



Mail: Box 931, Santa Fe NM, 87504

Courier: 105 Cienega, Santa Fe NM, 87501

Telephone: 505-988-9811/fax 505-986-0092

e-mail: lwa@lwasf.com

To: St. Johns River Water Management District

From: Lee Wilson, Ph.D.

Date: August 10, 2010

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

These comments relate to the report on the Johns Lake MFLs by Dr. Clifford P. Neubauer as revised and dated August 2, 2010. I commend Dr. Neubauer for what is clearly a careful and effective effort to respond to prior input. Herein I provide a few comments, mostly editorial, and my response to the questions that the District wishes answered regarding each report. In my opinion, no further peer review of the report is needed beyond the teleconference at the end of this month (which in my view can be quite short).

COMMENTS

1. Throughout the document the page number is on its own line, which may not have been the intent.
2. Executive Summary. Excellent.
3. Table of Contents. Appendix names should be given.
4. P. 4. Suggest making clear that the high and low stages reflect wet and dry climatic cycles.
5. P. 5. Mention of transects 1 and 2 seems out of place; in fact much of the entire paragraph that begins at the bottom of p. 4 seems out of place.
6. P. 5. Are we really “protecting the location of the upland ecotone” or protecting the uppermost wetland system against encroachment?
7. P. 6. “Lake level is controlled” might be better stated as “the outlet allows the lake to drain to Lake Apopka when stages are above ...”
8. P. 7. Is evaporation loss really four and one-half feet per year on average? See page 9 feet?
9. P. 11. As stated in June, great chart.

10. P. 51. Consider explaining why you picked 8 feet instead of 15 feet (or something in between) as the minimum water level.
11. P. 53. Don't understand the middle paragraph. What caused the increased leakage?
12. P. 61. See previous comments about "safe" boating. 100% of the lake is not safe.
13. P. 78. Graph is hard to read. Use color; something to show JL values?
14. P. 92. Appendix B header is wrong. Marginal notes need to be addressed. Fonts are not consistent in Appendix.
15. P. 121. I agree that Appendix C could be deleted. I did not review it.
16. P. 138. Appendix D needs a footer. What does it mean "two modeled sinkholes"?
17. P. 139. Is Blacks Lake outflow dependent on Floridan aquifer levels? If yes, was this taken into account in estimating that outflow? If not, why does Table D3 not match D2 for this value?
18. Table D1. Might benefit by adding columns for the average stage and area in each year.

19. For Appendix D, what documentation will be available if someone wants to explore the water budget results closely?

RESPONSE TO QUESTIONS

1. Questions that address “adequacy of environmental data in terms of quality and length of record”.

- a. Are there any deficiencies and/or errors regarding data availability?

The essential data on vegetation, soils and elevations are provided. The full array of potentially useful hydrologic data is not presented. Hard data are lacking for many 62-40.473 environmental values, which is unavoidable hence a reality, not a deficiency.

- b. Were appropriate analytical methods and procedures used for data collection?

Yes.

- c. Were reasonable quality assurance assessments performed on the data?

The ability to do QA for these types of investigations is limited, and I think the District has done what it can and should. Completing the methods manual would be a benefit. Ultimately, quality assurance will be accomplished through long-term monitoring.

- d. Was relevant data available but discarded without appropriate justification? Would use of discarded information significantly affect the development of the MFLs?

I found no significant discarding of information (relevant or otherwise). Certain information was given greater weight in developing the MFLs, which is appropriate.

e. Was "best information available" utilized in developing the MFLs?

Yes -- essentially this means that the District's procedures are appropriate and were implemented appropriately. More complete explanations about the hydrologic system would be an improvement.

2. Questions that assess methods and procedures for data analysis, including, where appropriate, performing appropriate statistical analyses of data to ensure that each is statistically valid and is used appropriately.

a. Are there any deficiencies and/or errors in analytical methods and procedures?

Future reports should include even more explanation of hydrologic cause-effect relationships.

b. Were appropriate analytical methods and procedures used for data analysis?

Yes.

c. Were the analytical methods and procedures appropriate given the "best information available"?

In general, yes.

d. Do the analyses include all necessary factors?

Factors controlling hydrology could benefit from more explanation, but this report is the best yet in that regard.

e. Were the analyses correctly applied?

Yes.

f. Were any limitations and imprecisions in the information handled appropriately?

Minor comments on this issue were resolved in the prior drafts.

g. Are the analyses repeatable?

This is difficult to answer given the inherent temporal variability of the natural system. Ultimately, long-term monitoring of transects, soils and hydrology will determine the repeatability of the analyses.

3. Questions that evaluate the validity and appropriateness of all assumptions used in the development of the MFLs analysis and water resource assessments.

- a. Are the assumptions reasonable and consistent given the "best information available"?

Minor comments on this issue were resolved in the prior drafts.

- b. Is there information available that could have been used to eliminate any of the assumptions? Would the use of this additional information substantially change the development of the MFLs?

No, but such information needs to be developed through long-term monitoring.

- c. Are the assumptions stated clearly?

Yes. The fundamental assumption that less inundation is acceptable is one that should continue to be addressed by the District. As time goes on, I'm hopeful that all of the assumptions that are part of the hydrologic analysis will be made in more detail.

- d. What, if any, assumptions are implied or inherent in the methodologies?

See above.

- e. Are other analytical methods or procedures available that would require fewer assumptions but could provide comparable or better results? Are adequate data available to support using these alternative methods or procedures?

The SJRWMD methods are state of the art. The key assumption noted above can be confirmed or modified only through long-term monitoring.

f. Are there deficiencies and/or errors in the MFLs or water resource assessments or application of findings? If so, describe each deficiency and/or error. If the identified deficiencies can be remedied, then enumerate and describe each necessary remedy, including the precision, accuracy, and an estimate of time and effort required to develop and implement each remedy. If the identified deficiencies cannot be remedied, then identify one or more alternative methodologies that are scientifically defensible given the available data. If the reviewer identifies an alternative methodology, the reviewer shall also describe the precision, accuracy, and estimate the time and effort required to develop and implement that methodology. If the identified deficiencies cannot be remedied without additional data, then identify what additional data is needed and provide recommendations for capturing such data.

Long-term monitoring will eventually firm up the relationships between hydrology and habitat and determine the extent to which allowing changes in the hydrograph is consistent with maintaining habitat. The language regarding the ability to reassess MFLs is an important assurance of appropriate results.

g. Identify all sources of uncertainty and assess their impact on developing MFLs that will prevent significant harm to water resources or ecology of the area.

All ecological systems pose uncertainty issues. The SJRWMD approach is as good as there is.

4. Final question: determine if the data, analyses, and interpretation of results support the recommended MFLs.

It is important to understand that any effort to establish environmental flow requirements will inevitably require assumptions and approximations; hard and fast relationships simply do not exist in the natural world. Agencies can only use data that are reasonably available, and can only

apply basic ecological principles, and this SJRWMD has done. Thus, in my opinion, the data, analyses and interpretations do support the recommended Johns Lake MFLs.