

# City of Pascagoula Turns to GE to Improve Drinking Water Quality

## Background

In Pascagoula, Mississippi, a plentiful groundwater supply had become the source of widespread community concerns. Bounded on the south by the Gulf of Mexico and the west by the Pascagoula River, the city had always faithfully relied on this naturally-filtered water source as it flowed to the Gulf. However, contaminants found in the water - although not considered hazardous - were causing distinct taste, color and odor problems with increasing impact.

## Challenge

Due to a growing number of customer complaints and stringent 2001 EPA regulations, the city became compelled to find a remedy. The City of Pascagoula turned to GE Water & Process Technologies to provide a viable solution for the removal of undesired characteristics from their water supply. The following profile illustrates how GE's breakthrough technology and equipment enabled the 27,000 residents of Pascagoula to enjoy pristine, crystal clear water, while ensuring compliance with existing and 2001 EPA regulations.

## Solution

To effectively remove salt and contaminants from the water, a MUNI Reverse Osmosis (RO) system was first implemented using a semi permeable membrane. This unique component employs small pores, which allow water molecules to pass through, while acting as a barrier to dissolved solids like salt and other organic compounds responsible for color. Forcing the water to move in the reverse direction by applying pressure to the high concentration area, pure water flows through the membrane, leaving the salt behind.



Figure 1: MUNI RO Systems at Pascagoula

GE's process of combining low energy RO in tandem with Ozone Generation and Contacting equipment proved to be the optimal solution to Pascagoula's water deficiencies. Working in conjunction with RO, Ozone polishes RO permeate by oxidizing remaining color and removing dissolved hydrogen sulfide. Ozone produced from oxygen results in a highly productive method of water purification, which attacks and destroys viruses, bacteria and other contaminants up to 3000 times faster than chlorine.

In 1999, the project's first phase commenced with the construction of buildings, piping and necessary utilities for the 4.5 MGD (million gallon/day) filter system at Community Street and Bayou Casotte Water Plants. Immediately thereafter, the specialized filtration equipment was installed, thoroughly inspected, tested and implemented with great success. Pascagoula, the first municipality in the US to use RO followed by Ozone to produce drinking water, flipped the switch to their high-efficiency GE RO/Ozone water filtration system in early 2000.



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## Results

After applying GE's practical interplay of membrane technology and Ozone to municipal drinking water, Pascagoula's residents have enjoyed remarkable results. GE's superior technology dramatically transformed water purity by virtually eliminating salts, color and disinfection by-products. Water sample comparative testing before and after implementation show sodium, chloride and total dissolved solids levels diminished by 90%. Also significant, color and disinfection by-products are sharply lowered by 95%. Even more, the environment-friendly treatment requires 87% less chlorine.

With this new filtration equipment in place, water taste is now highly rated, sodium free levels are achieved and odor-producing hydrogen sulfide gas is completely eliminated. It is also widely reported that staining no longer occurs on bathtubs and fixtures and laundered clothing appears cleaner and fresher, while using less detergent.

**Water Sample Comparison Chart** - A comparative analysis of water quality before and after filtration treatment shows remarkable improvement in purity (Figures 2 to 5).

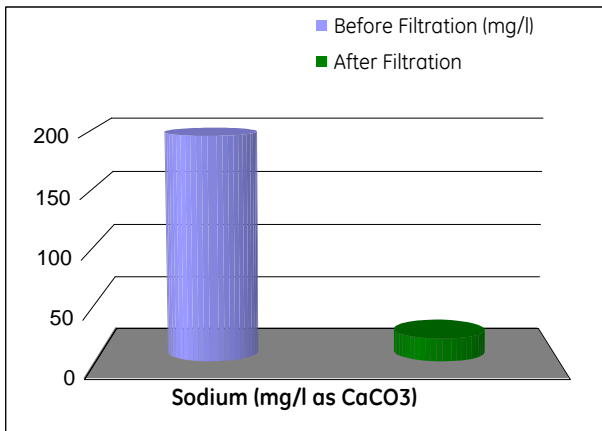


Figure 2: Sodium before and after filtration

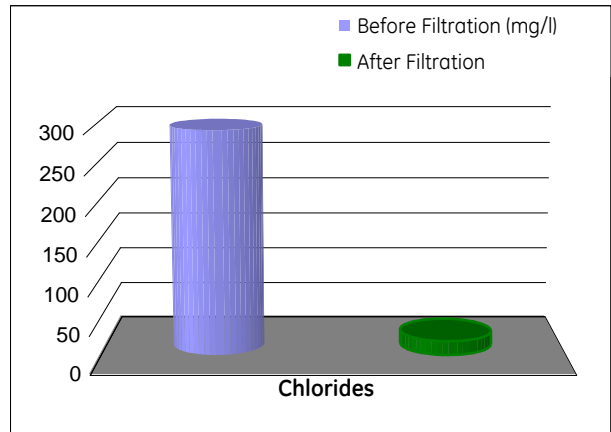


Figure 3: Chlorides before and after filtration

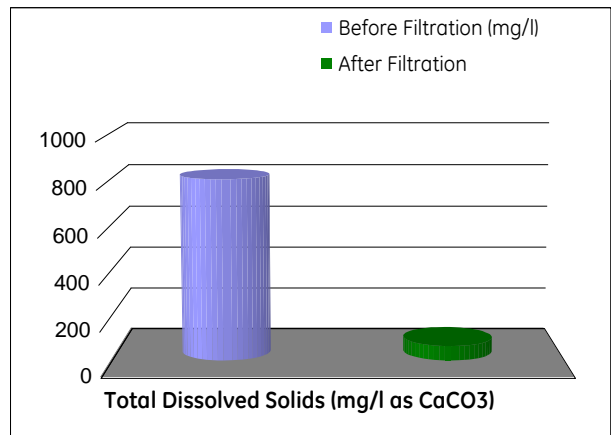


Figure 4: Total Dissolved Solids before and after filtration

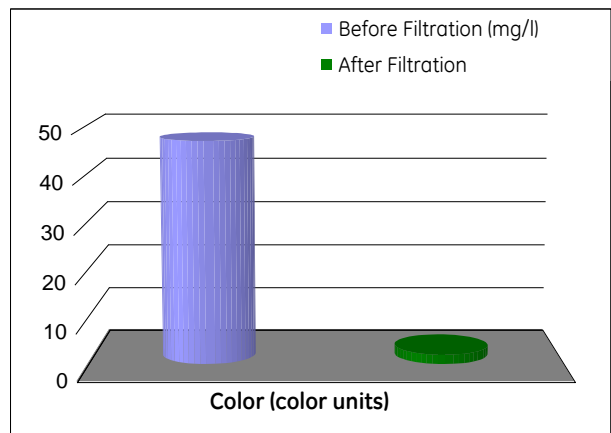


Figure 5: Color before and after filtration