425 lbs./yr of P entering the lake from septic systems, which is 175% of the 242 lbs./yr limit to prevent ongoing degradation of the lake. ***The proposed sewer system is a required next step of a comprehensive solution if we hope to have significantly better water quality in Findley Lake for generations to come.***