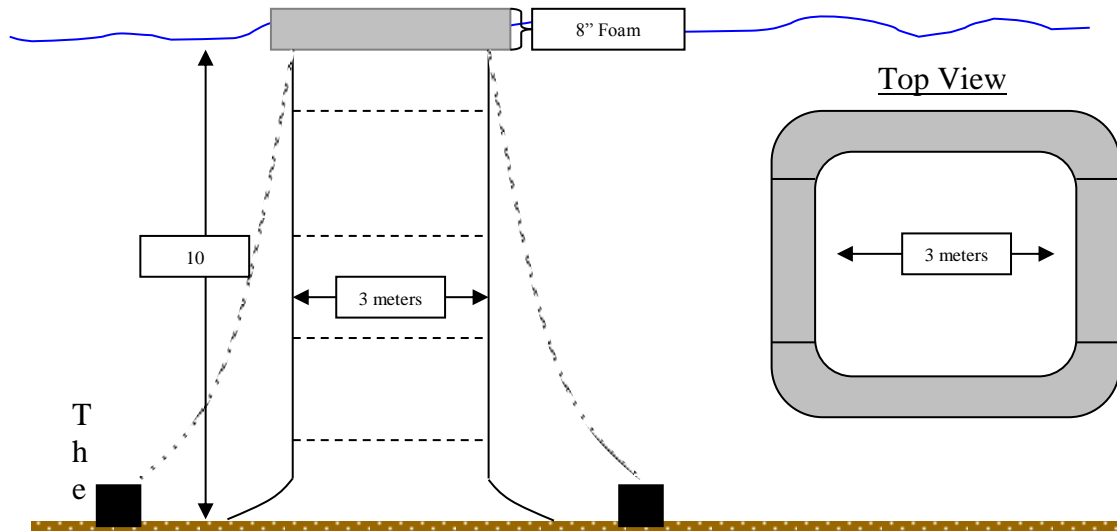


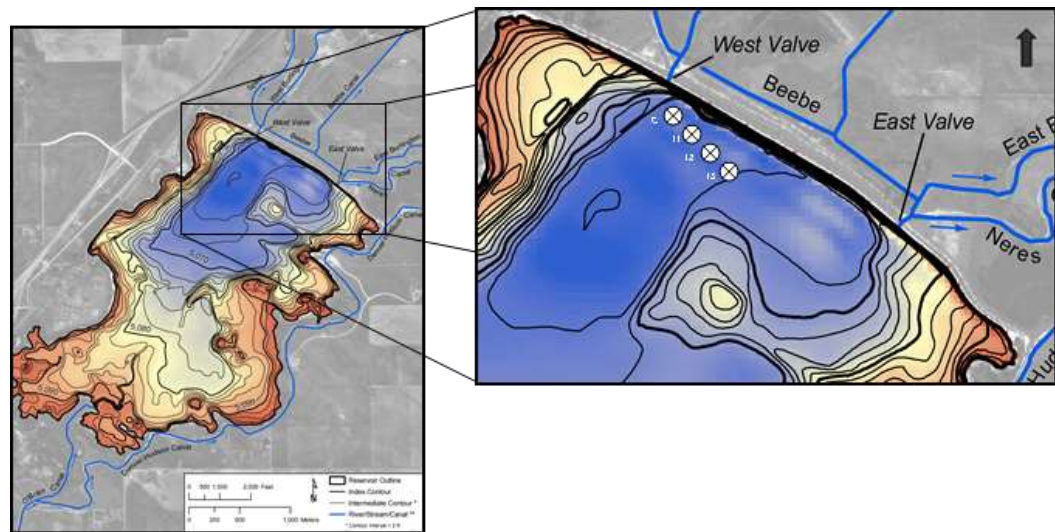
# 2011 Limnocorral Experiments Results

Barr Lake and Milton Reservoir Watershed Association

In 2011, the Barr Lake and Milton Reservoir Watershed Association (BMW) installed four (4) limnocorrals in Barr Lake, near Brighton, Colorado. In three (3) of the limnocorrals, aerators were installed; the fourth was used as a control.



The limnocorrals were installed close to the west outlet structure because that is where the source of the electricity to run the aerators was located. It was a concern, being close to the outlet, how the outflows would impact the corrals and the safety of a diver to secure the limnocorrals..



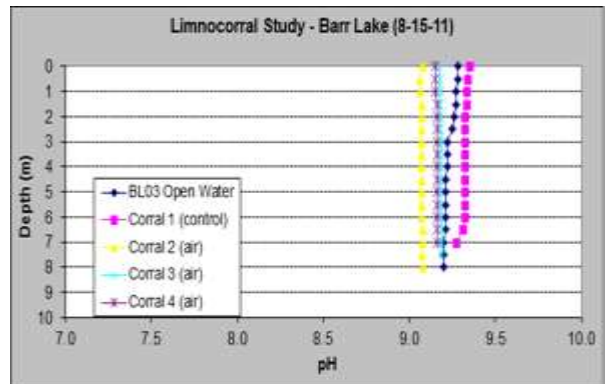
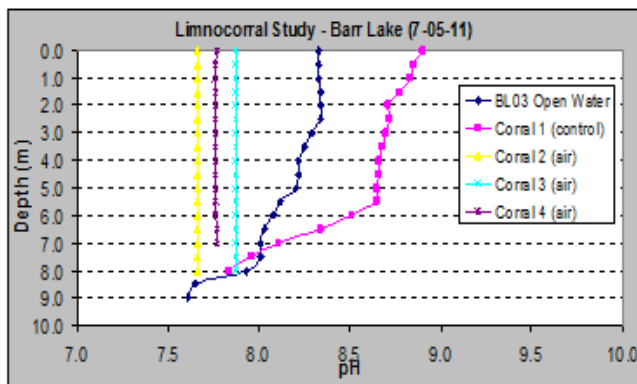
Volunteers were used to install the corrals and to remove them. While installation went smoothly, removal was a little more difficult given that the 30 foot long corrals had to be dragged up the dam structure.



Results from the limnocorral experiments, using only aeration, are not conclusive as the corrals moved off the aerators in high winds, effecting results. However, the results do show that aeration impacts pH under controlled conditions.

On July 5<sup>th</sup>, 2011, aeration seemed to reduce algae growth and lower the equilibrium pH. The control limnocorral and the open water had the highest pH due to having the highest chlorophyll-a readings. Photosynthesis caused the increase in pH in the upper water. For Corral 1 and 2, the water column was isothermal and very low chlorophyll-a. Corral 3 had higher chlorophyll-a, but since it was well mixed, it had a lower pH because of being in equilibrium with the atmosphere (i.e., more CO<sub>2</sub> lowers the pH because of carbonic acid formation).

By August 15<sup>th</sup>, 2011, aeration was not keeping up with the algae growth. pH was above 9.0 in all corrals and the open water due to photosynthesis. Chlorophyll-a was above 17 ug/L in the test corrals, 28 ug/L in the control corral, and 40 ug/L in the open water.



Aeration or the addition of CO<sub>2</sub> from the atmosphere does not change alkalinity but it can reduce pH. When algae growth is low or moderate, it looked like mixing by aeration kept the pH below 9.0. Aeration was able to delay the algae growth and the spike in pH by about a month. Eventually though, blue-green algae were still able to grow well in the fully mixing corrals causing pH to go above 9.0.. Preliminary results showed that aeration may reduce the growth of blue-green algae by about a month. Additional tests will be conducted during 2012 focusing on reducing phosphorus.

The bottom line is that aeration may prove a useful tool in controlling pH in early summer, but it is not a silver bullet that solves the entire pH issue