

# Lakes and water quality

BY STEPHEN MONTGOMERY

**L**ake and waterway management is a diverse and ever-changing field. Recently, attention has been focused on water quality and nutrient levels in surface water supplies. Government and environmental groups are examining water quality, and developing new policy and monitoring practices nationwide. Reporting is not only designed to inform on how water is managed, but to give lakeside residents an idea of aquatic conditions and the status of lakes. The information provided by basic water chemistry and microbiology analysis helps to do this by offering a better understanding of what's going on in a particular body of water.

Lake management companies are in the process of improving detailed programs for water quality analysis. The programs include water sampling at least four times a year, regular reporting and interpretation of test results, and a compiled annual history of lake parameters.

## Important parameters to be tested

**Total nitrogen and phosphorous:** Nitrogen and phosphorous are the two key nutrients in a lake's productivity and diversity. Both are necessary for aquatic plants and algae to grow. The plant and algae populations are a lake's source of oxygen. Insufficient levels of nitrogen and phosphorous can cause a decline in plant (and eventually aquatic animal) populations. Too much nitrogen and phosphorous is linked to algae blooms and excessive aquatic weed growth,

## Dissolved oxygen:

Dissolved oxygen is necessary to sustain any kind of fish or aquatic animal population. The level of oxygen in the water directly relates to the population size the lake can handle. Insufficient dissolved oxygen levels is the most frequent cause of fish kills,

## pH

The pH of a lake, in simple terms, is the acidity of the water. The pH of a lake can determine how fast certain nutrients and natural chemicals will cycle through it. In this way the pH has a great deal of influence over a lake's biology. Water that becomes too acidic, or not acidic enough has drastic effects on both plant and animal populations.

## Fecal and total coliform:

Coliforms are nonpathogenic bacteria that can be used as indicators of potentially dangerous substances. High levels of these harmless bacteria can signal the presence or inflow of contaminants such as sewage and animal waste. This element of the water test is extremely important if the lake is used for swimming or fishing (with intent to consume the catch)

## Clarity:

Water clarity beyond being an aesthetic factor is also an indicator of excessive plankton and free floating algae. Such excessive levels can unbalance the lake's other water quality parameters and lead to additional problems with nutrient levels and beneficial plants.

By supplementing lake management programs with water quality testing, property managers will be able to better understand the overall health and condition of lakes. Programs will also assist management in better tending to your water management needs. The data provided by enhanced quality testing would help to prevent certain management issues that may arise and more efficiently deal with existing problems. Additionally, lake technicians can employ management practices and offer information to help regulate water quality. The introduction of beneficial plants can help to control excessive nutrients such as nitrogen and phosphorous. The stocking of appropriate fish populations to restore biologic balance and food chains is desirable. Installation of aerators can also be employed to increase dissolved oxygen levels and to help disperse excessive algae populations.

Sufficient and appropriate information is crucial if property managers are to make important decisions concerning waterway management. A detailed water quality program is a very useful tool and can make the task of lake and water body maintenance less difficult.

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■ Stephen Montgomery is with Allstate Resource Management in Davie, Florida.