ATLANTA, GA

Atlanta Earned a Water Quality and Compliance Grade of Fair in 2000 and in 2001

The city water supply failed the national turbidity standard and has levels of haloacetic acids, total coliform bacteria, and lead that are of concern, although they do not violate national standards.

▶ **Haloacetic acids,** by-products of chlorine disinfection that may cause cancer, occur at levels just below a new standard that became effective in January 2002.

▶ Up to 2.4 percent of monthly water samples in 2001 contained **total coliform bacteria,** microbial contaminants whose presence is a potential indicator that disease-causing organisms may be present in tap water. Levels were of concern but did not violate the national standard.

▶ Tests of the city's water found **lead** in 7.5 percent of tested homes' tap water at levels that exceeded the national action level. Although findings represent a health risk to the homes affected, up to 10 percent of homes are allowed to exceed the national action level, and therefore no violation occurred. Lead can cause permanent brain and nervous system damage as well as problems with growth, development, and behavior.

▶ For three months of 2000 and 2001, United Water Services Atlanta did not meet the national standard for **turbidity**—cloudiness that can indicate that water may be contaminated with *Cryptosporidium* or other pathogens that present human health concerns. United reports that the turbidity was caused not by contamination but by treatment chemicals and presented no health risk.

ATLANTA
System Population Served **Nearly 1 million**[1]
Water Quality and Compliance **2000▶Fair** **2001▶Fair**
Right-to-Know Report—Citizenship **2000▶Fair** **2001▶Fair**
Source Water Protection **Poor**
REPORT CARD

Noteworthy

▶ In general, Atlanta's water system needs **substantial rehabilitation**. Some segments of it are a century old.

Atlanta's Right-to-Know Reports Earned a Grade of Fair for 2000 and 2001

▶ The reports were relatively user-friendly and generally met the minimum requirements of the EPA's right-to-know report rule, while making no overarching claims that the water is absolutely safe. However, the reports had some shortcomings, including a false claim that the city's water "meets" and "surpasses all EPA standards," even though Atlanta apparently failed to meet the EPA's turbidity standard in 2000–2001.

Atlanta Earned a Source Water Protection Grade of Poor

▶ Major threats to the city's water supply include polluted runoff from urban, suburban, and agricultural areas; new development, which can cause sedimentation and erosion; and more than 1,400 identified potential point source polluters, including hundreds of fuel and hazardous waste facilities and more than 100 large industries using hazardous chemicals.[2]

KEY CONTAMINANTS IN ATLANTA'S WATER

The following contaminants have been found in Atlanta's drinking water supply. For more information on health threats posed by specific contaminants, see Chapter 5.

MICROBIOLOGICAL CONTAMINANTS

Cryptosporidium (Crypto)

National Standard (MCL)
Treatment Technique (TT)

Draft Proposed New National Standard[3]
<7.5 organisms/100 liters (average); no additional treatment
7.5–100 organisms/100 liters (average); some additional treatment (>90% *Crypto* kill)
100–300 organisms/100 liters (average); significant additional treatment (>99% *Crypto* kill)
>300 organisms/100 liters (average); advanced treatment (>99.7% *Crypto* kill)

National Health Goal (MCLG)
0—no known fully safe level

National Requirements
Most large- and medium-sized water utilities that use surface water are required to monitor for *Crypto* and report results in their right-to-know reports; they eventually may be required to use advanced treatment if significant levels are found.

1997 Levels[4]	Low	Maximum
Untreated (raw) water	nondetectable	1,923 cysts per 100 liters
Treated (finished) water	nondetectable	

LEVELS PRESENT SOME CONCERN

Cryptosporidium (*Crypto*) is a waterborne microbial disease that presents human health concerns, especially to individuals with weakened immune systems, including HIV/AIDS patients, the elderly, children, and people who have undergone organ transplants. Under a negotiated EPA rule that is out in draft proposed form and is soon scheduled to be proposed formally in *The Federal Register,* water utilities that find significant levels of *Crypto* will have to use more effective treatment to kill the pathogen.

United Water Services (UWS) Atlanta is forthright about the health implications of *Crypto*.[5] Testing has found *Crypto* in the source water from the Chattahoochee River at the point where it is brought into the city's water treatment plants. Levels of *Crypto* in the raw water (that is, before treatment) for Atlanta's treatment plants have sometimes been quite high—up to 1,923 cysts per 100 liters (measured in 1997).[6] UWS Atlanta says it has not found *Cryptosporidium* in its finished (treated) drinking water. This finding is not unusual, however, because methodological problems make it all but impossible to actually detect the pathogen in *treated* drinking water; generally, only higher levels in untreated water are detectable.

Total Coliform Bacteria

National Standard (MCL)
5% maximum in any month[7]

National Health Goal (MCLG)
0—no known fully safe level

2000 Levels[8]
2% in highest month, total coliform positive

2001 Levels[9]
2.4% in highest month, total coliform positive

LEVELS PRESENT SOME CONCERN

Total coliform bacteria are microbial contaminants whose presence is a potential indicator that disease-causing organisms may be present in tap water. Coliform bacteria are on occasion found in Atlanta's finished tap water. The highest reported level in any month was 2.4 percent, meaning that 2.4 percent of samples taken were found to contain total coliform bacteria. The federal standard allows up to 5 percent total coliform–positive samples per month. The health goal for any type of coliform bacteria is 0. So while the coliform bacteria finding in Atlanta is not viewed as serious, it may indicate some regrowth of bacteria in the water mains after the water leaves the treatment plant. Some studies suggest that serious regrowth problems may allow disease-causing pathogens to subsist in pipes. Rehabilitation and renewal of the water distribution system will help Atlanta's century-old system address bacterial problems in pipes and prevent them from becoming more serious.

Turbidity

National Standard (TT) (in Nephelometric Turbidity Units, or NTU)
Filtered water
0.5 NTU 95% of the time (through 2001)
0.3 NTU 95% of the time (effective in 2002)
1 NTU 100% of the time (effective in 2002)
Unfiltered water
5 NTU maximum, 100% of the time

2000 Levels[10]

September	93.6% of samples <0.5 NTU
November	94.3% of samples <0.5 NTU

2001 Levels

January	90% of samples <0.5 NTU

LEVELS PRESENT HIGH CONCERN

Turbidity is a measure of the cloudiness of water and is used as an indicator that water may be contaminated with *Cryptosporidium* or other pathogens that present human health concerns. In addition, turbidity can interfere with water disinfection because it can impede the effectiveness of chlorine or other chemical disinfectants. UWS Atlanta's water supply did not meet the national standard for turbidity during three separate months in 2000 and 2001: September and November 2000 and January 2001. UWS Atlanta says that the excessive turbidity was the result of chemicals added to the water, not from mud or other contamination problems, that the problem is now fixed, and that these exceedances were not violations. The EPA's rules, however, include

no exemption for added chemicals, and excessive turbidity of any sort can interfere with effective monitoring. However, the state of Georgia apparently did not report these as violations to the EPA, so they do not appear in the EPA's violations database. The problem apparently was remedied in 2001, and the system has reported no turbidity problems since January 2001.

INORGANIC CONTAMINANTS

Lead

National Standard (TT)
15 ppb (action level, at 90th percentile)[11]

National Health Goal (MCLG)
0—no known fully safe level

2000 Levels[12]
9.2 ppb at the 90th percentile home; 3 out of 51 (6%) homes tested exceeded national standard

2001 Levels[13]
5 ppb at the 90th percentile home; 4 out of 53 (7.5%) homes tested exceeded national standard

LEVELS PRESENT SOME CONCERN

Lead—which enters drinking water supplies from the corrosion of pipes or faucets—can adversely affect blood pressure, red blood cells, and kidney and nervous system function, and, especially in infants and children, cause permanent brain damage, decreased intelligence, and problems with growth, development, and behavior. Though not sufficiently widespread to trigger an exceedance of the national standard, elevated levels of lead in many homes in Atlanta (7.5 percent of homes tested in 2001) may present health concerns for those affected. Consumers, particularly those with infants or young children, may want to test their water for lead; to find a laboratory, contact the Drinking Water Hotline, 800-426-4791. Or consumers may choose to flush faucets of lead by running water for approximately one minute before ingestion. (Excess water may be saved for plants or other uses.)

ORGANIC CONTAMINANTS

Haloacetic Acids

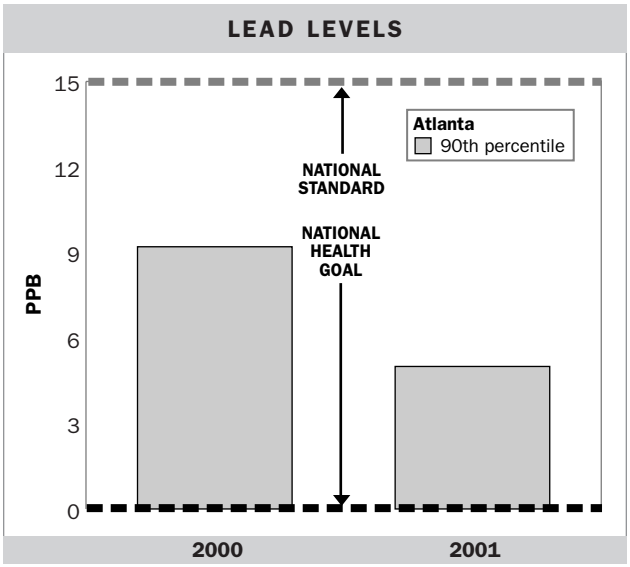
National Standard (MCL)
60 ppb (average) effective in 2002; no previous standard

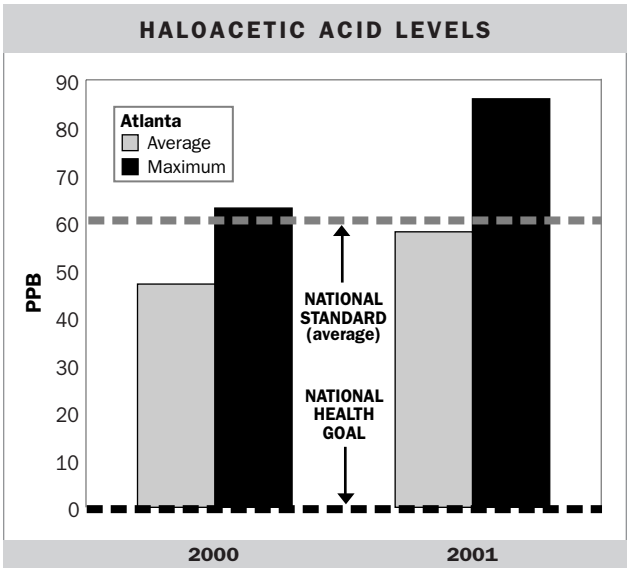
National Health Goal (MCLG)
0—no known fully safe level[14]

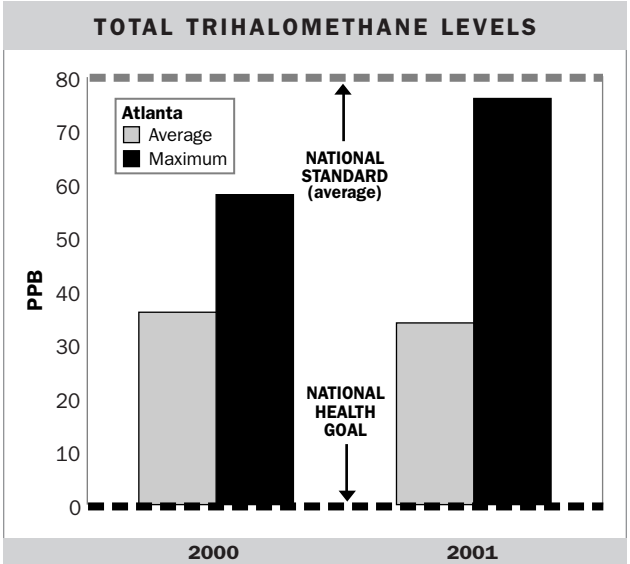
2000 Levels[15]	Average 47 ppb	Maximum 63 ppb
2001 Levels[16]	Average 58 ppb	Maximum 86 ppb

LEVELS PRESENT HIGH CONCERN

Haloacetic acids (HAAs), by-products of chlorine disinfection, may cause cancer and, potentially, reproductive and other health problems. Atlanta's haloacetic acid levels in 2001 were just barely below the national standard that took effect in January 2002. As discussed in Chapter 5, the EPA standard is not based exclusively upon health but rather on a weighing of health risks versus treatment options, costs, and other considerations. Atlanta's elevated levels of haloacetic acids represent a health concern.







Total Trihalomethanes

National Standard (MCL)
100 ppb (average) effective through 2001
80 ppb (average) effective in 2002

National Health Goal (MCLG)
0—no known fully safe level[17]

2000 Levels[18]	Average	Maximum
	36 ppb	58 ppb
2001 Levels	Average	Maximum
	34 ppb	76 ppb

LEVELS PRESENT SOME CONCERN

Total trihalomethanes (TTHMs)—contaminants that result when chlorine is used to treat drinking water and then interacts with organic matter in the water—are linked with cancer and, potentially, to miscarriages and birth defects. The levels in Atlanta's water average less than half of the national standard and are potentially of less concern than are haloacetic acids.

ATLANTA'S RIGHT-TO-KNOW REPORTS

Atlanta's Right-to-Know Reports Earned a Grade of Fair in 2000 and 2001

On the good-citizen side of the ledger:

▶ The 2000–2001 reports generally met the minimum requirements of the EPA's right-to-know report rule.

▶ The reports made no overarching claim that the water is absolutely safe.

▶ The format of the reports was relatively user-friendly.

On the could-be-a-better-citizen side of the ledger:

▶ The reports asserted that the system "meets" and "surpasses all EPA standards," when Atlanta apparently did not meet the turbidity rules. UWS Atlanta contends that problem was not due to contamination; nevertheless, its monitoring data show that the turbidity requirements were not met.

▶ The reports included neither maps nor detailed narratives noting the specific polluters in the watershed. EPA rules require water systems to include information on known polluters in their watersheds in their right-to-know reports.

▶ The reports also do not provide information on the health effects of some contaminants found at levels below EPA standards but above EPA health goals, such as haloacetic acids. Although not legally required, this information would assist local citizens in protecting their health and in fighting for better protection of their water.

THREATS TO ATLANTA'S SOURCE WATER

Atlanta Earned a Source Water Protection Rating of Poor for 2000 and 2001

EPA's Index of Watershed Indicators (IWI) has ranked the source waters of the city's water supply, the Upper Chattahoochee River, as a 6, the worst possible rating.[19] The IWI ranking describes the river's water as having "more serious problems" and "high vulnerability" to contamination.

The city of Atlanta and the Atlanta Regional Commission conducted an assessment of the vulnerability of the system's source water to pollution and made findings publicly available at www.atlantaregional.com/swap/. The source water assessment identified nonpoint sources of pollution as a major concern and also discussed hundreds of potential point sources of pollution in the watershed—without naming them in the publicly available document. A table from that assessment appears on page 102.

Urban sprawl is among the sources of pollution discharge into the Chattahoochee; it causes urban and suburban polluted runoff, as well as polluted runoff from agricultural sources and point source

Chattahoochee River Water Supply Watershed Inventory of Potential Point Sources of Pollution

Potential Pollutant Source Facilities	Number of Facilities
Agriculture	24
Airports	4
Asphalt Plants	4
Electric Substations	30
Fuel Facilities	438
Garbage Transfer Stations	6
Hazardous Waste Facilities	558
Junk/Scrap/Salvage Yards	18
Landfills	17
Large Industries Which Have Federal Categorical Standards	11
Large Industries Which Utilize Hazardous Chemicals	121
Land Application Site (LAS) Permit Holders	5
Lift Stations	78
Mines	14
NPDES Permit Holders	23
Recycling Centers	15
Water Treatment Plants	13
Wastewater Treatment Facilities	1
Oil/Gas Pipelines Crossing Streams	49
Total	**1,429**

Source: Atlanta Regional Commission, "Source Water Assessment Project: An Assessment of Potential for Pollution of Surface Drinking Water Supply Sources: City of Atlanta Water Department Drinking Water Supplied from the Chattahoochee River Watershed" (December 2001).

pollution from industries. Some of these point sources are shown on the map below. According to some experts, the two greatest threats to the water quality in the Chattahoochee watershed are sedimentation and erosion from development in vulnerable areas of the watershed and increased amounts of polluted runoff, as forested woodlands are transformed into impermeable roads, parking lots, buildings, and other associated structures.

According to the *Chattahoochee RiverKeeper*, while nonpoint source pollution is the biggest problem for the river, "in the upper Chattahoochee River basin (Helen to West Point Dam), 159 municipalities and industries are permitted to discharge specific levels of pollutants into the river."[20]

PROTECTING ATLANTA'S DRINKING WATER

Following are approaches to treating Atlanta's drinking water and information on how residents can help protect their local water.

Treatment Options Available for Contaminants of Greatest Concern

Atlanta could reduce its relatively high levels of disinfection by-products by using ozone or ultraviolet (UV) light as a primary disinfectant, instead of chlorine/hypochlorite. Ozone is a gas that can be created at the treatment plant and captured after use so it does not cause air pollution. It can be bubbled through the water to kill pathogens. As an alternative, UV light also can be created at the plant using special lightbulbs. Both ozone and UV are extremely effective at killing all pathogens in tap water, including chlorine-immune organisms like *Cryptosporidium*. UV creates no known disinfection by-products, and ozone creates lower amounts of most harmful by-products of concern than chlorine does.

As an interim step, Atlanta could reduce its by-products somewhat by switching to chloramines as a residual disinfectant rather than just sodium hypochlorite. It would still need chloramines in its pipes even after switching to ozone or UV. The city could also further reduce these contaminants by using activated carbon, which would remove the organic matter that reacts with the disinfectant to create by-products. In addition, although Atlanta reports that it has never found viable *Cryptosporidium* in its finished drinking water, ozone or ultraviolet light would offer a measure of additional assurance that *Crypto* poses no risk to residents.

Moreover, rehabilitation and renewal of the water distribution system, which suffers from deferred maintenance, is needed.

Until January 2003, Atlanta was the largest U.S. city to privatize its water. For four years, United Water Services Atlanta ran the city's water services. But when citizens and government officials, including Atlanta Mayor Shirley Franklin, raised concerns about Atlanta's tap

ATLANTA

United Water Services Atlanta
Operations Department, 651 14th Street, N.W.
Atlanta, GA 30318
One-Call Customer Service Center at 404-658-6500
www.unitedwater.com/atlanta.htm.

WATER UTILITY INFORMATION

water—including alleged poor customer service, localized boil water orders, failure to promptly and adequately respond to water main breaks, widespread meter problems, complaints about muddy or discolored water, among other issues—the city canceled its contract.[21, 22] United Water said that it was losing money on the deal and that most of these problems stemmed from long-term deferred maintenance from before the firm took over.[23]

United Water had planned to launch a rehabilitation and renewal effort, and now this problem will be the city government's responsibility. Such rehabilitation will help prevent bacterial problems and water main breaks in the city's nearly century-old system from becoming more serious.

How Individuals Can Protect Source Water

Citizens can help protect the city's drinking water by working to protect its sources—both by conserving water in their daily lives and by getting involved in community decision making about water resources.

- **Work for strong protections of the Chattahoochee River,** including enforcement of current polluter permits and restrictions, stricter controls on development in sensitive areas of the watershed, and buffer strips along the river and its tributaries.
- **Learn about the sources of pollution in Atlanta's watershed** by checking the source water assessment at www.atlantaregional.com/swap/ or by contacting Matthew Harper at the Atlanta Regional Commission, 40 Cortland Street, N.E., Atlanta, GA 30303.
- **Get involved in source water protection efforts** by contacting Sue Grunwald, Georgia Environmental Protection Division, 404-656-4807.
- **Learn more from:**
  - The Upper Chattahoochee RiverKeeper, http://ucriverkeeper.org

Peer reviewers of the Atlanta report included Erica Frack, M.D., M.P.H., Department of Family and Preventative Medicine, Emory University School of Medicine; Linda Greer, Ph.D., senior scientist, NRDC; Darcie Boden, Upper Chattahoochee RiverKeeper; Jennifer Giegerich, Georgia PIRG; and Dr. Curtis Hollabaugh, professor, State University of West Georgia.

NOTES

1 According to Atlanta's right-to-know report, the Atlanta water system serves "nearly 1 million residents in the Atlanta metropolitan area." The Environmental Protection Agency Safe Drinking Water Information System (SDWIS) reports that Atlanta serves 650,000 people but apparently does not count some people who live outside of the city who are served. The EPA's data are available online at http://oaspub.epa.gov/enviro/sdw_report.first_table?report_id=507527&pwsid=GA1210001&state=GA&source=Surface%20water%20&population=650000&sys_num=0 (visited March 29, 2002).

2 Atlanta Regional Commission, "Source Water Assessment Project: An Assessment of Potential for Pollution of Surface Drinking Water Supply Sources: City of Atlanta Water Department Drinking Water Supplied from the Chattahoochee River Watershed" (December 2001), available online at www.atlantaregional.com/SWAP/; Chattahoochee RiverKeeper, "Chattahoochee River Facts," available online at http://ucriverkeeper.org/mmnavind.htm.

3 See EPA, Long Term 2 Enhanced Surface Water Treatment Rule (LT2ESWTR) Preproposal Draft Regulatory Language For Stakeholder Review, posted at www.epa.gov/safewater/mdbp/st2dis.html The 1, 2, and 2.5 minimum log removal requirements are converted into percentage removals for simplicity. This rule has not been formally proposed in *The Federal Register*, but was agreed to by EPA, NRDC, public health groups, cities, and the water utility industry. See *Ibid* for the "FACA Stakeholder Agreement in Principle."

4 See EPA ICR Database for Atlanta, available online at www.epa.gov/enviro/html/icr/utility/report/GA1210001961004132938.html.

5 United Water states:
When ingested, Crypto can *cause symptoms such as nausea, diarrhea and abdominal cramps. Most healthy individuals are able to overcome the disease within a few weeks. However, immunocompromised people have more difficulty and are at greater risk of developing severe, life-threatening illnesses. Immunocompromised individuals are encouraged to consult their doctor regarding appropriate precautions to prevent infection.* Cryptosporidium *must be ingested for it to cause disease, and it may be spread through means other than drinking water."*
United Water Services Atlanta, "2000 Water Quality Report" (2001).

6 See, EPA ICR Database for Atlanta, available online at www.epa.gov/enviro/html/icr/utility/report/GA1210001961004132938.html.

7 Note that the contaminant levels are presented as a percentage. Total coliform is regulated as a percentage of positive samples that are present in water. The national health standard of 5 percent means that if more than 5 percent of the utility's total coliform samples test positive, then the national health standard has been violated. To say that a sample tests positive is to say that there are total coliform bacteria present in the sample. Therefore, for compliance purposes, the utilities provide the percentage of total coliform samples that tested positive.

8 United Water Services Atlanta, "2000 Water Quality Report" (2001).

9 United Water Services Atlanta, "2001 Water Quality Report" (2002).

10 United Water Services Atlanta, "2000 Water Quality Report" (2001); United Water Services Atlanta, "1999 Water Quality Report" (2000).

11 The action level standard for lead is different than the standard for most other contaminants. Water utilities are required to take many samples of lead in the tap water at homes they serve, including some "high-risk" homes judged likely to have lead in their plumbing or fixtures. If the amount of lead detected in the samples is more than 15 ppb at the 90th percentile (which means that 90 percent of the samples have 15 ppb or less), then the amount is said to exceed the action level. Under the complex EPA lead rule, a water system that exceeds the action level is not necessarily in violation. If a system exceeds the action level, additional measures such as chemical treatment to reduce the water's corrosivity (ability to corrode pipes and thus its ability to leach lead from pipes) must be taken. If this chemical treatment does not work, the water system may have to replace lead portions of its distribution system if they are still contributing to the lead problem.

12 See note 8.

13 See note 9.

14 Some of the haloacetic acids have national health goals of 0 and others have nonzero goals. For the sake of simplicity and understandability, since there is a single haloacetic acid standard, and because it is essentially chemically impossible under normal conditions in tap water to create one regulated haloacetic acid without creating the others at some level, we have listed the national health goal as 0.

15 See note 8.

16 See note 9.

17 Total trihalomethanes (TTHMs) consist of a sum of the levels of four closely related chemicals—chloroform, dibromochloromethane, bromoform, and bromodichloromethane—which occur together at varying ratios when water is chlorinated. The latter two TTHMs have health goals of 0. The EPA promulgated and then withdrew (after a court decision) a 0 health goal for chloroform and has not yet issued a new goal for chloroform. Dibromochloromethane has a health goal of 60 ppb. Since water systems generally report only the combined TTHM level, and since it is essentially chemically impossible to create one trihalomethane in tap water without some level of the others, we list the health goal for TTHMs as 0.

18 United Water Services Atlanta, "2000 Water Quality Report" (2001); United Water Services Atlanta, 1999 Water Quality Report (2000).

19 See EPA, IWI, available online at www.epa.gov/iwi/hucs/03130001/score.html.

20 *Chattahoochee RiverKeeper*, "Chattahoochee River Facts," available online at http://ucriverkeeper.org/mmnavind.htm.

21 Rick Brooks and Carrick Mollenkamp, "Companies: Suez Unit, Atlanta Quit Privatization Contract," *Wall Street Journal Europe,* January 27, 2003; D.L. Bennett, "Atlanta, Water Firm Split: Pact Dissolved After 4 Contentious Years," *Atlanta Journal-Constitution,* January 25, 2003.

22 D.L. Bennett and Julie Hairson, "Atlanta May Throw Out United Water: Privatization Has Not Met City Officials' Expectations," *Atlanta Journal-Constitution,* January 19, 2003; Rick Brooks and Carrick Mollenkamp, "Companies: Suez Unit, Atlanta Quit Privatization Contract," *Wall Street Journal Europe,* January 27, 2003; D.L. Bennett, "Atlanta, Water Firm Split: Pact Dissolved After 4 Contentious Years," *Atlanta Journal-Constitution,* January 25, 2003; Marianne Lavelle and Joshua Kurlantzick, "The Coming Water Crisis: Many Billions Will Be Needed to Quench America's Thirst, But Is Private Business the Answer?" *US News & World Report,* pp. 22–30, August 12, 2002; "North Atlanta Must Boil Water," *Atlanta Journal-Constitution,* July 6, 2002.

23 See notes 21–22.