

Moving Forward – Suggestions for Reducing the Destructive Lake Discharges to the Estuaries

Gary Goforth
April 2014



Moving Forward

- Commend Corps and District for holding Lessons Learned workshops to identify better ways to manage Lake releases in collaboration, and without criticizing any party
- Commend District for dedicated effort investigating and implementing ways to send more Lake water south
- Suggestions to reduce the destructive regulatory releases to the estuaries during temporary emergency conditions of Lake releases necessary to protect the health, safety and welfare of residents around Lake Okeechobee.
 - When LORS2008 guidance is to send Lake water to WCAs, before releases to estuaries
 - When Lake releases to the estuaries are unavoidable
 - Complete the documentation of the 2013 releases
 - Additional actions that could be initiated in the next year
- These analyses and suggestions were prepared outside of all contractual relationships with the District and other organizations, and used publically available data. This set of suggestions is not a final engineering document as defined in Chapter 471, Florida Statutes and Chapter 61G15, Florida Administrative Code.
- Follow up to March 6 WRAC presentation; will not repeat presentation

Goal

➤ Key aspects of suggestions

- LORS2008 is a destructive schedule for the ecology of the estuaries. Agencies are gambling risk of harm to dike, water supply, and Everglades against certainty of adverse impacts to ecology, economy and public welfare of coastal communities
- Will not stop releases to estuaries, but can significantly reduce them
- Majority can be implemented under existing conditions (existing laws, permits, infrastructure, etc.)
- Dry season presents greatest opportunity to achieve benefits of these suggestions
 - Sending sufficient Lake releases to STAs and WMAs to meet ET will top 250,000 AF by May 1
- Suggested target/maximum Lake releases to STAs are considerably below 2002-2003 overload (6 ft per month) that required 12-18 months to recover
- Options to send water south when LORS2008 guidance calls for “up to maximum releases to the WCAs ...” should be weighed against criterion: “Isn’t it worth it to protect the health safety and welfare of 40,000 people around Lake Okeechobee?”

➤ Receive feedback on suggestions:

- What are the constraints to implementation?
- Are constraints physical (e.g., canal conveyance), legal, regulatory, policy, discretionary?
- What are bases for constraints?
- How can constraints be resolved?

➤ Answers to basic questions

Some basic questions

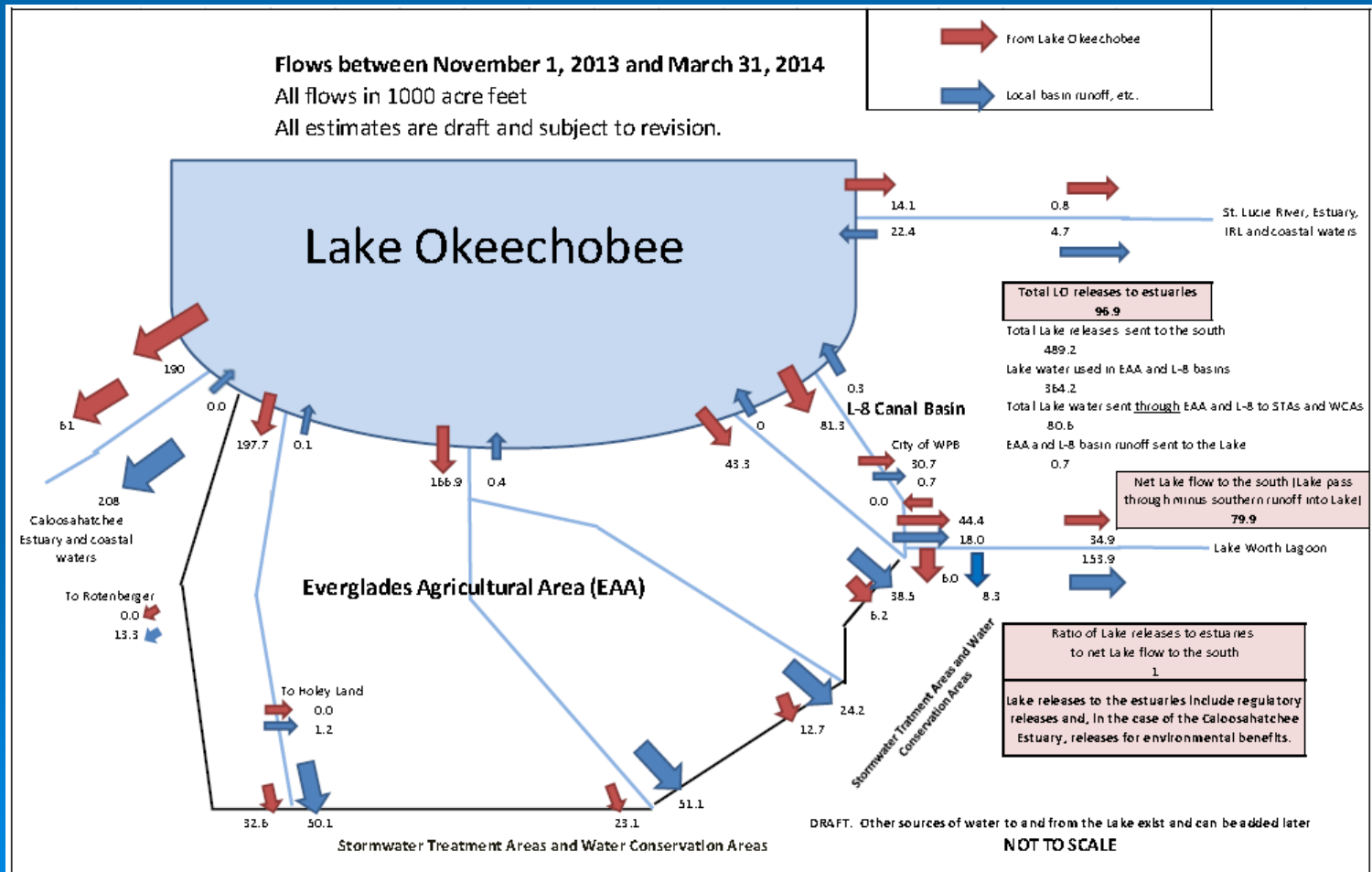
- Ecological benefits – a minimum threshold for releases to WCAs: When LORS2008 guidance is to send maximum practicable to WCAs, why isn't Lake water used:
 - to prevent STA-5/6 performance deterioration due to dryout?
 - to maintain minimum of 6 inches in all STA treatment cells? (Avian Protection Plan, STA operation plans)
 - to prevent ecological degradation of Holey Land?
 - to achieve optimal Lake Okeechobee recession of 0.5 ft per month?
- What is justification for elevating STAs to level of protection afforded the Everglades Protection Area when interpreting LORS guidance?
- What is the science behind the extensive vegetation management activities that restrict flow in thousands of acres of treatment cells? Duty factor?
- Will agencies document adverse impacts of releases to estuaries?
- With majority of risk reduction goals satisfied (Corps 2012) why doesn't District push for revisions of LORS2008 to increase upper limit of regulation schedule?
 - More water available for water supply
 - Less destructive releases to estuaries

Acknowledged constraints

1. Hydraulic conveyance limitations restrict Lake releases into and through the EAA canals to the STAs/WMAs and WCAs.
2. Need to maintain authorized level of flood protection.
3. USACE and SFWMD to implement improved operations communication protocols, e.g., closing LC10-A during storms.
4. Available capacity in the WCAs
5. The STAs are not achieving the WQBEL for TP concentrations entering the Everglades Protection Area.
6. STA critical maintenance
7. Building in flexibility to return cells to full operation when other activities require cells to be taken off-line
8. Birds nesting in STAs
9. Potential challenges to obtaining Migratory Bird Treaty Act Special Purpose Permits
10. Synchronized operations required to deliver Lake releases to STA-5/6 and Rotenberger WMA
11. Fear of cattail expansion in the WMAs with inflow waters above 50 ppb.
12. Opposition from hunters that have grown used to the dry conditions of the Holey Land WMA since flow-through operations ceased in 2005
13. Time and interagency cooperation is required to identify constraints and revise existing policies.
14. Would require development of Lake O release guidance for the middle and upper bands of the 2008 LORS; Process needed for release guidance development
15. Potential challenges by federal agencies and third parties.
16. Sediment estimates may require additional sampling.
17. Resources required to revise LORS are limited
18. Resources - funding, land, etc.; minimal disruption to existing communities

Dry season 2013-2014: Missed opportunity?

Minimal risk of water supply shortage; desired Lake recession not met; Holey Land desperately needed water; STAs drying out – ground nesting birds coming in, WCA-3A drying out; available capacity in WCAs; modeling predicting >60% risk of releases to estuaries in May



Note: Arrow sizes are not proportionate to flow values.

When LORS2008 calls for releases to the WCAs:

Suggestions:

- 1. Set a Target of sending a minimum of 250,000 acre feet to WCAs before any regulatory releases are made to the estuaries.***
- 2. Remove all state and federal policy restrictions to sending regulatory releases to the WCAs (subject to public safety consideration of WCA levees).***
 - District reported that Water Control Plan for WCAs does not allow Lake regulatory releases that reduce risk of flooding due to dike failure to be sent to WCAs when stage is more than 0.25 ft above schedule – even though stormwater runoff from same area can be sent to WCAs.
 - District reported that one reason for not sending Lake releases to the south is that they are now interpreting “harm to the WCAs” to include the STAs; not sure this was in LORS2008.
 - Agencies appear to be managing individual components for perfection – need to step back and look at these issues holistically.
- 3. Implement measures to temporarily reduce inflows to Lake Okeechobee.***
 - Temporarily raise the normal operating levels in canals adjacent to the Lake
 - Temporarily reduce the use of pump stations S-2, S-3 and LC10-A – keep trigger stage (12.5 ft) the same, but maximize southern pumps, e.g., G-370 was not pumping at maximum. The drainage capacity of EAA has increased from $\frac{3}{4}$ -inch per day to over 1-inch per day.

More Fully Utilize the STAs/WMAs

4. Slow and steady continuous flow through of Lake water south

- Approximately 17,000 more acres of treatment area operational now than when LORS2008 developed
- Lake TP concentrations are considerably lower now than when LORS2008 was developed

5. Send Target of 1.5 cm per day, up to Maximum of 3 cm/day, to STAs 1E, 1W, 2 and 3/4; send 0.5 cm/day to STA-5/6

Actual capacity will vary depending on various factors (rainfall, STA and WCA water levels, etc.) and while short-term impacts to STAs/WCAs may occur, using as many STAs as possible will minimize potential impacts to any one STA.

6. Maintain minimum of 0.5 ft water depth and obtain Special Purpose Permits to avoid restrictions due to ground nesting birds and avoid dryout

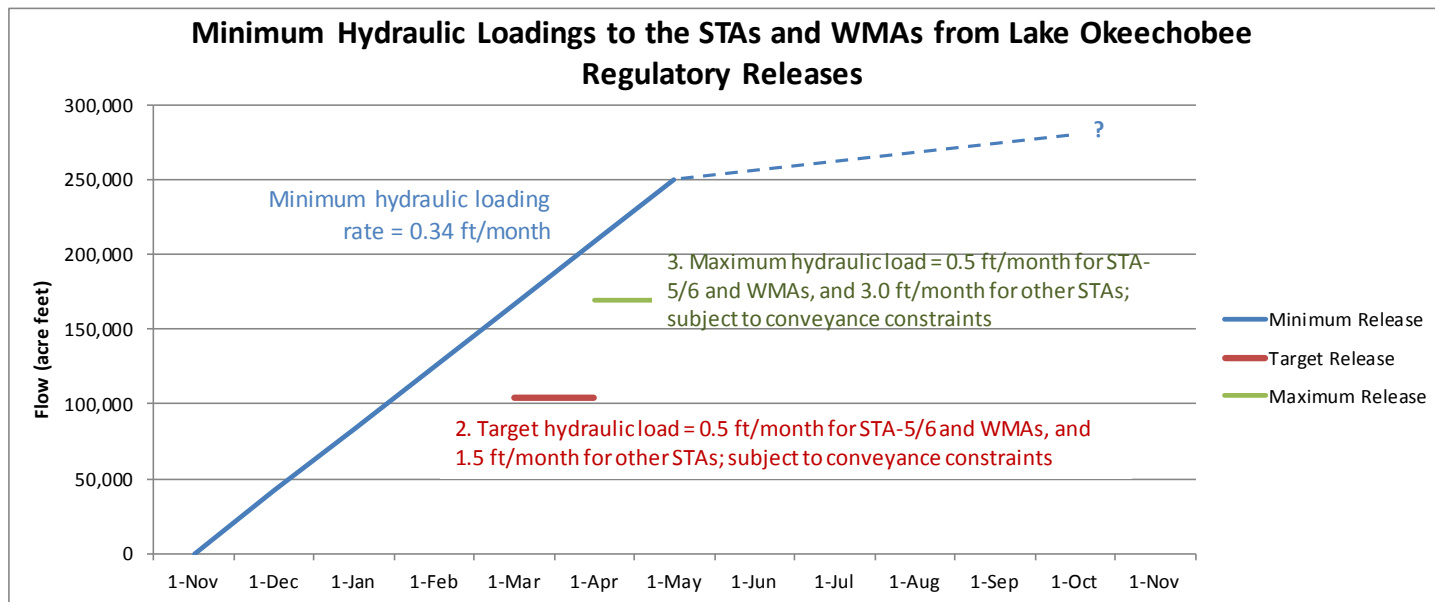
7. Consider declaring emergency and returning all STA cells to full operation

8. Slow and steady continuous flow through of Lake water (0.5 cm per day) to Holey Land and Rotenberger WMAs

Suggested releases to STAs/WMAs

Minimum hydraulic load set equal to 250,000 acre feet over all the STAs and WMAs in six months of dry season (November 1 - May 1)

Flow to STAs and WMAs:	STA/WMA	Minimum Hydraulic Loading Rate (HLR) Flow per month (AF)	Target HLR Flow per month (AF)	Maximum HLR Flow per month (AF)
	STA-1E	1,707	7,500	15,000
	STA-1W	2,219	9,750	19,500
	STA-2	5,292	23,250	46,500
	STA-3/4	5,565	24,450	48,900
	STA-5/6	4,677	6,850	6,850
	Holey Land WMA	12,068	17,675	17,675
	Rotenberger WMA	10,139	14,850	14,850
	Total	41,667	104,325	169,275



When Regulatory Releases to Estuaries are Unavoidable

Until the long-term solution is in place, estuaries will get destructive releases.

Suggestions:

- 9. Declare emergency – notify permit holders and regulatory agencies of need for emergency operations associated with Lake releases***
- 10. Alert county health departments when algae is observed in Lake releases***
- 11. Return all STA treatment cells to full operation.***
- 12. Implement additional measures to reduce inflows to the Lake***
- 13. Terminate releases to St. Lucie when Lake level is at or below 16 ft***
- 14. Weekly documentation of nutrient and sediment loads to estuaries during releases***

Other suggestions

15. ***Complete the documentation - prepare environmental and economic impact analysis of Lake releases to estuaries as part of After Action report***

16. ***Request that the Corps conduct an updated risk assessment of Herbert Hoover Dike***

Review Plan For Herbert Hoover Dike, April 18, 2012: “The implementation of the 21.4 mile cutoff wall component in Reach 1 satisfies the majority of the risk reduction goals.”

17. ***Request that the Corps revise the Lake’s regulation schedule – to balance environmental and economic impacts to estuaries at the same priority as impacts to other regions***

Reduced risk of dike failure

Approximately 15,000 acres more treatment area are operational

Lake Okeechobee concentrations significantly less than when LORS2008 was developed

Other suggestions

18. ***Sponsor an Emergency Management Workshop for agencies and stakeholders to identify water management operations to reduce regulatory releases to the estuaries.***

Participants will be asked to evaluate the following scenario:

“The U.S. Army Corps of Engineers has decided to close the gates at Port Mayaca (S-308), which will terminate discharges to the St. Lucie River and Indian River Lagoon. Discharges to the Caloosahatchee Estuary cannot exceed the rates identified in the 2008LORS”

Participants will be asked to identify physical, legal or discretionary operational constraints to moving more water to the south, and to identify courses of action necessary to resolve the constraints.

19. ***Continue working to remove all flow restrictions from WCA-3A and WCA-3B into the Park.***
20. ***Add projects to St. Lucie BMAP and Protection Plan to treat Lake regulatory releases***
21. ***Expedite actions to achieve Lake Okeechobee TMDL***
22. ***Begin conceptual design of long-term solution – “3rd outlet” to Everglades (USACE 1955)***

Questions
or
comments?



Photo courtesy of Jacqui Thurlow-Lippisch