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To: St. Johns River Water Management District

From: Lee Wilson, Ph.D.

Date: November 20, 2009

Re: Minimum Levels Reevaluation, Johns Lake, Lake and Orange Counties, Florida

On March 20 I provided initial comments on six reports that developed MFLs for various sandhill lakes, including Johns Lake. The Johns Lake report has subsequently been redone; these comments apply to the new report. Both the prior and new Johns Lake reports were authored by Clifford P. Neubauer. My review considers the data, methods and assumptions used by Dr. Neubauer, the resulting recommended MFLs, and the overall organization and presentation of the report.

Please note that the delivery date of the report to me, coupled with my plans to leave on vacation late on 20 November, constrained the time I had to review the report. I apologize for comments that prove inappropriate because I didn't have time to fully read and comprehend the MFL logic. Hopefully there is enough substance in what follows to be useful when coupled with the (later) input from others.

General comments

1. As I have stated before, it is my opinion that the SJRWMD MFL program is scientifically sound and at the forefront of the application of ecological principles to protection of

instream flows. The fact that my comments are critical of certain aspects of this report is a reflection of my assignment, which is to identify issues and find possible problems, and should be read in that spirit.

2. The Johns Lake report as revised departs substantially from prior MFL reports in approach, methodology and results. The report can be read as demonstrating that a fundamental assumption of the MFL program -- that ecology depends on hydrology -- has been shown to be false. Unless changes in the ecology of this lake's wetlands can be explained (which they are not in the current report), I am concerned that the report establishes a foundation which might be used to attack the overall MFL program.

3. I do not fully understand the logic behind either of the newly proposed MFLs and note that the hydrologic appendix does not discuss them.

4. I note that my prior review contained a number of generic and specific comments. Some of these have been mooted by the new approach and some have effectively been addressed, but many have not. If the report is to be further revised, I suggest these earlier comments be revisited. Examples of such comments are: the reports read much better when figures and tables are fully integrated; likewise background and field data work best when soils discussions occur before wetlands; it is useful to include a land use map. None of these are essential to getting a report out the door.

5. In my original comments I addressed the need for each report to more fully address the 10 WRV factors. The other reports responded with a very substantial matrix (e.g. Table 18 in the revised report for Sylvan Lake). Given how the Johns Lake MFLs are now being proposed, something similar is needed here.

6. Neither the report nor Appendix B provides a sufficient understanding of the hydrology of Johns Lake. For example one can't read this report and really understand the relative significance of runoff, surface precipitation/evaporation, outlets, and seepage such that there is a logical water balance that explains the hydrograph and does so in the context of what it means to be a sandhill lake. P. 5 cites Robison 2009 as a hydrologic water budget model of the lake; this appears to be different than Appendix B and probably has the information I'm interested in. If so it should be an appendix, or at least summarized.

Page-specific comments

7. Title page. No other report cites the Ph.D. credential of the author. I think it is ok to do so, but it should be done in other reports as well.

8. P. v, Executive Summary, states that fish + habitat = the primary value protected by the proposed MFLs. It takes work to find in the report the analysis that is being summarized.

9. Also p. v, the paragraphs on the recommended MFLs each contain a “that is” statement that doesn’t seem to follow from the prior statement.
10. It is preferred to have the Executive Summary contain specific language that MFLs are intended to support ecosystem protection. The language here isn’t as good as page v. of the Lake Avalon report.
11. Table of contents, Appendices should have names and these should be included in the Table of Contents.
12. P. 2 mentions MFLs as applying to permitting in the first full paragraph, and this is somewhat repeated in the third full paragraph. One mention would be sufficient.
13. The discussion of bathymetry on p. 4 mentions various features which would be better understood if they were identified on a map.
14. Throughout the report reference is made to the “upland ecotone” without ever defining that term for the lay audience, nor stating in a straightforward manner exactly what that ecotone consists of in this case. I gather it refers to the saw palmetto community, though that is never said. The discussion of wetlands p. 5-6 is at least one place where the report should make absolutely clear what is meant by “upland ecotone”.
15. P. 6-7. There is more USDA soils data here than in most reports.
16. P. 9. Is it possible to draw this graph using Johns Lake information?
17. P. 11. Figure caption does not match Figure (e.g. T3, T4 not in caption).
18. P. 12. Without labels on the isolines, the bathymetric map has limited value. Given that the map is fundamental to IL, it seems more is needed.
19. P. 13. Figure 5 could be omitted, and the reference simply cited in the report. This figure made me even more acutely aware of how little we seem to know about the hydrology of the lake.
20. P. 14. This is an interesting hydrograph and just adds to the interest in having the hydrology of this lake explained.
21. P. 15. Are these one-day values or some other duration?
22. P. 16. Figure 7 could use a citation.
23. P. 25. Tables 1 & 2 typically not found in other reports.
24. P. 26. Not sure a blank version of the WRV table adds much.
25. P. 28. Resurveyed transects are not provided, so we don’t know what has changed. Therefore, the astatic nature of the wetlands is not documented. In my view this lack of information is a severe problem.

26. P. 29. The information that is provided on the resurveys is generally either a) something found before is not there now; or b) silence. Silence may mean that no change was observed, but we aren't told that. Where "not found" is stated, we have no idea what **was** found, and thus what to make of what was found.

27. P. 29. The disappearance of a hammock community needs to be explained. In fact the entire concept of "big change" with no change in hydrology needs to be explained, as otherwise it seems to undermine the basic "hydrology drives ecology" underpinnings of the MFL program. Apparently had the previously recommended MFLs been used, they would have protected nothing. Likewise, SWIDs proved to not predict the behavior of this lake. The implication to defense of MFLs in general is evident.

28. P. 30. On Transect 2, the shrub swamp is said to be now found at a higher elevation, but no details are given and the drawing of the transect suggests the change couldn't have been much.

29. P. 32. I found the discussion of structural changes hard to follow. What exactly is it that happened after 2005 such that a repeat of the 2005 hydrology would produce a different result?

30. P. 33. Per prior comment, this WRV assessment is much less complete than in the other reports.

31. P 35. It may be the limited time I had to review these reports, but I didn't understand what the wetland and habitat consequence would be if the saw palmetto moves downslope a bit. Moreover, given that the 25-year return interval is a statistic, not a management strategy, some episodic downslope movement seems inevitable.

32. P. 36. As I understand it, the IL doesn't prevent large fish kills, it just increases (and limits) their frequency. Is that correct?

33. P. 37. More is needed on the 8-foot depth criteria to demonstrate that it should apply to this sandhill lake where trophy bass are being grown. Are we confident that this is enough water to maintain adequate DO? The volume and carrying capacity of the protected refugia would be interesting to know.

34. P. 42. As noted, other reports had much more info. than shown on Table 6.

35. P. 43. Make clear these are 2000 results? Same for Figure 11. And add 2009 results?

36. Appendix A does not add value. It belongs in a methods manual.

37. Appendix B is specific to the prior report and has not been updated to discuss the new MFLs.

38. The header of Appendix B is wrong.

39. I suggest the bottom line result of the compliance analysis (1.5 ft allowable drawdown based on current info.) be included in the Executive Summary.

Summary

40. I find the issues above of sufficient concern that my recommendation is that the report is not ready for release.