



Algae Removal Project Update: 4-28-2015

Located on an isthmus, Madison is particularly lucky to have a number of great public beach facilities. Unfortunately, the enjoyment of these beaches has been periodically marred by the arrival of algal blooms that occur during the summer months. Additionally, the location of some of the beach areas compound the algae problem as prevailing winds from the west gather algae into thick mats along the eastern shore of both lake Monona and Mendota. Once gathered near the waterline, the algae become particularly difficult to remove due to its semi-liquid nature.

The scale of the algae problem and the difficulty with which the unattractive algal scums are removed is demonstrated in the photo (*Right*) from Warner Park.



Photo: R. Lathrop

A lifeguard at Warner Park uses a rake to remove algal scum from Lake Mendota in July, 2014

Over the past weeks, the Madison College based design team has conducted extensive research into the design of filtration systems, pumps and the nature of the algae to be removed from the beaches. From our research we have formulated a design which we feel will be effective at the removal of algal scums from Madison's public beaches.

Our design will be of suitable size to clean a portion of a public beach and swimming area. We hope to operate this reduced scale system a number of times over the Summer to validate and fine tune our design and gather data to allow us to size a system that will have the capability to clean an entire beach of algae quickly and easily.

A Solution to Algae Removal

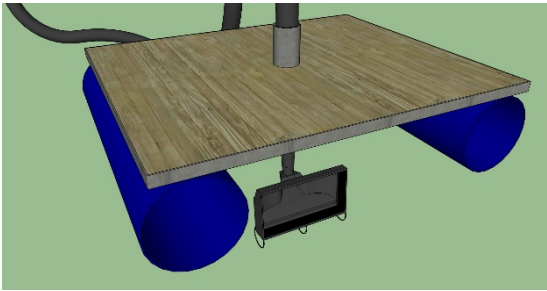
The design consists of water pump, which will draw in water and algae through an intake nozzle and direct it into the lake weeds dumpster where a mesh screen will separate the algae from the water. The strained water will then flow from an outlet in the bottom of the dumpster and be directed back into the lake away from the swimming area. We project that a crew of only two operators will be required to safely operate the device and it should be easily transportable with a small utility trailer and pickup truck. The design has been finalized, approved, and fabrication is currently underway. A working system should be ready in time for the arrival of the first algae blooms of Summer 2015. (Late June/ Early July)

Current Design



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The Intake Nozzle



The floating intake nozzle maintains the proper intake depth, allowing for optimum algae removal and minimizing lakebed disturbance and operator fatigue. The system operator need only gently glide the intake over the algae affected area and the intake nozzle will take care of the rest.

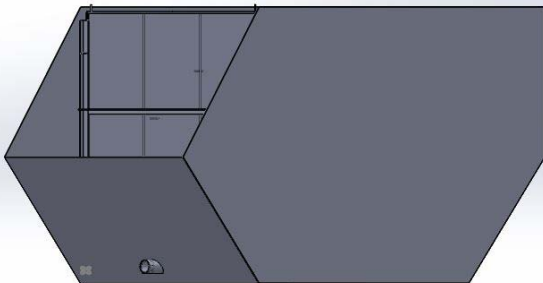
Water Pump



An on shore water pump provides the suction to transport the algae/water from the intake nozzle to our filtration system.

The pump in our design is very common commercially available, gasoline powered pump, known as a trash pump, capable of handling water with significant debris.

Algae Filter



The final component of our design will be a 10-yard dumpster outfitted straining screen mounted in a reinforced steel frame. The water/algae mixture pumped from the lake will accumulate upstream of the screen. The screen will act as a filter element, separating algae and debris from the water. The strained water will flow out of the dumpster through the outlet pipe (shown left) and back into the lake through a discharge hose.

The screen and frame slide into a track to allow for easy removal for cleaning and emptying of the dumpster.

System Component Overview