

ST. LUCIE RIVER RESERVOIR



PROJECT

St. Lucie River (C-44) Reservoir & C-44
Stormwater Treatment Area

INDUSTRY

Government/Military, Marine, Water Treatment &
Storage

**LOCATION
PRODUCTS**

The Everglades, Florida, USA
PENETRON ADMIX SB

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CASE SUMMARY

The completion of the St. Lucie River (C-44) Reservoir project in Florida by the South Florida Water Management District and the U.S. Army Corps of Engineers is another step closer to the revitalization of the Everglades – a crucial and unimaginably large Florida ecosystem. PENETRON ADMIX SB was specified as the preferred concrete waterproofing solution for the massive concrete structures.

The South Florida Water Management District (SFWMD) is responsible for managing and protecting the water resources of South Florida by improving flood control, water supply, water quality and natural systems. A key part of this plan is the revitalization of the Everglades. At over 730 square miles, it's easily the largest environmental restoration project in US history. The district is also working to improve water flow in the Kissimmee River, the Kissimmee River floodplain, Lake Okeechobee and South Florida's coastal estuaries, all to help better protect water quality and to store water where it is needed across the Everglades.

First opened in 1937, the Okeechobee Waterway is an extensive flood control system of canals, gates, and levees in the Florida Everglades that channels water into the reservoir to help attenuate flow back to the canals and to improve the overall quality of the downstream estuary. Many canals of the Okeechobee Waterway drain into the St. Lucie estuary, one of the most biologically diverse ecosystems in the USA. The natural ecosystem has become impaired as fresh water pours into the estuary through canals from Lake Okeechobee, a large shallow freshwater lake to the north. This results in reduced salinity, poor water quality, and negative impacts on aquatic life.

Embedded in the vast, open landscape of the Everglades, and located in Okeechobee and Martin Counties, the C-44 St. Lucie Reservoir is one of the primary sources of freshwater flow into the St. Lucie estuary and the Indian River Lagoon. The reservoir project includes 50,600 acre-feet of storage, which delivers water to the C-44 Stormwater Treatment Area (STA) for water quality treatment.

The C-44 Reservoir and the C-44 STA projects featured vast dimensions of construction work. The quantities of building materials (mostly concrete), and the scale of the construction went far beyond anything usually encountered in typical, urban projects. For example, the construction of the 6,300 acre C-44 STA and the reservoir pump station included 32 miles of berms, 30 miles of canals and 63 structures.

The U.S. Army Corps of Engineers was faced with the challenge of constructing durable concrete structures located in areas of aggressive groundwater. Most of the concrete in the water management systems in Southern Florida is constantly exposed to water or completely submerged.

“PENETRON ADMIX permanently seals microcracks, pores and capillaries against the penetration of water or liquids from any direction, even under the fluctuating hydrostatic pressures encountered in the Everglades.”



In the Kissimmee Chain of Lakes: This concrete control structure is located between Lake Rosalie and Lake Kissimmee (G-103).



Under construction: An aerial view of the foundation of the massive pump station (C-43) for the St. Lucie River reservoir.

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Penetron USA was asked by the U.S. Army Corps of Engineers to provide a robust concrete waterproofing solution for both the C-44 St. Lucie Reservoir and the C-44 STA. Similar to the recently completed C-44 Lakeside Ranch project, PENETRON ADMIX SB was specified for all concrete water control (gated spillways and locks, flow equalization basins, etc.) and water storage structures to ensure an impermeable concrete matrix. The simplified dosing with the pre-measured soluble bag format of PENETRON ADMIX SB helped keep concrete batching and placement on schedule.

The active ingredients in PENETRON ADMIX react in a catalytic reaction with moisture in fresh concrete to generate a non-soluble crystalline formation throughout the pores and capillary tracts of the concrete. This formation permanently seals microcracks, pores and capillaries against the penetration of water or liquids from any direction, even under the fluctuating hydrostatic pressures encountered in the Everglades.

The C-44 canal system now captures 65% of the average annual storm water runoff in the storm water treatment area. The reservoir will eventually hold up to 50,600 acre-feet, or 16 billion gallons, of water at an average depth of 15 feet.

The St. Lucie River (C44) reservoir and STA project are only the latest projects in the SFWMD's ongoing revitalization of the Everglades ecosystem. Penetron continues to work with the U.S. Army Corps of Engineers on further phases of construction.



Protected by PENETRON: The concrete water flow control structure is downstream from the St. Lucie River (C-44) reservoir pump station.