

La Virgencita Water Filtration Plant Toa Alta, Puerto Rico

Owner: Puerto Rico Aqueduct and Sewer Authority (PRASA)
 Engineer: CPM/MPPR Engineers of Puerto Rico
 Contractor: Engineered Parts & Services, Inc.

Overview

Technological advances, as ironic as it may seem, have their positive side and their negative side. By the mid nineties, and in their continuous effort to supply potable water to the public, the Puerto Rico Aqueduct and Sewer Authority (PRASA) constructed a one of a kind “super aqueduct” to bring water to the northern towns of the island from a lake reservoir located 50 miles away. No longer necessary, other PRASA plants and facilities in the area, like the La Virgencita Water Filtration Plant, fell out of favor. In 2003, the Plant was shut down.



Plant sedimentation units

As it turns out, with the population increase, demand for potable water in the region kept rising. It was then that PRASA decided to revitalize and invest \$750k to retrofit the La Virgencita WTP to a preliminary production capacity of 4 million gallons per day

La Virgencita Water Filtration Plant

Originally designed to produce 6 million gallons of water per day, the Plant consists of six sedimentation units and six filter units, each fitted with a pre-filter or clarifier just before the main filter. Water is brought to the Plant from the nearby La Plata river. Water was taken from two 35ft deep intake caissons, both originally fitted with submersible pumps. One unit in each caisson pumped “surface” water, while the other pumped from underground intakes connected directly to the pump’s suction via a pipe manifold. Use between one or the other configuration was a function of the demand, and also of the quality of water desired at any particular time.



New Dry-Pit Submersible pumps in south collector well



Pump suction manifold

As part of the retrofit of the Plant, it was decided to convert the south caisson to underground intakes only. Two Yeomans submersible Dry-Pit pumps were specified in the design and a new manifold, of a very complex

shape due to the round geometry of the caisson, was to be constructed.

Engineered Parts & Services Inc. supplied and installed two (2) Yeomans 9235, model 4103SC pumps.

Starting by mid 2007, and ending early this year, the project was a complete success. The new Yeomans pumps performed flawlessly. During the 14-day, 24-hour continuous operation start-up period, the pumps performed as expected, supplying the required raw water to the Plant.



Plant operator at work with the new pump system

As new residential and commercial developments in the area are being built, demand keeps rising. Plans and designs are in the works at this moment to increase the capacity of the Plant to the original 6 million GPD, and also to build a third caisson, so we will be seeing some more Yeomans soon!

The present case study clearly shows that the success of a water distribution system lies in having the different components of the system working in conjunction, and not by supplementing one with the other. Also that an effective preventive maintenance program is the key to having an continuous supply of filtered water to the ever demanding public.



Plant raw water intake caisson

Pump Details

Qty: 2, SO: 9811355
 Yeomans 9235 Dry-Pit pumps, model 4103SC, 4” discharge diameter, standard construction, designed for 1000 @ 135ft, 13” diameter impeller, 60hp motor, 60hz, 1750rpm, 3 phase.



EPS, Inc. Project Manager (left) and Project Designer in front of the plant's 6 million gallon Clearwell Tank

Photos and copy courtesy of José Martínez, Engineered Parts & Services, Inc.