

# WATER SUPPLY PLANNING AND COORDINATION IN THE ATLANTA REGION

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## INTRODUCTION

The Atlanta Regional Commission (ARC) is the regional planning and development agency for the seven-county Atlanta Region. The area encompasses Clayton, Cobb, DeKalb, Douglas, Fulton, Gwinnett and Rockdale counties. The Region currently has a population of 2.3 million people and is expected to have 3.7 million people by the year 2010. ARC's dual mission is (1) to provide a forum for the Region's leaders to discuss issues of common concern and plan for coordinated solutions, and (2) to develop comprehensive plans to guide future growth. Water supply is one of ARC's functional areas.

In March, 1988 the ARC Board adopted an updated Regional Water Supply Plan to reflect new long-range forecasts for population and employment. This plan serves as a guide for the allocation of raw water supplies in the Atlanta Region. This paper describes the main elements of the ARC Water Supply Plan. This presentation will also briefly discuss ARC's role as a forum for discussing water restrictions during the 1988 drought.

## CURRENT WATER SOURCES

Although the Atlanta Region receives an ample 48" per year of rainfall, other natural features of the area constrain water resources development. First, the Region lies in the Piedmont physiographic province and is underlain with crystalline rock. This bedrock is not porous and groundwater is only found in cracks and crevices. Wells may produce enough water to supply a residence or small municipality, but cannot support the large needs of major water systems. Second, Atlanta is located on a subcontinental divide. Most of the Region's streams are small, headwater streams, with the exception of the Chattahoochee River.

### Chattahoochee/Lanier System

The Chattahoochee River begins in the mountains of northeast Georgia. It is impounded by Buford Dam to form the 38,000 acre Lake Lanier at the border of the Region. Lake Lanier is a Corps of Engineers project. The River then flows from northeast to southwest through the heart of the Atlanta Region. It continues through Georgia and along the Alabama border to just above the Florida line. There it merges with the Flint River to become the Apalachicola River.

The Atlanta Region currently withdraws over 70 percent of its water supply from the Chattahoochee River below

Dam and 10 percent directly from Lake Lanier.

### Lake Allatoona

Lake Allatoona is a Corps of Engineers impoundment on the Etowah River. It borders the northwest corner of the Atlanta Region. The lake is about 1/3 the size of Lake Lanier and supplies about 10 percent of the Region's needs.

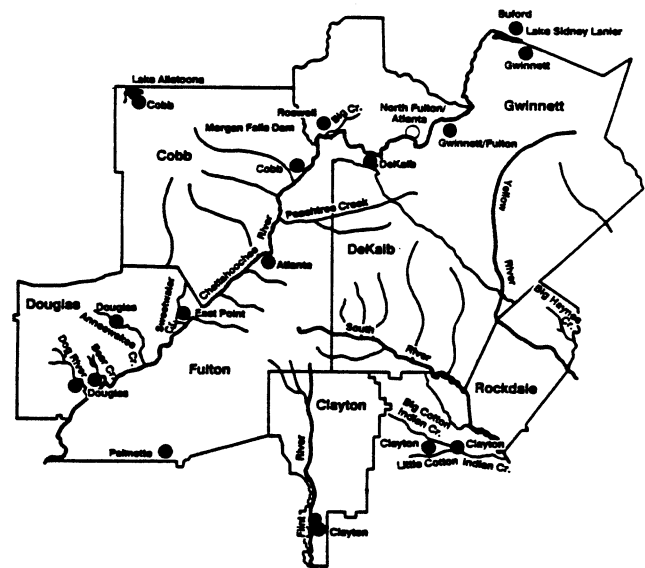
### Other Sources

There are seven other small streams in the area that in combination supply less than 10 percent of the region's water supply.

### Water Systems

In the Atlanta Region there are eleven (11) public water utilities that manage 17 separate intakes on surface water sources. There are a total of 34 public water agencies that retail this water to individual customers. In 1985 an annual average of 330 MGD of surface and groundwater was withdrawn for public use. This increased to 357 in 1986. A peak day of 536 MGD was withdrawn in 1986.

## Intakes



**PLANNING PROCESS AND ASSUMPTIONS**

The basic objective of the Regional Water Supply Plan is to allocate high quality, reliable water to the people and businesses in the Atlanta Region in the quantity needed to serve the activities anticipated. The Plan forecasts future demand, matches demands to sources and provides a guide for water withdrawals.

**Demand Forecasts**

Water demand forecasts were developed by applying water use rates for four sectors of the Region's economy (residential, commercial/government, retail, and industrial) to the ARC Regional Development Plan population and employment forecasts. A comparison of forecasted demands of 1985 to actual use showed the methodology to be a reasonable forecast.

An assumption built into the forecasts is that water conservation measures will be implemented throughout all sectors in the Atlanta Region. This policy was reflected in the forecast by reducing the water use factors applied to new population and employment.

Another assumption is that the Plan should satisfy reasonable peak daily water demand under worst case conditions. Peak day demands are generally 1.5 times annual average daily water demands. There are some exceptions such as the City of Atlanta where peak daily demands do not fluctuate as much because of the large industrial and commercial base. Also, Gwinnett County with its large single family residential component experiences higher peak factors.

In order to be safe and reliable, the Plan only considers water withdrawals that can be permitted for reliable flows.

The Water Supply Plan forecasts that water demand for an average day in the year 2010 will be 579 million gallons.

That is over 200 million gallons more than an average day now. On a peak day that amount would jump to 844 million gallons for the Region and 42 million gallons needed to serve out-of-Region customers.

**Sources**

The primary source of water supply identified in the Plan is the result of many years of work by all levels of government.

In March, 1972, the Metropolitan Atlanta Water Resources Management Study (MAWRS) was authorized by a resolution of the U.S. Senate Public Works Committee to develop a long-range water supply management plan for the Atlanta Region. MAWRS was a cooperative effort between the Corps of Engineers, the State of Georgia, local officials through the Atlanta Regional Commission, interest groups, and private citizens. The study looked at a wide range of water-related issues, but most importantly, it looked for a long-range water supply solution for the Atlanta Region. After looking at many different arrangements for water supply, the study identified the Lake Lanier/Chattahoochee River system as the only feasible large source of water. The problem with this source is that the flows in the Chattahoochee are not really suited to water supply. Large surges of water are released for electrical power generation at Buford Dam on weekdays and very little is regularly released on weekends when water supply demands are high. Much of the great surge flows cannot be used because they are available for only short time periods. Further study focused on how to best manage these flows for water supply.

In 1981, the Corps of Engineers published a feasibility report which recommended building a reregulation dam 6.3 miles below Buford Dam provided that water quality and other environmental and recreation concerns could be met. The dam would catch water released from Buford Dam and release it in a controlled flow to be used by the Atlanta Region. In 1986, the reregulation dam was authorized by the Federal Water Resources Act of 1986 with conditions that environmental concerns and economic issues be evaluated in more detail prior to construction approval.

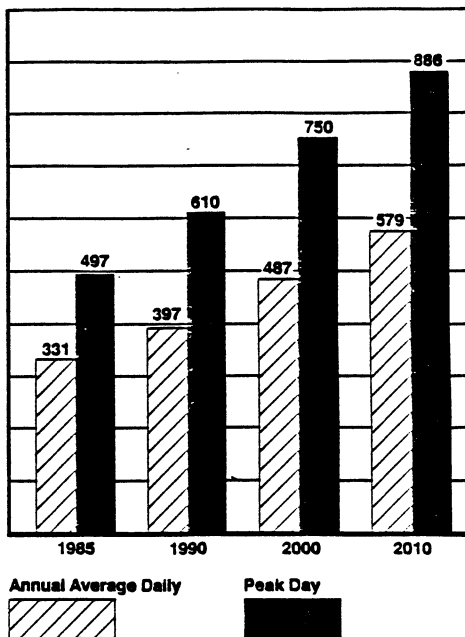
The results of detailed economic, environmental and engineering studies by the Corps of Engineers were that the reregulation dam was no longer the best alternative. In the fall of 1988 the Corps advised the State of Georgia and ARC that their recommendation had changed to the reallocation of storage in Lake Lanier from hydropower to water supply. On October 26, 1988 ARC adopted a resolution supporting the reallocation of storage in Lake Lanier to water supply. The Corps of Engineers is preparing a Post-Authorization Change Report recommending reallocation to submit to Congress for authorization.

The affected entities--the City of Atlanta, Cobb County-Marietta Water Authority, DeKalb County, Fulton County, and Gwinnett County--will need to develop contractual arrangements and cost sharing commitments. The storage cost will be financed locally. The Atlanta Regional Commission will continue to act as coordinator on behalf of the affected local governments.

The reallocation of Lake Lanier is an integral component in the Region's water supply system. It must be implemented by the early 1990's if the Atlanta Region is to continue to grow and prosper.

While the MAWRS Study proceeded to develop a long-term management plan for the Chattahoochee, water needs continued to grow. In order to meet those growing needs, several interim plans had to be negotiated to allow the

**Atlanta Region and Customers  
1985-2010 Increase in Public  
Water Supply Demands (MGD)**



withdrawal of additional water out of the Chattahoochee River. These plans were agreed to by the Corps of Engineers and the Georgia Power Company, which owns Morgan Falls Dam, on a temporary basis. ARC is currently managing one such plan, the Short-Term Water Supply Plan. This arrangement was implemented in 1986 by ARC, and will take us through the next several years.

#### ALLOCATION ARRANGEMENTS

The ARC Water Supply Plan recommends water allocation by source and withdrawers to meet peak demands during the period from 1990 to 2010. The following table summarizes the plan.

Recommended Withdrawals for Meeting Peak Daily Demands	
	2010
Chattahoochee River	564.1
Lake Lanier	177.0
Lake Allatoona	80.0
Cotton Indian Creek	22.0
Sweetwater Creek	16.0
Bear Creek/Dog River	20.8
Shoal Creek/Filint River	8.8
Other	3.3
<b>TOTAL</b>	<b>892</b>

#### POLICIES

The Water Supply Plan also contains policy statements of the Atlanta Regional Commission. These policies are summarized below.

1. The Chattahoochee River should be managed more effectively so that its reliable minimum flow can be increased for water supply purposes. The Commission supports the reallocation of storage in Lake Lanier from hydropower to water supply as the long-range approach for reregulating Chattahoochee River flows for water supply purposes.
2. Future water withdrawal permits should be issued consistent with the Regional Water Supply Plan. It is recommended that EPD specify in each permit an allocation which includes quantity guarantees to jurisdictions that will receive water from the permit holder.
3. Water conservation is promoted.
4. System interconnections are encouraged.
5. Intergovernmental cooperation is essential. ARC should coordinate the Short-Term Plan and arrangements for the reallocation of Lake Lanier.
6. Groundwater should be used as much as possible.
7. Three days of off stream storage are recommended.
8. Watershed protection is important, especially for small reservoirs.
9. An emergency procedures plan needs to be developed.
10. No new intakes beyond those currently planned should be permitted on the Chattahoochee River between Buford Dam and Peachtree Creek.
11. The Metropolitan River Protection Act and the Chattahoochee Corridor Plan should be rigorously enforced.

#### 1988 DROUGHT

The Regional Water Supply Plan is based upon meeting anticipated demands during 1954 drought conditions. When more severe conditions occur, additional drought measures are put in place. The 1988 drought was such an occurrence. ARC played a role in coordinating restrictions during that event.

After a fall and winter of record low inflows to lakes Lanier and Allatoona, the State Environmental Protection Division (EPD) anticipated the continuation of drought conditions and imposed water conservation requirements on all municipal suppliers in early May. This action was very timely, for the month of June saw the lowest recorded rainfall for that month since weather records began being kept at the end of the last century. In response to EPD, local water withdrawers adopted a variety of water conservation requirements.

During the first week in June nearly all of the major suppliers experienced pressure problems and loss of storage due to extraordinary demands particularly on Mondays and Tuesdays after weekend bans. ARC was asked to sponsor a forum to discuss the problem. At a meeting on June 8 the major water suppliers in the region agreed to adopt a uniform approach to water restrictions. They agreed that a noon-9:00 p.m. ban with watering at other times on odd/even days would go into effect. This was in effect until the winter months when the restrictive hours were dropped. The odd/even restrictions still applied.

After the noon-9:00 p.m. restrictions went into effect reductions averaged 8 percent below previous restrictions in the Chattahoochee River and 11 percent region-wide for those communities on the restrictions. It is hard to estimate how much was conserved compared to what could have been used. However, we estimate 20-30 percent.

#### LITERATURE CITED

- Atlanta Regional Commission (ARC), 1988. Atlanta Regional Water Supply Plan.  
 Atlanta Regional Commission, 1987. Water Resources Data Summary.