

# SOUTH ISLAND PUBLIC SERVICE DISTRICT, HILTON HEAD, SOUTH CAROLINA

## Reverse Osmosis Treatment Plant Expansion

### HIGHLIGHTS

Plant expansion from 1.5 to 3.0 mgd due to recent State limitations on the use of Floridian Aquifer water.

Plant expansion will maximize the use of the deep, geothermal and brackish cretaceous well supply.

Carollo to provide permitting, design, and construction-phase services.

The South Island Public Service District (SIPSD) retained Carollo to provide engineering services related to the expansion of their RO treatment plant in Hilton Head, South Carolina. The SIPSD has been operating their RO treatment plant since 2001 and due to recent limitations on the use of fresh Floridian Aquifer water imposed by the State, the SIPSD has decided to expand the RO plant from 1.5 to 3 mgd, maximizing the use of their deep, geothermal and brackish Cretaceous well supply. The current process consists of a plate-and-frame heat exchanger/cooling tower process, followed by RO. The heat exchanger/cooling tower process reduces the Cretaceous well temperature from 122°F to 104°F. The RO process operates at a recovery rate of 80 percent.

Prior to expanding the RO treatment plant, Carollo first needed to negotiate a new NPDES permit for discharging additional RO by-product water into the environmentally sensitive Calibogue Sound. Toxicity testing has recently proven troublesome to the SIPSD and Carollo must first demonstrate to the State that the nature of this failure is due to naturally occurring constituents that are not regulated (i.e., common ion toxicity, or ion imbalance toxicity). Additionally, CORMIX modeling was performed, demonstrating infinite dilution at the point of discharge.

In concert with the permitting effort, Carollo is proceeding with design services related to the expansion of the plant capacity. Additional heat exchanger and cooling tower capacity is required for redundancy. Carollo is also evaluating the maximization of the use of the existing RO equipment. Plant electrical and mechanical audits are also currently in progress to determine if the existing infrastructure can support the additional capacity.

Carollo will prepare designs, specifications, and contract documents for the equipment related to the expanded capacity. Construction-phase services will also be provided.



*Carollo is providing engineering services for the expansion of the SIPSD's RO treatment plant from 1.5 to 3 mgd.*



*Brackish, geothermal well water is cooled from 122°F to 104°F by a heat exchanger/cooling tower process.*