NanoOxygen Systems
1190 Clements Ferry Rd, STE-D
Charleston, SC 29492

Case Study: Atlanta Golf Course Implements Biological/Nanobubble Solution for Algae

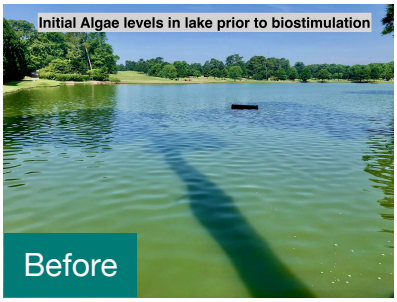
Client: Atlanta Golf Course
Type: Biological/Nanobubble Algae Control
Product: Byo-Gon PX-109, ByoClear Microbial Blend
Equipment: Moleaer Optimus 1000GPM
Project Start: June 2019
Benefits: Eliminated need for chemical treatments, Increased DO to bottom of lake, Successful reduction in algae and odor.
Lake size: 22 acres, 65 million gallons

An Atlanta, Georgia, USA golf course, which serves as a host to PGA Championships, was experiencing significant algae blooms in their main lake which serves as the primary irrigation water source for the course. This lake had been impacted by a major sewer spill from the City of Atlanta two years previous and was suffering from high Biological Oxygen Demand (BOD) in the lake and excessive levels of nitrogen and phosphorus nutrients from the wastewater and from golf course runoff into the lake. These organic nutrients triggered algae growth in the lake that caused an unsightly appearance and a foul smell, prompting course management to implement chemical control methods to address the problem.


Algae Bloom Caused by Raw Sewage Spill into Lake

One chemical control method typically used for algae control can increase copper levels in the soil on the golf course and impede plant growth. The concern for irrigation water quality control led management to pursue a more natural and sustainable solution to the problem.

In June, 2019 the University of Georgia testing of the lake water found high levels of cyanobacteria in the lake which also contributed to blue green algae levels in the turf. A 100% natural, organic biostimulant, Byo-Gon PX-109 was directly applied to the lake, along with a concentrated mix of natural bacillus bacteria to increase aerobic bacteria levels for nutrient uptake and reduced algae levels. A second treatment was applied in late July 2019 after confirming algae levels were decreasing. Foul odors began to subside around the lake after the second Byo-Gon PX-109 application.



The second phase of the project involved installing over 1000 ft of discharge piping on the lake bottom and installing a Moleaer Optimus 1000 unit to supply nanobubble oxygen to supply needed dissolved oxygen (DO) for sustained biological nutrient and BOD removal. By pumping the nanobubble water to the upper portion of the lake, water circulation was improved. DO levels in the water column prior to startup of the Optimus 1000 were 0 ppm below 3 ft and after two weeks of operation, DO levels in the lake bottom were above 1.5 ppm and continued to increase to an average of 4.0 ppm.

Moleaer's gas-injection technology provides trillions of neutrally buoyant, negatively charged nanobubbles that are approximately 100nm in size and stay suspended in the water column until used by the aerobic bacteria. This enables nanobubbles to transfer oxygen with greater than 90% efficiency and provide a distinct advantage over conventional aerators and fountains used in golf course ponds that rarely exceed 30% efficiency. By increasing biological activity in the water, and then supplying the needed oxygen to ensure bacterial survival, the sustainable solution has proven successful for this course.