



Environmental Consulting & Technology, Inc.

TECHNICAL MEMORANDUM

Independent Scientific Peer Review of Minimum Levels for Lake Brooklyn, Bradford and Clay Counties, Florida. 2013 (Draft)

Prepared for: Sonny Hall, Ph.D., St. Johns River Water Management District (SJRWMD)

Prepared by: Bob Epting, Ph.D.
Ivan Chou, M.E., P.E.

Date: June 3, 2013

PURPOSE

This technical memorandum (TM) summarizes Environmental Consulting & Technology, Inc.'s (ECT's) independent scientific peer review of a draft minimum levels reevaluation for Lake Brooklyn:

Neubauer, C. P. 2013. Minimum Levels for Lake Brooklyn, Bradford and Clay Counties, Florida. Technical Publication SJ2013-XX St. Johns River Water Management District. Palatka, Florida

This TM is ECT's first review of the referenced draft document prepared by C.P. Neubauer of SJRWMD, dated May 22, 2013. The review was conducted according to the peer review criteria specified by SJRWMD under Contract No. 27364. This TM includes both the general review and specific comments.

This assessment addresses the following general review criteria:

- Adequacy of environmental data in terms of quality and length of record.
- Appropriateness of methods and procedures for data analysis.
- Validity and appropriateness of assumptions used in SJRWMD staff's development of minimum flows and levels (MFLs) analysis.
- Sources of uncertainty and impact of uncertainty on SJRWMD staff's development and implementation of proposed MFLs.

3701 Northwest
98th Street
Gainesville, FL
32606

(352)
332-0444

FAX (352)
332-6722

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- Adequacy of data to support SJRWMD staff's conclusions and recommendations for proposed MFLs.

GENERAL FINDINGS

The report is logically organized into sections and subsections so that the reader can follow the presentation of the subjects. The text adequately describes quality assurance procedures, and summaries of the environmental and hydrologic data. There are some organization and presentation issues. The development of the MIL is omitted from the Methods. The presentation of standard MFLs methods for MFH, MA, and MFL occupy much of the text, followed by a brief exceptions statement or paragraph noting the actual methods for MIL and MIH. Some simplification or reduction of the standard text may improve the report.

It is recommended that the report clearly state, in the front end of the Executive Summary and the Introduction sections, that this study is to reevaluate the currently adopted Lake Brooklyn MFLs (with a brief description). It is also recommended that the report clearly state the reason that the Lake Brooklyn MFLs need to be reevaluated and why the newly reevaluated MFLs are technically better than the currently adopted MFLs in both the Executive Summary and the Introduction sections. The justification for the reevaluation of Lake Brooklyn MFLs has been stated in the later part of the report; however, the reviewers recommend that it be presented methodically in both the Executive Summary and the Introduction.

SPECIFIC COMMENTS

Attachment A presents specific comments on Dr. Neubauer's draft report.

ATTACHMENT A

**Independent Scientific Peer Review of Minimum Levels for Lake Brooklyn,
 Bradford and Clay Counties, Florida (Draft)**

Peer Review Comments – June 3, 2013		
Reviewer	Text Reference	Peer Review Comments
1. Chou	Title page	Recommend using “reevaluation” in the report title similar to other minimum level reevaluation reports.
2. Chou	Page iii, last paragraph, line 3 “had predominantly, declining water levels ...”	Recommend deleting comma.
3. Epting	Executive Summary, page iv, paragraph 1, line 1 “...although it is more common practice for SJRWMD to determine minimum frequent high (MFH) and minimum frequent low (MFL) levels for some sandhill type lakes.”	Please clarify how the two classes of sandhill lakes are differentiated.
4. Chou	Page 4, paragraph 4	If the goal is to protect recreational fishing, it seems relevant to assess WRV No. 1 (recreation in and on the water) to ensure that the fish are accessible to the anglers at MIL.
5. Epting	Executive Summary, page iv, paragraph 4, line 2 “A goal is that withdrawals of water should not adversely affect the largemouth bass population and result in decreased chances of catching trophy size largemouth bass based on modeled hydrologic conditions.”	The goal appears inconsistent with conditions in a widely fluctuating sandhill lake; providing refugia to facilitate population recovery would seem more appropriate (see Introduction, page 2, paragraph 2).
6. Epting	Executive Summary, page iv, paragraph 5, line 11 “Further, protecting the newly determined MFLs for Lake Geneva (i.e., 0.7 ft of “free-board”) will protect the MFLs for Lake Brooklyn.”	This statement may cause the reader to question why more restrictive levels are not being recommended for Brooklyn. Text may be more appropriate in the Results and Discussion section, where it can be more fully qualified.
7. Chou	Page 4, last paragraph, line 10 “limiting MFL”	Edit “MFL” to “MFLs.”

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8. Chou	Page vi, Table ES-1	Table ES-1 presents the adopted and newly recommended MFLs. However, the text did not state that there are currently adopted MFLs for Lake Brooklyn. It seems relevant to briefly describe the adopted MFLs, year of adoption, the reason to recommend a new set of MFLs, and why the newly recommended MFLs are more appropriate than the adopted MFLs in both the executive summary and the introduction section. The “minimum surface water levels” have not been formally defined. Recommend using established term, such as MFLs or minimum levels.
9. Epting	Contents, page vii, entry for Appendix A.	Appendix A and its title are listed separately as two entries.
10. Epting	Contents, page vii, entry for Appendix B.	Appendix B is listed without a title.
11. Epting	Contents, page vii, entry for Appendix C.	Appendix C is listed without a title.
12. Epting	Contents, page viii, entry for Figure 1 “The hydrologic continuum that results in a continuum of lake types and associated MFLs,” is referenced to page 10, but appears on page 12.	Please revise the referenced page numbers for the figures to match the text pagination here and throughout.
13. Epting	Contents, page 1, entry for Table 1 “Completed environmental values decision matrix for Lake Brooklyn based on Rule 62-40.473, F.A.C.,” is referenced to page 28, but appears on page 34.	Please revise the referenced page numbers for the tables to match the text pagination here and throughout. Also, this page of the contents should be ix rather than 1.
14. Epting	Introduction, page 3, paragraph 3, line 1 “Three MFLs are usually defined for each system...”	Consider a topic sentence similar to, “Five MFLs may be defined for a system...”, rather than listing three ‘usual’ levels and then listing MIL and MIH as “If deemed necessary...”
15. Epting	Introduction, page 3, paragraph 3, line 13 “MFLs represent hydrologic statistics...”	Recommend breaking this out as a paragraph and elaborating on the hydrologic character of sandhill lakes.
16. Epting	Introduction, page 4, paragraph 2, line 1 “A fundamental assumption...”	This seems an unnecessary assumption given the body of literature on wetland hydrology and plant community structure. A more appropriate assumption would be that MFLs embody the relationship with high fidelity.

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17. Epting	Introduction, page 4, paragraph 3, line 1 “Figure 1 illustrates a continuum...”	Moving this paragraph up before discussing stable versus unstable lakes would give an overview of the range of lake hydrology.
18. Epting	Introduction, page 4, paragraph 3, line 3 “...might be the cause of the continuum...”	Consider “...is a major determinant of the continuum...”
19. Epting	Introduction, page 6, paragraph 5, line 3 “...conceptual ideas about...”	Please summarize what is meant by conceptual ideas. Citing and presenting concepts from the CH2M Hill sandhill report would be helpful.
20. Epting	Introduction, page 7, paragraph 2, line 4 “Other portions of the system...”	Presumably this refers to other WRVs of the lake.
21. Epting	Introduction, page 7, paragraph 3	In light of the note that there has been little development along the shoreline, the Crater Lake text adds little additional support for the assumption that the bathymetry is valid today. Consider simplifying.
22. Chou	Page 8, paragraph 3, line 2 “based on linear interpolated values ...”	It seems relevant to describe the stage data collection frequency, thus the need for interpolation.
23. Epting	Introduction, page 10, Mapped Wetlands section	The value of summarizing these “mapped” wetlands in a sandhill lake is unclear; consider a clearer labeling of these “unstable” wetlands, which have changed distribution in response to lake levels. Moving up the last paragraph would improve clarity.
24. Chou	Page 12, Figure 1 title	Recommend placing the contents within the parentheses in the figure legend and/or footnote.
25. Chou	Page 17, Figure 6 title	Recommend placing part of this rather lengthy title in a footnote.
26. Epting	Introduction, page 18, Figure 7 title “Bathymetric map of Lake Brooklyn created from digitized contours by Lakewatch on July 22, 1998, when the lake stage was 113.48 ft NGVD”	The figure title does not include location.
27. Chou	Page 19, Figure 8 title	Recommend placing part of this rather lengthy title in a footnote.
28. Chou	Page 25, paragraph 5, line 3 “manageable component ...”	Please define/explain “manageable.”

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29. Epting	Methods, page 25, last line “The mean, minimum, and maximum elevations of vegetation communities and soil indicators were used for SWIDS analysis (Neubauer et al. 2004, Neubauer et al. 2007).”	This is obviously text left over from a standard MFLs methods (see the general comment).
30. Epting	Methods, page 26, paragraph 2	This paragraph summarizes methods for the standard three levels, followed in the next paragraph by a statement of why they are not used (see general comment).
31. Chou	Page 26, paragraph 3	Is SWIDS an important piece of information to determine MFLs for Lake Brooklyn? If yes, is there any plan to collect such information in the future?
32. Epting	Methods, pages 24 through 30	There appears to be no mention in the methods for the MIL, neither the development of elevations nor how they are averaged or analyzed.
33. Epting	Results and Discussion, page 30, paragraph 3, line 6 “These converted values will be included in the MFLs summary tables at a later date.”	The conversion appears complete in Tables ES-1 and 5.
34. Epting	Results and Discussion, page 30, paragraph 2, line 7	“Stable” is the term used elsewhere when describing these wetlands.
35. Epting	Results and Discussion, page 31, paragraph 3, line 13 “The stage data for the four event...”	“...for the four events...”
36. Epting	Results and Discussion, page 33, Table 1 title Completed environmental values decision matrix for Lake Brooklyn based on Rule 62-40.473, F.A.C.	No location given for the lake.
37. Epting	Results and Discussion, page 33, paragraph 1, line 4 “An assumption is that ...”	The assumptions are built into the screening criteria; thus “Based on the screening criteria in Table 1...”
38. Epting	Results and Discussion, page 35, paragraph 2, line 7 “The MIH level event should not kill upland plant species at the upland ecotone or at higher elevations.”	It is unclear why there is concern about water levels that are too high in a sandhill lake with an outlet.
39. Epting	Results and Discussion, page 36, paragraph 2, line 8 “In addition, this species does not migrate down slope during long (i.e., 25 years) dry periods (Carr et al. 2006, pg. 1017).”	Statement appears inconsistent with the discussion on pages 32 through 33 and in Figure 13.

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40. Epting	Results and Discussion, page 36, subsection <u>“Rationale for criteria and indicators of protection”</u>	Event duration appears the critical issue in the development of the rationale. From Figures 9 and 13, we see that saw palmetto has, in fact, moved down in less than 25 years, but not been killed by a high water event that exceeded 114.7 feet. Examination of that event would appear useful.
41. Chou	Page 37, Table 2 title	Recommend placing part of this lengthy title into a footnote.
42. Epting	Results and Discussion, page 39, paragraph 2, line 2 <u>“Specifically, withdrawals should not result in reduced chances that anglers can catch trophy size (i.e., ≥ 10 lbs) largemouth bass.”</u>	A discussion of fish population recovery would appear more relevant.
43. Chou	Page 40, Table	This table needs a table number and a title.
44. Chou	Page 42, Figure 13 title	Recommend placing part of this lengthy title in a footnote and/or in the text.
45. Chou	Page 43, Figure 14 title	Recommend placing part of this lengthy title in a footnote and/or in the text.
46. Chou	Page 44, Table 4, 1 st WRV, last column	Isn't MIL more restrictive in assessing recreation?
47. Epting	Literature Cited, page 53, Neubauer 2011, and page 55 SJRWMD 2009, and SJRWMD 2006.	The citations are out of order.
48. Epting	Appendix, page 56, Appendix A <u>“MFLs criteria for a continuum of System types”</u>	Appendix A has Appendix C as a page header.
49. Epting	Appendix B, page 73 <u>“Original MFLs memorandum for Lake Brooklyn, Bradford and Clay counties ... ”</u>	The page layout inexplicably changes to tablet paper size and there is no page header.