

Indicator 5.3 – Water Supply for Lake Okeechobee Service Area

What is the target?

This interim target for water supply for the Lake Okeechobee Service Area is to meet existing and future municipal, industrial and agricultural water supply needs in the Lake Okeechobee Service Area up to a 1-in-10 year drought event (Section 373.0361, F.S.). The characteristics of water supply to be measured include the frequency and duration of water restrictions that are imposed to protect the water resources from serious harm (Section 373.175, F.S.).

Why is this indicator important?

A goal of the Comprehensive Everglades Restoration Plan (CERP) is to enhance economic values and social well being. One means to accomplish this is through ensuring adequate water supplies for current and future water users. The CERP intends to increase the storage capacity of water in the regional system for delivery to the Lake Okeechobee Service Area. The increase in regional storage capacity provided by the CERP is expected to curtail the probability of water restrictions by supplementing regional and local sources and diminish demands on Lake Okeechobee.

Pursuant to Sections 373.175 and 373.246, F.S., the South Florida Water Management District implements water shortage restrictions to prevent serious harm to the water resources and to equitably distribute available water supplies to consumptive and non-consumptive users. These types of restrictions may be used for the purpose of managing water supplies in Lake Okeechobee as outlined in the South Florida Water Management District's Water Shortage Plan (Chapter 40E-21, F.A.C.). The plan provides the specific guidelines for implementing these water restrictions based on water use type and severity of drought. As part of this overall plan, the Supply-Side Management protocol outlined in the Water Shortage Plan is designed as a guideline for implementing water use restrictions and management alternatives during declared water shortages. The specific method for implementing restrictions will be determined through South Florida Water Management District Governing Board order.

The Lake Okeechobee Service Area includes those areas surrounding the lake that are directly supplied by it. This includes the Everglades Agricultural Area, Seminole Indian Brighton and Big Cypress Reservations, Caloosahatchee basin, St. Lucie basin, the S-4 basin, and the L-8 basin. Supplies to these basins include primarily water for agricultural production and public consumption.

How is the interim target for this indicator predicted?

The South Florida Water Management Model (SFWMM) is used to simulate a 31-year period (1965 to 1995) for the baseline (1995 base), 2010, 2015, and full CERP implementation (D13R) and the implementation of the South Florida Water Management District's Lake Okeechobee Supply-Side Management Policy and Water Shortage Plan (Chapter 40E-21,

F.A.C.). The results are presented in the "Frequency of Water Restrictions" graphic (Figure 5.3.1), which is a table indicating the months (rows) within each year (column) when water shortages are simulated. Years are "water years", October to September, to correspond to crop cycles and South Florida's wet and dry seasons. Three criteria are used to determine if the water restrictions are significant. First, for a month to be included in the count, there must be supply-side restrictions for 7 or more days. Second, the reduction in deliveries during the month must be 10 percent or more of the monthly totals. Third, the total reduction in deliveries during the month must exceed 18,000 acre-feet. Any water year with one or more months meeting these criteria is counted as a year with significant supply-side restrictions.

Additional information required includes Lake Okeechobee stage hydrograph; regional water deliveries to the Lower East Coast; annual irrigation supply and demand not met for Seminole Tribe Reservations; mean annual Everglades Agricultural Area/Lake Okeechobee Service Area supplemental irrigation demands and demands not met; S-236, S-4, and L-8 basins, and Seminole Tribe mean annual supplemental irrigation demands and demands not met; and average annual Lake Okeechobee inflows and outflows report.

Frequency of Water Restrictions for the 1965 – 2000 Simulation Period

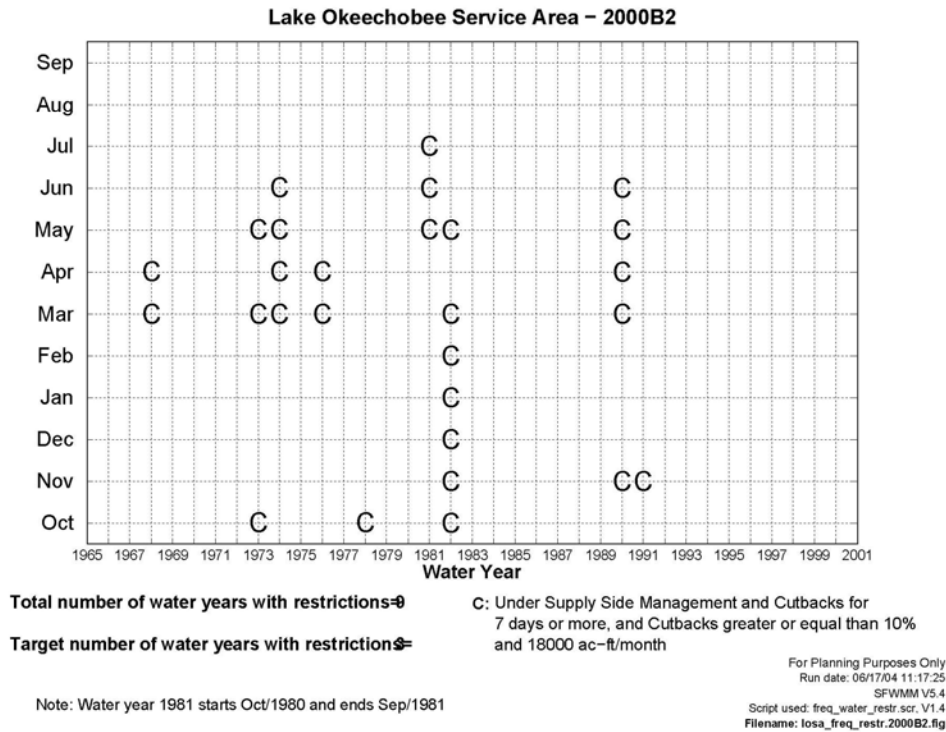


Figure 5.3.1. Frequency of water restrictions graphic for the Lake Okeechobee Service Area

What are the predictions for five-year increments?

Table 5.3.1. presents the characteristics of water shortages in a 31-year simulation in the Lake Okeechobee Service Area for each model simulation.

Table 5.3.1. Characteristics of water shortages in a 31-year simulation in the Lake Okeechobee Service Area

	Frequency of Water Restrictions (no. of years)	Duration (total no. of months with restrictions)	Severity (volume in 1,000 acre-feet)
1995 base	9	37	1,790
2010	12	58	2,418
2015	8	36	1,586
D13R	5	21	807

2010

The pattern of water shortages changed from the 1995 base simulation to the 2010 simulation. The number of years with predicted cutbacks increases, as does the severity and duration of the cutbacks. Some of the increases in cutbacks can be expected due to a projected increase in acreages requiring irrigation in some of the Lake Okeechobee Service Area basins.

Although the 2010 model run predicts cutbacks would increase, it is not expected that this would occur in all Lake Okeechobee Service Area basins. The Everglades Agricultural Area basin is the site of a reservoir that is expected to be constructed by 2010, which would reduce the demand by reducing the amount of acreage requiring irrigation in that basin. A similar situation occurs in the Seminole Tribe's Big Cypress Reservation basin where the irrigation demands remain constant from 1995 to 2010 due to the requirements of the Seminole Compact. The Seminole Compact is one of the documents representing the settlement of a lawsuit between the State of Florida (South Florida Water Management District) and the Seminole Tribe. It defines the nature and extent of Seminole water rights and the manner of their use within the confines of the South Florida Water Management District boundaries.

2015

The pattern of water shortages in the 2015 simulation improves over the 2010 simulation, and performs similar to the 1995 base. One fewer year of cutbacks occur in 2015 as compared with 1995 base, and 4 years fewer compared with 2010. One of the major drought events is predicted to be slightly shorter in 2015. Overall, the severity and duration of the 2015 cutbacks are improved over the 1995 base.

D13R

The pattern of water shortages continues to improve as the CERP is implemented. By the time it is fully implemented in 2050, the predicted frequency of water restrictions declines to five years with a restriction event out of the 31-year simulation with a total of 21 months with restrictions. The volume of water supply restricted is cut in half compared to 2015. The

frequency, duration, and severity of restriction events in the Lake Okeechobee Service Area improves in the D13R simulation when compared to the 2015 simulation.

How will we track whether the targets established for this indicator have been achieved?

The number of times and duration when water supply restrictions are imposed will be analyzed to determine if water supply demands were met. If they were not met, the severity of the drought associated with the restrictions will be determined.

What additional work is needed to improve this interim target?

No additional work is needed at this time.

References

Chapter 40E-21 F.A.C. Water Shortage Plan. Florida Administrative Code.

Section 373.0361, F.S. Regional Water Supply Planning. In: Title XXVIII: Natural Resources; Conservation, Reclamation, and Use, Chapter 373: Water Resources, Florida Statutes.

Section 373.175, F.S. Declaration of Water Shortage; Emergency Orders. In: Title XXVIII: Natural Resources; Conservation, Reclamation, and Use, Chapter 373: Water Resources, Florida Statutes.