

Rice Creek Watershed District



March 1, 2002

Dear Sir or Madam:

Peltier Lake is a hypereutrophic lake located in the headwater region of Rice Creek. This lake has two different distinct water quality areas. The area to the south of the island is largely shallow water (mean depth 7 feet) with very few rooted aquatic macrophytes. This portion of the lake is very high in nutrients and experiences excessive growth of phytoplankton (algae). The growth of algae limits light penetration into the water column, therefore limiting the available habitat for rooted macrophyte growth. Large algal growths can also contribute to low periods of dissolved oxygen during low light conditions. This is caused by plant respiration or decomposition of the algal material.

The area north of the island has a different water quality characteristic. This area of the lake is generally 3 to 5 feet deep and has extensive rooted aquatic macrophyte coverage (mainly coontail). The density of rooted macrophytes helps consolidate the lake bottom sediments and also consumes available nutrients, therefore leaving less available nutrients for algal uptake. The water clarity in the northern portion of Peltier Lake is generally much clearer than in the southern portion. During much of the growing season (May through September) the rooted macrophytes would consume nutrients from both the water column and also have some nutrient uptake through the root systems. Removal of aquatic macrophytes would have some impact on the water quality of the north basin. Some possible impacts would be redistribution of bottom sediments, and introduction of additional nutrients to the water column. Without adequate plant material to buffer wave action caused by boating and wind, bottom sediments would suspend and be transported either into the south basin or into the water column of the north basin. This action could increase the nutrient load to the water column, decrease water clarity, cause stress on resident fish populations, and potentially give algae the competitive edge to expand their range and have even more severe blooms.

Rooted aquatic macrophytes benefit the water quality of lakes. There is evidence that healthy aquatic macrophytes do not excrete large quantities of nutrients into the water column during active growing periods (Barko and Smart, 1980). They do tend to concentrate sediment-supplied nutrients in their tissue. These nutrients are partially

recycled to the lake when the plant dies, decays, or goes into senescence. Management of extensive aquatic macrophyte growth may be beneficial to late season nutrient release. Generally we are not concerned with nutrient release over the late fall and winter months because algae blooms are dependant on water temperature at this time.

The north basin also serves another important function to the lake ecosystem. This area is probably acting as a spawning area for many fish species and also as a nursery area for young fish. Many species of freshwater fish require macrophytes to lay eggs on. This keeps the fish eggs out of the anoxic sediments and allows oxygenated water to freely pass by the eggs. Northern pike spawning is very dependant on some type of plant growth to adhere their eggs to.

High speed boating in this area may cause sediment resuspension, nutrient release from the sediments, and severe damage to the existing aquatic macrophyte community. All of the above mentioned items could be detrimental to the overall water quality and biological health of Peltier Lake. I feel that the area north of the island on Peltier Lake deserves some special protection.

Sincerely,

Charles Johnson
Aquatic Biologist

CC: Wayne LeBlanc
City of Centerille
City of Lino Lakes
Correspondence
Peltier Lake File