DRAFT

-- Peer Review --

Minimum Levels Determination: Johns Lake, Lake and Orange Counties, Florida

By

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Overall Impressions

The MFL document for Johns Lake, prepared by Clifford Neubauer, is well written and develops the ecological criteria for MFLs at Johns Lake well. Descriptions of soils and plant-communities are thorough and understandable. The application of the SWIDS approach is well documented, and the discussion of MFL-development procedures using soils and plant communities are generally excellent.

I found no reasons for questioning the soils and plant community data and means for relating these to the stage-regime for MFL revisions.

I do have concerns that some critical steps have been referenced when they should have been included in the report, however. These largely deal with modeling and data development issues. Also, there is a need to provide geologic and hydrologic context.

General Issues

It is my belief that a document, such as this MFL report, should stand alone to the extent possible. As a result, there are some content issues that should be addressed. These are listed below.

1. The report mentions Price Robison's hydrologic model many times. The Appendix (B) deals with stage duration curves and how they are constructed. It does not detail what is modeled or how the model was used. I have reviewed the modeling report and believe that it should be included as an appendix. Also, there is important output from the model that should be presented, rather than referenced. For example, the water budget developed for Johns Lake is mentioned in the report, but not presented. I think it is important that the budget be presented so we can evaluate the relative sources and sinks for water, especially with respect to recharge to underlying aquifer(s) and seepage as opposed to inflows from Black Lake and the Turnpike wetland. Is the latter spring fed? What are the water sources?

2. There is a need to develop the geologic and hydrologic setting more. For example, what are the ages and geologic formations associated with the lake and its drainage

basin? Is the lake connected to the Floridan or Intermediate aquifers? Are there sinkholes in the bottom of the lake?

3. It would be helpful to include a drainage basin map in the first section. This could be on the location map or one of the others.

4. The use of Brooks' (1982) physiography is OK but the work is not widely used and has some careless names that have created problems in the past. One problem has developed in the vicinity of Johns Lake. Brooks used the term "The Gap" without considering that White and Vernon and Puri (both Florida Geologic Survey publications) used the term elsewhere (High Springs Gap, Dunnellon Gap, etc.) prior to Brooks. Therefore, there is a naming confusion.

5. Is this a considered sandhill lake? Any unusual variability in the lake hydrograph?

6. On page 4, the report mentions that the stage data for the lake had a long period of record (1959 – 2007). Are the measurements daily? Any changes in measurement methods or timing? It doesn't sound like there has been any data synthesis to complete the record. Is this true. If not, what was done and how?

7. Appendix B by Robison presents an excellent discussion of the Weibul distribution and how to use a stage duration curve. It also mentions how the groundwater flow model was used to determine the effects of groundwater withdrawals on lake levels. There is a need to present more about the results of the groundwater model, including current modeled drawdowns and sample effects of projected withdrawals on Floridan and surficial (?) aquifer levels. What is level of discitization of the model and sensitivity of the model to lake levels and vice versa? What does model say the water budget is at/near the lake?

8. The interactions of the lake with the Floridan are not discussed in the report. Appendix B and several locations in the report suggest that there is an interaction of the lake and the Floridan. How so?