

MOUNT PLEASANT WATERWORKS, SOUTH CAROLINA

Membrane Replacement Study and Water Treatment Master Plan

HIGHLIGHTS

Economic analysis of four membrane replacement options.

Master planning to implement a new RO facility to use an existing deep well supply.

First RO utility in the country to implement a no-acid approach to RO.

Reduced energy use, saving MPW approximately \$140,000 per year.

Carollo was selected by Mount Pleasant Waterworks (MPW) to perform a membrane replacement study and water treatment master plan. Mount Pleasant has been using reverse osmosis (RO) to treat a brackish groundwater supply for approximately 10 years. Their membranes had reached the end of their useful life and required replacement. Additionally, the population of Mount Pleasant had continued to grow and MPW was experiencing difficulty meeting water demands. Development of a standby well as a source for a new RO facility was desired. Additionally, the citizens of Mount Pleasant desired only membrane-treated water.

To help MPW receive the lowest replacement cost for their RO membranes, Carollo used single-element RO pilot plants to screen membranes from three different suppliers. To balance the system hydraulics and the resulting capital cost implications, Carollo performed an economic analysis for four membrane replacement options. A hybrid low-pressure RO membrane configuration was recommended for replacement using two different types of membranes, which will balance the system hydraulics. Carollo assisted MPW with membrane replacement and performance testing. A workshop was held at the time of replacement to train operations staff in proper membrane loading techniques. Once the membranes were fully replaced, Mount Pleasant saved \$140,000 per year from reduced energy use.



Mount Pleasant provides its customers with RO-treated water and has the second lowest water rates in the State of South Carolina.

