



Aquatic Plant Islands

LLPOA Lake Committee - 2023

Aquatic Plant Islands

- In May of 2023, the LLPOA Lake Committee installed four floating Aquatic Plant Islands.
- The 4 x 8 foot islands were placed in North Bay, Firth Canal, South Beach, and the Dam.
- Each island contained 72 aquatic plants on a thick, porous mat.
- The design allows aquatic plants to extend their root systems deep into the lake bed, and consume some of the unwanted nutrients that form the soft “muck” below.
- The combination of aquatic plants, long roots, and thick porous mats can remove up to 67% of Total Nitrogen, 68% of Total Phosphorus, & 75% of TSS - Total Suspended Solids!
- To be most effective, Loch Lomond would need about 40 of these islands for our 75 acre lake. The installation this year is to see their effectiveness and if we want to install more. Another option is to place multiple islands at locations where most filtering is needed.

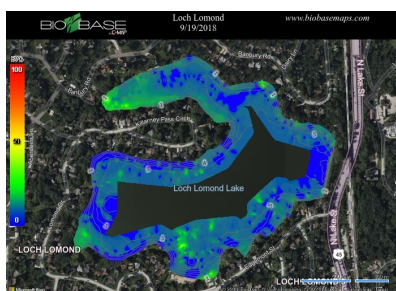
Value of Aquatic Plants

- The value of *Aquatic and Emergent plants* are multiple in a lake or pond.
 - *Directly convert solar energy into stored chemical energy useful for animals.*
 - *Produce the majority of Dissolved Oxygen in water necessary for animals.*
 - *Provide habitats, breeding areas, and hiding places for young animals to survive.*
 - *Stabilize shorelines, prevent wave erosion, and add a natural aesthetic beauty.*
 - *Use excess nutrients like nitrogen and phosphorus, and reduce algae blooms.*

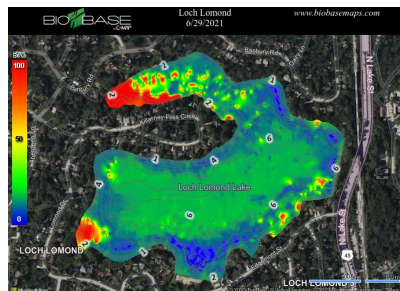
Increased Aquatic Plants 2018 to 2023

- The following maps from Lake County Health Department - Ecological Services, show an increase in aquatic plants across Loch Lomond from 2018, 2021, and 2023.
- **Red Spectrum indicates more plants & Blue Spectrum indicates fewer plants.**
 - *Note: 2021 map with light green in the center of South Bay are not plants.*

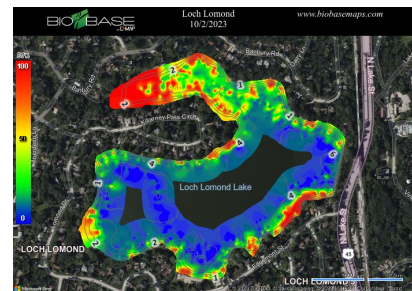
Sep 19, 2018








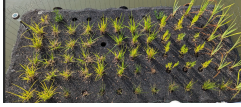










Jun 29, 2021



Oct 2, 2023



[Aquatic Plant Islands Photographs -2023](#)

	North Bay	Firth Canal	South Beach	Dam
June				
July	 			
August				
September				

[Information & Other Resources](#)

- **Midwest Floating Islands** <https://midwestfloatingisland.com/>
- <https://floatingislandswest.com/our-products-biohaven-floating-treatment-wetlands/customized-floating-islands/floating-island-10x10/>
- <https://www.epa.gov/sciencematters/epa-uses-floating-vegetated-islands-remove-excess-nutrients-water>
- **Value of Aquatic Plants:** <https://dnr.illinois.gov/content/dam/soi/en/web/dnr/publications/documents/00000270.pdf>

BIOHAVEN® FLOATING ISLANDS

Stormwater Treatment

BIOHAVEN FLOATING TREATMENT WETLANDS are an innovative tool for treating stormwater in retention ponds. Wet ponds (also called NURP or retention basins) are widely used for stormwater. They typically rely on settling to remove TSS and nutrients. However, *stormwater treatment can be much more effective by adding floating treatment wetlands.*

These proprietary floating wetlands are thick, porous mats which support plants. The plants grow long roots down under the matrix and draw nutrients from the water. However, the key to the success of BioHaven islands is the surface area provided by the matrix and the long roots.

Plant uptake is estimated to only be 5% of the nutrient removal.

STORMWATER
REMOVAL
RATES

CONTAMINANT	REMOVAL RATE
TOTAL NITROGEN	67%
TOTAL PHOSPHORUS	68%
TSS	75%

THE BIOHAVEN ADVANTAGE FOR STORMWATER PONDS

- Attractive retrofit
- Increased surface area for microbes to attach and break down pollutants
- Plant nutrient uptake
- Sediment trapping
- Plants to attract pollinators
- Algae reduction
- Aesthetic value
- Floation adjusts to fluctuations in water levels, improving plant survival
- Less prone to being smothered by sediments (Tanner)

FLOATING WETLANDS HAVE UNMATCHED SURFACE AREA

The matrix is dense and porous with holes which provide an excellent location for biofilms to attach and microbes to colonize. In fact, the BioHaven matrix provides approximately 125 square feet per cubic foot of surface area. This surface area is even larger with the long roots that grow beneath the island.



Native wetland plants flourish and attract pollinators



Treatment Wetland is positioned at the outlet of the stormwater pond to remove TSS and avoid clogging the pump. Water has been reused for 3 years to water ball fields in Minnesota.

GREEN INFRASTRUCTURE TECHNOLOGY

Floating Treatment Wetlands mimic natural floating islands – harnessing natural processes to reduce nutrients and provide wetland habitat.



MIDWEST
FLOATING
ISLAND

Cleaning water nature's way

Midwest Floating Island
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