

## **FWS Project: NY State Parks and Recreation, Rockland Lake Project**

NY State Parks and Recreation has a plan to use floating wetlands for water quality and ecological health in their public waters, so the Rockland Lake project is the start of many more to come in NY. While this project review will focus mostly on Rockland Lake, this application represents approximately 50% or more of our projects to date throughout the eastern US.

Floating Treatment Wetlands are recognized as a Best Management Practice (BMP) for improving water quality by reducing nutrients such as Nitrogen, Phosphorus and Total Suspended Solids in most any water body that is part of the greater watershed. Reducing nutrients from stormwater ponds and lakes is a broadly promoted practice for reducing non-point sourced nutrients from our watersheds. Some state and local jurisdictions are regulating and prescribing the use of floating treatment wetlands as part of their formal plans to reach their nutrient reduction goals. This often includes specific formulas for water body coverage and nutrient reduction credits. Some of these formulas are quite conservative and will hopefully relax over time while others are very liberal and aggressive. Other areas promote the practice but don't formally regulate the requirements. Regardless, this practice is growing in acceptance and broad use.

NY State is in the process of forming their floating treatment wetland strategy. Based on our reputation and success throughout the eastern US including the Chesapeake Bay states with their formal recognition of floating treatment wetlands as a BMP, NY State Parks chose FWS.

For the Rockland Lake Project, we proposed a design that bundled Floating Wetlands and Floating Islands as "combination units" to provide a full spectrum of water quality processes as well as outstanding habitat features.

Each Floating Island had planting holes for plants with some of the holes favoring terrestrial plants while the perimeter holes favored wetland plants. The islands were designed to accommodate the buoyancy requirements for the plants and the island itself, plus they augmented the floating wetlands buoyancy for vertical positioning in the water column. Our unique submerged Floating Wetland design allows variable positioning (submerged depth) so that the water depth over the wetland can be adjusted for different plant requirements.

We recommended four (4) Island/Wetland combination units that would each hold approximately 1200 plants and cover approximately 1,000 square feet in area. Three of the Island/Wetland combinations consisted of 2 Floating Island modules and 4 Floating Wetland modules that totaled 240 square feet per combination unit. The 4<sup>th</sup> combination unit contained an additional island module making that combination unit total 280 square feet so that the 4 combination units provided a total project coverage of 1000 square foot.

Pictured below is an example of a similar Floating Island and Floating Wetland combination unit, made up of 5 Floating Island modules and 7 Floating Wetland modules.



**Example of 5 Floating Islands and 7 Floating Wetlands as a combined unit**

Various independent research and actual case studies have measured and tracked phosphorus removal rates for floating wetland projects. The rates vary based on actual conditions, but for estimating purposes we use .54 pounds per cubic foot of wetland as an approximate guide. Therefore, for this project, we estimate phosphorus removal with 1000 square feet of wetlands to be approximately 360 pounds per year.

The project was installed in Summer 2017. The pictures below were taken during the installation.





As watersheds are challenged and held accountable to reduce non-point source nutrients, this is potentially our single largest market. Recognition as a BMP has taken nearly 10 years, but we are beginning to see acceptance drive more project opportunities.