

Water Utilities Supply Chain Challenges and Case Studies:

CHLORINE, SODA ASH, AND THE POARCH CREEK INDIANS UTILITY AUTHORITY

The Poarch Creek Indians chartered a Utility Authority in the early 1990s. Authority staff focus on drinking water, wastewater, and solid waste needs of both the Tribe and community. The Tribe has invested millions of dollars in establishing its own self-sustainable utility system, constructing and installing two groundwater wells with water treatment facilities for distribution, a million-gallon water tower, a sequencing batch reactor wastewater treatment plant, numerous lift stations, water mains, and sewer mains to support these facilities.



The Tribe is located close to the Gulf of Mexico in Escambia County, Alabama, making it familiar to the impacts from hurricanes. The Utility Authority has already implemented supply chain best management practices to combat extreme weather concerns. For example, the Authority established accounts with their treatment chemical suppliers and identified two back-up suppliers for each critical chemical. Furthermore, during hurricane season each year, the Authority increases the amount of treatment chemicals stored on site, anticipating that those chemicals may be hard to obtain after a hurricane makes landfall.

The Challenge

As the COVID-19 pandemic progressed, the Authority heard from regulatory agencies and other

utilities that chlorine and soda ash were soon to be in short supply. As the Authority began to consider its options, the call came from its supplier: the next expected shipment of both chemicals was going to be delayed for five to seven days. Authority staff quickly identified back-up suppliers, but were told that since the Authority was not an active customer with these distributors it could not be prioritized for delivery. Eventually one backup supplier was able to provide both soda ash and some chlorine, but the price would be double their normal cost.

Response and Mitigation

To mitigate the impacts of potentially running out of chlorine and soda ash, the Authority implemented operational changes designed to maximize the life of on-hand supplies of both chemicals.

For example, one well in the Authority's drinking water system is equipped with an in-line ultraviolet (UV) disinfection unit. The Authority began to use this well more than the other to leverage the UV unit and use less soda ash.

While this was not operationally ideal in terms of water age, cycling back and forth between the two wells enabled the Authority to continue to produce safe water at regulatory standards.

"It is my personal goal to have [sustain] a certain number of failures before we are critical."

- Shaun Livermore, Operations Manager

Lessons Learned

Although the Poarch Creek Indians Utility Authority believed it was well prepared to withstand supply chain disruptions given the Authority's experience with hurricanes, it further strengthened the following supply chain best management practices:

- **Increase storage.** Although the Authority was increasing chemical storage during hurricane season, it is now a year-round practice. To minimize environmental challenges, the Authority stores the same chemical in multiple locations around the utility. This avoids potentially exceeding storage limitation thresholds set for safety and reporting requirements. It also allows for more chemical access flexibility in the event of road closures or other unforeseen obstacles. Currently, the Authority's goal is to maintain a six-week supply of all critical treatment chemicals on-site.
- **Change order frequency.** Orders will be delayed and may come in multiple, partial shipments. The Authority orders critical supplies two weeks earlier than usual and may place the next order before the original order arrives.
- **Communicate with regulatory agencies.** Authority staff work with both EPA Region 4 and the Alabama Department of Environmental Management. These agencies have indicated their willingness to work with the Authority under emergency conditions to help relieve pressures caused by maximum storage thresholds and to consider any treatment changes that may be needed based on chemical shortages.
- **Ask neighbors for help.** The Authority has access to mutual aid through the United South and Eastern Tribes organization. The Authority also has agreements with West Escambia Utilities and Freemanville Water System for assistance. The three utilities can loan each other needed chemicals and supplies and then be "paid back" with identical chemicals and supplies once the borrowing utility has them in stock again.



The Poarch Creek Indians Utility Authority knows their supply chain challenges are not over yet. But the Authority feels it is now managing its supplies in a much more proactive way that allows them to maintain control over unpredictable supply challenges.

Additional Resources

You can find more information on using supply chain management best practices and preparing for supply chain challenges at <https://www.epa.gov/waterutilityresponse/water-and-wastewater-sector-supply-chain-resilience>.

