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Dr. Ann Hodgson
U.S. Army Corps of Engineers Jacksonville District
P.O. Box 4970
Jacksonville, FL 32232-0019
Via Regular mail and Email: LakeOComments@usace.army.mil

Re: Lake Okeechobee System Operating Manual Public Scoping Comments

Dear Dr. Hodgson:

We write to provide input into the U.S. Army Corps of Engineers (“Corps”) scoping period for the Lake Okeechobee System Operating Manual (“LOSOM”) study which includes reviewing the 2008 Lake Okeechobee regulation schedule (“LORS 2008”) and developing a new operating manual and regulation schedule. Completion of the new operating manual and regulation schedule is targeted to coincide with completion of the Herbert Hoover Dike (“HHD”) rehabilitation project in 2022. The Corps has stated at public scoping meetings that LOSOM is not merely intended to update LORS 2008; rather, it will be a thorough and comprehensive evaluation of the Corps lake water management practices and procedures. The Corps has further stated its objective of taking into account additional infrastructure anticipated to become operational contemporaneously with completion and adoption of the LOSOM and associated regulation schedule.

We commend the Corps for conducting an open, inclusive and transparent public comment solicitation process and appreciate the opportunity to offer the following comments for the record.

Introduction

Development of the new LOSOM and regulation schedule is an opportunity to re-examine how water management operations impact ecological conditions on Lake Okeechobee, the Northern estuaries, the Everglades and Florida Bay. Several consecutive years of higher than desirable lake water levels have resulted in significant degradation of lake health and functions and contributed to the devastating harmful algal blooms that occurred in 2016 and 2018.

LORS 2008 represented an improvement from previous schedules, but it still resulted in repeated instances where Lake Okeechobee levels were deeper than ecologically desired to support valuable submerged aquatic vegetation and critical marsh habitat. Weather forecasting, hydrological monitoring and modeling, basin mapping, are some of the technological advances that were conducive to improvements in LORS 2008. This schedule also incorporated new knowledge from experience with biological responses of the lake and downstream resources to various hydrological patterns. LORS 2008 also increased operational

flexibility to allow the Corps to make adjustments to current and/or antecedent conditions, biological responses and needs, harmful algal blooms, unusual weather patterns, construction projects, and other considerations not foreseeable in any forward-looking schedule. Audubon applauds these improvements and looks forward to working with the Corps during the LOSOM process to improve real-time adjustments that are essential to optimizing lake management.

Ecosystem health, water needs of the natural environment, and endangered species protection should be prioritized, or at a minimum, be on equal footing with other Congressionally Authorized Purposes (“CAPs”).

Public LOSOM scoping meetings have demonstrated the divergent interests among stakeholders and some of the misconceptions surrounding the Corps’ lake management operations, among them the misconception that the Corps is responsible for the allocation of water supplies for consumptive use via LORS 2008. Meeting water consumptive use falls primarily within the purview of the South Florida Water Management District’s (“SFWMD” or the “District”) permitting process. Managing the lake requires the Corps to balance a number of often competing purposes such as flood control, water supply, recreation, navigation and environmental effects to fish and wildlife (each a congressionally authorized purpose or “CAP” and collectively “CAPs”). Although LORS 2008 states that it does not optimize any single CAP, optimizing the health of the lake ecosystem must be a key consideration in all management decisions, except, perhaps, where flood risk or extreme weather events warrant otherwise. A healthier lake will benefit all stakeholders and downstream ecosystems.

While water supply is clearly an important CAP, ecosystem protection and endangered species protection are as well and Audubon will be focused on a more equitable balance between CAPs. Specifically, allocation of water supply is a state responsibility accomplished through the issuance of consumptive use permits provided such permits are not harmful to the water resources of the area.¹ When adopted, LORS 2008 recognized that the level of service for Lake Okeechobee Service Area (“LOSA”) users had dropped from 1-in-10 to 1-in-6 years. Yet the state went on to permit both, new and existing LOSA users at the time, who applied for permits after LORS 2008 was adopted. Clearly, continuing to increase demands on an already burdened water resource increases the probability of harm to the lake.

Furthermore, the issue raised at the public hearings that the water supply “Savings Clause” of CERP could apply to LOSOM is troubling. The savings clause does not apply to LOSOM. Okeechobee management and System Operating Manuals significantly predate the Comprehensive Everglades Restoration Plan (“CERP”) and while Okeechobee operations are important in CERP function, the management of Lake Okeechobee is **not** a CERP project, and therefore not obligated by the Savings Clause. The ongoing Herbert Hoover Dike (HHD) rehabilitation, whose completion is the primary reason a new LOSOM is being undertaken, and whose completion is scheduled to coincide with adoption of the new LOSOM is a non-CERP project. LOSOM and the HHD repair do not enjoy the 50-50 cost share that all CERP projects share. The Corps could perform a water availability analysis if preferred, but it should not obligate itself to meet the consumptive use permits provisioned by the SFWMD under LORS 2008.

¹ Florida Statutes section 373.219 states in relevant part, “[t]he governing board or the department may require such permits for consumptive use of water and may impose such reasonable conditions as are necessary to assure that such use is consistent with the overall objectives of the district or department and is not harmful to the water resources of the area.” FLA. STAT. § 373.219 (2018)

The Corps should remove uncertainty and unnecessary complexity from the planning process.

The Water Resources Development Act of 2018 which directed the Corps to expedite its review and update of LORS 2008 stated that the Corps may include all relevant aspects of the Comprehensive Everglades Restoration Plan (“CERP”). As noted above, the Corps has announced its intention to develop incremental regulation schedules to account for future infrastructure construction. While the Corps may be well intentioned, attempting to anticipate the benefits that may derive from unfinished CERP projects and incorporate those benefits into “incremental” regulation schedules adds layers of uncertainty and unnecessary complexity to an already complex process.

Past experience shows that CERP projects take a long time to plan, construct and complete and are often delayed for long periods. For example, the current regulation schedule, adopted in 2008, was intended to be in place for approximately 3 years pending completion of the EAA Reservoir (LORS 2008). Today, construction of the EAA Reservoir has barely begun and almost eleven years after adoption of LORS 2008 the process of reviewing and updating it is just beginning.

Taking the Kissimmee River and HHD projects into account appears prudent as both projects are on course to be completed around 2022 when the new regulation schedule is to be completed. The impacts of those projects can be anticipated with some degree of certainty. In addition, the A-1 FEB was completed after LORS 2008 was adopted and the new regulation schedule should account for it. Conversely, the status of other major CERP components are too uncertain to include in the LOSOM process. Attempting to factor in CERP projects such as CEPP, the EAA Reservoir, the C-43 and C-44 reservoirs and stormwater treatment areas is too speculative at this point in time and will only serve to bog down the process. Once those projects are closer to completion and their impacts can be identified and factored in with more certainty, the regulation schedule can be revisited and updated accordingly.

The new regulation schedule should highlight the importance of a healthy lake ecosystem and functions in all management decisions.

Lake Okeechobee is the liquid heart of the Greater Everglades Ecosystem and plays a key role in the health of the Northern Estuaries and downstream ecosystems. Like all lakes, there are limits to how deep or shallow Okeechobee can get, and on how quickly or when water levels can change without significant negative impacts.

High levels

LORS 2008 recognized the damaging effects to lake ecosystem health when water levels exceed 15 feet even for short periods of time. Damages include higher turbidity, loss of acres of submerged aquatic vegetation, incursions of nutrient enriched water deep into the littoral zone (feeding the spread of cattails), and high volume discharges of nutrient and sediment enriched water to the Northern Estuaries. Consistently high lake levels also have negative consequences for nesting of wading birds, the endangered Everglade Snail Kite, the Okeechobee Gourd, apple snails, alligators, and a host of other fish and wildlife.

Even though the current regulation schedule recognized the need to keep lake levels lower, lake levels have been consistently higher than desired for the past 7 years with devastating impacts to lake health. Marsh vegetation, and the ecological services it provides, has declined from over 44,000 acres in 2012 to about 5,000 acres today. As a consequence, the lake is struggling to overcome a number of adverse effects, most notably lake levels that do not recede to low enough levels during the dry season to allow

vegetation to replenish in increased sunlight penetration, or for seeds to germinate in the submerged aquatic vegetation (“SAV”) zone when needed.

Low levels

As important as it is to prevent lake levels from being too high, it is important to keep lake levels from going too low. When lake levels are too low, lake ecology and biota are adversely impacted. For instance, below 11 feet, ancient organic soils on the southern end of the Lake dry, oxidize, and subside, causing permanent harm. Very low water levels seriously limit Snail Kite and wading bird breeding, and renders most of the marsh habitat unusable to wetland animals. Since 2001, Lake Okeechobee has fallen below pre-2000 low lake levels by about a foot four times (2001, 2007, 2008, 20011). During these periods, portable forward pumps were placed in the lake by the SFWMD to meet its water permit allocation commitments to water supply users. As a consequence, Everglade Snail Kite populations declined by 50% in 2001 and another 50% in 2007-08, for a cumulative 75% drop in population. Florida apple snail populations have yet to recover and wading bird use and nesting virtually stopped on the lake during these periods. Data on other aquatic organisms in the lake are less detailed, but experienced similar impacts. However, given the past seven years of high water events and the loss of so much lake and estuary habitat, this year we have a 1-in-10 year opportunity to drop lake levels to the 11-foot range for 2-3 months to allow submerged aquatic vegetation seed banks to receive the sunlight they need to germinate and grow. The Northern Estuaries in turn, need relief from harmful releases to allow their grasses and biota a chance to regrow, and low lake levels this year will make that recovery condition more likely.

We would like to see a new schedule with operational flexibility that allows for the recovery of ecosystem health after harmful high or low water years.

Modeling “up to” amounts

The LORS 2008 decision trees make release recommendations phrased as releases “up to” a certain amount and modeling runs tended to use the maximum value for simulations. In actual practice, releases often are less than the maximum value. The result is lake levels tend to be higher in real life than modeling runs predict. Having a higher lake than predicted affects the accuracy of downstream predictions as well. While model runs cannot be expected to fully account for variability in future release decisions, we recommend the Corps work to develop a better approximation of average releases for simulation runs.

The Corps should model a lake stage envelope of 12 – 15 feet.

Managing lake levels within the optimal range that balances all CAPs equitably and promotes a healthy lake ecosystem and functions is the best possible outcome of any regulation schedule. Although the Corps is required to balance all CAPs on an equal footing, the health and functions of the natural ecosystems have taken a back seat to water supply interests and dike integrity. Audubon recognizes that the Corps’ primary consideration for lake operations has to be flood risk control and maintaining dike integrity to ensure the safety of multitudes of people who live in proximity to the lake. However, when balancing all other interests we urge the Corps to make ecosystem health a higher priority and manage the lake as a natural ecosystem on a level playing field with other interests. Keeping lake levels in a moderate range, the “stage envelope” as much as possible will have benefits not only for the lake, but also represents a good range to balance the competing needs of flood control and water supply.

During the development of LORS 2008, substantial scientific data, including the C&SF Restudy, supported a lake stage envelope of 12-15 feet.² However, when LORS 2008 was adopted, the lake stage envelope that was used was 12.5 – 15.5 feet. Subsequent experience and research has shown the benefits of lowering the lake to the 12 foot range on a more regular basis provides the essential dry season fluctuation needed for healthy marsh functions.³ It also provides larger freeboard against storms, reduces pressure on the dike and can result in fewer discharges to the Northern Estuaries. The LOSOM study should include updated modeling that includes performance measures and impacts on lake functions and biota with a lake stage envelope of 12 – 15 feet.

The importance of recession rates as part of the LOSOM study.

The U.S. Fish and Wildlife Service (“USFWS”) updated the Biological Opinion for LORS 2008 in 2018. In its Biological Opinion, USFWS recognized that in some years lake levels dropped quickly enough to cause additional loss of Snail Kite nests. Incidental take provisions were developed to allow for some extra nest loss. However, in some years, the lake has dropped so rapidly that Kites did not attempt to nest at all (e.g., the spring of 2017), effectively rendering the critical habitat in the lake unusable by Kites. That type of impact is significant and we think should have been evaluated in the Biological Opinion. Recession rates also affect wading bird nesting, fish spawning and other biological functions in the lake. As the LOSOM study proceeds, we support increased attention on recession performance measures (presently less than 6 inches per month) in its simulation results.

The list of constraints in the current regulation schedule should be updated to reflect current conditions.

LORS 2008 contains a list of constraints categorized as structural, meteorological, environmental, and hydrological that bear on the Corps’ water management decision making. The constraints were identified and included in the regulation schedule prior to its adoption in April 2008. Consequently, some of the constraints may no longer be applicable or may require updating and newly identified constraints may be relevant. Environmental and hydrologic constraints should be updated to reflect the best and most up to date scientific data on lake and estuary ecosystems, including, but not limited to endangered and threatened species and long term impacts on hurricane and rainfall patterns from climate change and climate cycles such as the El Nino and La Nina oscillations and the Atlantic Multi-Decadal Oscillation (including the current warm phase and the potential transition to a cool phase).

Updating the list of constraints to reflect current data, trends and conditions will help the Corps make more informed and accurate management decisions. Additionally, the hydrological constraints section of the new regulation schedule may be an appropriate place to begin identifying the anticipated impacts of CERP and other related infrastructure projects without adding the additional uncertainty and complexity associated with trying to develop multiple, incremental regulation schedules.

² Havens, K., L. Manners, and R. Pace. 1999. Priority hydrologic performance measures for Lake Okeechobee. Pages IV-9 to 15. *In* Central and Southern Florida Project: Comprehensive Review Study, Vol. II. USACE, Jacksonville.

³ National Academies of Sciences, Engineering, and Medicine. 2018. Progress Toward Restoring the Everglades: The Seventh Biennial Review - 2018. Chapter 5. Lake Okeechobee regulation (pages 133-157). Washington, DC: The National Academies Press. <https://doi.org/10.17226/25198>.

Update performance measures for the Caloosahatchee and St. Lucie Estuaries and Water Conservation Areas (“WCAs”).

Performance measures for all environmental parameters should be revisited to ensure they accurately describe environmental performance in model runs, and to align them with public preferences. For example, in LORS 2008 (e.g., see page 150 of the Final EIS), the “preferred or tolerable range” for the St. Lucie Estuary was deemed a flow rate of 350 to 2000 cubic feet per second (“cfs”). Model runs in that range were deemed “good.” Yet, the St. Lucie has proven to be negatively impacted by turbidity, nutrients and salinity changes from virtually any level of releases from the S-80 structure. This performance measure should be lowered to some value close to zero cfs (allowing for lockages, structure maintenance, and so on). Changing the performance measure to some value closer to zero cfs does not mean we can achieve it, rather it will allow the stakeholders to accurately evaluate how many times the various model runs predict flows greater than desired.

Similarly, the Caloosahatchee Estuary has benefited most from flows in the range of 800-1000 cfs and LORS 2008 performance measures rated acceptable flows as 450-2800 cfs. Changing acceptable flows to something closer to the 800-1000 cfs range should be done (based on technical input and development). The minimum flows level from S-79 to the estuary was recently updated but has been in question. The minimum threshold for harm used to evaluate LOSOM runs should be based purely on estuary environmental performance, rather than an administrative value that includes the many social and legal trade-offs. In LORS 2008, flows from the lake to the St. Lucie are measured at the S-80 structure, which results in a measurement that includes a mix of Lake Okeechobee and C-44 basin flows. However, flows to the Caloosahatchee are measured at S-77, the structure on the lake, or S-79, the structure at the estuary, depending on lake conditions. The LOSOM study should evaluate flows at the S-79 structure on a consistent basis to allow stakeholders to more accurately assess future possible conditions.

The Water Conservation Areas performance measures should go through similar reviews.

The Corps should not heed calls to store more water in the lake when the HHD repairs are completed.

Flood risk management is one of the Corps’ highest priorities and understandably so for the multitudes of people who live in proximity to the lake whose safety depends on the integrity of the dike. Some commenters at the public scoping sessions have recommended returning to earlier regulation schedules such as the WSE under which the lake consistently held more water to meet the demands of consumptive uses.

The 2016 HHD safety modification study noted that HHD rehabilitation efforts were initiated because the structure was identified as an “urgent and compelling (unsafe)” water control system that is “critically near failure or extremely high risk.” The rehabilitation project currently underway is meant to make the HHD safer under the current regulation schedule. A report conducted by the SFWMD cautioned that “[i]t should not be expected that structural repairs – even when successfully completed – will necessarily provide a once and for all solution.”⁴ Storing more water in the lake upon completion of the rehabilitation project would create undue safety risks. A deeper lake will also result in a dirtier lake, destroy nutrient-

⁴ Bromwell, L.G., Dean, R.G. and Vick, S.G., 2006. Report of Expert Review Panel: Technical Evaluation of Herbert Hoover Dike, Lake Okeechobee, Florida. BCI Engineers & Scientists, Incorporated.

absorbing aquatic vegetation and increase the likelihood of high volume releases to the estuaries. These outcomes can be avoided by resisting the temptation to treat the lake as merely a storage reservoir and, as previously recommended, by treating and managing the lake as a living, natural ecosystem.

The Corps should continue to exercise its operational flexibility under the current regulation schedule to improve lake health and reduce the likelihood of high volume discharges to the estuaries.

LORS 2008 decision trees include a degree of operational flexibility that allows the Corps to take into account and respond to ecosystem conditions, weather patterns, and seasonal conditions in real time. For example, the Corps has exercised its operational flexibility to make ecological releases to the Caloosahatchee River and estuary during the dry season. The Corps has also been using its operational flexibility to lower lake levels to allow the lake's marsh areas to revive after unusual damage post Hurricane Irma, and to set the lake stage lower in anticipation of the wet season. Audubon encourages the Corps to continue using existing operational flexibility to improve lake health and reduce the likelihood of high volume discharges to the estuaries. Data, trends and conditions should be analyzed to optimize the Corps' operational flexibility in the new regulation schedule.

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We thank you for your consideration of our comments and look forward to working with you throughout the LOSOM study process to develop a new regulation schedule that places lake, estuary and Everglades health on an equal footing with other CAPs and manages the lake as a natural ecosystem that reflects its importance as the liquid heart of the everglades.

Sincerely,

A handwritten signature in black ink, appearing to read 'Doug Gaston', with a long horizontal flourish extending to the right.

Doug Gaston
Northern Everglades Policy Analyst