WATER FACT SHEET

U.S. GEOLOGICAL SURVEY, DEPARTMENT OF THE INTERIOR

NATIONAL WATER-QUALITY ASSESSMENT PROGRAM—The Apalachicola-Chattahoochee-Flint River Basin

BACKGROUND

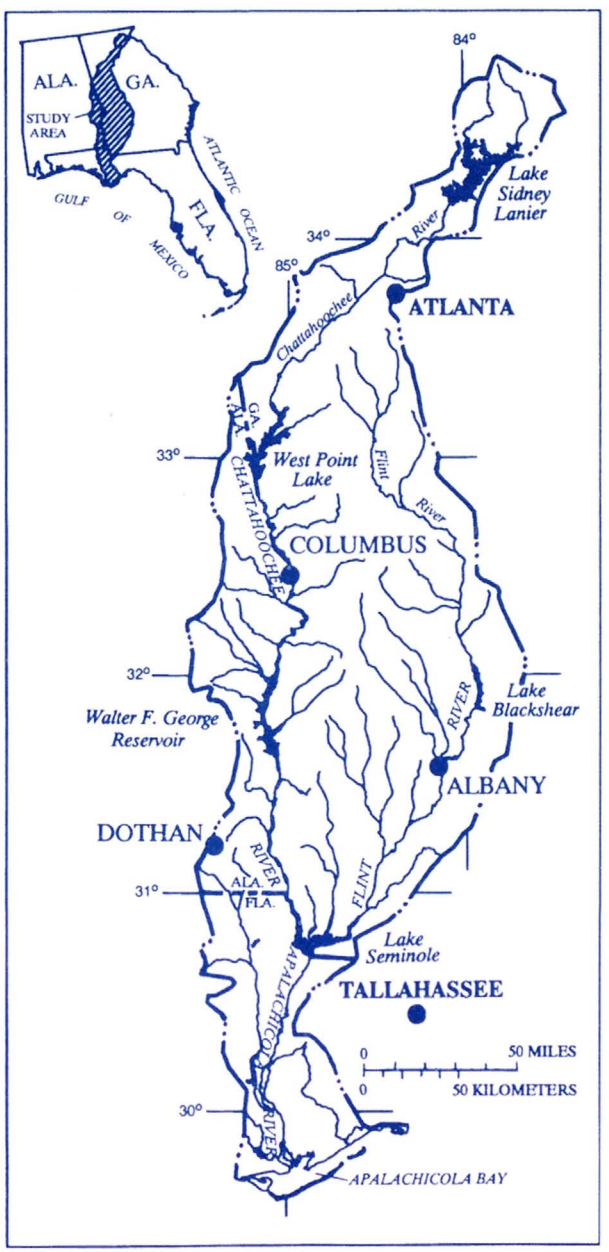
In 1991, the U.S. Geological Survey (USGS) began to implement a full-scale National Water-Quality Assessment (NAWQA) program. The three major objectives of the NAWQA program are to provide a consistent description of current water-quality conditions for a large part of the Nation's water resources, define long-term trends (or lack of trends) in water quality, and identify, describe, and explain the major factors that affect observed water-quality conditions and trends. These objectives will be met by conducting retrospective analyses of existing data; by establishing a nationwide, long-term-monitoring network designed to assess existing water-quality conditions and provide a data base for trend analyses; and by conducting process-oriented studies designed to provide a better understanding of the relation between land- and water-use activities and water-quality conditions. The NAWQA program will provide an improved scientific basis for evaluating the effectiveness of water-quality-management programs, and for predicting the likely effects of changes in land- and water-management practices.

The NAWQA program will be implemented through investigations of hydrologic systems in 60 study units that include parts of most major river basins and aquifer systems in the United States. These investigations will be conducted at the State and local level, and will comprise the foundation on which national and regional assessments will be based. Study units range from 1,200 to about 65,000 square miles in size, and incorporate 60 to 70 percent of the Nation's water use and population served by public water supply. In 1991, the Apalachicola-Chattahoochee-Flint (ACF) River was among the first 20 NAWQA study units selected for study under the full-scale implementation plan.

DESCRIPTION OF THE ACF RIVER BASIN STUDY UNIT

The ACF River basin drains about 19,600 square miles in western Georgia, eastern Alabama, and the Florida panhandle, and is comprised of the Chattahoochee and Flint River drainages that meet in Lake Seminole to form the Apalachicola River. The Apalachicola River flows south through the Florida panhandle into Apalachicola Bay (which has a tidal reach of about 21 miles), which discharges into the Gulf of Mexico. The northern part of the basin is in the Piedmont and Blue Ridge physiographic provinces, and the southern part is in the Coastal Plain physiographic province.

The ACF River basin has a population of approximately 2.5 million people, about 90 percent of whom live



in the Atlanta metropolitan area. This population estimate excludes the southeastern part of Atlanta because it is outside the ACF River basin.

The ACF River basin receives about 53 inches of precipitation per year; average annual runoff is about 19.39 inches at the mouth of the Apalachicola River. Surface-water withdrawal of about 1,860 million gallons per day accounted for 86 percent of the water used within the ACF basin in 1985. Surface water was used for cooling in thermoelectric-power generation (1,230 million gallons per day); public water supply (316 million gallons per day, primarily in the northern part of the Chattahoochee River basin); self-supplied commercial, industrial, and mining facilities (227 million gallons per day); and agricultural activities (83 million gallons per day, primarily in the southern part of the basin). In addition, 15 hydroelectric-power facilities used about 29,800 million gallons per day of instream water in 1985.

Five principal aquifers have been identified in the ACF River basin. In the northern part, crystalline rock aquifers of the Piedmont and Blue Ridge physiographic provinces supply water for domestic use. In the southern part, four major aquifers underlie the Coastal Plain physiographic province. The Floridan aquifer system (porous limestone, dolomite, and calcareous sand) is one of the most productive ground-water reservoirs in the United States and is the principal source of ground water for irrigation, industrial, public, and domestic supply in the basin. The Claiborne aquifer (sand and sandy limestone) supplies water primarily for irrigation. The Clayton aquifer (limestone and calcareous sand) supplies water for irrigation and public supply. The Cretaceous aquifer system (sand and gravel) is a major source of water for industrial and public supply in the northern third of the Coastal Plain. Ground water was withdrawn at an estimated rate of 305 million gallons per day in 1985, and was used for agricultural activities (190 million gallons per day); public water supply (53 million gallons per day); self-supplied domestic water supply (34 million gallons per day); self-supplied commercial, industrial, and mining facilities (27 million gallons per day); and thermoelectric-power generation (1 million gallons per day).

Land uses most likely to affect water quality in the ACF River basin are agricultural and urban. In the Chattahoochee River basin upstream from Atlanta, poultry and livestock operations generate tens of millions of tons of waste annually. Most of this waste is spread on pasture and croplands, and contributes nutrients to surface water and shallow ground-water systems. The southern part of the basin (Dougherty Plain district of the Coastal Plain) is farmed intensively—double- and sometimes triple-cropped. Use of agricultural chemicals and extensive irrigation on land overlying the highly permeable and vulnerable aquifer systems increase the potential for ground-water contamination. Urban and industrial areas contain point and nonpoint sources of nutrients, sediments, metals, and organic compounds that have degraded the quality of the Chattahoochee River and the headwaters reach of the Flint River. Surface and ground water near major population centers also are vulnerable to contamination by leachates from waste-disposal sites.

WATER-QUALITY ISSUES

Water quality in the study unit is affected by a variety of intensive land and water uses that stress the water resources of the basin: a complex and diverse hydrogeologic system that governs ground-water flow, 16 large dams and reservoirs that regulate surface-water flow between the ACF headwaters and the Gulf of Mexico, and the rapid growth and development of the Atlanta metropolitan area that increases the demand for water supply. The study is designed to address specific surface- and ground-water-quality issues and, where appropriate, incorporate findings from other studies to enhance understanding of the water-quality resources in the ACF River basin. Issues of concern include but are not limited to the effects of:

- Point and nonpoint sources of nutrients, sediments, metals, and organic compounds, particularly on upstream reaches of the Chattahoochee River and major reservoirs, caused by intensive agricultural and urban land uses;
- Point and nonpoint sources of nutrients and pesticides on aquifer systems of the Dougherty Plain, caused by intensive agricultural practices; and,
- The quality of surface- and ground-water discharges to Apalachicola Bay on commercial fisheries as they relate to the quality and quantity of inflow necessary to maintain a healthy estuarine environment.

COMMUNICATION AND COORDINATION

Communication and coordination between USGS personnel and other interested scientists and water-management organizations are important components of the NAWQA program. Each study-unit investigation will have a local liaison committee that consists of representatives from Federal, State, and local agencies, and academia and the private sector who have water-resources responsibilities. Specific activities of each liaison committee will include exchange of information about water-quality issues of regional and local interest; identification of sources of data and information; assistance in the design and scope of project products; and review of project planning documents and reports. The liaison committee for the ACF River basin study unit will be formed in 1991.

Information on reports and data related to the NAWQA program can be obtained from:

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