



Lake Okeechobee Watershed Program
PO Box 707
Lorida, FL 33857
Tel: 863-655-1831
www.audubonofflorida.org
Audubon@Okeechobee.com

March 16, 2007

Thomas M. Beason
Senior Assistant General Council
Office of General Council
Department of Environmental Protection
3900 Commonwealth Blvd, Mail Station 35
Tallahassee, FL 32399-3000

Dear Mr. Beason:

Audubon of Florida submits these comments on the draft Lake Okeechobee Water Control Structure Operations permit (LOOP). We applaud the agencies for producing a draft permit for public review and thank you for offering an extension to submit comments. Although this draft is a step forward, Audubon's main concern is that the agencies have not incorporated the most up-to-date phosphorus (P) and climate data, and as a result, have over-estimated the likelihood of reaching Lake Okeechobee's TMDL by the year 2015.

Declaration of Reasonable Assurances

The Declaration of Reasonable Assurances (Declaration) cited four documents, as recent as 2004, but did not cite the "Lake Okeechobee Protection Plan Evaluation Report" ("Evaluation," SFWMD 2007), that contains the most recent data on P loads to Lake Okeechobee. This omission is important because the Evaluation reported that the average P load to the Lake has increased significantly, due mostly to recent wetter weather patterns. The increased P loads indicate that calculations for meeting the TMDL in the 2004 LOPP, may no longer apply.

The Lake Okeechobee Protection Act (LOPA) required that the Lake Okeechobee Protection Plan (LOPP) be evaluated every three years to identify whether further P load reductions were necessary to achieve compliance with the Lake Okeechobee P TMDL, established pursuant to Section 403.067. Appendix 1 quotes LOPA direction for the LOPP Evaluation and concludes the Evaluation did not follow legislative intent, or direction, because the Evaluation excluded data from 2001-2005 in its calculations for P reduction needs.

In a nutshell, the Evaluation estimated that an average load of 468 tons of P enter the lake (for years 1991-2000), and present plans fall short of meeting the TMDL by about 40 tons (see Evaluation Table 4, page 25). However, if the Evaluation had added the years 2001-2005 (the data are quality checked and ready to add), in accord with the legislative direction of basing the period of record on "existing" phosphorus conditions, 548 tons of P enters the lake and the average is 80 tons higher. Thus, present plans actually appear about 120 tons short.

A shortfall of 40 tons is a concern, but perhaps manageable with additional moderate-sized projects. Addressing a shortfall of 120 tons likely requires planning, funding, and building, additional large water treatment facilities, such as Stormwater Treatment Areas. Such efforts take years to complete and should be initiated very soon if the 2015 deadline is to be met. Although the Evaluation states that further P load reductions are being planned, it gives no specific plans or schedules for the reductions, and does not appear to call for funding sufficient to build large new facilities. Until the LOPP offers additional comprehensive strategies sufficient to account for a “120-ton shortfall,” Audubon asserts there is not a reasonable assurance the LOPP will succeed in meeting the TMDL by 2015.

It is imperative that FDEP fully reviews the 2007 LOPP Evaluation¹ as part of this permit, and reassess whether a “Reasonable Assurance” condition is met.

Operations at the S-2 and S-3 Structures

The Interim Action Plan has guidelines that govern flood-control backpumping based on a point system, and it is unclear whether the draft LOOP is aligned with it. It would be useful to include the IAP as an appendix and directly reference management to it.

Annual Compliance Evaluation

Structure goals for P loads to Okeechobee in the draft LOOP are assigned on a regional basis, rather than goals for individual structures. Regional goals are unneeded because the LOPP calculated loads to the lake through each structure, which can be used to assign loads for individual structures. The advantage of assigning loads to individual structures is to enable quick identification of problem basins and effectively target remedial actions. Such an approach has been used successfully in identifying work in the “four priority basins,” and this approach would benefit all basins.

Additionally, a load of 16.84 metric tons is allocated to the east region, about 16% of the TMDL inflow goal. Recent data indicate this region contributes less than 16% of the lake’s inflow, thus this allocation appears too high. If this load is greater than the proportional water flow, this could unduly force other regions to reduce their loads. The draft permit should specify how this number was selected for this region.

¹ The LOPP Evaluation has other significant challenges that create concern about “reasonable assurance.” The total budget is projected at \$1.154 billion. Table 7 lists the Fisheating Creek STA as \$382 million of the total (33% of total budget), however SFWMD informed us that there actually is no STA planned for Fisheating Creek and the \$382 million is a “placeholder” for further efforts in the region. While having some sort of placeholder for efforts in Fisheating Creek is appropriate, having 33% of the total budget in a “non-existing project” reflects a low level of planning. Additionally, calculations in the LOPP are based on an average P year (468 tons). This is a concern because many P-removal features cannot remove higher amounts of P during higher-load years (such as STAs that have annual P load limits). Therefore, during high-load years, disproportionately larger loads of P may reach the lake and contribute to TMDL violations not predicted in “average-year” calculations. The TMDL is based upon a 5-year running average and we suggest it would be greatly preferable for the LOPP to base its calculations on a 5-year running average of the last 15 years (1991-2005).

Conditions for Parameter Other than Total Phosphorus

This permit must set limits for total nitrogen (N). The previous permit set N goals. The lake has a water column goal of 1.2 ppm. Even though N is not considered the major problem in Okeechobee at the present, Okeechobee has significant N threats around it, especially dairies and organic soil regions (the EAA). High N levels also are a threat to drinking water, especially for communities on the south end of the lake. Finally, the estuaries are vulnerable to N pollution, so protecting the lake will help protect the estuaries to some extent.

Factors Impacting Compliance -- Anomalous Rainfall

Audubon strongly objects to allowing permit non-compliance due to “anomalous rainfall.” First, “anomalous” is not defined, which opens the door to loose interpretations that could render the LOOP meaningless. Further, the TMDL sets the P goal as a five-year moving average, which allows accommodations for unusually wet or dry years.

There is an additional concern about labeling years anomalous. The SFWMD announced in a 2005 press release (http://www.sfwmd.gov/newsr/9_05_newsrel.html), that the Atlantic Ocean water temperatures appear to have switched to a warm phase, that historically has triggered greatly increased flows to Lake Okeechobee (roughly double the amount of inflow, which creates significant nutrient control challenges). Termed the Atlantic Multi-decadal Oscillation (AMO), this pattern appears to last for 2-4 decades, and because the warm phase started in about 1995, may last several more decades². This pattern also is characterized by droughts that appear more extreme than when the Atlantic water temperatures are cooler. If this pattern continues as predicted, future weather that appears “anomalous,” may actually be normal for this pattern. In spite of increased difficulties when dealing with more extreme weather, the agencies must account for this phenomenon in meeting the TMDL, and not allow weather to be used as an excuse for non-compliance. Indeed, planning to effectively deal with the range of weather variations is central to the SFWMD successfully fulfilling their mandates.

In closing, Audubon thinks the draft LOOP does an insufficient job of considering up-to-date weather and P data, and in its present form, this permit does not provide a reasonable assurance of meeting the lake’s TMDL by 2015. Audubon has written a paper with a more detailed analysis of these considerations entitled, “Lake Okeechobee Restoration: Watershed, weather, and strategies toward achieving goals,” that I have attached. It also can be found on our website at http://www.audubonofflorida.org/pubs_OkeechobeeReport.html (click on “Lake Okeechobee 2007 Report”). We hope your technical staff will study the report and incorporate these considerations into a final LOOP.

² The warmth in the Atlantic Ocean water also is influenced by global warming and there remains uncertainty about whether the Atlantic will revert to a cool phase in the foreseeable future. If not, the more volatile weather likely will persist.

Thomas M. Beason
March 16, 2007
Page 4

Thank you for the opportunity to comment, I will be happy to answer questions if any clarifications are needed.

Sincerely,

Paul N. Gray, Ph.D.
Science Coordinator

C: Dr. Susan Gray, SFWMD
Jerry Brooks, FDEP
Chuck Aller, FDACS
Eric Hughes, USEPA

Appendix 1. Comments to SFWMD Governing Board, February 15, 2007.



**Statement on the “Period of Record” selected for the
Lake Okeechobee Protection Plan Evaluation**

In light of new data presented in the three-year Evaluation of the Lake Okeechobee Protection Plan (LOPP), and in an effort to include this new information, especially new data related to the wetter climate pattern, Audubon recommends updating the Period of Record to reflect existing conditions for total phosphorus, specifically incorporating the five additional years of quality-checked, and finalized data for 2001-2005.

The “Lake Okeechobee Protection Plan Evaluation,” scheduled for approval by the South Florida Water Management District Governing Board today (February 15, 2007), was mandated in the Lake Okeechobee Protection Act (LOPA), which stated:

“Evaluation. –By January 1, 2004, and every 3 years thereafter, the District, in cooperation with the coordinating agencies, shall conduct an evaluation of any further phosphorus load reductions necessary to achieve compliance with the Lake Okeechobee total maximum daily load...[and] identify modifications to facilities...as appropriate...”

The LOPA also instructed the agencies to:

“...develop a water quality baseline to represent existing conditions for total phosphorus...”

The 2004 Lake Okeechobee Protection Plan used the years 1991-2000 as the baseline because those were the latest years for which phosphorus data were available. For the current Evaluation, there are five additional years of quality-checked, and finalized data for 2001-2005, which should be added to the baseline (see Table 1) to ensure the baseline “represents existing conditions for total phosphorus.”

The average phosphorus load to the lake for the period of 1991 to 2000 was 468 metric tons. The average phosphorus load to the lake for the period of 2001 to 2005 period was 709 tons. Adding the past five years to the previous period of record creates an average P load of 548 tons (1991-2005).

A case can be made that the updated baseline should start in 1995, when the current wet weather pattern started. (See the news release issued by the SFWMD on September 7,

2005 announcing the transition to this weather pattern, termed the warm phase of the Atlantic Multi-decadal Oscillation). If the baseline were changed to 1995-2005 to reflect this transition, the average phosphorus load would be 592 tons. This figure likely is the most representative of “existing conditions,” and the conditions most likely to prevail in 2015, the deadline for meeting the lake’s TMDL.

Conclusion

Because the LOPA directed the agencies to conduct “an evaluation of any further phosphorus load reductions necessary to achieve compliance with the Lake Okeechobee total maximum daily load...” and because the data described above unequivocally demonstrate that further reductions are necessary due to higher average phosphorus loads to the lake, the agencies must add these five years to the period of record and identify the further phosphorus reductions they plan to instate to ensure meeting the TMDL by 2015.

Table 1. Total phosphorus loads to Lake Okeechobee 1991-2005 (from draft LOPP Evaluation, Dec. 12, 2006). Current planning to meet the TMDL is based on an average year of 468 metric tons, but note that 7 of the past 11 years (64%) have had loads of more than 600 tons (bold), indicating the old period of record is inadequate to describe existing phosphorus control needs.

<u>Year</u>	<u>Measured Load (tons)^a</u>
1991	445
1992	388
1993	296
1994	580
1995	683
1996	200
1997	470
1998	780
1999	670
2000 ^c	169
2001	609
2002	561
2003	614
2004	938
2005	822

^a Includes an atmospheric load of 35 t per year based on the Lake Okeechobee TMDL (FDEP, 2001)

Identifying “further phosphorus reductions” is a great challenge and will require fundamental re-thinking of current efforts. Audubon’s 2007 report³, “Lake Okeechobee Restoration: watershed, weather, and strategies toward achieving goals,” recommends a framework for addressing this challenge, through:

“Three Steps to Success”

- 1. Re-examine the scope of challenges to restoration:** The first step toward achieving full restoration of Lake Okeechobee and its watershed—so critical to bringing the Greater Everglades Ecosystem back to health—is to establish a multi-disciplinary technical group to conduct a formal review of the most recent findings regarding climate conditions, land and watershed development and land use, and current and legacy nutrient phosphorus in the system. This public process may be best conducted under the auspices of the South Florida Restoration Task Force, established by Congress in 1996 to coordinate and advise restoration initiatives, through its Science Coordination Group.
- 2. Produce a comprehensive estimate of restoration needs:** Based upon the assessment of restoration challenges, this technical group should conduct a comprehensive and rigorous estimate of restoration needs. This includes estimates of the total water storage, water treatment, and conveyance infrastructure, needed both upstream of and downstream from Lake Okeechobee to achieve ecological goals and objectives throughout the system. This estimate should aim, in part, at quantifying the total storage needed to achieve natural timing of water movement through the system and prevent discharge of polluted water to any natural area.
- 3. Develop a plan to implement storage and treatment solutions:** Once an adequate estimate of restoration needs is developed, it will be the task of agencies, the federal, state and local governments, and their partners, to determine a course of action for meeting any needs not met by ongoing restoration projects and initiatives. This effort must include identification of the land, infrastructure, configuration, and conveyance needed to achieve restoration goals. Finally, funding and timetables to achieve the goals must be determined.

³ See http://www.audubonofflorida.org/PDFs/LakeORreport_1-07.pdf