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CASE STUDY

Increasing analytical efficiencies in the City of Atlanta

The city of Atlanta, Georgia, played a pivotal role during the Civil War in the 1860's and the Civil Rights Movement in the 1960's. Currently home to more than 500,000 people and the ninth largest metropolitan area in the USA, it was established in 1837 at the intersection of two railroad lines that linked the port of Savannah to the Midwest. Atlanta maintains international prominence as a major transportation hub in the Southeast as well as home to Coca-Cola, the CNN Center, the Georgia Aquarium, and Centennial Olympic Park.

Department of Watershed Management (DWM)

The City of Atlanta Department of Watershed Management (DWM) focuses on providing safe and sustainable drinking water and supplying wastewater and watershed protection services to the community. Priorities include:

- Furnishing the highest quality customer service.
- Encouraging a safe and engaging workplace.
- Maintaining full compliance with environmental regulations for drinking water, wastewater, storm water, and natural systems.
- Incorporating operational efficiencies to deliver the best service to customers using environmentally sustainable and economically effective solutions.

In 1998 and 1999, an ambitious capital improvement program was undertaken, estimated to cost $4 billion and one of the largest focused on water in the USA. Two Federal Consent Decrees were mandated by the Federal Court to resolve the poorly maintained wastewater

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system under a strict schedule of requirements. Construction for the first Consent Decree was complete in 2008 and the program was able to eliminate over 400 million gallons of sewer spills per year. In addition, water leak repairs rose ten-fold and water bills dropped 45%. With rate increases, a dedicated sales tax, and a bond issue, the city was able to continue development and avoid millions of dollars in fines. To manage the City of Atlanta's drinking water, wastewater, and storm water systems, the DWM was formed in 2002. In 2003, the DWM took control of the drinking water system (which had been outsourced since 1998).

Clean drinking water in Atlanta is sourced from a raw water system in which three cast iron pipelines installed from 1893 to 1924 are still in use. This old system has exceeded its intended life even though a cement liner was installed in the 1950's. A fourth line was built in 1975; however metallurgical weaknesses restrict its use to the warmer weather months. Raw water is drawn from the Chattahoochee River for all of Metro Atlanta. Looking toward the future, a plan exists to build a new five-mile conveyance following the current cast iron pipeline path and ending at a quarry that will hold 2.4 billion gallons of water. In the meantime, the DWM is charged with providing clean and safe drinking water for the people of Atlanta.

City of Atlanta Watershed Protection

About one and a half years ago, Carolyn Duncan, Senior Chemist at City of Atlanta Watershed Protection, wanted to remove the alkalinity test from the bench. The existing method used older titration techniques, took a long time to complete, and required dedicated attention from a technician. In addition, their work day officially ends at 3:30 PM, but since samples usually arrive in the afternoon, someone was often forced to work overtime to complete the state mandated tests.

The Thermo Scientific™ Gallery™ Plus discrete analyzer was added to the existing equipment at the laboratory in order to automate analysis procedures. Affectionately dubbed "Gertrude," their Gallery Plus discrete analyzer has an attached electrochemical (ECM) unit with which they can test pH and conductivity in addition to the desired alkalinity and hardness tests.

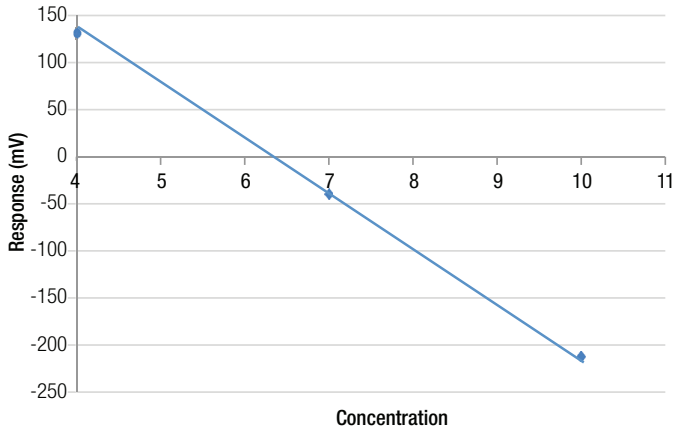

Figure 1. pH water

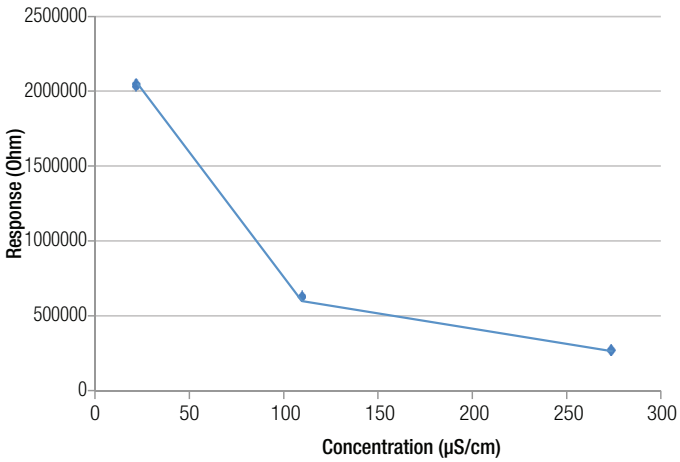

Figure 2. Conductivity water

"Using the Gallery Plus analyzer freed up a technician. We are actually saving manpower and everyone can go home on time."

"The pH test works great."

—Carolyn Duncan,
Senior Chemist,
City of Atlanta Watershed Protection

About 25-30 samples per day are analyzed at least three days per week. Specific minimum detection limits (MDLs) are mandated by the State of Georgia and by the US EPA under the Clean Water Act (CWA). Because the analyses on the Gallery Plus are performed using colorimetry, Ms. Duncan noticed that the levels of chlorine in Atlanta's water were bleaching out the color. She resolved this issue by de-chlorinating her samples prior to analysis. In the future, she hopes to validate tests for chloride and phosphate. Once all the methods have been validated, she will train the other technicians to use the instrument. In the past, eight people worked in the laboratory. Now, four technicians perform the same amount of work.

DWM in Atlanta found automated methods that enable them to reliably test and supply safe drinking water to the citizens of Atlanta. Using a discrete analyzer has increased their analytical efficiency.

Find out more at **thermofisher.com/discreteanalysis**

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