LAKE OKEECHOBEE FAQS

Q: How big is the lake?

A: The lake covers 730 square miles.

Q: How has the lake changed over time/how old is the lake?

A: The lake formed approximately 6000 years ago, when an inland sea receded, and the Florida peninsula emerged above sea level. The lake has undergone enormous changes over time, but probably the biggest change is the presence of the Herbert Hoover Dike, which now encircles the lake. This dike has been built in stages from the 1930s to 1960s; whereas under high water levels, lake water used to flood the surrounding marshes and enter the adjacent Everglades as sheetflow, water is now stacked up in the lake under high water levels.

Q: What are the lake's main problems?

A: Lake Okeechobee currently faces three main problems: 1) too much phosphorus; 2) excessive water levels (both high and low); and 3) invasive species. High phosphorus levels result in a greater frequency of algal blooms. Too high a water level leads to less light penetrating to the lake bottom, so the submerged plants die off. Because these plant beds are important habitat for fish, their loss has important implications for other biota in the lake. Too low a water level can result in the spread of exotic species, such as torpedograss. Finally, invasive species such as torpedograss and melaleuca are spreading rapidly in the lake's marsh area. These upland species are capable of tolerating inundation, but spread more rapidly under dry conditions. If there is a prolonged condition of low water, it is important that the District is ready to fight their spread through a combination of fire and herbicide.

Q: What is being done to improve the lake?

A: A huge intergovernmental agency initiative has begun to restore Lake Okeechobee. The partners in this initiative include the South Florida Water Management District, Florida Department of Environmental Protection, Florida Fish and Wildlife Conservation Commission, U.S. Army Corps of Engineers, U.S. Fish and Wildlife Service, and local state and tribal units. A recent bill passed by the state of Florida, the Lake Okeechobee Protection Bill, lays out a number of projects that will be undertaken in the near future. Although certainly not exhaustive, the following list gives the reader an idea of what is ahead:

- expanding the Works of the District regulatory program to improve compliance, enhance its ability to find high phosphorus source areas, and initiate enforcement when necessary.
- applying Best Available Technologies to the dairies
- working with landowners to help identify on-farm measures that could be taken to improve the quality of runoff and identifying federal cost-sharing

opportunities

- continuing the Lake Okeechobee Water Retention/Phosphorus Removal Critical Restoration Project, which includes two pilot stormwater treatment areas and measures that will change the water management system on 10 parcels by reflooding isolated wetlands or detaining runoff.
- starting design work on the Taylor Creek/Nubbin Slough reservoir-assisted stormwater treatment area, which is a component of the Comprehensive Everglades Restoration Plan (formerly called the Restudy)
- initiating a study to evaluate the extent to which sludge residuals and chicken manure are imported into the lake's watershed
- developing a comprehensive phosphorus budget for all sources of P in the watershed, including non-traditional sources such as septage, biosolids, and commercial P fertilizers
- initiating studies to assess the feasibility of removing phosphorus-rich sediments from both the lake and the tributaries in the watershed
- carrying out a comprehensive program of ecological monitoring, research, and modeling, in order to evaluate how the lake responds to management actions where they occur, and to help managers identify the most appropriate management actions for the future.

Q: What is the economic value of the lake?

A: No one study has evaluated the entire economic value of Lake Okeechobee. However, according to an analysis published in 1994 (Furse and Fox 1994), the total economic value of the four primary vegetation communities in Lake Okeechobee, based on their ecological roles, was over $283 million.

Q: Why is water quality in the lake negatively affected by high water levels?

A: The bottom of Lake Okeechobee is not flat, but rather it contains a crescent-shaped ridge of rock about 1 mile offshore along the south and western regions. When water levels are low (below 15 ft msl), this ridge restricts water movement between the central lake area, where wind frequently mixes bottom muds into the water, and the near-shore regions. As a result, less mud is transported to the near-shore region and water quality is improved. When water levels are high (well above 15 ft msl), water movements are less restricted, and the resuspended mud from mid-lake is able to reach the near-shore area. High water levels also result in less light reaching the lake bottom, and this suppresses the growth of near-shore plants. Without these plants to stabilize sediments and remove nutrients from the water, water quality further deteriorates.

Q: What is the main purpose of the Sediment Removal Feasibility Study?

A: The purpose of the feasibility study is to determine the best method for removing or treating phosphorus laden sediment in the lake with the goal of obtaining optimal water quality benefits in the shortest period of time.

Q: Why conduct computer modeling studies?

A: Computer modeling studies enable the District to estimate the effects of different management scenarios on natural systems without having to change the system. For example, the effects of increasing or decreasing pollutant loads on Lake Okeechobee without actually changing the loads can be estimated.

Q: What are the advantages of developing computer models in-house?

A: Developing models in-house ensures that employees have a high level of understanding about the models they are using. They are very knowledgeable of model algorithms and the underlying assumptions, and know under what situations models can and cannot be used to answer management questions. Furthermore, if a model's program code is developed in-house, that code is modified much quicker than code developed externally, to meet changing District needs, because outside contractors are not needed to make program modifications. Thus, the entire contracting process, and its associated time delays, are eliminated.

Q: What is a GIS and what is the role of GIS in Lake Okeechobee watershed management?

A: A GIS, or geographical information system, is a computer-based system for the collection, storage, management, analysis and presentation of geographical or spatial data. It consists of hardware, software, procedures and interfaces designed to support the capture, management, manipulation, analysis, modeling and display of spatially referenced data for solving complex planning and management problems. Geographical information systems provide researchers, scientists, engineers and water resources managers of Lake Okeechobee with various spatial analysis functions and decision support capacities. With an extensive database and various simulation models, GIS can reconstruct the historical evolution, illustrate current dynamics, and simulate future trends in Lake Okeechobee and its watershed. Examples of GIS applications in Lake Okeechobee research include: Littoral Zone Vegetation Mapping; Mapping of Bulrush Communities; Lake Hydrodynamic and Sediment Transport Modeling; GIS Modeling of Vegetation - Hydroperiod Relationships; the Lake Okeechobee Agricultural Decision Support System; and a GIS-based Model for Phosphorus Loading and Transport in the Lake Okeechobee Watershed.