

# High Performance Coagulant

Case Study - Outdated Coagulant Program  
Required High Maintenance



## Upgrading to a High Performance Coagulant reduces Caustic Demand by 60% and saves over \$300k in Chemical Costs

The San Patricio Municipal Water District, located in Ingleside, Texas, provides water to more than 85,000 customers through municipal and industrial contracts. The district sources its water from the Nueces River, Lower Colorado River, and Lake Texana.

After discovering several maintenance issues, the district management sought advice from other utilities in Texas. They were referred to Usalco to find a solution.

The 24-inch line between the filters and the clearwell had a caustic soda injection point that was frequently getting clogged.

### **WHAT IS THE BEST METHOD FOR A DRINKING WATER PLANT TO REDUCE THE CAUSTIC SODA DOSE?**

The issue was caused by the plant's aluminum sulfate program, which required high doses of caustic soda to raise the pH of the finished water before distribution. Despite installing an inline mixer and implementing a six month inspection program, clogging issues persisted.

## SOLUTIONS

A polyaluminum chloride blend was formulated to solve the caustic clogging issue and improve performance. By formulating a product specific to the facility's raw water parameters, the use of polyaluminum chloride has allowed a reduction in coagulant dosage. Polyaluminum chloride showed immediate results, using lower coagulant and caustic dosages that exceeded settling and TOC removal requirements.

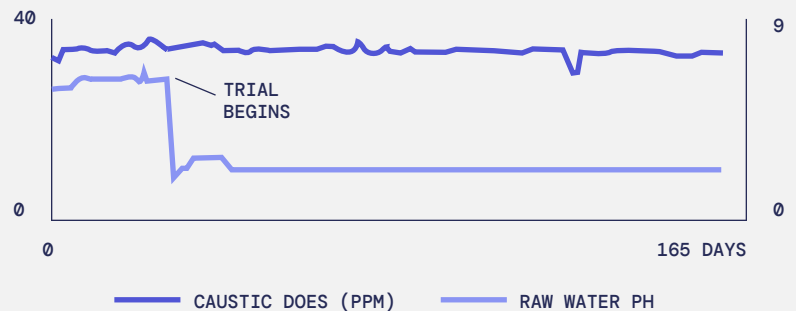


DRONE VIEW

## 24 INCH LINE BLOCKED



## DRAMATIC REDUCTION OF CAUSTIC SODA DOSAGE



## Actions

- 01 Discover and understand process challenges and opportunities
- 02 Examine and replicate current treatment process for jar study analysis
- 03 Collect jar study data during different water quality conditions while developing PAC formula
- 04 Test and re-test product in jar studies until data is unequivocal

## 60%

## Caustic Soda Reduction

During certain raw water conditions, the facility was able to completely shut off the post-pH adjustment.

## 60%

## Coagulant Reduction

The customized PAC blend included higher metal content per ppm and a more efficient molecule.

## 15%

## Lower Metal Salt Sludge Generation

Molecule efficiency increased compared to the former aluminum sulfate program, requiring less metal salts.

