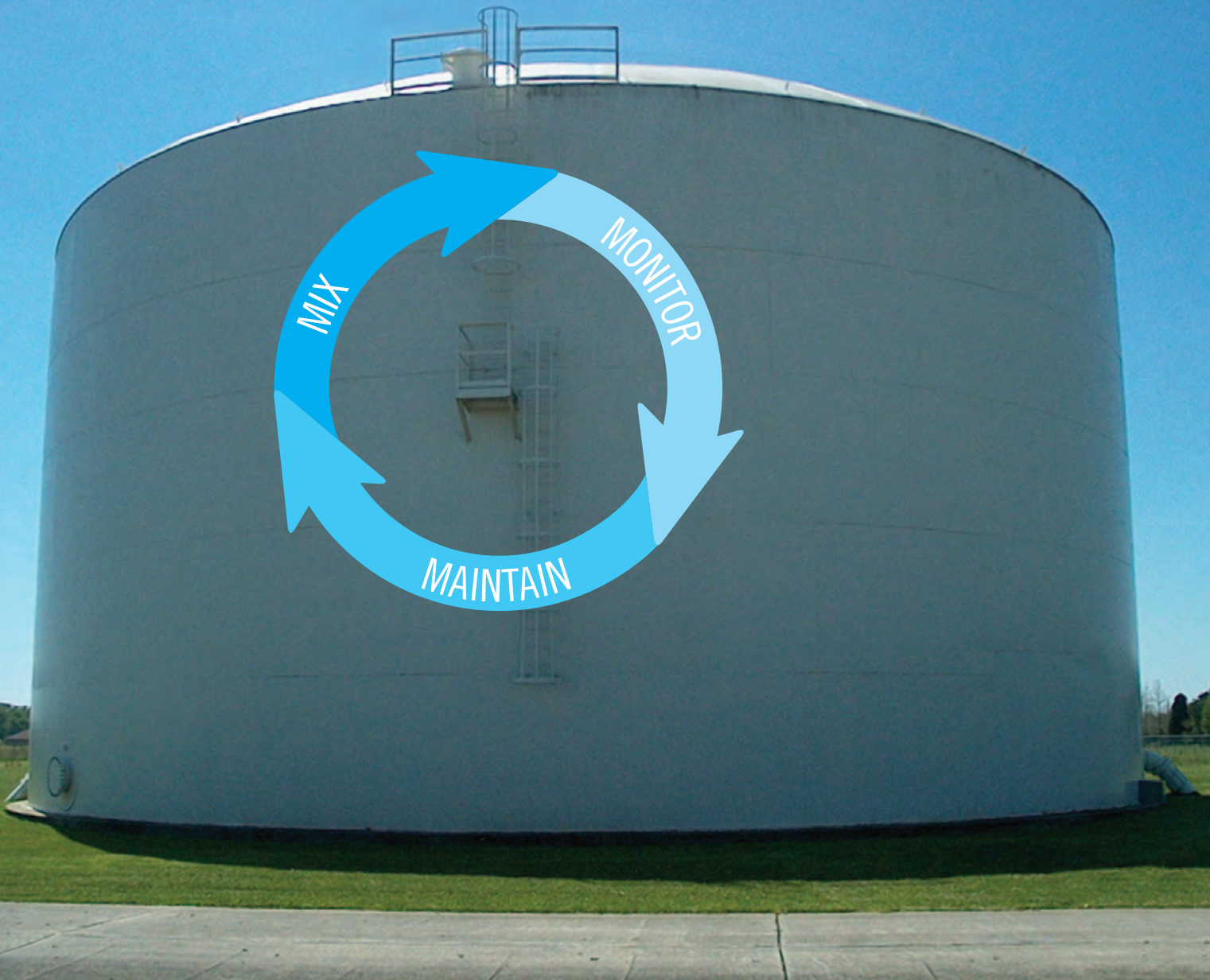


Nature. Technology. Innovation.



Residual Control System (RCS)



Control Distribution System Water Quality

Distribution system water quality is a primary factor in regulatory compliance and customer satisfaction. To ensure high water quality, operators must carefully balance maintaining sufficient disinfectant residual while reducing disinfection by-product formation. And systems that use chloramines as a secondary disinfectant must continuously monitor and guard against nitrification. Unfortunately, traditional tools for managing disinfectant levels in the distribution system are costly, time consuming and often inadequate.

RCS PAX Residual Control System – Smart Boosting for Your Tanks

The PAX Residual Control System (RCS) is an intelligent disinfectant boosting system that gives operators the ability to set and control residual levels in water storage tanks and key locations in the distribution system. By combining advanced water quality sensors with powerful tank mixing and an automated chemical feed system, the PAX RCS enables operators to:

- Set and maintain consistent disinfectant levels in storage tanks
- Eliminate costly and labor-intensive manual boosting
- Quickly counteract adverse water quality changes, such as low residual, excess ammonia and nitrification
- Optimize and balance disinfectant levels across a water distribution system
- Access water quality data in real-time from a tablet or smartphone

>> Right away, we saw chlorine residual levels improve in our Sweeney Ridge tank and our nitrification problem went away.”

—Mark Reinhardt, Water System and Conservation Manager, City of San Bruno, California



RCS Components

The PAX RCS utilizes advanced water quality sensors, powerful active mixing and an automated chemical feed system to set and maintain residual levels in water storage tanks.



Water Quality Station

The Water Quality Station uses advanced sensors to continuously measure water chemistry inside the tank, including temperature, pH and chlorine. This water quality data is communicated to the Smart Controller and displayed in real time on a touch screen. With this data, utilities can evaluate day-to-day operations, react to unexpected changes in water chemistry and observe the effects of treatment plant changes on distribution system water quality.



Smart Controller

The Smart Controller is the brain of RCS. It analyzes data from the Water Quality Station and compares it to preset thresholds established by the operator. If disinfectant adjustments are needed, the Smart Controller issues commands to the Chemical Feed System. The Smart Controller can also stream the water quality data and system status updates to the utility's SCADA system to provide SMS and text alerts directly to operators.



Chemical Feed System

PAX Water's Chemical Feed System reliably and precisely delivers disinfectant chemicals to the water tank or into distribution system mains. The chemical skids are designed to minimize maintenance needs and include safety features such as chemical level sensors, leak detection and 9 gallons of secondary containment.

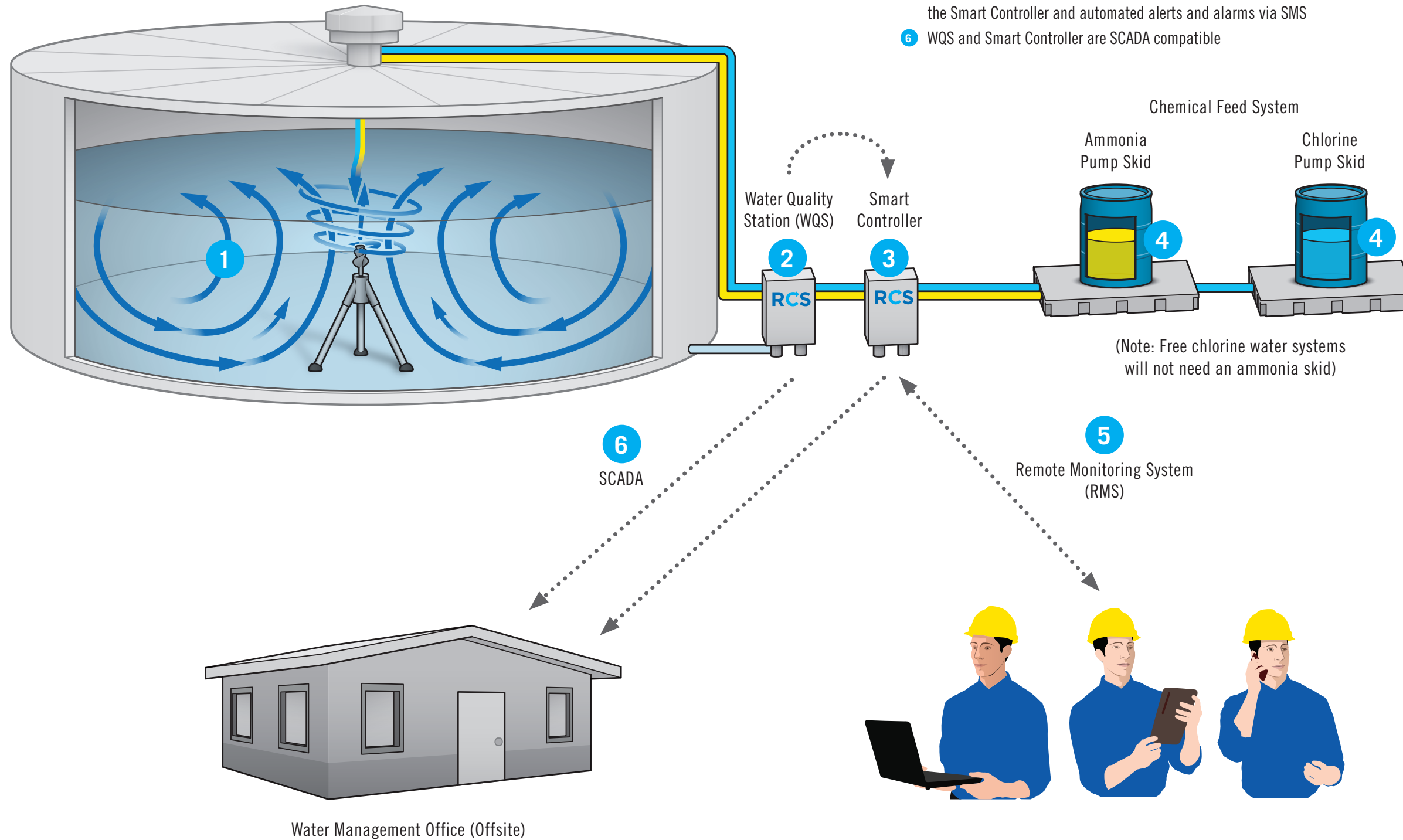


PAX Water Mixer

At the heart of RCS is the PAX Water Mixer – the most powerful and reliable tank mixing system available. The PAX Water Mixer rapidly and completely mixes disinfectant chemicals into the entire volume of water in the tank, enabling rapid homogenization and maximum water quality stability and reliability.

RCS Residual Control System

- 1 PAX Water Mixer continuously blends disinfectant residual and eliminates stratification
- 2 Water Quality Station (WQS) continuously samples tank, monitors water quality and sends data to the Smart Controller
- 3 Smart Controller analyzes data from WQS, transmits commands to Chemical Feed System and monitors pump and chemical levels
- 4 Chemical Feed System doses tank based on commands from Smart Controller
- 5 Remote Monitoring System (RMS) provides real-time access to water quality data, the Smart Controller and automated alerts and alarms via SMS
- 6 WQS and Smart Controller are SCADA compatible



Site Considerations and Installation

Enclosure Options

Both the Water Quality Station and the Smart Controller are made with enclosures rated NEMA 3R. They may be mounted outdoors under an awning or indoors, either in an existing or custom-built pump house or shed.

On-Site Power Requirements

- WATER QUALITY STATION:** 100-240 VAC, 15 watts for electronics
115 VAC, 40 watts for booster pump (optional)
- SMART CONTROLLER:** 100-240 VAC, 50 watts
100-240 VAC, 15 watts for chemical dosing controller
- CHEMICAL FEED SYSTEM:** 115 VAC, 80 watts per chemical dosing pump
- MIXER CONTROL CENTER:** 120/240 VAC, 50/60 Hz, 15 amp circuit

Connectivity Specifications

- WATER QUALITY STATION TO SMART CONTROLLER:** Quick disconnect ethernet cable
- SMART CONTROLLER TO CHEMICAL FEED SYSTEM:** Quick disconnect RS-485 cable
- SMART CONTROLLER TO MIXER CONTROL CENTER:** Quick disconnect RS-485 cable
- MIXER CONTROL CENTER TO SMART CONTROLLER:** Single digital/analog cable or RS-485

Chemical Storage

The Chemical Feed System is designed to be used with 55-gallon reservoirs for storing 12% hypochlorite and 19% ammonia. The system includes leak detection and 9 gallons of secondary containment. Larger storage volumes are available as a design alternative.

Portable RCS

The PAX RCS is available in a portable version – quickly deployable to a tank site. The system is housed in a 10-foot cargo trailer, specially designed for safe transportation and easy operation.



>> RCS saves us time and money. Our old methods required us to spend hours testing and waiting. The results were unreliable and tied up our operator for several hours a day at the tank. With the RCS, we bring water to our tanks to treat it.”

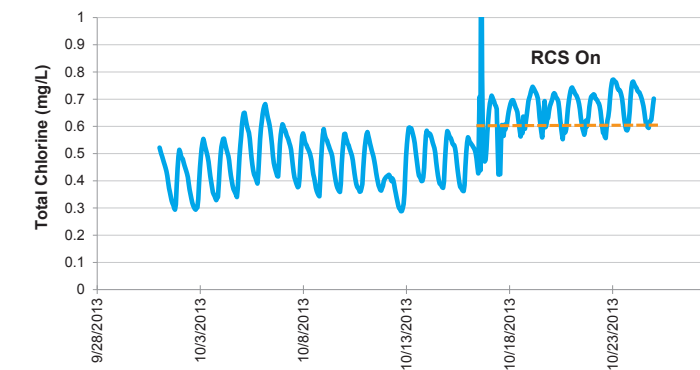
—Mark Nelson, Water System Operator, Naval Air Station North Island, California

Success Stories

Benicia, California

TANK SIZE: 1.8 MG **TANK TYPE:** Ground Storage Tank **DISINFECTANT:** Chlorine

In its first year of operation, the PAX RCS has enabled Benicia operators to maintain better control over water quality in the most problematic section of their distribution system. By continuously monitoring and recording water quality at the 1.8-MG Zone 2 tank, operators now have more insight into the specific operational and seasonal factors that stress their distribution system. And, by streaming the data real-time and making it available both to operators and to PAX engineers, early indicators of water quality problems can promptly be addressed.



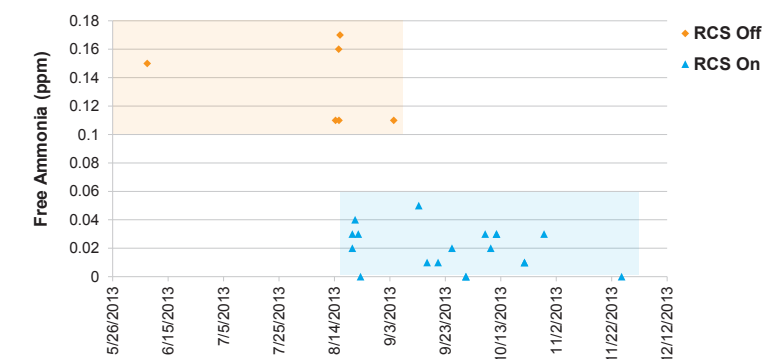
>> The data obtained by the RCS will help us better manage water quality in the distribution system. What PAX is trying to do is really where distribution system operations needs to go.”

—Scott Rovanpera, Water Treatment Plant Supervisor, Benicia, California

San Bruno, California

TANK SIZE: 400,000 gallons **TANK TYPE:** Ground Storage Tank **DISINFECTANT:** Chloramines

San Bruno Water faced a tough balancing act using well water and purchased water as sources for its system. After wrestling with excess ammonia and episodes of nitrification, San Bruno utilized RCS to correct Cl:ammonia ratios in its Sweeney Ridge tank, maintain a constant 2.0 ppm total Cl residual disinfectant level and reduce the risk of nitrification.



We are committed to creating a world where high-quality drinking water is sustainably produced, efficiently distributed, and universally valued as a life-giving foundation for healthy communities.

Our mission is to deliver innovative, durable and elegant water quality solutions, inspired by nature and backed by science, to our partners and the communities they serve.

ANY TANK. ANY SIZE.™



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