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Lake and watershed  
 management studies,  
 environmental planning,  
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## WATER QUALITY INVESTIGATORS

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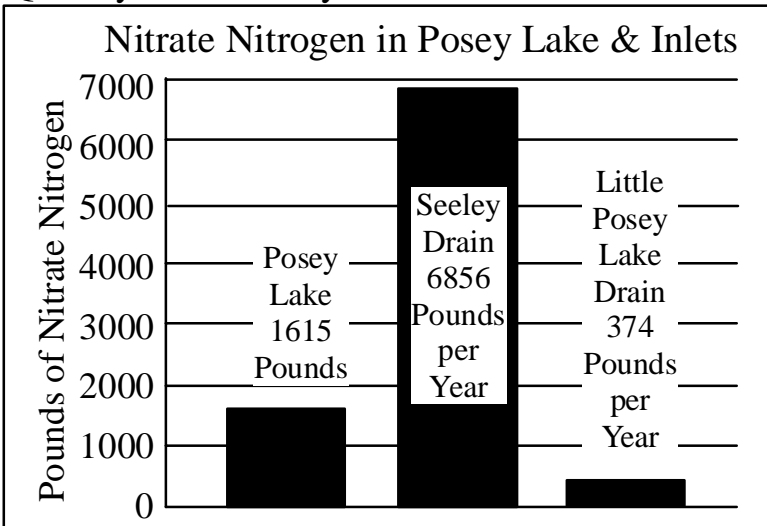


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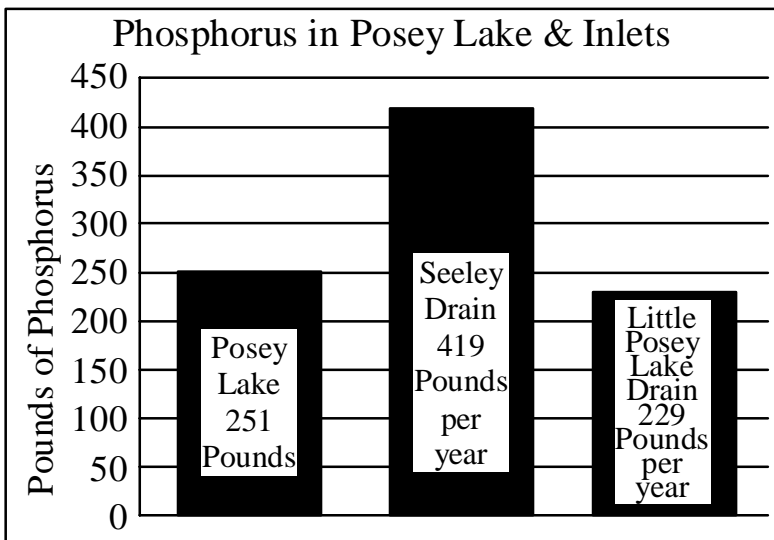
**JUNE 2006**

### QUESTIONS AND ANSWERS ABOUT POSEY LAKE

Q. Why divert Seeley Drain water to the outlet?

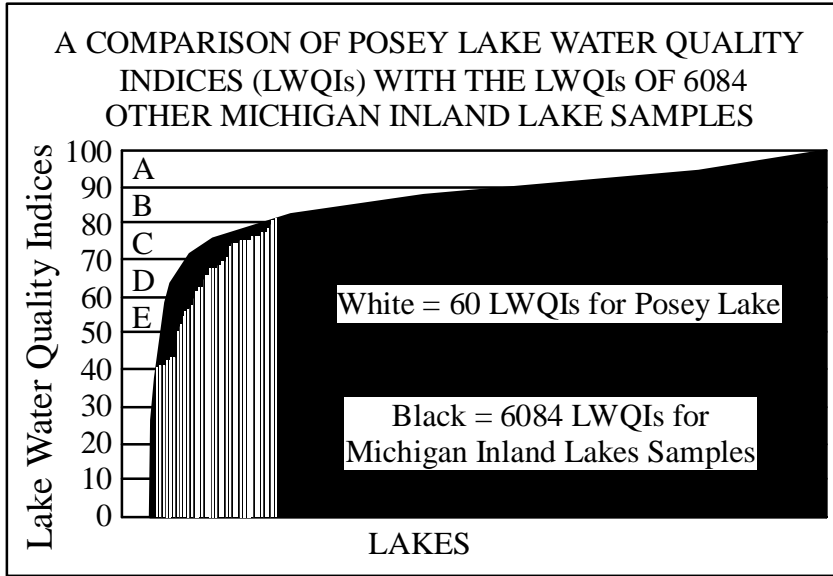


A. There are two inlets which flow into Posey Lake. Based on numerous samples collected over several years by Jack Harbaugh, Howard Yennor and WQI, the nitrogen and phosphorus levels in Seeley Drain are considerably higher than in Little Posey Lake drain.



The two graphs show the average number of pounds of nitrate nitrogen and phosphorus in Posey Lake, and the average number of pounds of nitrate nitrogen and phosphorus delivered

to Posey Lake by Seeley Drain and Little Posey Lake drain each year. The nutrients delivered to Posey Lake cause the poor water quality conditions in the lake.

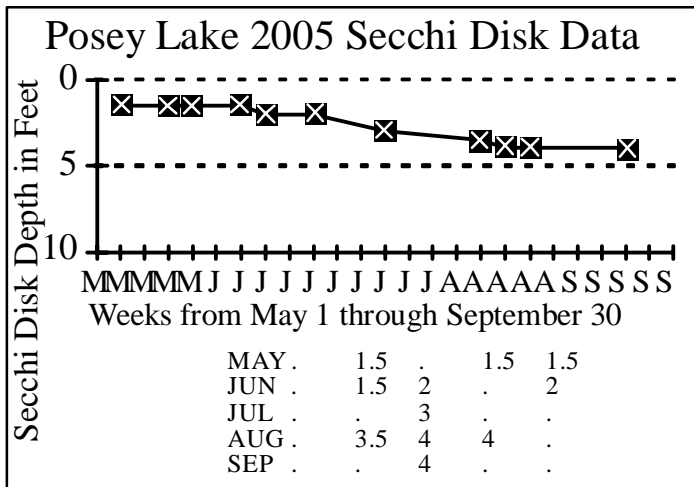


The graph shows the Lake Water Quality Indices for 60 Posey Lake samples (the gray-white bars) compared to the LWQIs for over 6000 Michigan inland lake samples (the black bars). The graph shows the Posey Lake LWQIs are

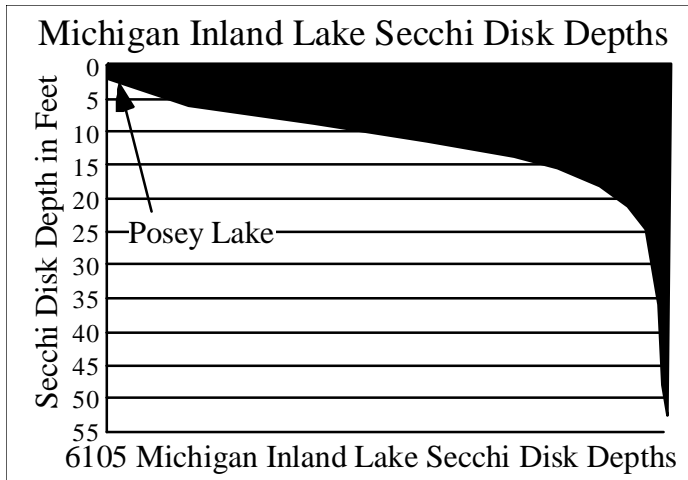
among the lowest of all the lakes sampled by WQI over the years.

The cause of the poor water quality are the nutrients in the lake which cause algal blooms (high chlorophyll a concentrations) cloudy water (shallow Secchi disk readings) and supersaturated dissolved oxygen conditions.

One of the measures of water quality is water clarity, measured by a Secchi disk, an 8-inch diameter black and white disk that is lowered into the lake until it is no longer visible.



The graph shows the Secchi disk (water clarity) readings for Posey Lake from May through September 2005. They range from 1.5 feet to 4 feet. These are very shallow water clarity readings for a Michigan inland lake.



The graph shows over 6000 Secchi disk readings on Michigan inland lakes, with the position of Posey Lake noted on that graph. As you can see, it is very near the lowest end of the data. This is an indication of just how poor the water quality of the lake really is compared to other lakes in Michigan.

Q. Will removing the Seeley Drain water from Posey Lake affect the level of the lake?

A. Watersheds are areas of land that provide water for a lake. Most inland lakes have watersheds three to eight times larger than the lake. The 4755-acre watershed for Posey Lake is more than 28 times larger than the lake. Of that 4755-acre watershed, Seeley Drain makes up 2400 acres. So if the Seeley Drain is diverted, 2400 of the 4755 acres will be lost. However the total watershed for Posey Lake will still be large, 2355 acres, which is still more than 15 times larger than the lake.

Given other Michigan inland lakes maintain their levels with watersheds 3 to eight times larger than the lake, a lake with a watershed more than 15 times the size of the lake should have absolutely no problem maintaining the lake level.

Plus the 24-inch diversion pipe will pass all regular stream flows, plus the first flush of large storms (where all the pollutants are). Any remaining water from large (100-year+) storms will over flow into the lake. This water is generally low in nutrients.

Q. How much of an improvement in water quality can we expect?

A. I would expect the Secchi disk readings to get much better, doubling, tripling or even increasing as much as four times. And I would expect the Lake Water Quality Indices to be in the 70s and 80s (C to B) rather than as they are now being as low as in the 40s (E). These changes should occur because of reduced nutrients which will cause lower chlorophyll a

concentrations (algae) and deeper Secchi disk readings (increased water clarity).

Q. Is there anything else we should know?

A. If the water clears up, aquatic plants will probably grow in the shallow areas of Posey Lake. That should provide better and more diverse fish habitat. Aquatic plants are generally a benefit in terms of the ecology of a lake.

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