

June 6, 2014

The Honorable Senator Joe Negron, Chairman
Select Committee on Indian River Lagoon and Lake Okeechobee Basin

Subject: Near-term Reductions of Destructive Lake Okeechobee Discharges to the St. Lucie River/Estuary and Indian River Lagoon

Dear Chairman Negron:

As I mentioned at the Scripts Treasure Coast Newspapers "On the Record" forum on Monday, I sincerely appreciate your effectiveness in carrying the message of public opposition to the pollution of the coastal estuaries caused by Lake Okeechobee discharges. As you know, we still have a long way to go to eliminate these destructive discharges, but I am confident that we can build on the successes of the 2014 Legislative session.

The year 2013 marked a tragic milestone in the history of the State of Florida's water policy. It was the 100th anniversary of the State's decision to sacrifice the environment and related economy of the region around the St. Lucie River/Estuary and Indian River Lagoon (SLRE/IRL) for the benefit of agricultural and other development south of Lake Okeechobee. In 1913 the State of Florida decided to construct a canal between the lake and the Atlantic Ocean to divert water from Lake Okeechobee that historically flowed south to the Everglades. The year 2013 was also the 90th anniversary of the first discharge from Lake Okeechobee through the newly-constructed St. Lucie Canal. Tragically, also during 2013 the joint management of Lake Okeechobee by the State of Florida and the U. S. Army Corps of Engineers resulted in the discharge of more than 136 billion gallons of nutrient-rich and sediment-laden Lake water to the SLRE/IRL. These untreated discharges conveyed more than 7,500 tons of sediment, more than 650 tons of nitrogen and more than 70 tons of phosphorus into the St. Lucie. In addition, more than 350 billion gallons of untreated Lake water was sent to the Caloosahatchee Estuary and Lake Worth Lagoon. The impacts of these discharges on the regional environment and economy were horrific, and the summer of 2013 became known as the "Lost Summer."

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In response to the public outcry against this government-sponsored pollution of the estuaries, the Florida Senate conducted workshops and sought public input on short-term and long-term measures to reduce the destructive discharges from Lake Okeechobee to the estuaries. Under your effective leadership, the resulting 2014 appropriations included approximately \$172 million for a wide array of projects that, if implemented, will benefit the Everglades, Kissimmee River, Lake Okeechobee, the IRL and agricultural landowners. Significant funds were appropriated for many beneficial projects, however I could find no projects that will stop or reduce the destructive discharges from Lake Okeechobee to the SLRE/IRL in the near term, i.e., within the next 3 years. Had environmental conditions similar to last year occurred this year, I'm not aware of any projects funded by the 2014 appropriations that would reduce Lake releases to the SLRE/IRL. Please let me know if I missed a project that would reduce Lake discharges to the SLRE/IRL in the next 3 years. Also, were provided information on the implementation schedules for the funded projects, or estimates of flow and nutrient reductions for the longer-term projects?

Of the \$172 million appropriation, approximately 33 percent (\$56.6 million) was earmarked for projects that should benefit the SLRE/IRL region. The majority (\$40 million) of this portion was designated for the C-44 Reservoir/STA, a project designed to treat runoff from the largely agricultural C-44 watershed. The C-44 project is a federal project and was not authorized by Congress to treat Lake releases, although there may be incidental amounts of Lake water captured and treated by the project. Another \$10 million was earmarked for dredging in the northern IRL; \$4 million was designated for water quality monitoring within the IRL; \$2 million was devoted to St. Lucie River Initiative, and \$0.5 million was allocated for oyster bed restoration within the SLRE/IRL. The largest portion (41%) of the \$172 million appropriation was earmarked for the continuing cleanup of primarily agricultural runoff south of Lake Okeechobee and additional re-plumbing of the Everglades. These projects may one day provide some additional relief for the estuaries in the form of additional Lake Okeechobee discharges to

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the south, however, significant policy issues remain as obstacles for returning the flow of Lake Okeechobee to its historical course to the Everglades. While I am in no position to affect changes to these policies, you are, and your continuing leadership will be vital.

While the recent newspaper forum was very informative, there was insufficient time to ask the following questions regarding actions to reduce the devastating Lake releases to the SLRE/IRL.

1. Will you (or the Legislature) require state agencies to prepare an environmental and economic impact analysis of the 2013 releases to the estuaries, IRL and coastal reefs?
2. Will you (or the Legislature) sponsor an Emergency Management Workshop for agencies and stakeholders to identify water management operations to reduce Lake Okeechobee regulatory releases to the estuaries? Participants could 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 be increased above existing practices.”

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

3. Will you (or the Legislature) request the Florida Department of Environmental Protection (FDEP) and South Florida Water Management District (SFWMD) to add projects to *St. Lucie Basin Management Action Plan* and *St. Lucie River Watershed*

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Protection Plan to treat Lake regulatory releases? Currently, neither state plan has a project to treat Lake regulatory releases prior to discharge into the SLRE/IRL.

4. Will you (or the Legislature) request the FDEP to issue a permit to the Corps for Lake discharges with sufficient conditions to protect the SLRE/IRL and Caloosahatchee River/Estuary, their endangered and threatened species, and the regions' economy?

5. Available infrastructure and legislative direction exists to send significantly more treated Lake water to the Everglades. Will you (or the Legislature) request the SFWMD to operate the STAs in accordance with the 1994 Everglades Forever Act (Ch. 373.4592)? In 1994, your predecessors in the Florida Legislature made a promise to the citizens of Florida that in exchange for almost a billion dollars in increased public taxes to fund the Everglades STAs, **28 percent more water would flow to the Everglades** – including an annual average of 81.5 billion gallons (250,000 acre feet)¹. ***In fact, there has been a 29 percent decline in the amount of Lake water sent to the Everglades relative to the***

¹ Everglades Forever Act: 373.4592(4)(b) Everglades water supply and hydroperiod improvement and restoration -

- “To the greatest extent possible, wasteful discharges of fresh water to tide shall be reduced”

- “The District shall operate the Everglades Construction Project as specified in the February 15, 1994, conceptual design document, to provide additional inflows to the Everglades Protection Area.” i.e., an average of >250,000 acre feet per year of Lake water to STA-3/4

- “The increased flow from the project shall be directed to the Everglades Protection Area as needed to achieve an average annual increase of 28 percent compared to the baseline years of 1979 to 1988.”

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1979-1988 base period. This Lake water should be sent slowly and continuously through STAs/WMAs/WCAs – which was the historical way Lake water flowed to the Everglades. Somewhat counterintuitively, the dry season (November 1 – May 30) is the best time to send this Lake water to the Everglades: best for the Lake, best for the Everglades, best for the Holey Land Wildlife Management Area and best for the STAs. If additional treatment area is needed to achieve this goal and meet Everglades water quality standards, then so be it. During 2013, more than 370 billion gallons of runoff from private agricultural and other areas was treated in the publically-funded STAs, accounting for 88 percent of the inflow to the STAs. In 2013 just 51 billion gallons of Lake water was sent to the STAs. To their credit the SFWMD has sent approximately 20 percent more Lake water to the Everglades this year than last year. Will you (or the Legislature) request the following?

- a. When the LORS calls for releases to the Everglades,
 - i. Request the SFWMD to set a target of sending 81.5 billion gallons to the STAs and Wildlife Management Areas (WMAs) between November 1 – May 1. Target hydraulic loading rates should be kept below 1.5 ft per month to avoid impacts to the STAs and WMAs.
 - ii. Request the SFWMD to maintain a minimum depth of 0.5 ft in the STAs and obtain a Special Purposes Permit to avoid restrictions due to ground nesting birds and to avoid dryout.
- b. When destructive Lake releases to the estuaries are unavoidable,
 - i. Consider declaring a state of emergency, and have the SFWMD notify permit holders and regulatory agencies of the need for emergency operations throughout the district associated with Lake releases
 - ii. Request the SFWMD to alert county health departments when algae is observed in discharges from the Lake

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- iii. Request the SFWMD to return all STAs to full operation
 - iv. Request the SFWMD to implement measures to temporarily reduce inflows to Lake Okeechobee
 - v. Request that the Corps to terminate Lake regulatory releases to SLRE/IRL when the Lake level is at or below 16 ft
 - vi. Request the FDEP and SFWMD to document the sediment and nutrient loads in the Lake discharges to the estuaries
- c. The SFWMD operations to send additional Lake water to the Everglades is hampered by existing policies and will need to your help to surmount these, including:
- i. Lake releases to the STAs are considered secondary to EAA runoff – and need to be elevated in priority equal to EAA runoff;
 - ii. Lake releases to the WCAs are considered secondary to EAA runoff, and restrictions are encoded in the Corps' *Water Control Plans* – and need to be elevated in priority equal to EAA runoff; and
 - iii. Modeling used in the design of the Everglades Restoration Strategies contain outdated estimates of Lake releases to the STAs based on old phosphorus levels, and need to be synchronized with the 81.5 billion gallons per year average directed by the Ch. 373.4592. This modeling needs to be updated to reflect the legislatively mandated target.
- d. ***See Attachments 1 and 2 for additional details and suggestions.***
6. Will you (or the Legislature) request state agencies to expedite actions to achieve the Lake Okeechobee TMDL? Cleaning up the Lake will reduce the nutrient pollution to the estuaries.

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7. I fully support the Committee's Final Report recommendation "that Florida's Congressional representatives support legislation or rulemaking in order to revisit the regulation schedule to update the risk assessment used to manage risk at certain lake level management bands." Will you (or the Legislature) formally make this request to Florida's Congressional representatives? In this request, will you (or the Legislature) request that the Corps treat the impacts to estuaries at same priority as impacts to Lake, EAA and Everglades? To their credit, the Corps exercised good discretion over the last few months and did not make releases to the St. Lucie even though the LORS guidance was to do make regulatory releases.
8. I fully support the Committee's Final Report recommendation "establishing an advisory board at a state university to evaluate technologies and proposals that address one or more of the problems affecting the estuaries." How will this recommendation be implemented?
9. I fully support the Committee's Final Report recommendation calling for "further evaluation of methods to reduce the impact of septic systems on ecologically sensitive areas." The \$172 million appropriation, along with budget line items 1390 and 1391 allocated \$50 million to the clean-up of pollution from private agricultural lands through source control programs and Dispersed Water Management Projects (DWMPs), but no money was earmarked for the clean-up of pollution from septic tanks along the SLRE/IRL. Will you (or the Legislature) seek funding to address septic tanks in high risk areas equal in funding to the amount appropriated to agricultural source control programs and DWMPs?
10. I fully support the Committee's Final Report recommendation for sediment removal from the canal upstream of the Lake Worth Lagoon and capping of muck in the lagoon

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(“appropriating \$2,075,000 for continued funding of this program and the implementation of these short-term projects.”) Will you (or the Legislature) request funding for construction of a similar sediment trap upstream of the S-80 lock and dam to capture the tons of nutrient-laden muck contained in Lake releases to the SLRE/IRL? Will you (or the Legislature) request funding for a similar program of capping (or dredging) muck in the St. Lucie estuary?

11. I fully support the Committee’s Final Report recommendation that “The Standing Committee on Environmental Preservation and Conservation, the SFWMD, and the Corps should continue to address the potential of any project, plan, or technology that would eliminate the discharges to the coastal estuaries east and west of Lake Okeechobee.” and the Senate appropriation of \$250,000 for the University of Florida Water Institute to evaluate ways to eliminate destructive Lake releases to the estuaries by sending more Lake water to the Everglades.

- a. Will you (or the Senate) appoint a public advisory committee to actively participate in the Florida Water Institute evaluation of ways to move Lake water to the Everglades?
- b. Will you (or the Senate) request the Corps to provide to the Water Institute all the previous design reports leading to their 1955 design for the “3rd Outlet to the Everglades”? The 1955 report was entitled “Partial Definitive Project Report, Central and South Florida Flood Control and other projects. Serial 19, March 28, 1955. District Office, U.S. Army Corps of Engineers, Jacksonville, Fla.
- c. Will the Senate publish monthly progress updates of this study?

12. Accountability in Dispersed Water Management Projects. The \$172 million appropriations contained \$13 million for dispersed water management projects

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(DWMPs) on private lands. To date, over \$65 million has been obligated by the SFWMD for DWMPs. However, members of the public (e.g., Audubon of Florida, Mark Perry and I) have support for DWMP is contingent on responsible and meaningful use of these funds for projects that measurably reduce nutrient loads to Lake Okeechobee and the estuaries in a cost effective manner. To date, there has been no master plan feasibility study showing that these projects will measurably reduce nutrient loads to Lake Okeechobee and the estuaries in a cost effective manner relative to regional projects, and there appears to be no accountability if the projects fail to perform as manner. Worse, several beneficial regional water quality projects remain unfunded while public funds are diverted to DWMPs on private lands. Prior to dispersing the funds appropriated by the Legislature:

- a. Will you (or the Legislature) require that the District fund only those projects that measurably reduce nutrient loads to Lake Okeechobee and the estuaries at a cost effectiveness (dollars per pound of phosphorus removed including monitoring costs) as good as, or better than, regional projects (e.g., STAs)?
- b. Will you (or the Legislature) require accountability within the program, e.g., if a project is funded on a claim of nutrient reduction, then a meaningful correction will be required if a claim is not borne out.

Attachment 3 is a letter I sent to the SFWMD containing additional technical details; to date I have not received a response.

13. During 2013, only 12% of the water sent to the STAs was Lake releases – the rest was runoff from primarily agricultural basins. Since the 1994 EFA was passed, Lake Okeechobee releases have averaged less than ten percent of the STA inflow. In 1995, the public voted to amend the Florida constitution to require that those who primarily

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pollute the Everglades should be primarily responsible for paying the costs. Will you (or the Legislature) request an analysis of public vs private funding of Everglades restoration and comparison with the public vs. private pollution sent to the STAs?

14. An oft-repeated constraint to sending Lake water to the STAs is that discharges are not meeting the water quality based effluent limit (WQBEL - an average phosphorus level of 13 parts per billion). Over \$2 billion of public funds have been expended or earmarked to achieving this number – and **to date there is no STA that has ever achieved the WQBEL during a 5-year period**. District staff has said that the \$1.9 billion CEPP will not treat Lake releases if the WQBEL is not met – and under this scenario, CEPP will only treat agricultural runoff. Recently diverse parties have questioned whether an unintended consequence of Everglades Restoration has been the reduction in flow of water to Everglades National Park. The reduction is due in part to the reduction in Lake Okeechobee releases to the STAs and WCAs as mentioned in No. 5 above. Will you (or the Legislature) sponsor an independent evaluation of the environmental benefits vs. costs of Everglades restoration, with a focus on the appropriateness of the WQBEL?

Finally, a special thanks to you and the Senate for appropriating \$30 million for protection of Florida springs. I know I share your desire that this money goes toward measurable springs protection.

I look forward to your responses. Please contact me if I can be of any assistance.

Sincerely,



Gary Goforth, P.E., Ph.D.
10924 SW Hawkview Circle
Stuart, FL 34997

Attachments

Attachment 1

The Honorable Senator Joe Negron, Chairman
Select Committee on Indian River Lagoon and Lake Okeechobee Basin

October 8, 2013

c/o Katie Betta
Deputy Chief of Staff for Communications
Suite 409
The Capitol
404 South Monroe Street
Tallahassee, FL 32399-1100

Dear Chairman Negron:

Attached for consideration by the Select Committee on Indian River Lagoon and Lake Okeechobee Basin is a set of suggestions designed to reduce the damaging discharges from Lake Okeechobee to the St. Lucie River and Estuary, the Indian River Lagoon and the coastal reefs. I presented a portion of these at the August 22, 2013, special committee hearing in Stuart, and was asked to submit in writing the complete set of suggestions for your consideration. These suggestions may also provide benefits to the Caloosahatchee River and Estuary.

By way of brief background, my name is Gary Goforth. I am a Ph.D. environmental engineer with more than 25 years of hands-on experience in the restoration and protection of the Kissimmee-Okeechobee-Everglades ecosystem. I was one of the lead environmental engineers with the South Florida Water Management District during the planning, design, permitting, construction and operation of the Everglades Stormwater Treatment Areas (STAs) between 1988 and 2004. I left the District in January 2005 to start my own engineering firm based in Stuart, Florida, and the District is my primary client. I drafted these suggestions for your committee's consideration outside of all contractual relationships with the District and other organizations. This set of suggestions is not a final engineering document as defined in Chapter 471, Florida Statutes and Chapter 61G15, Florida Administrative Code.

Please contact me if I can be of any assistance.



Gary Goforth
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Stuart, FL 34997
772 223-8593

Suggestions for Consideration by the Select Committee on Indian River Lagoon and Lake Okeechobee Basin

Gary Goforth – 10 8 2013

Note: Several of these suggestions were made to the committee at the August 22 public hearing in Stuart. A few have already been implemented, and all parties are to be commended for their collaborative effort to reduce the damaging discharges to the estuaries. The full set of suggestions is compiled here for completeness.

1. Consider declaring a State of Emergency for the coastal regions being adversely affected by the discharge of Lake Okeechobee regulatory releases, and for the region south of the Lake potentially impacted by a failure of the Herbert Hoover Dike.
 - a. The Florida Department of Health has issued numerous public health advisories for the St. Lucie River and Indian River Lagoon, and hopefully the declaration of an Emergency would increase support for improving public health and safety.
 - b. In addition to potentially providing financial support to individuals and businesses adversely affected by the discharges, declaring a State of Emergency may give the State and regions additional flexibility to deal with this crisis.
 - c. Consider requesting the South Florida Water Management District (District) to declare a State of Emergency with regard to their Works of the District permits (40E-61 and 40E-63), and their operation of the Stormwater Treatment Areas (STAs), the Water Conservation Areas (WCAs) and other public lands. This hopefully will give them more flexibility to manage water levels in the Kissimmee-Okeechobee-Everglades system and reduce discharges to the coastal estuaries.

2. Consider sponsoring an Emergency Management Workshop for staff of the U.S Army Corps of Engineers (Corps), District and stakeholders.
 - a. Participants could be asked to develop an Operation Plan for 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. No additional discharges will occur to the C-43 canal (Caloosahatchee River) above the rates in the 2008 Lake Okeechobee Regulation Schedule”
 - b. Workshop participants could be asked to develop an Operation Plan and a list of projects necessary to safely manage the waters of Lake Okeechobee, which

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could include reducing inflows to the Lake and increasing the amount of water sent to the south.

- c. Participants could 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.
3. Consider asking the Corps to prepare an updated risk assessment on the potential risk of failure of the Herbert Hoover Dike, now that the initial 21.4 mile section of the dike has been rehabilitated.
- a. Issues regarding the structural integrity of the Herbert Hoover Dike led to lowering the upper limit of the Lake Okeechobee regulation schedule (2008 LORS) from 18.5 ft NGVD to 17.25 ft NGVD, resulting in increased pressure to send Lake releases to the estuaries. From a presentation by Lt. Col. Greco at the August 8, 2013 WRAC meeting in Stuart, it is my understanding that the Corps estimated the following annual risks of failure **before the rehabilitation**:

Lake Elevation (ft., NGVD)	Combined Probability of HHD Breach (%)
15	1
17	11
18	45
21	100

(Table H-10.2, 1998 HHD MRR & LORS FEIS, A-3)

- b. Documents available on the Corps website indicate the risks are much less after the present rehabilitation:
 - i. "Since 2007, the Corps has made a significant investment, over \$300 million, in projects designed to reduce the risk of catastrophic failure of the aging structure."
 - ii. "The implementation of the 21.4 mile cutoff wall component in Reach 1 satisfies the majority of the risk reduction goals."

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4. Consider requesting the Corps to re-evaluate the Lake Okeechobee regulation schedule with a goal to minimize Lake releases to the estuaries.
 - a. As part of this re-evaluation, consider requesting the Corps to perform an **updated cost benefit analysis** of making regulatory releases to the estuaries.
 - i. Costs would include the economic and environmental costs of discharging nutrient-laden freshwater to the estuaries, including
 1. Immediate loss of income and jobs for people who make their living on or in the water,
 2. Near-term loss of income as potential tourists and others decide not to visit the coastal regions, or buy homes in the area
 3. Loss of real estate value
 4. Ecological costs to the rivers, estuaries, lagoons and near-shore reef systems.
 - ii. Benefits of releasing water from the Lake to the St. Lucie River and Indian River Lagoon could be quantified. These benefits have been described as two-fold:
 1. Reducing the risk of breach of the Herbert Hoover Dike, and
 2. Improved health of Lake Okeechobee
 - iii. Request the Corps to examine the balance of potential economic costs of a dike breach with the certainty of economic and environmental costs of these Lake discharges to the St. Lucie River and Indian River Lagoon.
 - iv. This analysis may indicate that the coastal regions are suffering the majority of the economic and environmental costs, while the region south of the Lake is receiving the majority of the benefits. If so, the Corps could be asked to determine how the Lake Okeechobee regulation schedule could be revised to more fairly align the majority of the costs to the region receiving the majority of the benefits.
 - b. As part of this re-evaluation, consider requesting the Corps to evaluate raising the upper limit of the lake regulation schedule back to 18.5 ft, now that the present dike rehabilitation efforts have satisfied the majority of the risk reduction goals (as reported in a Corps news release).
 - c. As part of this re-evaluation, consider requesting the Corps to eliminate the restriction of moving water south for treatment in the STAs.
 - i. Additional treatment areas are operational that were not operational when the 2008 LORS was developed.
 - ii. The 2008 LORS recommended a dramatic decrease in the amount of regulatory releases to be sent south to the STAs compared to the design of STA-3/4. In 1994, STA-3/4 was designed to capture and treat an

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average of more than 250,000 acre feet per year (80 billion gallons per year) of Lake regulatory releases. The Florida Legislature directed the District to operate the STAs in accordance with the 1994 Conceptual Design (Ch. 373.4592, F.S.).

- iii. The 2008 LORS assumed a limit on Lake Okeechobee releases to the STAs of 60,000 ac-ft per year. This limit was based on the high TP concentrations in Lake Okeechobee following the 2004-2005 hurricanes.
 - iv. Lake concentrations have declined to a current average of 63 ppb for releases to the Miami and North New River Canals. Using the updated TP concentrations will allow higher flows to the STAs and not exceed the TP loads from the Lake as assumed in the 2012 Restoration Strategies.
5. Consider requesting the District to move more water south during periods of Lake releases into and through the following areas, without sacrificing public health and safety.
- a. STAs. In light of the public health and safety issues surrounding Lake regulatory releases, normal STA operations might be suspended, e.g., Target depths, vegetation maintenance activities, and nesting bird constraints. The nutrient removal performance of the STAs will likely suffer a temporary decline, but the performance should return to normal over time.
 - i. STA-1E – a 5,000-acre treatment area located north of WCA-1
 - ii. STA-1W - a 6,500-acre treatment area located north of WCA-1
 - iii. STA-2 - a 15,000-acre treatment area located between the EAA and WCA-2A
 - iv. STA-3/4 – a 16,500-acre treatment area located between the EAA and WCA-3A. As mentioned above, the 1994 Conceptual Design for the STAs contemplated sending an annual average of more than 250,000 AF of Lake regulatory releases to STA-3/4. While some adjustments were made to reflect higher TP concentrations in Lake Okeechobee, since 2008 actual volumes of Lake water that have been sent to the STAs have averaged less than 75,000 AF/yr.
 - v. STA-5/6 – a 15,000-acre treatment area located immediately west of the Rotenberger area; canals currently exist to convey Lake releases to STA-5/6 and existing water supply pumps can be supplemented with more pumps to increase the capability to store Lake water in STA-5/6.
 - b. Other public lands

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- i. Holey Land Wildlife Management Area, a 35,350-acre area located between the EAA and WCA-3A. During the current event, there are no records of Lake water being sent to the Holey Land since releases to the estuaries began on May 8, 2013.
- ii. Rotenberger Wildlife Management Area, a 28,760-acre area located between the EAA and WCA-3A. Pump station G-410 has historically been used to deliver Lake water to the Rotenberger Wildlife Management Area, but during the current event, less than 5 acre feet of Lake water has been sent to the Rotenberger. In contrast, over 9,000 acre feet of Lake water was sent to the Rotenberger for water supply purposes in the 12 months prior to May 2013. Phosphorus concentrations leaving the Rotenberger have averaged 13 parts per billion over the last year, better than any STA.
- iii. The Water Conservation Areas, and
- iv. Everglades National Park.

Normal operating schedules in the areas may need to be temporarily exceeded during these periods of emergency.

6. Consider requesting the District and Corps to evaluate ways to reduce inflows to Lake Okeechobee before and during periods when releases are being made to the estuaries.
 - a. Alternatives could include
 - i. temporarily raising the normal operating levels in canals adjacent to Lake Okeechobee.
 - ii. temporarily reducing the use of pump stations S-2 and S-3 in the EAA, and instead sending this runoff to the south. During June 2013 as harmful Lake releases were being made to the St. Lucie River and Caloosahatchee River, the District pumped over 8 billion gallons of water from the EAA back into Lake Okeechobee through pump station S-2. The pumping capacity within the EAA to drain excess rainfall to the south is greater now than before the STAs were constructed. In addition, approximately 50,000 acres of land has been removed from the regional drainage area and have been converted to STAs and the soon-to-be-constructed EAA Flow Equalization Basin.
 - iii. temporarily reducing the use of Culvert 10A in the L-8 Canal Basin, and instead sending this runoff to the south and southeast. During the summer of 2013 as harmful Lake releases were being made to the

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estuaries, over 8 billion gallons of stormwater runoff from the L-8 Canal Basin was sent to the Lake through Culvert 10A.

- iv. closing the gates at S-308 during rainfall events to prevent C-44 Basin runoff from flowing into the Lake.
 - b. Having the District declare a State of Emergency may provide additional flexibility to manage water levels in canals surrounding the Lake in order to minimize inflows to the Lake.
7. In light of the public health and safety risk associated with blue green algae, consider requesting the District to notify the public health departments when blue green algae are observed in waters discharged from Lake Okeechobee to the St. Lucie Canal and the C-43 Canal. According to the District's DBHYDRO database, blue green algae were observed in water samples collected by the District during many sampling events since regulatory releases began on May 8.
8. Consider requesting the Florida Department of Environmental Protection to provide a report to the Committee on the permit issued to the Corps to discharge water from Lake Okeechobee into the St. Lucie River and Indian River Lagoon, portions of which are classified as Outstanding Florida Waters. If a permit was not issued by the State that authorizes these discharges, then the committee should consider requesting follow-up action from the Department. Some of the Outstanding Florida Waters affected by the Lake discharges to the St. Lucie River and Indian River Lagoon include the following:
1. Hobe Sound National Wildlife Refuge
 2. St. Lucie Inlet State Preserve
 3. Indian River State Aquatic Preserve
 4. Jenson Beach State Aquatic Preserve

From Chapter 62.302-700, Florida Administrative Code:

(1) It shall be the Department policy to afford the highest protection to Outstanding Florida Waters and Outstanding National Resource Waters. No degradation of water quality, other than that allowed in subsections 62-4.242(2) and (3), F.A.C., is to be permitted in Outstanding Florida Waters and Outstanding National Resource Waters, respectively, notwithstanding any other Department rules that allow water quality lowering.

9. Consider requesting the Florida Department of Environmental Protection to provide a report on the environmental impacts of the lake releases on endangered and

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threatened plant and animal species within the affected rivers, estuaries, lagoons and coastal reefs. The intent of the Florida Legislature to conserve and protect these species is described in the Florida Endangered and Threatened Species Act (Ch. 279.2291, F.S.).

10. Consider requesting the District to supplement their weekly charts reporting Lake releases and basin flows to the estuaries with
 - a. charts documenting nutrient loads to the estuaries from Lake releases and basin flows (examples attached – see Figures 1 and 2), and
 - b. charts documenting Lake releases and basin flows sent to the south, the STAs, the WCAs and other southern water bodies (example attached – see Figure 3).

11. Consider requesting the District to make available to the public provisional water quality data for discharges from Lake Okeechobee. Presently there is an approximate 2 month delay from the time some samples are collected to the time they are available for public review within the District’s DBHYDRO database.

12. Consider requesting the District and Corps to prepare an “After Action” report covering the regulatory releases to the estuaries. The following components could be included in this report.
 - a. An evaluation of the short-term and long-term ***environmental*** damages, and the risk to public health and safety, resulting from the discharge of millions of pounds of nitrogen and phosphorus from the Lake into the rivers, estuaries, lagoons and near-shore reef. Impacts from the following should be identified and methods to mitigate the damages should be suggested.
 - i. Freshwater
 - ii. Nitrogen (it is estimated that over 1.2 million pounds have been discharged from the Lake to the St. Lucie River between May 8 and September 17, 2013)
 - iii. Phosphorus (it is estimated that over 120,000 pounds have been discharged from the Lake to the St. Lucie River between May 8 and September 17, 2013)
 - iv. Sediment (it is estimated that over 14 million pounds have been discharged from the Lake to the St. Lucie River between May 8 and September 17, 2013)
 - v. Blue green algae – present at many samples of water discharged from the Lake since May 8

Suggestions for Consideration by the Select Committee on Indian River Lagoon and Lake Okeechobee Basin

- b. An evaluation of the short-term and long-term ***economic*** damage resulting from the Lake discharges to the rivers, estuaries, lagoons and reef.
 - c. An analysis of the sediment transported from the Lake into the C-43 and C-44 canals, and subsequently into the St. Lucie and Caloosahatchee Estuaries.
 - i. According to data obtained from the SFWMD database, over 14 million pounds of TSS (suspended sediment) has been discharged to the Lake into the C-44 Canal between May 8 and September 17, 2013. Where has this sediment gone? How much has gone into the River and estuary? How much has been deposited on the bottom of the C-44 Canal? What impact does this have on the flood conveyance capacity of the C-44 Canal? Can the Corps expedite the muck removal project recommended in the Indian River Lagoon – South project, with subsequent routine dredging to remove accumulated sediment?
 - d. A Lessons Learned document summarizing operational decisions, flow summaries, nutrient load summaries, etc. from the current event, along with identification of ways to reduce discharges to the estuaries in future events.
13. Consider asking the District and Corps to clarify what if any additional Congressional authorization is required to authorize the treatment of Lake releases in the C-44 reservoir/STA prior to discharge into the St. Lucie River and Estuary.
- a. Project documents indicate that the present objective for the C-44 Reservoir/STA is to capture and treat local basin runoff – and not Lake Okeechobee discharges.
 - b. If additional Congressional authorization is required, consider asking Congress for this authorization.
14. Consider assisting the District obtain relief from STA operational restrictions due to the federal Migratory Bird Treaty Act of 1918. According to the District's August 2013 report on Lake releases, STA operations protecting certain ground nesting migratory birds limited the amount of Lake water that could be sent to the STAs (i.e., black necked stilts, which are neither threatened nor endangered).
15. The water quality problems Lake Okeechobee are at the heart of the water quality problems of the estuaries resulting from Lake regulatory releases.
- a. Consider requesting the FDEP and the District to project when the Lake will achieve its Total Maximum Daily Load (TMDL). In their 2005 South Florida

Suggestions for Consideration by the Select Committee on Indian River Lagoon and Lake Okeechobee Basin

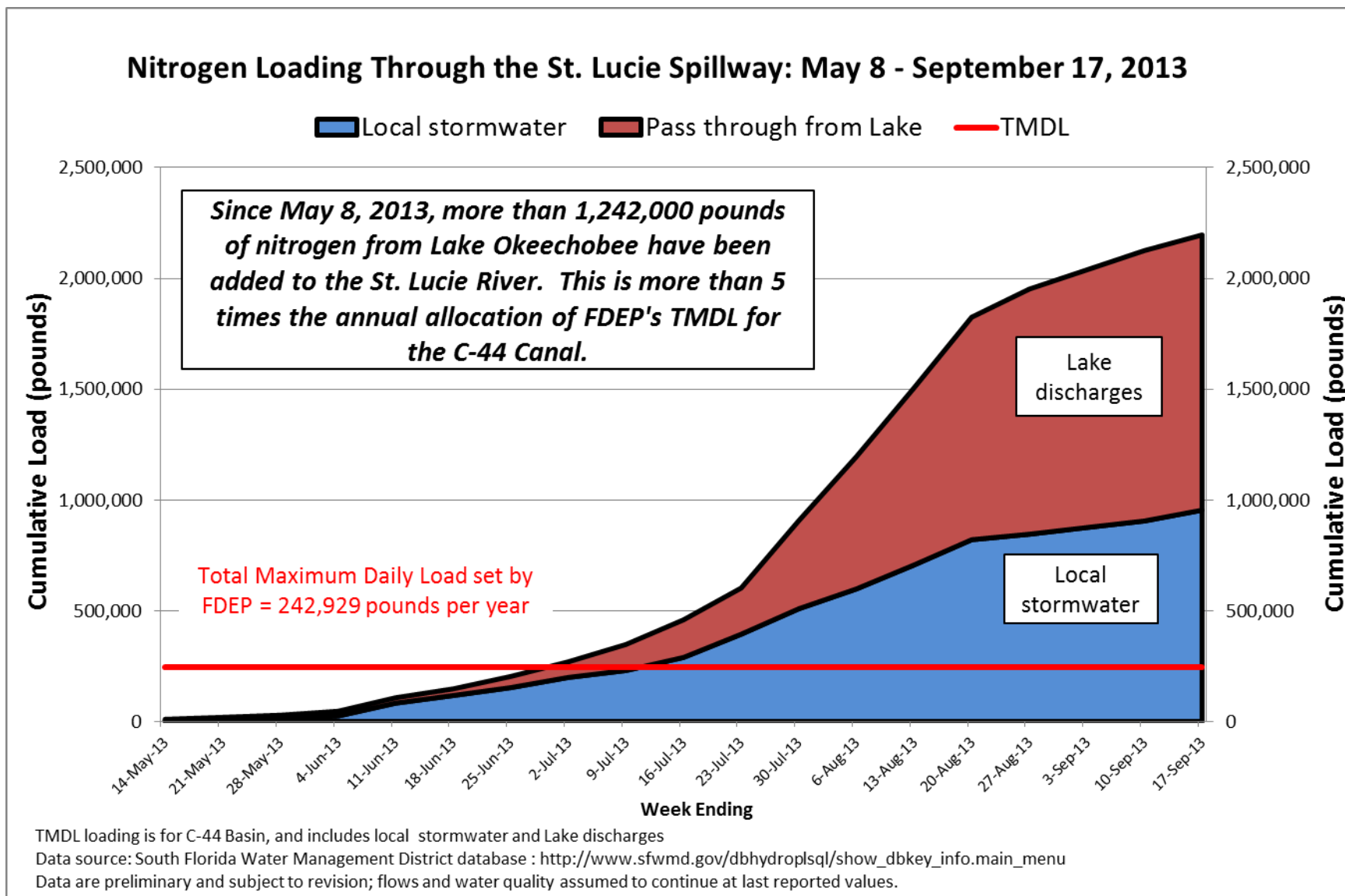
Environmental Report (SFER), the District anticipated that by 2015 inflows nutrient loads to the Lake will achieve the TMDL of 105 metric tons of phosphorus per year. In the 2013 SFER, the District reported “The current five-year average (WY2008–WY2012) TP load was 387 mt, which is about 2.8 times greater than the 140 metric tons per year (mt/yr) Total Maximum Daily Load (TMDL) for the lake.”

- b. The Florida Legislature authorized the Northern Everglades and Estuary Protection Program in 2007 that required specific actions to improve the water quality in the Lake Okeechobee, St. Lucie and Caloosahatchee River Watersheds. Consider requesting annual reports from District, the FDEP and the Florida Department of Agriculture and Consumer Services documenting the effectiveness of source control programs to reduce nutrient loads into Lake Okeechobee and the river watersheds. The annual reports could require identification of the nutrient level targets for each source control program, and present results from monitoring the effectiveness of the various programs.
 - c. According to their website, the FDEP has no schedule for developing the Lake Okeechobee Basin Management Action Plan (BMAP). Consider requesting the FDEP to expedite the development a BMAP for the Lake Okeechobee watershed.
16. Consider requesting the Florida Department of Environmental Protection to add projects in their St. Lucie River BMAP to reduce the nutrient loads coming from Lake discharges so that they will achieve the TMDL. Presently I do not find any projects in the BMAP within St. Lucie River watershed designed to reduce nutrient loads specifically from Lake discharges to achieve the TMDL.
17. Consider requesting the District identify projects in their St. Lucie River Watershed Protection Plan to reduce the nutrient loads coming from Lake discharges so that they will achieve the TMDL. Presently I do not find any projects in the Watershed Protection Plan within St. Lucie River watershed designed to reduce nutrient loads specifically from Lake discharges to achieve the TMDL.
18. Ten Mile Creek Reservoir and Stormwater Treatment Area
- a. Consider requesting the Corps to prepare, if they haven’t already done so, a Lessons Learned document on the design and construction of the Ten Mile Creek Reservoir and Stormwater Treatment Area. The Corps is currently building another Reservoir/STA – the C-44 project.
 - b. Consider requesting the Corps to expedite the repair and full operation of the Ten Mile Creek Reservoir and Stormwater Treatment Area.

Suggestions for Consideration by the Select Committee on Indian River Lagoon and Lake Okeechobee Basin

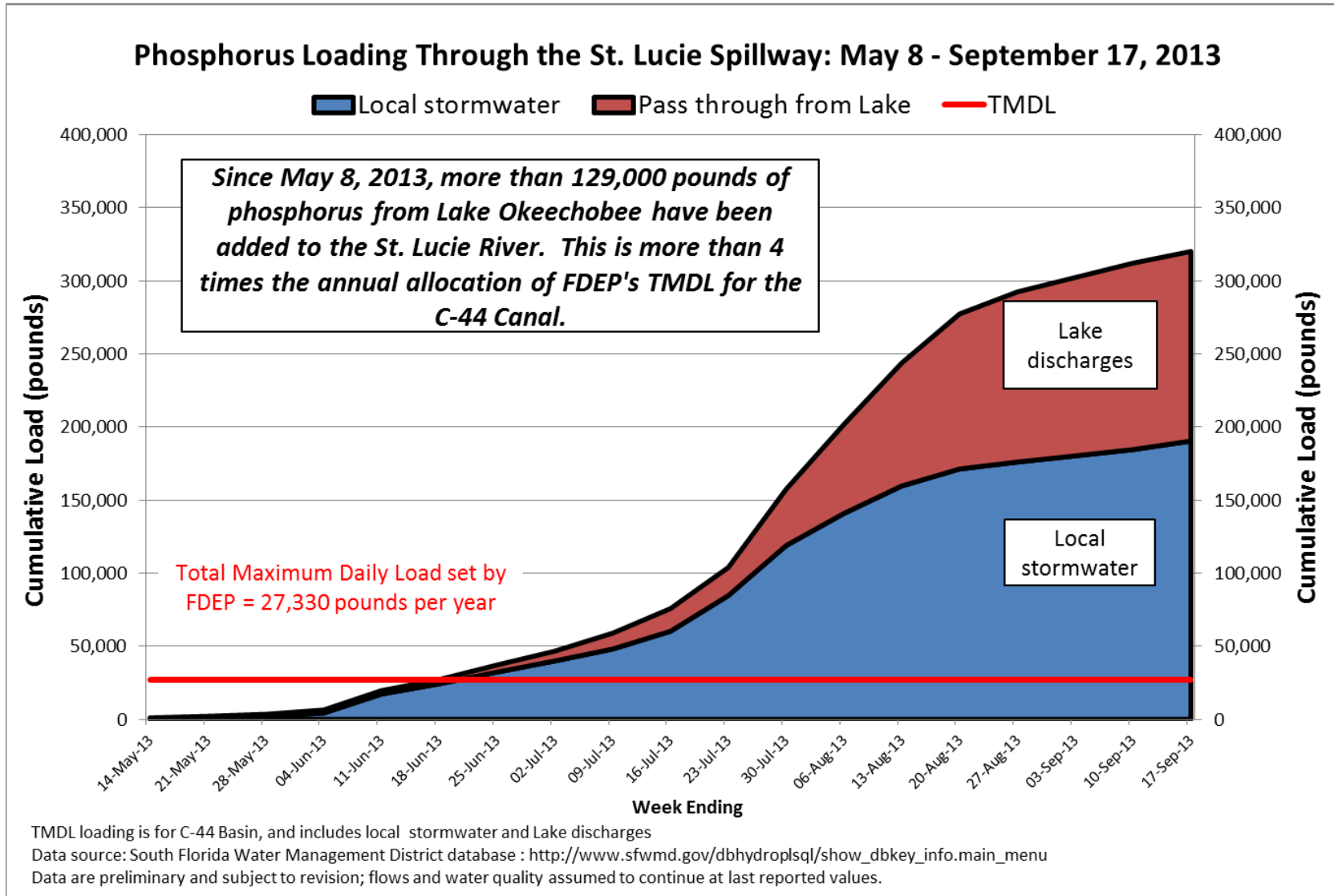
19. Consider requesting the Corps to begin the conceptual engineering design of new discharge structures along the south rim of Lake Okeechobee. A physical constraint to moving more water south is insufficient discharge capacity to the south, and new discharge structures along the south rim of Lake Okeechobee ideally would be large enough to increase the capacity to send water to the south up to the combined capacity of the structures that send Lake water to the east and west estuaries. This conceptual design could identify any necessary expansion of the EAA Canals and treatment areas necessary to convey and treat Lake regulatory releases that are currently sent to the St. Lucie and Caloosahatchee Rivers and estuaries.

Figure 1. DRAFT – Estimates are preliminary and subject to revision.



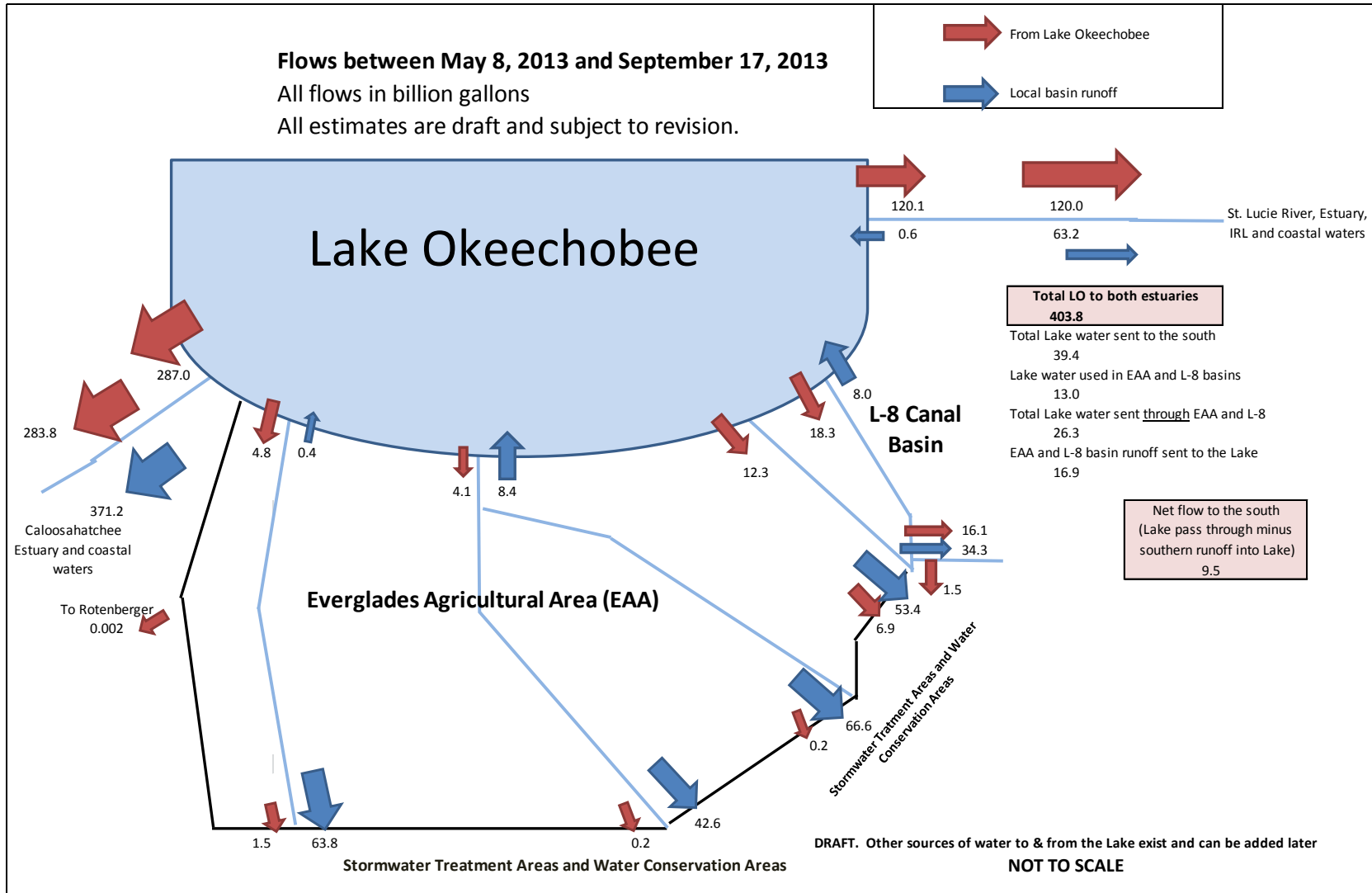
Suggestions for Consideration by the Select Committee on Indian River Lagoon and Lake Okeechobee Basin

Figure 2. DRAFT – Estimates are preliminary and subject to revision.



Suggestions for Consideration by the Select Committee on Indian River Lagoon and Lake Okeechobee Basin

Figure 3. DRAFT – Estimates are preliminary and subject to revision.



Attachment 2

The Honorable Senator Joe Negron, Chairman
Select Committee on Indian River Lagoon and Lake Okeechobee Basin

October 15, 2013

c/o
Pepper Uchino, Staff Director
The Capitol
404 South Monroe Street
Tallahassee, FL 32399-1100

Dear Chairman Negron:

Attached for consideration by the Committee are specific suggestions designed to reduce the damaging discharges from Lake Okeechobee to the St. Lucie River and Estuary, the Indian River Lagoon and the coastal reefs. If implemented these suggestions would also provide benefits to the Caloosahatchee River and Estuary. These suggestions supplement the suggestions I provided last week by providing specific details on sending more Lake releases to the south by utilizing over 100,000 acres of State-owned land. In addition, with the completion of over \$300 million in rehabilitation of the Herbert Hoover Dike, it may be appropriate for the Committee to request the Corps of Engineers to suspend all regulatory releases to the estuaries when the Lake is below 16 ft NGVD.

As with my prior set of suggestions, I drafted these suggestions for your consideration outside of all contractual relationships with any organization, 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.

I look forward to discussing these with you and/or the full Committee at your earliest convenience.



Gary Goforth
Stuart, Florida
(772) 223-8593

Specific Suggestions for Increasing Lake Regulatory Releases to the South

Brief Background. Emergency operations are underway to manage water levels in Lake Okeechobee to reduce the risk of failure of the Herbert Hoover Dike. This emergency condition necessitates discharge of environmentally and economically damaging releases from the Lake to the coastal estuaries, where county governments have declared states of emergency, and/or have asked the Governor to declare a state of emergency. During these emergency conditions, public health and safety issues surrounding Lake Okeechobee releases temporarily override other operational objectives throughout the region. Between January and September, over 450 billion gallons of Lake releases¹ have been sent to the St. Lucie and Caloosahatchee estuaries, the largest volume of Lake releases sent to the estuaries since before the 2004-2005 hurricanes (**Figures 1 and 2**). In addition to freshwater, these releases have conveyed millions of pounds of nitrogen and hundreds of thousands of pounds of phosphorus to the estuaries. Between January and September, approximately 69 billion gallons of Lake releases have been sent south through the Everglades Agricultural Area (EAA) and L-8 Canal basins to the Stormwater Treatment Areas (STAs), Water Conservation Areas (WCAs) and other downstream waters. Of that, approximately 24.5 billion gallons of Lake releases have been sent through the STAs (**Figure 3**). Although available STA treatment area has increased dramatically – 15-fold since 1995 (3,815 acres in 1995 to 57,000 acres today) – the volume of Lake releases sent through the EAA to the STAs and WCAs has decreased significantly (**Figure 4**). In addition to the STAs, the District manages water on over 60,000 acres of public lands south of the Lake and north of the WCAs in the Holey Land and Rotenberger Wildlife Management Areas (WMA).

Based on a review of recent and historical data, I suggest that the Committee consider asking the South Florida Water Management District to send significantly more Lake releases to the STAs and WMAs during this time of emergency conditions. Specific suggestions are provided below. Adverse impacts to these areas can be minimized by sending Lake releases to all these areas as opposed to just one or two of them. By way of example, if STA-1E, STA-1W, STA-2 and STA-3/4 each receive an average of three feet of Lake releases per month (e.g., 20,100 acre feet to the 6,700-acre STA-1W), and STA-5/6, Holey Land and Rotenberger each receive an average of 0.5 feet of per month, almost 55 billion gallons per month of Lake releases could be sent south. The Committee might consider asking the District to consider declaring a state of emergency to enable greater flexibility to send more water sent to south, e.g., to the WCAs and points further south, and to designate Lake regulatory releases as high of priority as flood control discharges.

¹ Lake releases include regulatory releases and, in the case of the Caloosahatchee Estuary, deliveries made to maintain acceptable salinity ranges within the estuary. All estimates are preliminary and subject to revision. A billion gallons is equal to approximately 3,070 acre feet. One acre foot is equal to 325,872 gallons.

FIGURE 1.

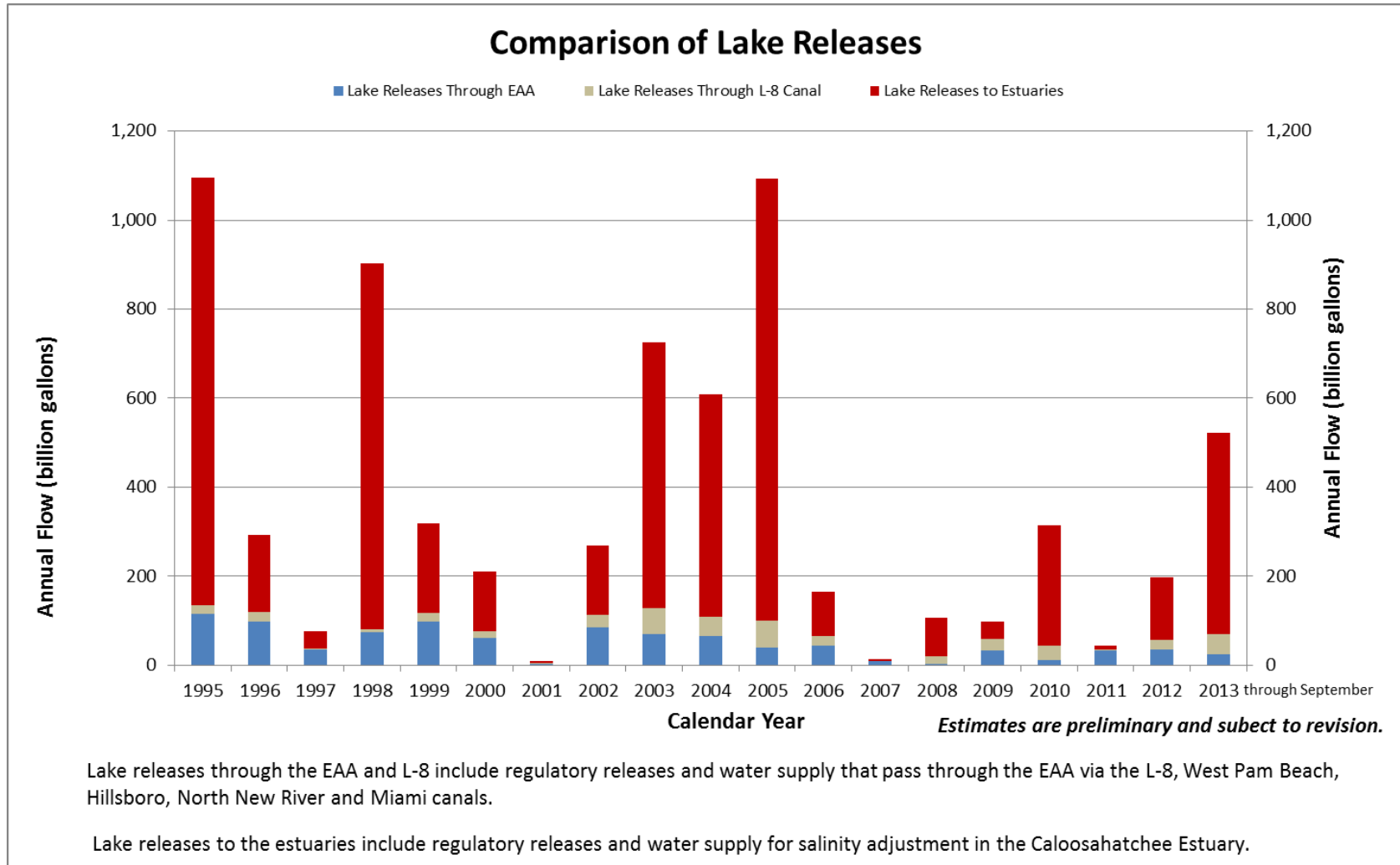


FIGURE 2.

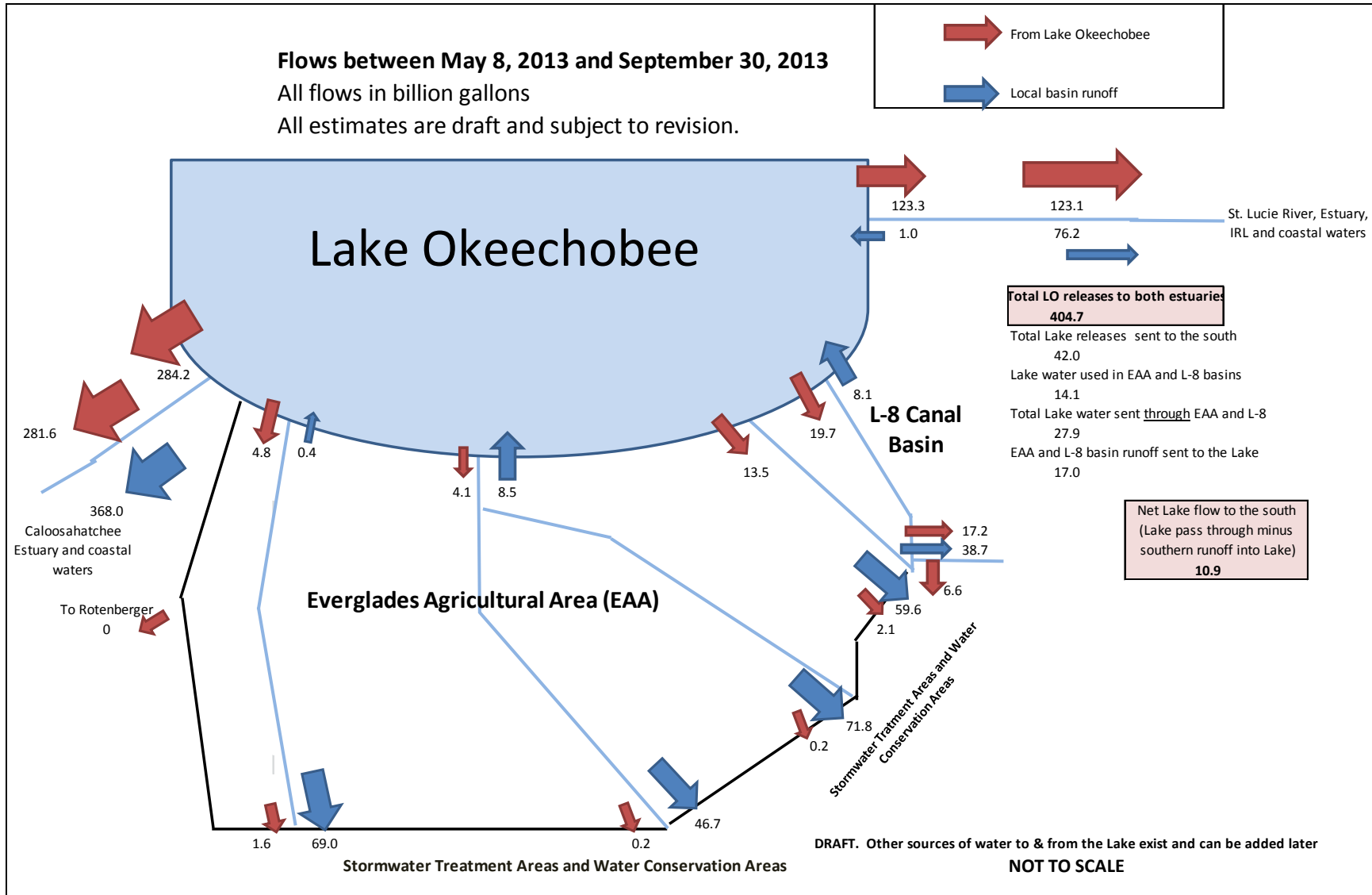


FIGURE 3.

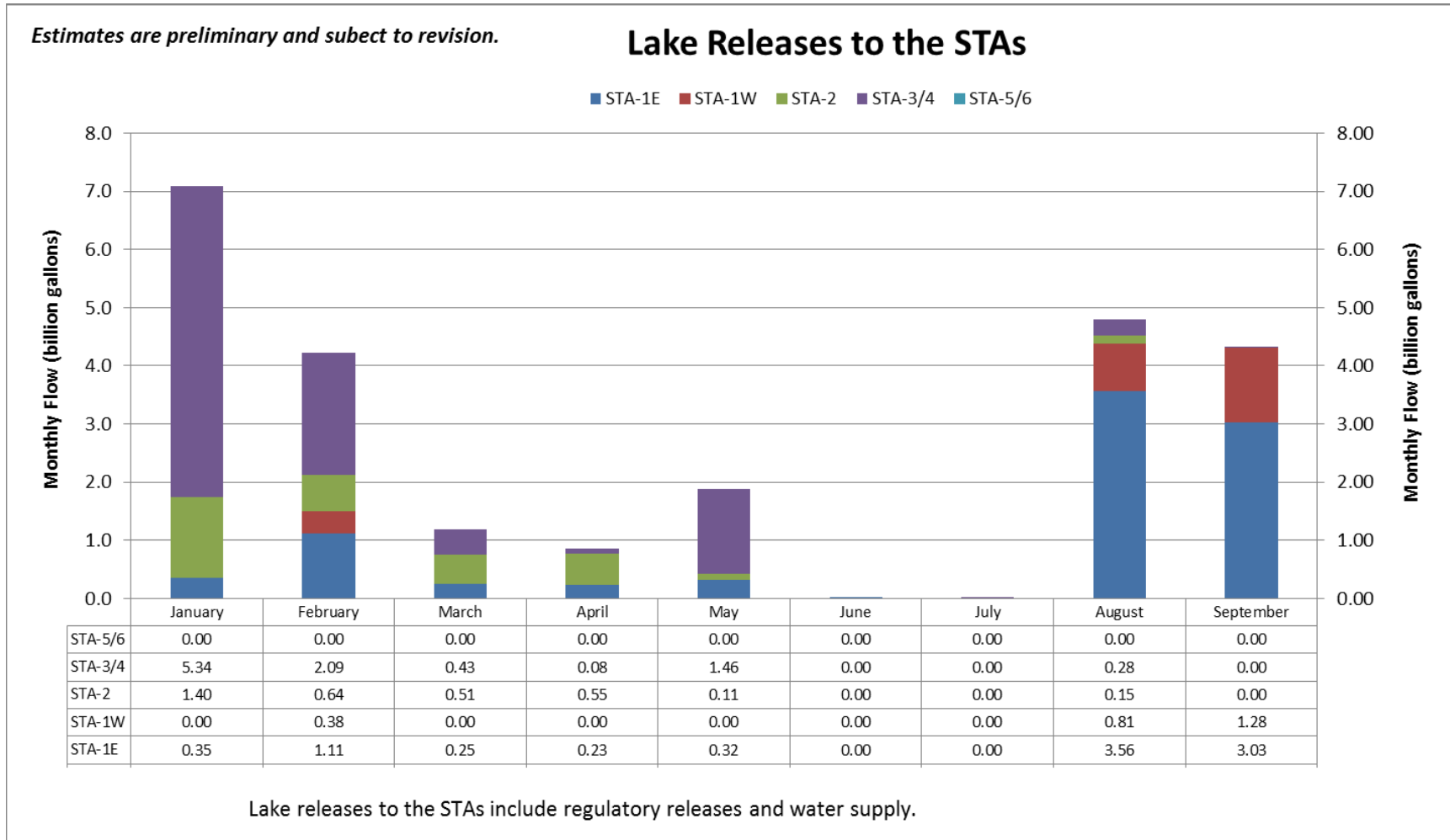
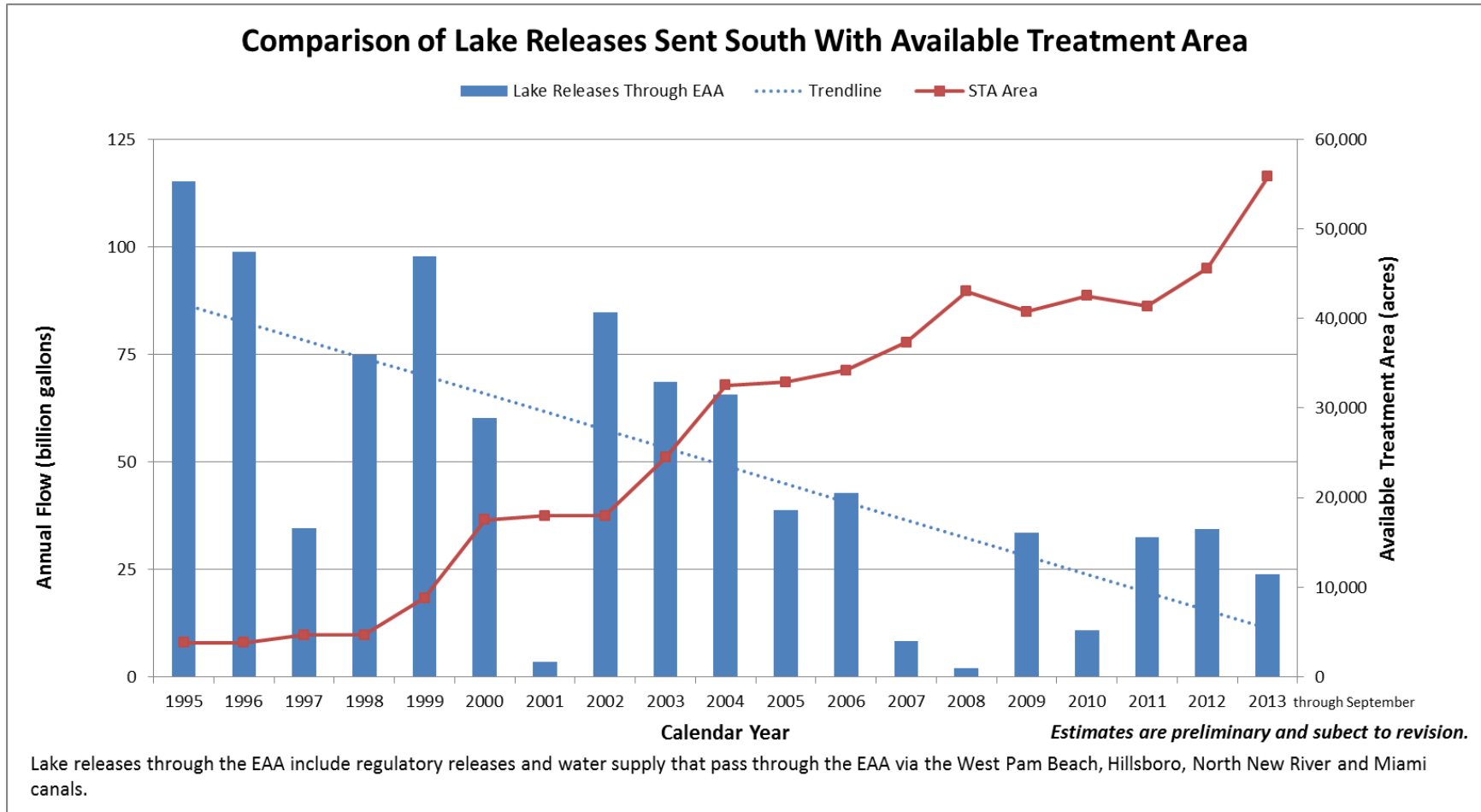


FIGURE 4.



1. General Background on the STAs (approximately 57,000 acres)

- a. Several STA flow-ways are not being used for treatment of Lake releases, for example, the Eastern Flow-way of STA-1E (approximately 1,100 acres) has been off-line for over a year due to structure repairs by the U.S. Army Corps of Engineers (Corps). In addition, the 13,700-acre STA-5/6 has not been used to treat Lake releases through September of this year, despite available conveyance capacity to send the Lake releases to the STA, available treatment capacity and a need for water supply in the NW corner of WCA-3A directly downstream of STA-5/6.
- b. STA performance will likely decrease with a significant increase in Lake releases, but will return to normal over time.
 - i. Approximately 18 months were required for STA-1W to return to normal performance after it received 329,000 acre feet from July 2002 to February 2003. This volume equates to an average hydraulic load of 6.2 ft per month, where the hydraulic load is equal to the flow divided by the area, e.g., $329,000 \text{ acre feet} / 8 \text{ months} / 6,670 \text{ acres} = 6.2 \text{ ft per month}$.
 - ii. By comparison, through September of 2013 approximately 57,000 acres of STAs have received approximately 75,000 acre feet of Lake releases. This equates to an average hydraulic load of under 0.15 feet per month, or less than $1/40^{\text{th}}$ of the 2002-2003 loading rate. If a permit compliance issue arises, perhaps a “force majeure” defense may be appropriate; this might be strengthened with a declaration of emergency.

- 2. Holey Land Wildlife Management Area (approximately 35,000 acres).** The Holey Land restoration project was designed as for flow-through operation, however, it has largely been supplied with water from rainfall alone². District’s data do not indicate that any Lake water has been sent to the Holey Land through September of 2013. However, the infrastructure exists today to send Lake releases to the Holey Land through a connection to the STA-3/4 inflow pump station (G-372). The Holey Land outlet structures (G-204, G-205 and G-206) could be operated to effect a flow-through operation that minimizes the increase in water depth. Although the routine objectives of Holey Land (e.g., ecosystem restoration and hunting) will be impacted by sending Lake releases through the WMA, during this time of emergency conditions perhaps these routine objectives should temporarily be considered secondary to public health and safety issues surrounding Lake Okeechobee releases that reduce the risk of failure of the Herbert Hoover Dike. Suggest the Committee consider requesting the District to send a target of 0.5 ft of Lake releases to the Holey Land WMA per month. Note that this amount would not raise water levels by 0.5 ft

² The inflow pumps (G-200) were destroyed in the 2004 hurricanes and not repaired.

since the load would be spread over 30 days. If applied evenly this would amount to an inflow of 0.2 inches per day, and the actual rise in water depth would be a function of the outlet capacity, rainfall and local hydrology. If a target hydraulic load of 0.5 feet per month could be achieved, approximately 5.7 billion gallons of Lake releases could be treated in this WMA each month.

3. **Rotenberger Wildlife Management Area (approximately 27,000 acres).** The Rotenberger WMA currently receives treated discharges from STA-5/6, and is discharging water containing extremely low phosphorus concentrations (13 parts per billion). In prior years, Lake water has been sent to the Rotenberger, but during the current emergency conditions, no Lake releases have been sent to Rotenberger. The infrastructure (canal and pumps) exists today to send additional Lake releases to the Rotenberger WMA through structure G-373 and the STA-5/6 discharge canal. The Rotenberger inflow pump (G-410) has a capacity of 240 cubic feet per second, which equates to over 4.5 billion gallons per month under ideal conditions. The Rotenberger outlet structures (G-302s) could be operated to effect a flow-through operation that minimizes the increase in water depth. Although the routine objectives of Rotenberger (i.e., ecosystem restoration and hunting) will be impacted by sending Lake releases through the WMA, during this time of emergency conditions perhaps these routine objectives should temporarily be considered secondary to public health and safety issues surrounding Lake Okeechobee releases that reduce the risk of failure of the Herbert Hoover Dike. Suggest the Committee consider requesting the District to send a target of 0.5 ft of Lake releases to the Rotenberger WMA per month. Note that this amount would not raise water levels by 0.5 ft since the load would be spread over 30 days. If a target hydraulic load of 0.5 feet per month could be achieved, approximately 4.4 billion gallons of Lake releases could be treated in this WMA each month.
4. **The 2008 Lake Okeechobee Regulation Schedule (LORS)** contains provisions that reduce the storage potential within Lake Okeechobee and create restrictions for the District to make additional releases to the south. Suggest the Committee consider requesting the District to formally request the Corps to revise these provisions, either within the existing LORS framework, or if that isn't possible, through a formal revision process. Examples:
 - a. As stated in the District's August 7 report on Lake releases³ "Note that issues regarding the structural integrity of the Herbert Hoover Dike led to lowering the upper limit of the lake regulation schedule from 18.5 ft NGVD to 17.25 ft NGVD." Now that Corps has spent over \$300 million for rehabilitation projects which have

³ Assessing the Capability to Discharge Excess Lake Okeechobee Water South: Review of System Operations (January through mid-June 2013). Draft, August 7, 2013.

satisfied “the majority of the risk reduction goals”⁴, suggest that the Committee consider requesting the Corps to suspend the regulatory releases to the estuary when the Lake is below a stage of 16 ft NGVD, and to raise the upper limit of the schedule back to 18.5 ft NGVD.

- b. Also included in the District’s August 7 report on Lake releases was the following:
“Lake Okeechobee regulatory discharges to the WCAs are constrained by water levels in the conservation areas. Specifically, federal regulations contained in the Water Control Plan prohibit lake regulatory releases to the WCAs when WCA water levels exceed their respective regulation schedules. Therefore, lake regulatory discharges are not made to the WCAs if WCA stages exceed their regulation schedules.”

However, EAA stormwater can be sent to the WCAs when WCA water levels exceed their respective regulation schedules. Suggest that the Committee consider requesting the Corps to revise any Water Control Plan that prohibits sending Lake regulatory releases into the WCAs during emergency conditions such as during operations that reduce the risk of failure of the Herbert Hoover Dike. Lake regulatory releases intended to reduce the risk of failure of the Herbert Hoover Dike (which would flood the EAA) should be treated with the same priority for public health and safety as flood protection for the same region.

Specific Suggestions For Increasing Lake Regulatory Releases to the STAs

1. STA-1E

- a. Over 8.8 billion gallons of Lake releases have been sent to STA-1E through September of this year, with an average hydraulic load of 0.6 ft per month.
- b. STA-1E discharges into WCA-1, which is currently below its regulation schedule.
- c. Eastern Flow-way – this 1,100 acre flow-way has been off-line for over a year while the Corps has been decommissioning a demonstration project. Suggest the Committee consider requesting the Corps to temporarily suspend the decommissioning during periods of Lake regulatory releases.
- d. During this time of emergency operations, consider requesting the District to increase Lake releases to the maximum safe capacity through all flow-ways. If a target hydraulic load of 3 feet per month could be achieved, approximately 4.9 billion gallons of Lake releases could be treated in this STA each month. Note that

⁴ Corps report: REVIEW PLAN For HERBERT HOOVER DIKE, April 18, 2002: “The implementation of the 21.4 mile cutoff wall component in Reach 1 satisfies the majority of the risk reduction goals.”

this target hydraulic load is less than one half the load sent to STA-1W during the 2002-2003 period.

2. STA-1W

- a. Approximately 2.4 billion gallons of Lake releases have been sent to STA-1W through September of this year, with an average hydraulic load of 0.1 ft per month.
- b. STA-1W discharges into WCA-1, which is currently below its regulation schedule.
- c. The Western Flow-way has been receiving less than full flow to allow the treatment vegetation to “rest”.
- d. During this time of emergency operations, consider requesting the District to increase Lake releases to the maximum safe capacity. If a target hydraulic load of 3 feet per month could be achieved, approximately 6.3 billion gallons of Lake releases could be treated in this STA each month.

3. STA-2

- a. Approximately 3.4 billion gallons of Lake releases have been sent to STA-2 through September of this year, with an average hydraulic load of 0.1 ft per month.
- b. During this time of emergency, consider requesting the District to increase Lake releases to the maximum safe capacity through all flow-way. If a target hydraulic load of 3 feet per month could be achieved, approximately 15.1 billion gallons of Lake releases could be treated in this STA each month.

4. STA-3/4

- a. The 1994 Conceptual Design for the STAs anticipated an average of approximately 81.5 billion gallons per year of Lake regulatory releases would be sent to STA-3/4, with higher flows during some years. This equates to an average hydraulic load of 1.3 ft per month over the course of 12 months. However, only 9.7 billion gallons have been sent to STA-3/4 through September of this year, with an average hydraulic load of 0.2 ft per month.
- b. The north portion of WCA-3A routinely needs supplemental water which can be provided by STA-3/4 discharges.
- c. The Central Flow-way has been receiving less than full flow to reduce water levels sufficiently to allow the treatment vegetation to “rest”. An unintended consequence of reducing water levels in this flow-way during the spring is that this may have increased the opportunity for ground nesting birds to establish nests, which further restricted STA operations.
- d. During this time of emergency operations, consider requesting the District to increase Lake releases to the maximum safe capacity. If a target hydraulic load of 3

feet per month could be achieved, approximately 15.9 billion gallons of Lake releases could be treated in this STA each month.

5. STA-5/6

- a. No Lake releases have been sent to STA-5/6 through September of this year.
- b. The north portion of WCA-3A routinely needs supplemental water which can be provided by STA-5/6 treated discharges.
- c. With the expansion to over 13,000 acres, dryout of the treatment area is often cited as a concern for long-term phosphorus removal performance. When a treatment cell dries out, the soil is exposed to air and a spike in phosphorus concentration often occurs upon rewetting. In addition, the dry treatment cells can become home for ground nesting and other protected birds, which further restrict STA operations.
- d. Canal conveyance capacity and water supply pumps exist today to send Lake releases to STA-5/6:
 - i. Close synchronization with the operation of the STA-3/4 and Rotenberger structures will be required to ensure the most effective operation of STA-5/6 to treat Lake releases.
 - ii. The divide structure G-373 could be opened, the STA-5/6 water supply pumps (G-507, G-349B, G-350B and G-509) could be turned on and the opening of G-411 could be coordinated with pump operations. The existing water supply pumps could be supplemented with temporary pumps to increase the volume of Lake water treated in the STA, if needed. Flexibility exists to transport the Lake water to the middle of the treatment cells' flow paths via the seepage return canals to increase the treatment effectiveness.
- e. During this time of emergency conditions, consider requesting the District to increase Lake releases to the maximum safe capacity through all flow-ways. If a target hydraulic load of 0.5 feet per month could be achieved, approximately 2.2 billion gallons of Lake releases could be treated in this STA each month.

Attachment 3

January 13, 2014

Mr. Blake Guillory, Executive Director
South Florida Water Management District
P.O. Box 24680
West Palm Beach, FL 33416-24680

Subject: Cost Effectiveness of Dispersed Water Management Projects

Dear Mr. Guillory,

At the Governing Board meeting on January 9, 2014, District staff reported that the District has obligated more than \$64.6 million for dispersed water management projects (“DWMPs”). In the same presentation, staff mentioned that many other projects that will reduce nutrient loads to Lake Okeechobee were held up due to insufficient funds. As I commented to the Board, I am concerned that the DWMPs may be diverting funds away from these critical nutrient reduction projects. I was encouraged to hear that you have committed to evaluating how cost effective these DWMPs are.

1. For each individual DWMP, can you please answer these questions?
 - a. What is the project name and where is it located?
 - b. What is the total cost, separated into initial cost and continuing costs?
 - c. If the landowner has a consumptive use permit, or a pending application,
 1. What is the maximum annual volume of water allocated by the permit, or requested in the permit application?
 2. When evaluating DWMPs, does the District consider whether or not the landowner has a consumptive use permit, or a pending application?
 - d. Were the funds for each project budgeted as specific line items? If not, what was the source of funding?

2. What are the estimated annual reductions in nutrient loads to Lake Okeechobee, or to the St. Lucie or Caloosahatchee River basins, anticipated for each of these DWMPs?
 - a. How were these load reductions estimated?
 - b. Are these reductions permanent, i.e., the water will be held and used on site, or temporary, e.g., released back to receiving waters after a storm event?
 - c. How will the actual nutrient load reductions be monitored?
 - d. If the actual nutrient load reductions do not meet the estimated load reductions, will the landowner return any of the funds paid for the DWMP?
 - e. What accountability for achieving the estimated nutrient load reductions does the District place on each DWMP owner?

Mr. Blake Guillory, Executive Director
Subject: Dispersed Water Management Projects
January 13, 2014
Page 2

- f. What is the current annual phosphorus load and phosphorus concentration in waters being discharged from the lands to be used as the DWMP?
 1. What is the current Works of the District (e.g., 40E-61) permit limit for phosphorus for the same land?
 2. When evaluating DWMPs, does the District consider whether or not the property is meeting the existing Works of the District permit condition?

3. What is the estimated annual reduction in stormwater flow to Lake Okeechobee or the St. Lucie or Caloosahatchee River basins for each of these projects?
 - a. What is the current annual volume of water being discharged from the lands to be used as the DWMP?
 - b. How were the flow reductions estimated?
 - c. Are they estimated reductions to Lake Okeechobee (or the River basins), or estimated reductions from the landowner's property? As you know, in general the further the discharge point is from the Lake, the smaller the actual flow reduction would be due to water reuse and floodplain losses/attenuation.
 - d. Are these reductions permanent, i.e., the water will be held and used on site, or temporary, i.e., released back to receiving waters after a storm event through surface or groundwater discharges?
 - e. How will the actual flow reductions be monitored?
 - f. If the actual flow reductions do not meet the estimated flow reductions, will the landowner return a portion of the public funds paid for the DWMP?
 - g. What accountability for achieving the estimated flow reductions does the District place on each DWMP?

4. In their October 2013 Board presentation, District staff reported that the average cost for a DWMP was \$163 per acre foot of water per year.
 - a. What basis did the District use to establish this value as a fair cost?
 - b. Has that average cost been revised? If so, what is the current average annual cost per acre foot of water per year?
 - c. The 2013 Lake regulatory releases discharged more than 417,700 acre feet to the St. Lucie River and Estuary. These releases carried blue green algae, more than 1.43 million pounds of nitrogen, more than 153,000 pounds of phosphorus, and more than 15

Mr. Blake Guillory, Executive Director
Subject: Dispersed Water Management Projects
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Page 3

million pounds of sediment. The landowners, businesses, and residents impacted by these discharges were not compensated by the District. If the District compensated the landowners, businesses, and residents impacted by these discharges the same average rate per acre foot as the average DWMP, the District would owe over \$68 million. Preliminary reports indicate the actual economic and environmental damage to the St. Lucie River and Estuary region was considerably greater than that amount.

5. The latest 5-year average annual phosphorus loads discharged to Lake Okeechobee exceeded 420 metric tons, more than four times the Total Maximum Daily Load (TMDL) established for surface water inflows to Lake Okeechobee. The District has a Lake Okeechobee Protection Plan, which contains water quality projects that will reduce the nutrients entering the Lake. According to staff's presentation last week many of these projects are not being completed due to insufficient funds.
 - a. Which projects in the District's Plan could be implemented if the funds obligated to the DWMPs were instead expended to finish the projects?
 - b. What is the estimated average cost per pound of phosphorus removal for the water quality projects in the Lake Okeechobee Protection Plan?
 - c. How do these costs compare to the unit costs for the DWMPs?
 - d. Are the DWMPs located in tributaries identified in the Protection Plan as needing additional storage?
 - e. The District's 2005 annual report anticipated that the Lake's TMDL would be achieved by 2015, as mandated by the State's 2000 Lake Okeechobee Protection Act. What is the current estimate when the Lake's TMDL will be achieved?

6. The 2013 Lake regulatory releases discharged more than five times the TMDL for nitrogen and phosphorus to the St. Lucie River through the C-44 Canal. Yet the District's St. Lucie River Watershed Protection Plan does not contain a single project in the St. Lucie Basin to remove nutrients from Lake releases. What projects to treat Lake releases could the District implement in the St. Lucie River basin for \$64.6 million?

Sincerely,



Gary Goforth, P.E., Ph.D.
10924 SW Hawkview Circle
Stuart, FL 34997