

WATER RECLAMATION PRACTICES AT THE PINELLAS COUNTY (FL) RESOURCE RECOVERY FACILITY

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ABSTRACT

The Pinellas County Resource Recovery Facility (PCRRF) combusts 3,150 tons per day of municipal solid waste from Pinellas County, Florida and produces 75 megawatts (MW) of electrical generation capacity. The facility requires about 1.7 million gallons per day (MGD) of makeup water for the cooling tower and up to 200 thousand gallons per day of high-purity water for boiler makeup. The facility currently uses recovered storm water for cooling during summer months (rainy season) and treated municipal wastewater ("reclaimed water") during the winter months (dry season). The facility currently uses potable water for boiler makeup and is planning to use reclaimed water in the future.

Use of reclaimed water for plant water demands is consistent with the philosophy of resource recovery. Reclaimed water, once considered a waste product, is now a valuable resource in water-short areas such as peninsular Florida. Pinellas County's population of over 1 million people requires water for residential, commercial and industrial purposes. Use of reclaimed water for demands at the PCRRF minimizes the impact on limited freshwater resources and can also build support for the facility among the environmental community.

Reclaimed water also has economic benefits. Tampa Bay is experiencing ever-increasing potable water costs. Potable water prices are expected to outpace inflation for the next several years to fund capital improvements associated with the Tampa Bay water program. Reclaimed water is available during the winter season, and the PCRRF has the ability to procure it from two separate sources at competitive rates. During the summer months, the facility depends more on its storm water source. A lime softening pretreatment system processes the storm water prior to its use in the cooling towers.

Reclaimed water for boiler makeup will require membrane treatment followed by ion exchange. Microfiltration is being evaluated to remove bacteria-size particles and prevent fouling of the reverse osmosis membranes. Potable water will be used as a backup in the event of availability or quality problems with the reclaimed water supply.

KEYWORDS

Water reuse, resource recovery, microfiltration, reverse osmosis, boiler makeup, cooling water, reclaimed water