AQUATIC CONTROL TECHNOLOGY, INC.
POND AND LAKE MANAGEMENT SPECIALISTS

March 1, 2011

Pembroke Watershed Association
c/o Mr. Ray Holman, President
P.O. Box 368
Pembroke, MA 02359

Re: 2010 Project Completion Report

Dear Ray:

This report provides an overview and summary of the past year's Aquatic Management Program at Furnace Pond. A chronology of the 2010 Management Program activities follows:

- *Issuance of License to Apply Chemicals permit from MA DEP ..... June 10th*
- *Algal Sample Collection by the Pembroke Watershed Association..... weekly May 25th -August 30th*
- *Initial Algaecide Treatment..... June 22nd*
- *Follow-up Algaecide Treatment..... August 9th*

Algae Monitoring Program:
Weekly water samples were collected by the Pembroke Watershed Association from the middle of Furnace Pond, between late-May and late August. The collected samples were shipped to Aquatic Control for dominant algae species identification and enumeration. Fresh samples were generally examined within a day or two of receipt and then preserved for further analyses at a later date.

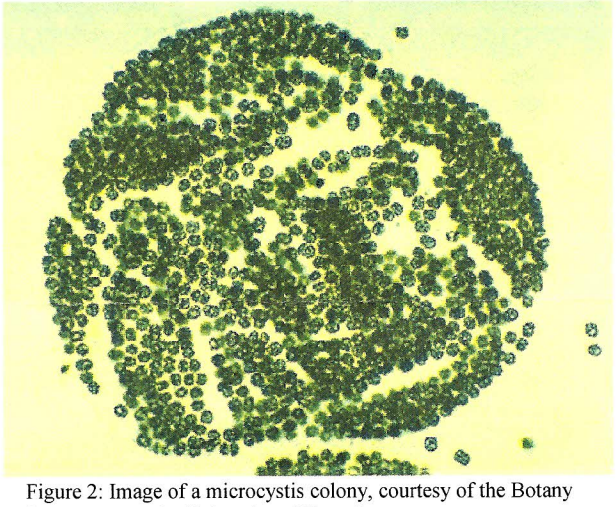

Figure 2: Image of a microcystis colony, courtesy of the Botany Department at the University of Hawaii

Among the algal groups represented in the samples collected Chlorophytes (green algae) were generally the most prevalent with cell densities reaching nearly 70,000 cells/ml in late May and again in late July. Cyanophytes (blue-green algae) and bacillariophytes (diatoms) followed chlorophytes as prevalent taxonomic groups in most samples. Some cyanophytes or blue-green algae species are of particular importance to management as members of this genus have the ability to produce toxins that can be harmful to the pond ecology and human health. The only blue-green algae genus encountered in Furnace Pond in 2010 was *Microcystis*. Many *Microcystis* species produce a toxin appropriately named microcystin. The acute effects of exposure to this toxin can include skin and mucous membrane irritation, nausea, vomiting, diarrhea and severe thirst. The extent of the effects experienced depends on a number of factors including toxin concentration, exposure time, number of exposures and subject sensitivity. No instances of microcystin exposure were reported for Furnace Pond in 2010. As a result of the management program we were able to keep the *Microcystis* and all other blue-green algae species at relatively low densities throughout the growing season. In fact, the total blue-green algae density never rose above about 12,000 cells/ml during the 2010 season, which is significantly less than the near