Desalination and Drought at the SFWMD

The State of Florida and the South Florida Water Management District (SFWMD) support development of alternative water supplies to reduce dependence on our fresh traditional sources of water and to reduce the effects of droughts. Alternative sources include reclaimed water, brackish groundwater, and seawater, in addition to increasing storage.

Can We Fill Lake Okeechobee with Coastal Water?

Technically, it can be done, but at what cost? First, seawater from the Atlantic Ocean cannot be piped untreated to Lake Okeechobee because of the high chlorides and water quality concerns. The Florida Department of Environmental Protection has classified the Lake as a Class I Drinking Water Source, requiring strict standards that would not permit us to put salty Atlantic water into the freshwater lake without removing the salts. Desalination treatment by high-pressure reverse osmosis will be needed to remove these salts.

Lake Okeechobee covers 730 square miles or 467,200 acres. To raise the lake one foot would require 150 billion gallons of treated water, enough to supply the entire State of Florida for two months! This number does not account for evaporation losses. To supply this volume from treated seawater would cost about $500 million per foot. The electricity used for desalinating the same volume would be enough to supply 100,000 homes for one year. To fill up the lake by 4 feet to its historical average will cost about $2 billion. The cost of a 50-mile pipeline from the Atlantic Ocean to Lake Okeechobee would be about $50 million.

Desalination Efforts at the SFWMD

Realizing that droughts are part of Florida and that nine of our 16 counties have access to coastal water that is drought-proof, the South Florida Water Management District performed seawater desalination feasibility studies in 2002 and 2006. The goal was to turn seawater into safe drinking water. Three sites: Fort Myers, Fort Lauderdale, and Port Everglades were recommended for possible seawater plants. Cost has hindered building the seawater plants. Compared to other alternatives such as water conservation, water reuse, and tapping water from the deep groundwater, the seawater option was estimated to be two to three times more expensive. The water from the ocean is very salty and takes a lot of electricity and delicate facilities to make it clean. Despite the cost, the District is still encouraging water utilities to incorporate seawater desalination into their future water supply plans to improve water supply reliability.

What We Are Doing

There are efforts underway to conserve water, store more stormwater and to desalinate groundwater to reduce public water supply withdrawals from the lake. Two groundwater desalination plants with a combined capacity of 13 million gallons per day have been built for four lake cities to replace potable demand and save Lake Okeechobee water for agriculture and the environment. We also have 24 brackish water and 2 seawater desalination plants in South Florida with a combined existing capacity of about 140 million gallons of water per day. Fourteen plants are under construction for an additional 120 million gallons of potable water.

To avert future water crisis, the District is working with water utilities to consider building ocean water desalination plants in South Florida, but at a smaller scale that is

economically feasible. More information on the District's reuse, conservation, and desalination efforts can be found at:

https://my.sfwmd.gov/portal/page?_pageid=1874,4164635,1874_13064096:1874_4167300&_dad=portal&_schema=PORTAL

Furthermore, the District is collaborating through participation and sponsorship with state, national, and international agencies on funding, research, and development to reduce the cost of implementing seawater desalination.

If you have any questions or additional information, please feel free to email or call Ashie Akpoji, P.E., at aakpoji@sfwmd.gov and (561) 682-2571.