SAC Summary Statement for Lake Munson Workshop
12/21/09 WM Landing

We have reviewed the summary from the Lake Munson Workshop (June 26, 2009) and, based on discussions with workshop participants, offer these additional comments on the general topic of periodic drawdowns for the restoration and protection for Lake Munson. The SAC has reviewed and approved these recommendations, and they have also been discussed with the Water Resources Committee.

The organic and nutrient rich muck sediments in Lake Munson are contributing significantly to poor water quality. Removal of these sediments is desirable, but it is also extremely expensive and logistically difficult. PCB contamination in some areas would also restrict the disposal options. When such lakes naturally drain, the sediments de-water, oxidize, and form a crust. This serves to "cap" the underlying sediment and also provides decent habitat for fish spawning. Thus, the simplest and cheapest option is to simply drain the lake to allow this process to occur.

We have an excellent opportunity to monitor and quantify the effects of a drawdown on water and sediment quality in Lake Munson in the coming months as a result of plans by Leon County Public Works (LCPW) to conduct repairs on the dam. We strongly urge LCPW to maintain frequent communication with all of the relevant stakeholders as their plans for the dam repairs move forward. This includes the public, local property owners and residents, NGOs, and governmental agencies especially the Florida Fish and Wildlife Conservation Commission (FWC) since they are particularly concerned with the health of the fishery in Lake Munson. Options for frequent and widespread public noticing include posting on a Leon County web site, posting at boat ramps, submitting a newspaper article, and alerting the various stakeholders (and the Science Advisory Committee) via email.

1. How far should the drawdowns go (how many feet?).

Partial drawdowns would leave pools of water for the fish and other biota in the lake, but a two foot drawdown will expose only 10% of the bottom, and thus is not worth doing. A five foot drawdown will expose almost three quarters of the lake bottom, but the remaining water will be too shallow to support large fish. A complete drawdown would expose the most sediment and would force fish and other biota to the sinkhole in the southwestern corner of the lake. Many fish and other organisms would not survive a complete drawdown, however the lake biota would recover relatively quickly upon refill. The fish populations could be re-established from those that survived in the sinkhole, from upstream Lake Henrietta, and from re-stocking by FWC. It is hoped that the invasive Island Apple Snail population would be dramatically reduced by a complete drawdown, allowing natural aquatic vegetation to re-establish.

The most recent opinion from Michael Hill (and colleagues at FWC) is that we should opt for a complete drawdown, as soon as possible after FWC removes and relocates some of the largest "trophy" bass (sometime in early 2010). It has been suggested that efforts be made to minimize the death of fish and other creatures (turtles, alligators, etc.) during an extended complete drawdown, and we encourage interested parties to start such a discussion. However, it is important to recognize that the primary goal of the drawdown is to improve sediment quality (and thus water quality) so that the long-term health of the entire lake ecosystem will be improved. All of the creatures that live naturally in Lake Munson recovered from the complete

drawdown in 2000 with no obvious ill effects. In the lake's current state, extensive blue-green algae blooms and late summer warm temperatures threaten the entire fish population every year. The drawdown schedule under discussion should reduce this threat.

2. How frequently should drawdowns be done?

Drawdowns on Lake Munson should be reasonably frequent, with an effort to mimic the natural draining and refill cycle that keeps such lakes in a healthy state. Every seven to ten years would be appropriate, starting with the proposed drawdown in early 2010.

3. When should drawdowns be done, and how long should they last?

The timing of any drawdown and subsequent re-fill needs to be carefully considered, with input from FWC. The primary objective of a complete drawdown is to maximize the exposure of the sediments to the air. On average, the driest months in Tallahassee are October, November, December, and January. A complete drawdown starting in October, and lasting through the winter would be ideal. In addition, because oxygen is more soluble in cold water, cooler waters provide increased dissolved oxygen for the biota that have moved to the sinkhole. If the rains were to hold off through the Spring, an extended drawdown would allow for even more sediment oxidation and compaction. Even though the growing season might be encountered, willows and other woody plants will not be large enough to be a problem upon refill and will easily drown out and create submersed habitat. A drawdown extending into the warm summer months would lead to lower dissolved oxygen levels that could result in fish kills in the sinkhole, however it would not be difficult to re-establish the fish population though natural restocking from upstream Lake Henrietta or manual restocking by FWC.

4. How low will the County need to drain the lake to complete the repair work?

The dam repairs are expected to take about four months. If the work starts in April 2010 and continues through July or August 2010, we expect that some woody plants will start to grow in the exposed lake bed. Upon refill, those plants would be drowned and would provide beneficial habitat for the fish in Lake Munson. A complete drawdown from April through July or August (i.e. including warm summer conditions) may also lead to low dissolved oxygen levels that could result in fish kills. Despite these concerns, we believe that the biota will recover naturally once the lake refills and that it is more important to get started on trying to improve the sediment characteristics by exposing them for as long as possible. Once again, the timing of the drawdown and subsequent re-fill needs to be carefully considered, with input from FWC.

5. Should a drawdown be started now (or very soon)?

FWC has decided to remove and relocate some of the large bass in Lake Munson, so a drawdown should be started as soon as they have completed that task or as soon as FWC agrees that it is appropriate to start. We suggest that February 15, 2010 might be a reasonable deadline to start the drawdown.

6. How fast should the lake be drained?

Ames Sink has a known acceptance rate and the County has the ability to control the drawdown rate and avoid flooding of downstream properties. Due to the outflow of resuspended sediment during the drawdown, County staff should consider the possible impacts this might

have downstream and consider ways to minimize the impacts. The drawdown rate should not be so fast as to strand large numbers of fish, and should be coordinated with input from FWC.

7. Should Leon County devote funds to increase the water quality monitoring frequency from quarterly (to perhaps monthly), and to test the characteristics of the exposed sediment (water and nutrient content) for the duration of the first drawdown?

One cannot suffer from having too much information. The FWC will be continuing fisheries and aquatic plant surveys and will be able to measure the effects of the drawdowns that way. There is no drawback to establishing an enhanced water quality and sediment quality monitoring program, except that additional funding will likely be needed. It may be adequate to monitor water quality on incoming and outgoing streams. The reduced number of quarterly water quality samples from the lake itself could enable more frequent sampling of incoming and outgoing streams. Access to isolated pools may be constrained by the exposed muck sediment. Monitoring how fast the sediment compacts, dewaters, and forms a crust would be provide useful information for conducting future drawdowns, since knowledge gained from each managed drawdown must be used to evaluate and modify the management strategy.

8. The Water Resources Committee wondered if it would be useful to seed the exposed sediment with some rapidly growing winter grass, followed by a controlled burn prior to re-fill. This could enhance nitrogen loss, but would probably have little effect on phosphorus levels. Should we consider this option?

The seed bank already in place on the bottom sediments is considerable thus we should expect a natural vegetative response. "Terrestrial" plants will be drowned after the re-fill and provide fish habitat. A controlled burn would be difficult to manage in terms of developing fire lanes and smoke control.