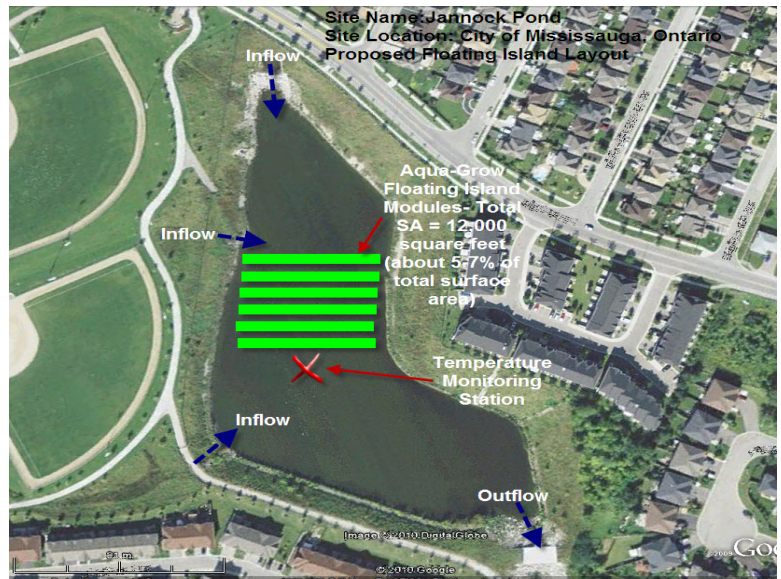


GRADUATE RESEARCH POSITION AVAILABLE

- Working in collaboration with the Centre for Alternative Wastewater Treatment (CAWT), the City of Kawartha Lakes and C&M Aquatic Management Group Ltd., we are seeking a new M.A.Sc. candidate
- Project title: *Floating Wetlands to Improve Stormwater Effluent at Sensitive Receptor Outfalls*
- Project Sponsor: *Ontario Ministry of Environment Showcasing Water Innovation*
- The project will examine an innovative phytotechnological approach to source water protection in urbanized and semi-urbanized watersheds in and around the City of Kawartha Lakes, ON
- Completion of the project will see the installation and demonstration of floating wetland technology to improve stormwater effluent quality at sensitive receptor outfalls
- This project will also provide a great opportunity to engage the public with government through education and outreach, by bringing the issue of stormwater and diffuse pollution to the forefront and educating the public on what happens to stormwater once it enters the drainage system, and how the adverse effects of this diffuse pollution source can be mitigated in a cost effective and environmentally sustainable way
- For more information and to apply for this position, please contact Prof. Bruce Anderson, Dept. of Civil Engineering, Ellis Hall Rm. 229A, email anderson@civil.queensu.ca



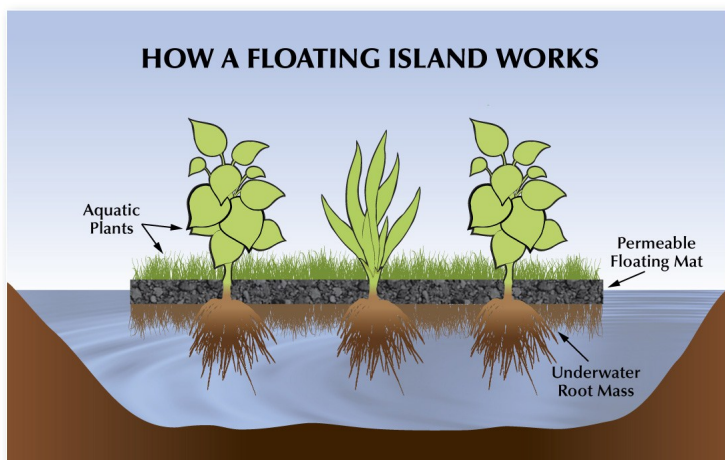
Floating Islands



Shown: Landscaped Floating Island

Floating Islands (also known as **Floating Treatment Wetlands**) represent an elegantly simple way to address today's complex water quality issues.

The technology consists of a floating mat or mesh, onto which plants are established. The mat or mesh must be porous enough to allow the roots of the plants to penetrate into the water column below, permitting the plants to be grown hydroponically, sequestering the nutrients they need for



growth such as phosphorous and/or nitrogen from the water itself. The resulting competition for nutrients reduces the growth of non-desirable species such as algae. Floating islands also block sunlight from penetrating into the pond leading to a further reduction in the growth rates of algae.

The extensive root mass which develops below the mat provides an excellent refuge for aquatic life (such as small fish), as it simultaneously offers both food (in the form of invertebrates such as insect larvae) and cover.

The root mass and its associated biofilm also assist in tying up and removing tiny suspended particles in the water column, enhancing the water clarity of the pond. The plant material can even be harvested from the islands as an effective means of mining either nutrients or contaminants from aquatic ecosystems.

Floating Islands

Applications for floating treatment wetland technologies are varied and include:

- Improvement of water quality through reduction of nutrients
- Mitigation of thermal impacts in storm water ponds
- Improved hydraulics and sedimentation in storm water ponds
- Harvesting nutrients or contaminants (phytoremediation)
- Wildlife habitat creation/restoration
- Wetland restoration
- Improved aesthetics & landscaping
- Wind and wave erosion mitigation

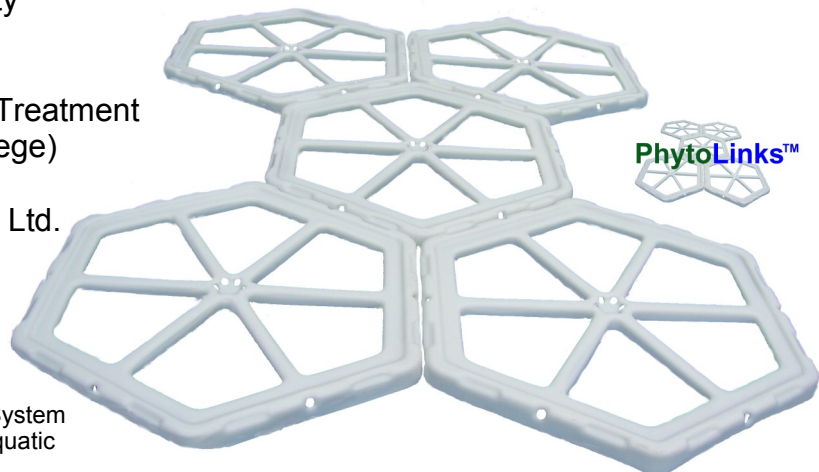
At **C&M** we are committed to improving our understanding of how this technology works and how it can be optimized for future applications. C&M is actively engaged in collaborative scientific research projects on various abilities and applications of floating island technology.

Our floating island research partners and advisors include:

- Toronto & Region Conservation Authority
- Credit Valley Conservation Authority
- Trent University
- Queens University
- Centre for Alternative Wastewater Treatment (based at Sir Sanford Fleming College)
- Environment Canada
- Greenland International Consulting Ltd.



Shown: Newly planted floating Island



Shown: PhytoLinks™ System
Developed by C&M Aquatic

C&M has worked with a diverse range of clients on numerous floating islands projects. Some of the clients include:

- City of Toronto
- City of Brampton
- Municipality of Waterloo
- Toronto & Region Conservation Authority
- Credit Valley Conservation Authority

And numerous recreational pond owners.

C&M Floating Islands are also being used in the Oil Sands Mining Region in Fort McMurray Alberta as a means of boosting native wetland plant biodiversity in reclaimed tailings pond sites by:

- Syncrude Canada Ltd.
- Canadian Natural Resources Limited
- Suncor Energy Inc.