

Hassle-free Analysis in a Georgia Wastewater Laboratory



▲ Gwinnett County Georgia.

Over the past 20 years Gwinnett County, located about 30 miles northeast of Atlanta, Georgia and minutes from Lake Lanier, has been one of the fastest growing counties in America. Covering 437 square miles and home to 16 municipalities, the county was originally created in 1818 and named after Button Gwinnett, one of the signers of the Declaration of Independence. Gwinnett County is a Gold level Green Community due to the successful implementation of best practices for energy efficiency, green building, transportation, and water efficiency.



The Gwinnett County Environmental and Heritage Center

To educate the community, Gwinnett County offers *Water on Wheels*, a traveling classroom-based, hands-on program designed to teach students about the importance of water conservation and to inspire water efficient behaviors. A series of water conservation workshops targeted to the homeowner are also offered with training on fixing leaks, wise landscaping, and smart irrigation. In addition, the Gwinnett County Environmental and Heritage Center provides educational programs and interactive exhibits focused on green science. With a commitment to maintaining sustainable green space, they constructed the Center as a working exhibit using recycled materials and featuring roof vegetation, permeable pavement, natural ventilation, and plumbing that conserves water. The Center is surrounded by a 700-acre oasis of nature which includes 10 miles of hiking trails, a creek, a zip line, and several buildings with historical significance.



▲ Gwinnett County Environmental and Heritage Center.

Water Resources Laboratory

The Gwinnett County Department of Water Resources was charged with enhancing quality of life in the region by providing water, wastewater, and storm water services to their customers while preserving natural water resources. Each day the laboratory performs both chemical and biological analyses to maintain compliance with the Clean Water Act (CWA), more specifically the National Pollutant Discharge Elimination System (NPDES) and the Safe Drinking Water Act (SDWA). They test approximately 12,000 wastewater samples per year from three nearby water reclamation facilities.

For the last ten years chemical analyses were performed using an autoanalyzer and Segmented Flow Analysis (SFA). This technology required the preparation of large volumes of reagents and regular attention to the tubing.

In order to streamline and automate their testing procedures, Erika Rodgers, Environmental Scientist at the Water Resources Laboratory added a Thermo Scientific™ Gallery™ discrete photometric analyzer to their instrumentation in January 2015.

“I love it. It’s hassle free and I’m so excited about that!”

Erika Rodgers
Environmental Scientist, Water Resources Laboratory



▲ Wastewater samples tested.

Currently, analyses for ammonia and Total Kjeldahl Nitrogen (TKN) are performed on the Gallery analyzer. Ms. Rodgers is in the process of validating the Total Oxidized Nitrogen method using hydrazine reduction (TON-Hydrazine) for nitrate analysis. The validation process requires tests for the Minimum Detection Limit (MDL) with a specified number of data points. An initial calibration is also needed and test samples must be run. Time to validation with performance accreditation by the National Environmental Laboratory Accreditation Conference (NELAC) for the first two methods, ammonia and TKN, took about one month.



▲ Erika Rodgers testing procedures.

In the near future, Ms. Rodgers intends to add a phosphate test to her panel on the analyzer. She has no concerns about cross contamination since tests are performed in individual disposable cuvettes and the instrument has a programmed washing step that allows it to clean itself. Later, orthophosphate and cyanide will also be added to the test panel.

At this time, Ms. Rodgers is the only member of the team operating the Gallery analyzer.

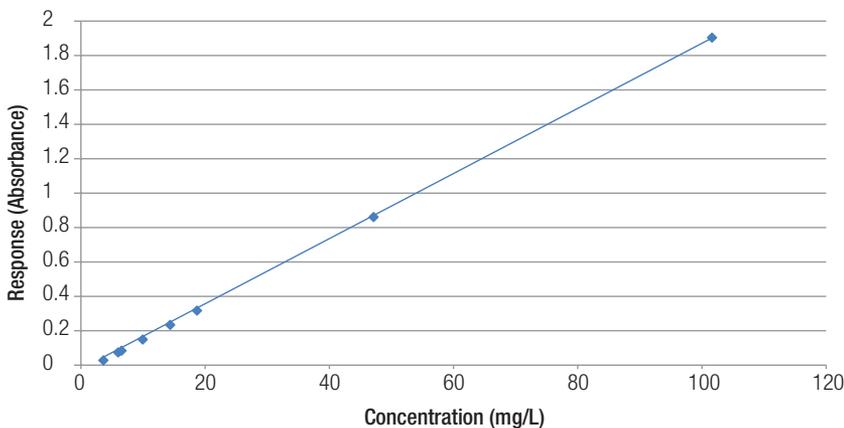
"I don't want anyone to touch it," she said with a big smile.

Although she is very protective of her new instrument, she will be training two of her colleagues to use the system and provide back-up assistance as needed.

In Gwinnett County, caring for water is taken seriously and a consistent effort is made to educate the population about sustainability. In the Water Resources Laboratory, wastewater is tested for ammonia and TKN using a recently acquired automated discrete analyzer that has made the process hassle-free. Three additional tests will be added to the current panel as soon as validation is complete. And two co-workers will soon be trained to use the analyzer.



▲ Ms. Rodgers operating the Thermo Scientific Gallery analyzer.



▲ Calibration for TON-Hydrazine method.

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