

## **Prepared by The Florida Senate Committee on Environmental Preservation and Conservation**

**What causes algae blooms** – cyanobacteria or blue-green algae is naturally occurring **freshwater** algae that can grow into a bloom due to many factors, including elevated nutrient levels and warmer temperatures. **Nutrient inputs** come from a variety of sources, including agricultural areas, fertilizers, septic tanks, and wastewater, and industrial effluents.

**What has the Legislature done to mitigate the causes?**

### **Freshwater Discharges**

As the system is designed, Lake Okeechobee fills up much faster than it can drain and it can primarily drain through two major outlets (west through to the Caloosahatchee Estuary and east through to the St. Lucie Estuary). As blue-green algae is a freshwater algae, the freshwater discharges from the lake at high levels and long durations lower the salinity levels in the estuarine systems and make the conditions more conducive to algal blooms. Additionally, even when there is an active bloom in the lake, the United States Army Corps of Engineers (USACE) is still required to discharge toxic water from Lake Okeechobee to the northern estuaries to keep lake water levels down to prevent failure of the Herbert Hoover Dike.

### **The Select Committee on Indian River Lagoon and Lake Okeechobee Basin (IRLLOB)**

- After the 2013 algae bloom the Senate formed a select committee to investigate policies, spending, and other governmental activities affecting water management in the basin.
- The select committee held public workshops and developed a final report that provided short-and long-term recommendations focusing on the following three key areas:
  - Improving water quality;
  - Expanding water storage capacity; and
  - Strengthening the current relationship between the state and federal government.
- The recommendations totaled over \$220 million in proposed state funding, including increased funding for the C-43 and C-44 reservoirs, as well as sediment removal and dredging in the Indian River Lagoon.

### **Chapter 2016-201, Laws of Florida, “Legacy Florida”**

- In recognition of the critical importance of restoring and preserving Florida’s water and natural resources, the Legislature passed Legacy Florida to commit to long-term funding for the Everglades.
- The law requires minimum distributions (approximately \$200 million annually) from the Land Acquisition Trust Fund for Everglades Restoration, including CERP and NEEPP.

Specifically, it requires priority to be given to projects that reduce harmful discharges of water from Lake Okeechobee to the St. Lucie or Caloosahatchee estuaries.

### **Kissimmee River Restoration**

- The Kissimmee River Restoration project was authorized by Congress in 1992 with the goal of restoring a third of the river flood plain system that was altered when the river was channelized.
- The project is designed to attenuate peak flows into Lake Okeechobee and, once complete, is expected to provide an additional storage capacity of 130,000 acre-feet.
- The project is substantially complete and testing has begun to evaluate the ability to retain additional water in the basin to reduce flows to Lake Okeechobee and, consequently, to the Caloosahatchee and St. Lucie estuaries.

To date the state has contributed \$225 million to the Kissimmee River restoration efforts.

### **Lake Okeechobee Regulation Schedule (LORS)**

- Due, in part, to concerns regarding the structural integrity of the Herbert Hoover Dike, the USACE adjusted the lake's regulation schedule back in 2008, with the primary goal of maintaining the lake between 12.5 and 15.5 feet. Additionally, the maximum state of the lake was lowered from 18.5 ft. to 17.25 ft.
- The change in the regulation schedule reduced the USACE's operational flexibility in regards to adjusting lake levels, which led to a reduction in overall storage capacity within the lake.
- The Legislature in Chapter 2017-10, Laws of Florida (SB 10) set a requirement that the SFWMD request that the LORS be reevaluated as expeditiously as possible to reduce the high-volume freshwater discharges from Lake Okeechobee to the St. Lucie and Caloosahatchee estuaries.
- The LORS is scheduled to be revised in 2022.

### **Herbert Hoover Dike Rehabilitation**

- To address concerns regarding dam safety, the USACE has been developing structural and non-structural options for mitigation, such as additional seepage barriers, construction of floodwalls, and replacement of culverts.
- The federal government has invested over \$870 million since 2001 to make repairs and structural modifications to the HHD. Based on funding projections the rehabilitation was estimated to be completed by 2025.
- Over the past two years the state had provided the federal government with a total of \$100 million and the federal government has budgeted \$514 million to expedite rehabilitation. With the influx of money, rehabilitation is estimated to be completed by 2022-2023.

- Once the rehabilitation efforts are complete, the USACE will reevaluate the LORS and potentially more water will be able to be stored within the lake.

The state contributed \$50 million over two years for a total of \$100 million to the federal government to accelerate the rehabilitation of the Herbert Hoover Dike.

### **Comprehensive Everglades Restoration Project**

The Comprehensive Everglades Restoration Project (CERP) is a 50/50 cost-share program between the state and the federal government which was approved by Congress in 2000. The CERP includes more than 68 project components which focus on improving the water delivery and timing within the Everglades system by increasing the size of natural areas, improving water quality, releasing water in a manner that mimics historical flow patterns, and storing and distributing water for urban, agricultural, and ecological uses.

The Legislature passed ch. 2017-10, Laws of Florida, referred to as Senate Bill 10, in recognition of the state of emergency that existed regarding the St. Lucie and Caloosahatchee estuaries due to the high-volume freshwater discharges to the east and west of Lake Okeechobee. Section 373.4598, Florida Statutes, provides that the rate of funding for CERP must be increased if restoration is to be achieved within the timeframe originally envisioned. The Legislature found that increasing water storage is necessary to reduce the high-volume freshwater discharges from the lake to the estuaries and that water storage projects east, west, south, and north of the lake should receive priority funding.

Specifically, the Legislature directed the South Florida Water Management District to expedite the design and construction of a water storage reservoir in the Everglades Agricultural Area (EAA) with the goal of increasing the southern water storage necessary to reduce the high-volume freshwater discharges from the lake to the estuaries. The EAA Reservoir project is a modification of the Central Everglades Planning Project and includes a 240,000 acre-feet reservoir on 10,500 acres and a 6,500 acre stormwater treatment area<sup>1</sup>. As designed, the EAA Reservoir is estimated to provide a 55% reduction in discharge volumes to the northern estuaries. The state has provided \$64 million annually to fund the project over the past two years, for a total of \$128 million.

The following is a list of CERP projects under construction or in planning stages which are designed to increase the amount of water storage available to capture and store runoff from local basins and decrease the undesirable discharges from Lake Okeechobee:

- Western Storage: the Caloosahatchee River (C-43) West Basin Storage Reservoir project:
  - The project includes an above-ground reservoir with the total storage capacity of 170,000 acre-feet. The first phase of construction began in late 2015 and is anticipated to be completed in 2020.

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<sup>1</sup> Stormwater treatment areas (STAs) are shallow constructed wetlands that remove and store excess nutrients, such as phosphorous, through vegetation. STAs are used throughout South Florida to improve water quality by removing nutrients from water before the water flows into the lake or to the estuaries.

- Total project costs spent to date by the state are \$115 million.
- Eastern Storage: the Indian River Lagoon – South project:
  - The IRL-S includes one above-ground storage reservoir in the C-44, C-23, C-24, and C-25 basins, with a total storage capacity of approximately 200,000 acre-feet, and three STAs. Additionally, water from the C-23/C-24 basin will be redirected to the North Fork of the St. Lucie River to attenuate freshwater flows to the St. Lucie Estuary.
  - Construction is completed on some features included in the C-44 reservoir, including intake and drainage canals, access roads, and staging areas. Construction also began on the C-44 reservoir pump station and STA, with reservoir construction expected to be completed in 2019.
  - Total project costs spent to date by the state are \$250 million.
- Northern storage: the Lake Okeechobee Watershed Restoration project:
  - The tentatively selected plan (TSP) includes an above-ground wetland attenuation feature and aquifer storage and recover wells. Additionally the project includes restoration of wetlands along the Kissimmee River channel.
  - The TSP provides a 57% reduction in discharge volumes from Lake Okeechobee to the northern estuaries.

Since FY 2014-2015, the state has contributed approximately \$400 million for CERP projects.

### **Dispersed Water Management program**

- Since 2005, the South Florida Water Management District has been working with a coalition of agencies, environmental organizations, ranchers, and researchers to enhance opportunities for storing excess surface water on private and public lands.
- The program is used to store and treat water on public and private lands which would otherwise be discharged through the estuaries or otherwise lost.
- Private landowner involvement typically includes cost-share cooperative projects, easements, or payment for environmental services.
- These projects provide an approximate total of 54,000 acre-feet of additional storage.

Since FY 2014-2015, the state has contributed approximately \$52.4 million for dispersed water management projects.

## **Nutrient Management**

High levels of phosphorus in Lake Okeechobee and the estuaries are harmful to the natural systems and can lead to increased frequency of algal blooms. In 2001, the Department of Environmental Protection (DEP) established the Total Maximum Daily Load (TMDL) for phosphorus to support a healthy Lake Okeechobee ecosystem.<sup>2</sup> The goal is to achieve an in-

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<sup>2</sup> A TMDL is a calculation of the maximum amount of a pollutant a waterbody can receive and safely meet water quality standards.

Lake target phosphorus concentration of 40 parts per billion in the pelagic (open water) zone of the Lake. When a watershed fails to meet its TMDL, DEP in conjunction with stakeholders may adopt a Basin Management Action Plan (BMAP), which is a comprehensive plan designed to help the watershed achieve its TMDL. DEP has developed BMAPs for Lake Okeechobee and the Caloosahatchee and St. Lucie Estuaries as well as the Indian River Lagoon. These BMAPs evaluate where the pollution is coming from for each basin, require monitoring of pollution to assess progress, and set out strategies for reducing that pollution. BMAPs are reevaluated and updated every 5 years. The Lake Okeechobee BMAP includes projects such as structural improvements associated with CERP and muck scraping to remove legacy phosphorous.

BMAPs set out pollution allocations for point-sources and nonpoint sources. A wasteload allocation (WLA) is the allocation to point sources permitted under the National Pollutant Discharge Elimination System (NPDES) Program. It includes wastewater and municipal stormwater pollution. The permits restrict the amount of pollution that can be discharged into the waterbody by each permittee. Load Allocation (LA) is the allocation to nonpoint sources, including agricultural runoff, nonmunicipal stormwater runoff, septic systems, and legacy pollution. This type of pollution is controlled through the implementation of best management practices (BMPs). Agricultural BMPs are developed by the Department of Agriculture and Consumer Services (FDACS). Agricultural BMPs are generally structural or management BMPs. Structural BMPs include water control structures, fencing, and irrigation tailwater recovery systems. Management BMPs include nutrient and irrigation management. FDACS continues to enlist agricultural producers in its BMP programs and to assess the efficacy of existing BMPs with a focus on reducing nutrients that result from agricultural operations north of Lake Okeechobee.

### **Northern Everglades and Estuaries Protection Program (NEEPP)**

- The Legislature passed the Northern Everglades and Estuaries Protection Program (NEEPP) in 2007, which expanded the Lake Okeechobee Protection Act (passed in 2000) to include the Caloosahatchee and the St. Lucie estuaries. The primary goal of the program is to restore and protect the state's surface water resources by addressing the quality, quantity, timing, and distribution of water to the natural system.
- The Legislature in 2016 passed the "water bill" which updated and restructured the NEEPP to build upon the Department of Environmental Protection's implementation of BMAPs for Lake Okeechobee, the Caloosahatchee River and Estuary, and the St. Lucie River and Estuary.
- The BMAPs must include the construction of water projects, water monitoring programs, and the implementation, verification, and enforcement of BMPs within these watersheds. Specifically, it required that agricultural nonpoint sources must either implement interim measures or BMPs or demonstrate compliance with state water quality standards set out in the BMAP by implementing monitoring programs. Where water quality problems are detected for agricultural nonpoint sources despite the

implementation of adopted BMPs, the BMPs must be reevaluated and improved if necessary. The BMAPs must include 5-, 10-, and 15-year measureable milestones towards achieving the TMDLs for those water basins within 20 years.

Since FY 2014-2015, the state has contributed \$160.8 million to the NEEPP.

<b>Breakdown of State Spending by Fiscal Year</b>					
<b>Fiscal Year</b>	<b>2014-2015</b>	<b>2015-2016</b>	<b>2016-2017</b>	<b>2017-2018</b>	<b>2018-2019</b>
	IRLLOB		Legacy Florida Water Bill	SB 10	
Everglades Restoration		\$81.8 million	\$132 million	\$167.7 million	\$143.1 million
(CERP)	(\$58 million)	(\$29 million) <sup>3</sup>	(\$100 million)	(\$132 million)	(\$110 million)
IRLLOB Report	\$232 million				
EAA Reservoir				\$64 million	\$64 million
NEEPP	\$9 million <sup>4</sup>	(\$29 million) <sup>5</sup>	\$56.8 million <sup>6</sup>	\$35 million	\$31 million
Herbert Hoover Dike				\$50 million	\$50 million
Dispersed Water Management	\$10 million	\$27.4 million	\$5 million	\$5 million	\$5 million

<sup>3</sup> Combined CERP/NEEPP.

<sup>4</sup> Hybrid wetlands treatment projects.

<sup>5</sup> Combined CERP/NEEPP.

<sup>6</sup> Chapter 2016-66, Laws of Florida, provided that “first consideration shall be given to projects that will efficiently and effectively provide relief from discharges to the St. Lucie and Caloosahatchee Rivers and estuaries. Public-private partnerships for water storage and water quality improvements that can be implemented expeditiously shall receive priority consideration for funding.”