

below  
the  
surface  
an in-depth  
look at...

# Lake Okeechobee Protection Program

*Partners committed to restoring and protecting  
a national treasure*

## ON THE INSIDE

- A look at the eight primary components of the Lake Okeechobee Protection Program each designed to reduce the amount of phosphorus entering Lake Okeechobee from both internal and external sources
- Partner up! How you can help improve Lake Okeechobee's health
- Did you know? Facts about Lake Okeechobee
- Water Words: Glossary of technical terms

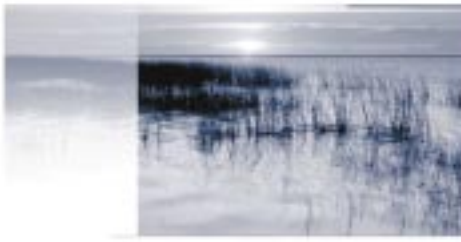
Lake Okeechobee serves many users. Not only does the 730-square-mile lake provide a natural habitat for fish, wading birds and other wildlife, it supplies essential water for people, farms and the environment, provides flood protection, attracts boating and recreation enthusiasts and is home to a multimillion dollar sport and commercial fishery.

But the lake's health is on the brink of endangerment. Lake Okeechobee's natural resources have been threatened in recent decades by three environmental impacts: 1) excessive phosphorus loads, 2) harmful high and low water levels, and 3) spread of exotic vegetation.

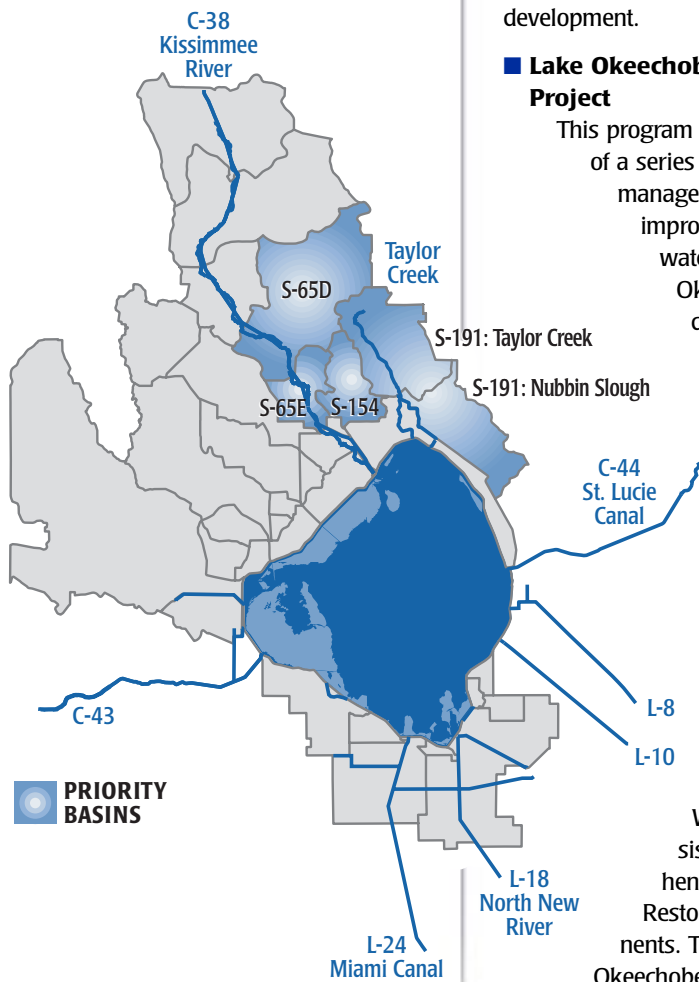
In recognition of these issues, the State Legislature enacted the 2000 Lake Okeechobee Protection Act and the subsequent Lake Okeechobee Protection Program (LOPP). It is a phased, comprehensive and innovative program designed to restore and protect the lake by improving water quality and implementing long-term solutions through a variety of specific components.

## A cooperative effort

The LOPP components are designed and implemented – with public input – by an interagency team of scientists, engineers and other environmental restoration experts. The coordinating partners include the South Florida Water Management District, Florida Department of Environmental Protection, Florida Department of Agricultural and Consumer Services, Florida Fish and Wildlife Conservation Commission, U.S. Department of Agriculture Natural Resources Conservation Services, the Institute of Food and Agricultural Sciences of the University of Florida, and other agencies, organizations and landowners.



Florida Department of Agricultural and Consumer Services completed Agricultural Nutrient Management Assessments on all active dairies in the four priority basins representing more than 31,000 acres.



**DRAINAGE BASINS OF LAKE OKEECHOBEE**

### Primary components of Lake Okeechobee Protection Program

The Lake Okeechobee Protection Program consists of eight distinct components:

#### ■ Lake Okeechobee Protection Plan

The Lake Okeechobee Protection Act requires that by January 1, 2004, the South Florida Water Management District, in cooperation with Florida Department of Environmental Protection and Florida Department of Agriculture and Consumer Services, complete a Lake Okeechobee Protection Plan. This plan will contain an implementation schedule for subsequent phases of phosphorus load reduction consistent with the total maximum daily load (TMDL). The LOPP plan also addresses exotic vegetation control and high and low water level impacts. This plan is under development.

#### ■ Lake Okeechobee Construction Project

This program consists of construction of a series of regional water management facilities to improve the hydrology and water quality of Lake Okeechobee and downstream receiving waters. **Phase I** consists of:

- initiating construction of the Lake Okeechobee Critical Project, involving wetland restoration and construction of two pilot stormwater treatment areas;
- Tributary Sediment Removal Project; and
- Lake Okeechobee Watershed Project consisting of four Comprehensive Everglades Restoration Plan components. They are North of Lake Okeechobee Storage Reservoir, Taylor Creek/Nubbin Slough Storage and Treatment Area; Lake Okeechobee Watershed Water Quality Treatment Facili-

ties and Lake Okeechobee Tributary Sediment Dredging.

**Phase II** starts in 2004, and includes additional projects to meet water quality standards in the watershed.

#### ■ Lake Okeechobee Watershed Phosphorus Control Program

This is a multifaceted approach to reduce phosphorus loads through continued implementation of existing regulations and best management practices, development and implementation of improved best management practices, improvement and restoration of the hydrologic functions of the natural and managed systems, and utilization of alternative technologies for phosphorus reduction.

One approach is the Lake Okeechobee Regional Public-Private Partnership Program. Approximately \$4.75 million in state-appropriated funds were made available in 2002-2003 for regional projects that reduce phosphorus loading to Lake Okeechobee. In February, 2003, the District's Governing Board authorized staff to enter into negotiations with two respondents for the construction and operation of phosphorus removal facilities. The program will help to reduce phosphorus loading in to the lake while benefiting the local economy. The South Florida Water Management District administers the process for this four-year program.

Another approach is the Phosphorus Source Control Grant Program for projects that will reduce phosphorus entering Lake Okeechobee. Twelve projects for a total of approximately \$6.5 million were approved for funding by the District's Governing Board in 2002. Each project is to be implemented by September 2004. Phase IV, the last phase of the program, includes the monitoring of each project to determine the relative effectiveness of the phosphorus source reduction.

#### ■ Lake Okeechobee Research and Water Quality Monitoring Program

This program has several components including:

- (1) evaluate water quality data to develop a baseline to represent present condi-

tions, monitor long-term ecological changes and measure compliance with water quality standards for total phosphorus according to the established total maximum daily load;

- (2) develop a water quality model for the lake (by July 2003);
- (3) determine the relative contribution of phosphorus from all identifiable sources (by July 2003);
- (4) assess sources of phosphorus from the Upper Kissimmee Chain-of-Lakes and Lake Istokpoga (by July 2003);
- (5) develop recommendations for structural and operational improvements in the watershed (by July 2003); and
- (6) evaluate feasibility of alternative nutrient reduction technologies (by July 2003).

#### ■ Lake Okeechobee Exotic Species Control Program

The LOPP calls for the identification of exotic species that threaten the native flora and fauna in the lake, and development of programs for their control. The two species of greatest concern are melaleuca (*Melaleuca quinquenervia*, a tree that is native to Australia) and torpedograss (*Panicum repens*, a grass native to Europe). These exotic plants have spread over thousands of acres of the lake's western marsh, displacing native plants and the valuable fish and wildlife habitat that

---

*In spite of environmental impacts, the lake still supports one of the nation's most prized recreational fisheries, and is known as the "bass capital of the nation."*

---

they once provided. The South Florida Water Management District has carried out an aggressive program to eradicate melaleuca, and at this time, has that plant largely under control in the lake. Consistently effective control methods have not yet been established for torpedograss, and

remain a focus of ongoing research. Goals of a cooperative management effort with the Florida Department of Environmental Protection are to initially treat approximately 5,000 acres a year through 2006. Cattail (*Typha spp.*) is another plant of concern. Although native, this hearty, emergent plant often smothers other native plants. After the record low lake levels during the 2000-2001 drought, the lake receded and its bottom became exposed and dry. The cattails germinated and flourished in historic fish bedding areas usually covered with water, which prevented the return of the normal plant community with the rising lake levels. Since the drought, the SFWMD controlled 1,500 acres of cattail to reclaim threatened fish and wildlife habitat.

#### ■ Lake Okeechobee Internal Phosphorus Management Program

A feasibility study, in conjunction with a pilot dredging study, was conducted to assess the technical feasibility, economic considerations, and all reasonable methods of phosphorus removal from the lake itself. These efforts have been completed and the no action alternative, i.e. no in-lake dredging or chemical treatment, is the preferred alternative. Instead, the study recommends concentrating control activities in the watershed versus the lake.

#### ■ Annual Progress Report

This annual report, published January 1 since 2001, includes a summary of water quality conditions and status of the Lake Okeechobee Construction Project. For a copy of the latest report, please call 561-820-6745 or visit [www.sfwmd.gov/koe\\_section/2\\_lakeokee.html](http://www.sfwmd.gov/koe_section/2_lakeokee.html)

#### ■ Lake Okeechobee Permits and the Works of the District programs

The Lake Okeechobee Protection Program requires a streamlined process for the permitting of water quality projects in the watershed. This is accomplished through project reviews from the Environmental Resources Permitting group. In addition, the District has an ongoing regulatory program called Works of the District. The Lake Okeechobee Works of the District pro-

---

### Lake Okeechobee's Three Major Environmental Impacts

---



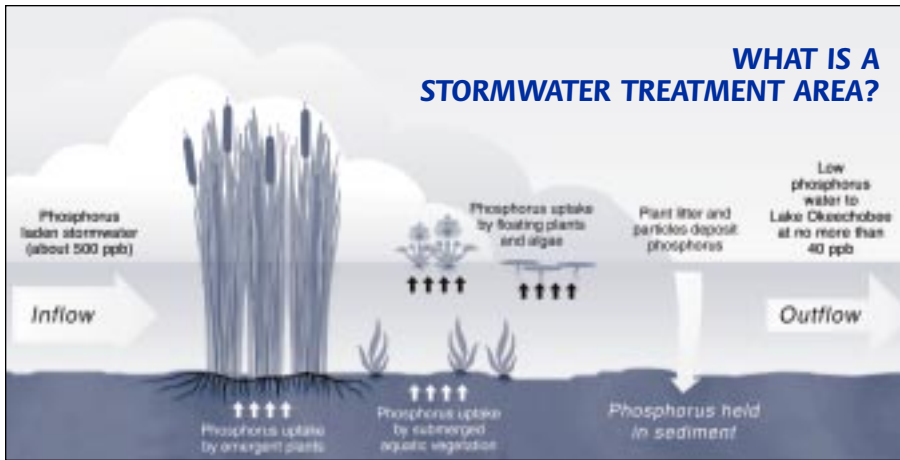
*phosphorus*



*exotic species*



*high water*



The Taylor Creek and Nubbin Slough Stormwater Treatment Areas are manmade wetlands that will naturally remove phosphorus from stormwater runoff flowing from Taylor Creek and Nubbin Slough before the water eventually reaches Lake Okeechobee. The illustration above shows how the STAs will remove phosphorus.

gram, based at the Okeechobee Service Center, monitors phosphorus discharges for compliance and inventories and permits all non-dairy land uses in the priority basins of the Lake Okeechobee watershed. Works of the District staff performs compliance inspections and monitoring as well as water quality surveys to identify high phosphorus source areas, and requires corrective actions from landowners when they are found to be out of compliance.

### Partner up! How you can help improve Lake Okeechobee's health

Your participation is valuable to the success of the Lake Okeechobee Protection Program. You are invited to attend and provide input at regular LOPP public meetings and workshops. For a schedule of upcoming meetings, please call the South Florida Water Management District Okeechobee Service Center at 1-800-250-4200, Ext. 3006.

– FOR ADDITIONAL INFORMATION ABOUT THE LAKE OKEECHOBEE PROTECTION PROGRAM –

Visit our web site at [www.sfwmd.gov/koe\\_section/2\\_lakeokee.html](http://www.sfwmd.gov/koe_section/2_lakeokee.html) or call 1-800-250-4200, Ext. 3006

**The South Florida Water Management District** is a regional, governmental agency that oversees the water resources in the southern half of the state. It is the oldest and largest of the state's five water management districts.

Our Mission is to manage and protect water resources of the region by balancing and improving water quality, flood control, natural systems, and water supply.

This "Below the Surface" publication on Water Conservation directly supports all elements of the District's mission.



[sfwmd.gov](http://sfwmd.gov)

**South Florida Water Management District**  
 3301 Gun Club Road  
 West Palm Beach, Florida 33406  
 561-686-8800 • FL WATS 800-432-2045  
[www.sfwmd.gov](http://www.sfwmd.gov)

MAILING ADDRESS: P.O. Box 24680  
 West Palm Beach, FL 33416-4680

### DID YOU KNOW?

- The lake water column phosphorus concentration has more than doubled over the last 30 years.
- Although the lake is one of the largest in the USA at 730 square miles or 467,200 acres, it is very shallow with a maximum depth in the center of the lake of only 15 feet.
- In the last 200 years, the bottom of the lake has accumulated about 200 million cubic yards of mud. That's enough mud to fill about 250,000 Olympic-size pools!
- The Tributary Sediment Removal Demonstration Project has been constructed and is now operational, collecting valuable sediment removal data from two different sediment removal technologies.

### WATER WORDS

#### Best management practices (BMPs)

Land, industrial and waste management techniques that reduce pollutant loading from an industry or land use.

#### Loads (mass loading)

The mass of a material entering an area per unit time, e.g., phosphorus loading into Lake Okeechobee as metric tons per year.

#### Phosphorus

Phosphorus is an element that is essential to life and often promotes the growth of algae and vegetation in water, changing the delicate ecology of the lake.

#### Stormwater treatment area (STA)

Large, constructed wetland designed to remove pollutants from stormwater runoff through wetland vegetation uptake, retention and settling.

#### Total maximum daily load (TMDL)

A calculation of the maximum amount of a pollutant that a water body can receive and still meet water quality standards, and an allocation of that amount to the pollutant's sources.