



The J.G. Beacham Water Treatment Plant was built in the art deco style, a representation of scientific progress and better times ahead.

REGINA LUCAS AND MARILYN HALL

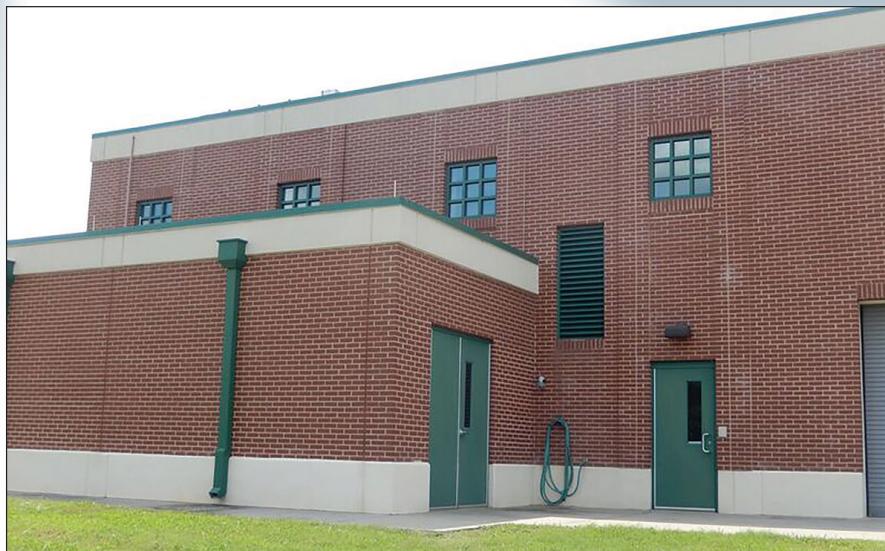
J.G. Beacham Water Treatment Plant: 80 Years of Heritage and Innovation

THE STORY OF WATER IN ATHENS-CLARKE COUNTY BEGINS WITH WELLS AND CISTERNS AND EVOLVES TO THE J.G. BEACHAM WATER TREATMENT PLANT, A TESTAMENT TO HISTORIC PRESERVATION, ENVIRONMENTAL STEWARDSHIP, AND SAFE AND RELIABLE WATER SERVICE.

In 1893, the City of Athens, Ga., built a public water system to replace an unsuccessful, privately owned water works. The city's first filter plant initiated the city's history of reliable water service. When the City of Athens needed to increase its capacity for drinking water, the J.G. Beacham Water Treatment Plant was built and went on-line in 1936. For 80 years now, the plant has supplied high-quality drinking water, meeting community needs through growth, severe drought, and economic changes in Athens-Clarke County. Today, water service is provided to approximately 98% of the county, and the water treatment plant is projected to meet community water needs through 2040.

19TH CENTURY: FROM WELLS TO WATER WORKS

For most of the 1800s, people in Athens got their water from wells and a few cisterns in the downtown area of the city. Also at that time, bucket brigades fought fires, passing buckets hand to hand in a line stretching from the nearest well to the burning building. In 1882, a group of men from New York opened



Top left and right: The recent facility addition that houses an advanced ultraviolet treatment system carefully blends the architectural style of the original building, which features art deco brickwork, downspouts, and windows. **Bottom left:** The original 1936 pipe gallery, pump, and motor are on display at the plant, providing an interesting look at the past during plant tours.



the privately owned Athens City Water Works Co., establishing the first water works in the city. The system was intended to improve firefighting and provide water for street sprinkling. The water works consisted of a dam that crossed the Tanyard Branch tributary of the Oconee River to form a spring-fed pond, a pumping station, a ground-level storage tank, 7.5 mi of water mains, and 72 hydrants. The system did not use filtration or any other form of treatment and the water quality was not acceptable for drinking.

The privately owned company was not a success. After years of complaints from the local residents regarding poor water quality and inadequate pressure for firefighting, the City of Athens constructed its own municipal system, the Athens Water Works, in 1893. The city purchased property along the

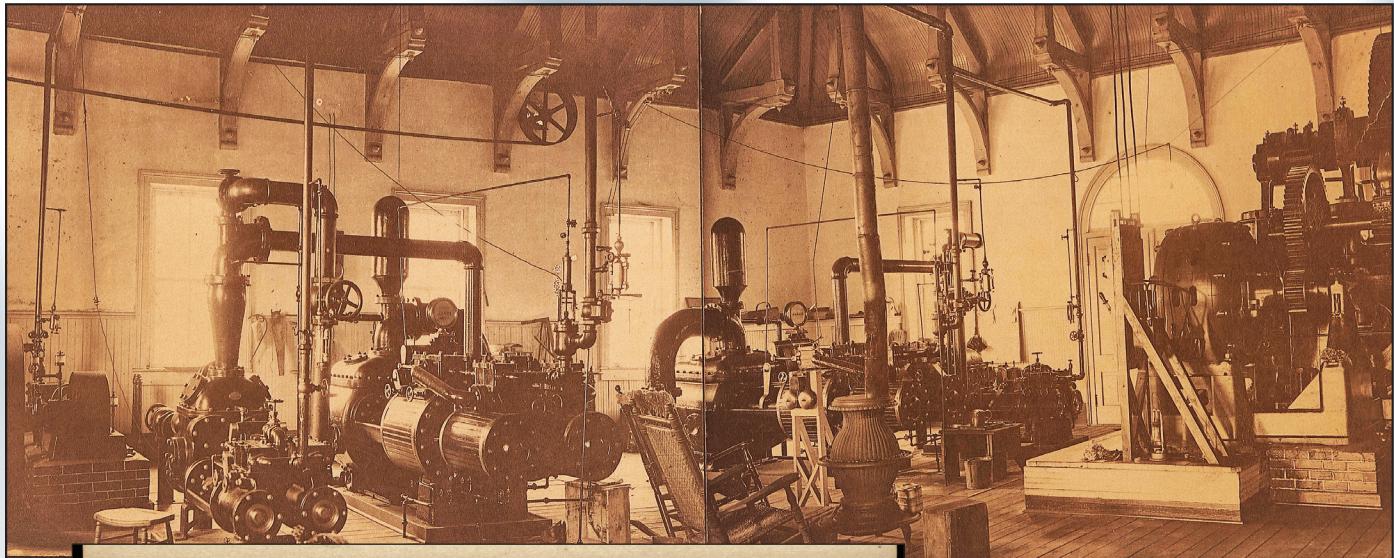
Oconee River and built a 1-mgd water works filter plant at a cost of \$125,000 (see the top photograph on page 56). The municipal system consisted initially of the filter plant, a 175,000-gal treated water storage tank, 17.5 mi of water mains, and 130 hydrants. The local paper introduced "The New Works" in 1893, calling it "a credit to the city and to all who managed its construction—Athens will never regret the building of the new system."

As shown in the bottom photograph on page 56, a personal journal entry by an operator from 1892—the year before the city took over the water works—illustrates early water system operations: daily weather, cords of wood bought for the boiler, the reservoir water level, pipeline repairs, visitors, and reports sent. The journal entry even notes the operator's concern for water conservation,

with comments about residents "sprinkling after dark" and an entry that states, "Stopped street sprinkler early this morning. The streets being very wet from rains, I prevailed on the driver to go in and stop his foolish waste of water."

20TH CENTURY: GROWTH AND CHANGE

The early 20th century was a prosperous era for Athens, and water service spread throughout the town. The population of the city doubled between 1900 and 1940, from 10,245 to 20,650. With a combination of rapid growth following the Great Depression of 1929, advances in water treatment practices, and the threat of flooding at the original water filter plant because of the elevation, it became necessary to begin plans for a new facility on city-owned land.



August 20th, 1892

Cloudy but no rain.

Stopped street sprinkler this morning - the streets being very wet from rains I turned on the drum to go in & stop this foolish waste of water, besides making streets muddy. He said Mr. Griffith ordered him to sprinkle; but it was wrong to sprinkle the streets, when they were already wet & he would quit & go in. Guess he will start him out again when he gets down from breakfast.

Carl still sick

More cleaning walks - Felix fixing boiler

Reservoir 16½ Brick below platform

Dr. D. D. Quillian turned on to day. $900 + 600 = 1500$

Sent W. H. A. Check for \$1300. to day.

Sprinkler didn't come out any more to day

2,

Sunday - bright & warm till 2-30 P.M. when we got a good shower lasting half an hour.

Nothing unusual to day - all quiet.

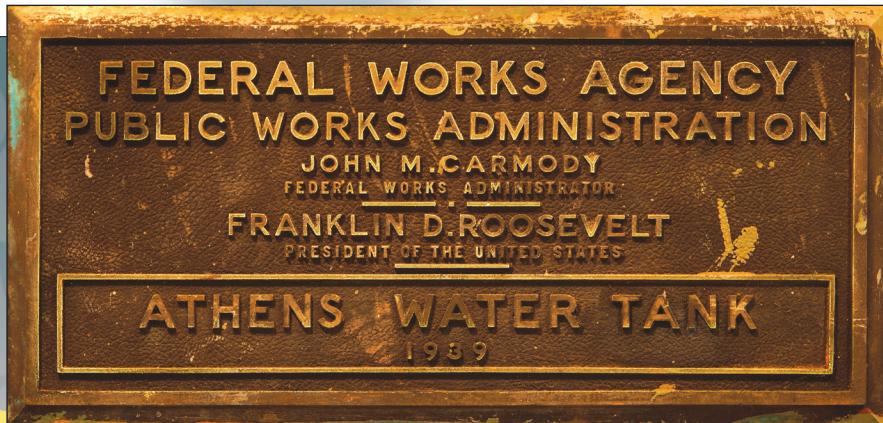
Top: The pump room of the plant that was built in 1893 had a 1-mgd capacity.

Bottom: An operator's journal entry from 1892 paints a fascinating picture of early water system operations. Source: UGA's Hargrett Rare Book and Manuscript Library 1:1 Athens-GA. City of Athens, Waterworks Report 1892-1894 MS31.

In 1935, construction started on a new, modern plant with a treatment capacity of 3 mgd on the north side of the city along the North Oconee River. The original filter plant was abandoned, and the new facility began operations in 1936. The new plant was built in art deco style, a representation of scientific progress and better times ahead (see the photograph on page 54).

The federal Public Works Administration (PWA), one of President Franklin D. Roosevelt's New Deal programs (see the top right photograph on page 57), funded some of the filter equipment, a new raw water pumping station on the North Oconee River, additional distribution lines, and an elevated storage tank. The facility also included settling basins, sand filters, and mechanical equipment for chemical dosing. The plant was later named the J.G. Beacham Water Treatment Plant in honor of the city engineer (see the sidebar on page 57).

One of the earliest pieces of equipment used in the plant was a Model "G" pH meter (see the top left photograph on page 57). The Beckman pH meter was the first automated and portable laboratory instrument of its kind. Its inventor, Arnold Beckman, was a professor at the California Institute of Technology in Pasadena. He produced 444 pH meters in 1936, the first full year of sales.



Left: The Beckman Model "G" pH meter was the first automated and portable laboratory instrument of its kind. Above: The federal Public Works Administration, one of President Franklin D. Roosevelt's New Deal programs, funded some of the filter equipment, a new raw water pumping station, additional distribution lines, and an elevated storage tank for the 1936 building.

In 1950, more than 3 mi of water main were installed outside city limits. This increase to the water supply service area marked the beginning of an ongoing period of growth and expansion of the water system. From 1950 through the 1980s, the city expanded and improved the water plant, constructed additional raw water intakes and pump stations on the North Oconee and Middle Oconee Rivers, and continually installed water mains and elevated storage tanks throughout the city and unincorporated Clarke County. Water service was also extended to the cities of Winterville and Bogart and to portions of Oconee, Jackson, Madison, and Oglethorpe Counties.

In 1991, the city and county merged into Athens-Clarke County (ACC), and the water system became part of the Athens-Clarke County Public Utilities Department (PUD).

21ST CENTURY: J.G. BEACHAM WATER TREATMENT PLANT

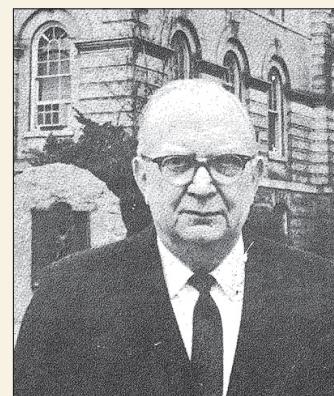
The J.G. Beacham Water Treatment Plant is ACC's sole facility for potable water treatment, and its location has remained the same for 80 years. Major expansions have been easily accommodated within the property. The county has preserved the original 1936 facility through five major upgrades over the past 60 years, including the original tile, guardrails, and gas lamps.

Today, the plant is capable of delivering 36 mgd, with a permitted peak capacity of 34.75 mgd. The plant serves approximately 40,000 customer accounts, including the University of Georgia and Pilgrim's Pride Poultry Plant, the industrial user with the highest demand.

Water supply. The county's water supply is withdrawn from the North Oconee River, the Middle Oconee River and, during periods of low flow, from the Bear Creek Reservoir. This reservoir, a model of forward-thinking cooperation, was constructed when leaders of four fast-growing counties (Athens-Clarke, Barrow, Jackson, Oconee) joined forces for the project and an

Jack Garlington Beacham (1906–1977)

A graduate of the University of Georgia, Athens, with a degree in civil engineering, Jack Garlington Beacham—affectionately known as "Captain Jack"—served as Athens' city engineer from 1930 to 1968. In his words, his job was "to see that the people had good water," and he "always visualized all the mammas giving their little babies this water." Beacham played a significant role in the design of the city's first water treatment plant and the city's water pollution control plant, making Athens one of the first cities in Georgia to begin treating sewage. The City of Athens formally recognized his "unceasing efforts toward the betterment and improvement of the rendition of city services to all of the citizens" and conferred on him the honorary title of "City Engineer Emeritus." Upon Beacham's retirement after 38 years of service, Mayor Julius Bishop said, "The city of Athens is a much better city today... through the efforts of Jack Beacham."





The Bob M. Snipes Water Resources Center houses laboratories and the environmental compliance group, the water plant management offices, and a meeting area for guided student and citizen water treatment plant tours, community forums, county meetings, and training.

accompanying treatment plant in 2002. The Bear Creek Reservoir, designed to provide low-flow protection to the Middle and North Oconee Rivers, includes some 505 acres and a storage volume of 5 bil gal. ACC receives raw water for processing at the J.G. Beacham plant; the Bear Creek Water Treatment Plant serves Barrow, Jackson, and Oconee Counties.

The Bear Creek Reservoir proved to be a great success in dealing with water demands after 2002. In 2007, most of Georgia experienced an extremely severe drought—the second driest year on record for ACC. The Bear Creek Reservoir was integral to overcoming the critical water shortage.

Water treatment. Major improvements to the J.G. Beacham Plant were completed in 2009. For safety and security, a new ultraviolet (UV) disinfection system was added. The chlorine gas system was replaced with sodium hypochlorite generators, brine, and hypochlorite storage tanks. A new chemical feed system was installed. Filter underdrains were upgraded, allowing filters to operate at a higher rate, thus increasing plant treatment capacity from 28 mgd to 36 mgd. Two 2,000-kW backup power generators were installed for service reliability. An additional building was constructed as well, to house four new high service pumps and two backwash pumps. Four new raw water pumps were placed in two existing buildings at the North Oconee River, and an electrical controls building was added for the pumps. Two clear wells with a total storage capacity of 7 mil gal replaced three clear wells with a total storage capacity of 2.75 mil gal.

The addition of a two-story wing, housing the new UV system, restored the building's original orientation toward the river (see the top and right-hand photographs on page 55).

Water quality and education. Along with the significant improvements to plant processes, the county took an innovative step and built the Bob M. Snipes Water Resources Center (WRC), shown in

the photographs on page 58. The facility houses laboratories and the environmental compliance group, consolidating all National Pollutant Discharge Elimination System (NPDES) sampling, testing, and reporting for water, wastewater, and stormwater under one roof for increased efficiency and central record-keeping. The WRC also contains the water plant management offices and a meeting area for guided student and citizen water treatment plant tours, community forums, county meetings, and training. The large open foyer includes a permanent interactive water quality and conservation exhibit and a historic display that tells the story of drinking water in ACC. The original 1936 pipe gallery, pump, and motor are also on public display at the plant (see the bottom left photograph on page 55).

The WRC earned a silver LEED (Leadership in Energy and Environmental Design) certification for conscientious construction, efficient energy and water use, and a healthy indoor environment. All features and systems have been designed, installed, and calibrated for maximum efficiency and energy performance. Landscaping conservation methods and high-efficiency plumbing fixtures minimize water use, resulting in the building exceeding requirements in water efficiency.

Stewardship. Careful and responsible management is clearly evident and recognized in the water system and the Water Conservation Office of the ACC PUD. The Water Conservation Office received US Environmental Protection Agency WaterSense Partner of the Year awards in 2013 and 2016 for commitment to water efficiency and outstanding efforts supporting the WaterSense program. The office promotes water conservation and increases understanding of water resources through innovative school, summer camp, and business programs, as well as special

events and plant tours. Successful water conservation efforts helped significantly during the 2007 drought, and citizens' efficient use of water has kept a strong pace to this day with the popular ongoing conservation activities.

In 2013, the plant received the Georgia Association of Water Professionals (GAWP) Plant of the Year award, and William Brooks, one of the plant's certified operators, was awarded GAWP Operator of the Year. The plant has also earned the GAWP Platinum award for eight consecutive years without a Safe Drinking Water Act violation.

With ongoing improvements, continued high-quality water service, and historic preservation efforts, the plant earned a 2014 Athens-Clarke Heritage Foundation Preservation Award for Outstanding Stewardship.

SAFE AND RELIABLE SERVICE

The story of water in ACC that began with wells and cisterns continues with the evolution of technology, regulations, and water efficiency. The J.G. Beacham Water Treatment Plant is a testament to the ACC PUD's commitment to historic preservation, environmental stewardship, and safe and reliable water service. To learn more about the ACC PUD, go to www.ThinkattheSink.com, or follow us on Facebook and Twitter (@accwaterwarrior).

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REFERENCES

- ACC PUD (Athens-Clarke County Public Utilities Department), 2015. *2015 Service Delivery Plan Update*. ACC PUD, Athens, Ga.
- ACC PUD, 2010. *2010 Service Delivery Plan*. ACC PUD, Athens, Ga.
- Athens Banner Weekly*, 1893. The New Works. October 3. <http://dig.galileo.usg.edu/athensnewspapers/id:abw1893-0308> (accessed May 2016).
- Athens-Clarke Heritage Foundation, 1976. *Interview With Jack Beacham*. Oral History Project—1976.
- Minutes of the Mayor and Council City of Athens, Georgia; Mar. 5, 1968.
- Waterworks Report 1892–1894*. UGA's Hargrett Rare Book and Manuscript Library 1:1 Athens-GA. City of Athens, MS31.