Lake Facts

Location: Lake Ripley is located in western Jefferson County, in the Town of Oakland, and just east of the Village of Cambridge.

Lake Type: Lake Ripley is a glacial kettle lake. The lake receives most of its water as surface drainage from the watershed. It has one inlet at its southeast corner, and one outlet at its northwest corner. Lake Ripley is further characterized as a ***marl*** lake with high ***alkalinity***. Marl is a white to gray accumulation on the lake bottom caused by precipitation of calcium carbonate. This substance is known to bind to ***phosphorus***—a nutrient that promotes algae growth—resulting in less algae and improved water clarity. Alkalinity is a measure of the amount of carbonates, bicarbonates and hydroxide present in the water. Alkaline lakes maintain a higher pH, and are less susceptible to the effects of acid rain.

Lake Morphometry: The ***morphometry*** of Lake Ripley is simply its physical dimensions. It may be described in terms of *lake volume* (7,561 acre-feet of water), *surface area* (418 acres), *shoreline length* (4.85 miles), *mean depth* (18 feet), and *maximum depth* (44 feet). Maximum depth is found near the lake's center. However, more than a third of the lake is considered very shallow with less than 5-ft. water depths. These shallow-water areas generally offer the most diverse aquatic habitat, but are shown to be the most vulnerable to boating impacts.

Watershed: Lake Ripley's ***watershed***, or drainage basin, is the adjacent land area that drains surface water to the lake. This land area lies mostly east of Lake Ripley, and extends more than 2.5 miles from the lake in that direction. The watershed area is about 8 square miles, or 5,100 acres in size. This equates to a watershed-to-lake surface area ratio of 12:1. Lakes with ratios greater than 10:1 generally exhibit water quality problems. This is because larger watersheds are capable of delivering a greater quantity of pollutants to the lake as stormwater runoff. Upstream wetlands and vegetated buffers can help protect water quality by filtering these pollutants before they reach the lake. Lake Ripley eventually drains to Koshkonong Creek, which is part of the Lower Rock River Basin.

Water Budget: Lake Ripley receives most of its water as stream drainage from the outlying watershed. However, groundwater accounts for as much as 30% of the water supply to the lake. This large groundwater contribution is important in maintaining good water quality. Unfortunately, increased development pressure around the lake threatens the quality and quantity of this resource. The proliferation of hard surfaces (i.e., roofs, driveways, patios, roads, etc.) can prevent rain water from naturally infiltrating the soil and replenishing the groundwater supply.

Lake Stratification: Lake Ripley is ***dimictic***, meaning "twice mixing." The lake completely mixes in the spring and fall (known as spring and fall ***turnover***) as a result of seasonal warming and cooling of the water column. Under stable weather conditions, the lake produces horizontal water layers of varying temperatures and densities (called ***thermal stratification***). This phenomenon occurs during the summer and winter months. Although water freezes at 32^{o} F, it attains its greatest density at about 39^{o} F. This is why ice forms at the lake's surface.

Dissolved Oxygen: Portions of Lake Ripley become oxygen-limited, or ***anoxic***, whenever respiration exceeds photosynthesis—that is, when more oxygen is consumed than is produced by green plants. This is especially evident in the ***hypolimnion***—a deep layer of colder water that forms during summer stratification. The hypolimnion is the coolest, densest and most light-limited water layer that forms in depths between 23 and 44 feet in Lake Ripley. As a result, oxygen-dependent organisms must retreat to a more hospitable environment or die. Anoxia can also cause phosphorus that is bound to sediment on the lake bottom to migrate into the water column, eventually fueling algae blooms that thrive on this nutrient.

Pollution Sources: Lakes that receive excessive nutrients, such as phosphorus and nitrogen, are most likely to be plagued with algae blooms, abundant weed growth and poor water clarity. Lake Ripley receives most of its "problem" nutrients from sediment pollution that gets carried to the lake as stormwater runoff from the watershed (called ***non-point source pollution***). The erosion of agricultural drainage ditches, construction sites, shorelines and farmland all contribute sediment and nutrients to Lake Ripley. Lawn and farm fertilizers, pesticides, leaves, grass clippings, and pet waste are other common sources of non-point source pollution.

Eutrophication: ***Eutrophication*** is the premature and accelerated aging of a lake caused by excessive nutrient-enrichment and associated plant and algae growth (called ***primary productivity***). The extent of this process is reflected in a lake's trophic classification: oligotrophic, mesotrophic or eutrophic. ***Oligotrophic*** lakes have the best water clarity, lowest nutrient content, and least amount of plant/algae growth. ***Eutrophic*** lakes have the poorest water clarity, highest nutrient content, and most abundant plant/algae growth. Lake Ripley fluctuates between mesotrophic and eutrophic, meaning it ranges from moderately to highly productive and nutrient-rich.

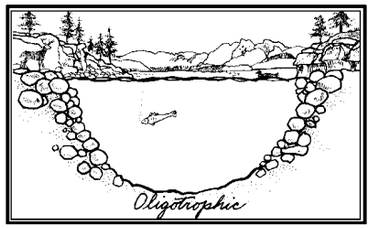
Fish & Wildlife: Lake Ripley is home to a variety of plants and animals. In fact, 29 aquatic plant species and 34 fish species have been identified. Some of these species are listed as endangered and threatened resources. Examples include the pugnose shiner, blandings turtle, giant carrion beetle, least darter, lake chubsucker and cuckoo flower. Many of these species are threatened by non-point source pollution, loss of natural habitat, and competition from non-native (***exotic***) species.

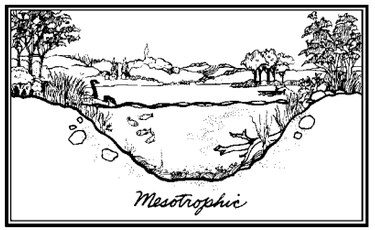
Land Use: Approximately 70% of the land area in the watershed is in agriculture; 15% is residential; and 15% is wetland, woodland and open water. Residential land uses are expanding, and are mostly located within one-half mile of the lake. Pre-settlement, wetlands represented a much greater percentage of the total watershed area. Less than 540 of the original 1,500 wetland acres remain. Of the few remaining wetlands, many are severely degraded from years of filling, ditching, and draining.

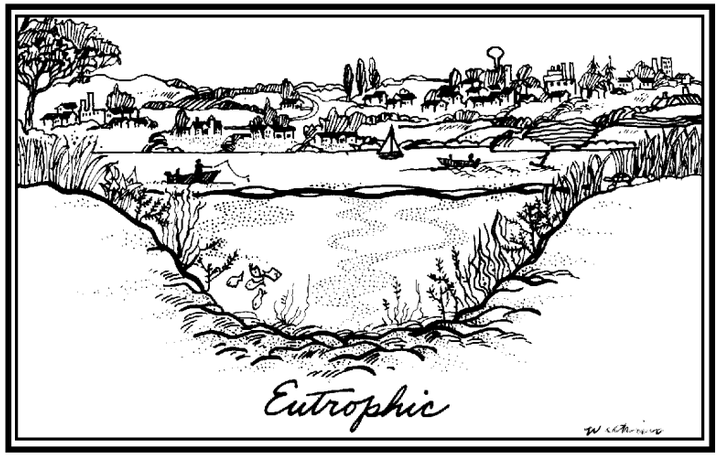
Shoreline Development: The Lake Ripley shoreline is considered heavily developed, with most development concentrated within about a half-mile band around the lake. Population varies on both a weekly and seasonal basis due to a large number of part-time residents.

Water & Sewer: Drinking water around Lake Ripley is obtained from private wells. A municipal wastewater treatment plant manages most of the area's septic waste.

Fishery: Lake Ripley's sport fishery consists of largemouth and smallmouth bass, walleye, northern pike, yellow perch, bluegill, black crappie, and pumpkinseed sunfish. Other species previously found in the lake include white bass, bullhead, carp, bowfin, lake chubsucker, bluntnose minnow, brook silverside, longnose gar, white sucker, central mudminnow, johnny darter, burbot, golden shiner, green sunfish, rock bass and grass pickeral. The state record largemouth bass was caught on Lake Ripley in 1940 weighing 11 lbs., 3 oz.







The Big Picture

The Threats…

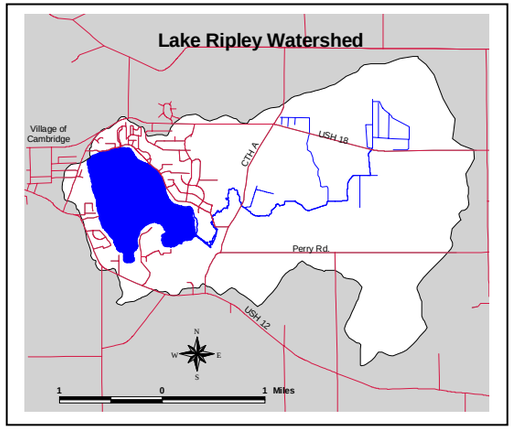
- ✓ Non-point source pollution
- ✓ Poor land-use decisions
- ✓ Loss of wetlands
- ✓ Soil erosion
- ✓ Contaminated runoff
- ✓ Lake-use & development pressure
- ✓ Destruction of fish & wildlife habitat
- ✓ Non-native, invasive species
- ✓ Recreational conflicts
- ✓ Lack of public awareness

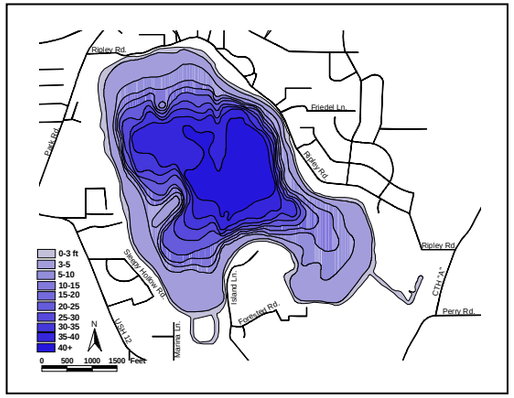
The Consequences…

- ✓ Degraded water quality
- ✓ Algae blooms
- ✓ Excessive weed growth
- ✓ Poor fishing
- ✓ Loss of natural scenic beauty
- ✓ Less diverse wildlife
- ✓ Destroyed aquatic habitat
- ✓ Reduced recreational enjoyment
- ✓ Reduced property values
- ✓ Increased cost for lake management

Things You Can Do…

- ✓ Plant a native tree, shrub or perennial garden
- ✓ Protect exposed soil to prevent erosion
- ✓ Reduce the use of fertilizers & pesticides
- ✓ Only use phosphorus-free fertilizers
- ✓ Plant a “rain garden” to capture runoff
- ✓ Keep soil, leaves & grass out of the lake
- ✓ Burn yard waste away from the lake
- ✓ Pick up litter
- ✓ Practice catch-and-release when fishing
- ✓ Respect wildlife & your fellow lake users
- ✓ Keep shorelines natural and well vegetated
- ✓ Help prevent the spread of “exotic” species
- ✓ Comply with all rules & regulations
- ✓ Properly dispose of harmful chemicals
- ✓ Become better educated on lake issues
- ✓ Support lake-management efforts
- ✓ Participate in local decision making
- ✓ Learn to share the lake with others
- ✓ Report illegal activities to authorities
- ✓ Recognize the impacts of your actions
- ✓ Travel at slow-no-wake in shallow water
- ✓ Promote environmentally-friendly land uses
- ✓ Educate your friends & neighbors
- ✓ Help protect wetlands & natural areas





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Lake Ripley

PRIORITY LAKE PROJECT

RESOURCE GUIDE