

Comments of Gene Phifer – Water Quality Expert and Neely Henry Area Resident

My name is Gene Phifer and I've been retired for about three years, so I guess you could say that my title is "Recreational Specialist" or "Concerned Citizen." I worked in the industry and was involved in water quality studies for about thirty years. Before that I did research and taught at the university level in the area of water quality and water quality studies, and did work on Neely Henry and other reservoirs in this area. I am going to deal with one specific topic that concerns me and that is nutrient loading. I understand that the state has a good program on nutrient loading and I've read their procedures and protocols and they are very good. The concern I have is if they reduce flow what will happen as far as nutrient loading on this reservoir. If you increase retention time on reservoirs like Neely Henry and Weiss, there is a good chance there will be an increase in phytoplankton and many organisms that can cause problems in the aquatic environment and with the biodiversity in the ecosystem.

Cutting flows can drastically increase the nutrients in the environment. As they increase, the algae density increases. As the algae density increases, other microorganisms increase and they first produce more oxygen. Then you have algae blooms. As the algae dies off suddenly, you have decomposition of the algae by bacterial action that uses the oxygen that is in the water, thus lowering the dissolved oxygen concentration. This could result in a very bad scenario in drought conditions. For instance, in Neely Henry or Weiss Lake if you have a spring or early summer drought and you have water being syphoned off to Georgia, the already drought-reduced flows are reduced even further and a biological explosion of algae and other microorganisms can occur because water retention times are increased with a decrease in the water flow. Flow is the mitigating factor that helps maintain balance in an ecosystem like this, but suddenly it is slowed down changing the dynamics of the ecosystem. Sudden explosive blooms of undesirable algae will occur causing dissolved oxygen problems and major pH swings. Major pH swings have adverse impacts on fish fry, or hatchlings, as well as invertebrate organisms and can result in the death of fish fry, which will negatively impact the future quality of a fishery. This is a really bad scenario.

One of the biggest problems we have in this state with regard to water quality is nutrients. Nutrient loading is one of the biggest problems in the United States. Approximately 44 percent of the pollution problems we have in our state waters result from nutrient loading. All five reservoirs on the Coosa River have already been identified by ADEM as nutrient impaired. If you start taking water out of the system, you make the problem worse. As stated above, the resultant low dissolved oxygen levels, pH swings and increased pollution could have a major negative impact on the health of the fisheries. However, it could also negatively affect other public uses of the water.

The information above is backed up by scientific data from ADEM and other sources. But now I will address some issues that are not yet backed up by scientific research. People have noticed degradation in the quality of fishing in Weiss Lake and elsewhere. When we have had drought years, I observed a negative impact on fishing on Weiss Lake and Neely Henry. Absent supporting research, I cannot say that these observations were the result of above-cited factors, but I wouldn't be surprised.

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Let me read something from work done on Weiss Lake by Dr. Bayne and Dr. Maceina of Auburn University. They reported that the relationship between reservoir water retention times and phytoplankton algae production was examined on Weiss Lake in the summer of 2001. Dr. Bayne and Dr. Maceina assessed the potential water quality effects on Weiss Lake of the drought and the Coosa River Water Sharing Agreement between the states of Alabama and Georgia. The study showed that reservoirs with typically short retention times, such as reservoirs on the Coosa River, are more susceptible to hypereutrophic effects and higher chlorophyll A concentrations, which are what is used to measure eutrophic conditions, when retention times are increased even moderately. Historical data show that higher chlorophyll A concentrations in Weiss Lake have consistently corresponded to longer retention times. Hydrologic models and their study indicated that longer retention times in the reservoir would likely increase phytoplankton algae production and algae biomass accumulation, assuming that other factors remain unchanged. This result is particularly evident during drought periods such as occurred in 2000 and 2006. So, they have already done a lot of research and they are warning us that already just during drought periods there is a problem. Hypereutrophic is not good. You can have good biodiversity and fish quality if you have good flow and hypereutrophic conditions sometimes, but as it gets more and more hypereutrophic that is not good. Eutrophic means nutrient-rich environment. Mesotrophic means a medium level of nutrients and oligotrophic means low level. Alabama has very few of those lakes. We have some that are mesotrophic and a few that may be a mixture of oligotrophic and mesotrophic, like Martin. But, most of the lakes that we are discussing are eutrophic.

I admire the work that has been done by ADEM and others. However, what happens in Georgia can change much of the work that has been done. Nutrient target levels in studies done thus far cannot accurately predict the impacts on water flows that may be caused by actions in Georgia.