WASHINGTON, D.C.

Report does not include Northern Virginia suburbs purchasing D.C. water.

Washington, D.C., Earned a Water Quality and Compliance Grade of Poor in 2000 and Fair in 2001

▶ From 1998 to 2000, Washington's water had high levels of **total trihalomethanes** (TTHMs) and **haloacetic acids** (HAAs), contaminants that result when chlorine is used to treat drinking water and then interacts with organic matter in the water, which are linked with cancer and, potentially, to miscarriages and birth defects. TTHM levels exceeded the national standard that went into effect in 2002.[1] HAA levels approached, without exceeding, the national standard that went into effect in 2002. Levels of both of these classes of chemicals decreased in 2001 as a result of new treatment approaches.

▶ In 2000, Washington's **lead** levels were just below the national action level. 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. Although tests in 2001 showed better results, lead levels in the city's tap water may be a continuing cause for concern.

▶ Washington, D.C., has a disturbing history of violations of the **coliform** and **turbidity** rules, with a string of serious violations from 1993 to 1996 that triggered several boil-water alerts. Total coliform bacteria (microbial contaminants) and turbidity (cloudiness) are potential indicators that disease-causing organisms may be present in tap water. Thereafter, aggressive action to control bacteria and turbidity brought levels down. Since 1999, coliform has been trending upward again during peak months, though Washington, D.C., reportedly has not violated the national standards since 1996.

▶ **Cyanide**—a known poison that is the by-product of mining, metal and other manufacturing processes and chlorination treatment of some wastewaters—can cause weight loss, rapid breathing, tremors, and thyroid and nerve damage at below-fatal doses. Periodically, it and such chemicals are spilled, dumped, or permitted to run off into the Potomac River and subsequently enter the water system, possibly presenting health concerns.

WASHINGTON, D.C.
System Population Served **595,000**[2]
Water Quality and Compliance **2000▶Poor** **2001▶Fair**
Right-to-Know Report—Citizenship **2000▶Fair** **2001▶Fair**
Source Water Protection **Fair**
REPORT CARD

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

▶ The Washington, D.C., Water and Sewer Authority's (WASA) right-to-know reports included information on health effects of certain contaminants found at levels below enforceable national standards, an explanation of how the water is treated, information about lead, suggestions on how citizens can reduce it in their tap water, and warnings for vulnerable populations.

▶ The reports also included prominent, unqualified, and misleading statements about the water's safety.

▶ The report also included a misleading assertion about *Cryptosporidium.*

Noteworthy

▶ Washington's drinking water infrastructure is in serious need of modernization. The distribution system and treatment plants are aged and the technology outdated. Drinking water quality issues can result when the infrastructure is not well maintained. In part to upgrade the much-outdated drinking water infrastructure, WASA is implementing a $1.6 billion capital improvement plan.[3] This includes more than $600 million in planned upgrades and rehabilitation of the water treatment and distribution system for the city, plus hundreds of millions in upgrades for the wastewater system. Serious investment will require changes in how

the U.S. Army Corps of Engineers incurs debt and will require WASA to raise significant new funds.

Washington Earned a Source Water Protection Rating of Fair

▶ The watershed for the Potomac River, Washington's source for drinking water, does not contain much heavy industry, but the river is vulnerable to contamination from urban and agricultural runoff and from such point source pollution as upstream sewage treatment plants.

KEY CONTAMINANTS IN WASHINGTON'S WATER

The following contaminants have been found in Washington, D.C.'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[4]
<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-size 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.

1997–1998 Levels in Source Water	Average	Maximum
	2 organisms per 100 liters	23 organisms per 100 liters

(Most recent detailed data publicly reported)[5]
Detected in 2 of 18 monthly samples

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. When water utilities find significant levels of *Crypto*, draft EPA rules will eventually require them to use better treatment. Washington, D.C., has a history of *Cryptosporidium* concerns. In December 1993, the EPA issued a boil-water alert for the area after drinking water suddenly became too cloudy, an indication that *Cryptosporidium* or other disease-causing organisms might be getting through the treatment plant.[6] The alert continued for several days, affecting more than 1 million residents. According to data the Washington Aqueduct submitted to the EPA and other data obtained by NRDC, *Cryptosporidium* has been detected several times in Washington's source water (prior to treatment).[7,8] It is not clear whether *Crypto* has been tested for or found in Washington's *finished* drinking water, but it is unlikely since methodological problems make it extremely difficult to find *Crypto* at the relatively low levels at which it would be anticipated to occur in finished tap water.

Total Coliform Bacteria

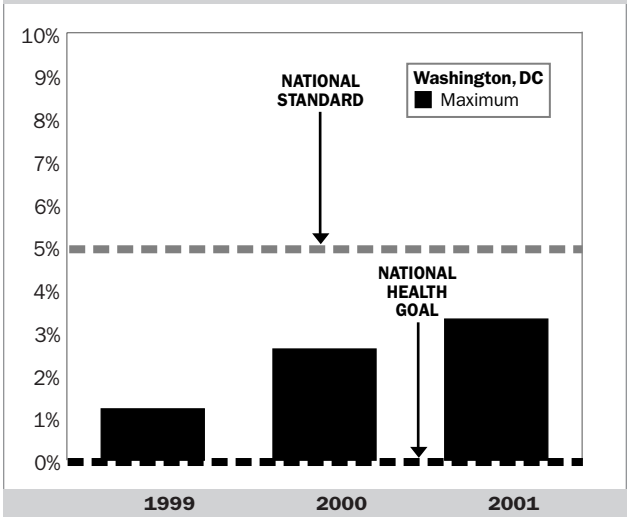
National Standard (MCL)
5% maximum in any month[9]

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

1999 Levels
1.2% in highest month, total coliform positive[10]

2000 Levels
2.6% in highest month, total coliform positive[11]

TOTAL COLIFORM BACTERIA LEVELS



2001 Levels
3.3% in highest month, total coliform positive[12]

LEVELS PRESENT HIGH CONCERN

Total coliform bacteria are microbial contaminants whose presence is a potential indicator that disease-causing organisms may be present in tap water. Although Washington's levels are below the EPA's standard, any readings of total coliform bacteria could be a sign that vulnerable populations may experience infections. The continued finding of coliform in pipes indicates that the District likely still has bacterial regrowth problems in its distribution system—possible cause for concern because of Washington's history of violations of the total coliform rule and turbidity requirements. Violations from 1993 to 1996 triggered several boil water alerts. In response to EPA administrative orders in the mid-1990s, the D.C. Water and Sewer Authority and the Army Corps of Engineers took aggressive action to control bacteria and turbidity, and coliform levels dropped. However, since 1999, the levels of coliform during peak months are showing a troubling trend upward, from 1.2 percent of samples testing positive for coliform during the highest month of 1999, up to 2.6 percent in 2000, and up again to 3.3 percent in 2001. The EPA standard prohibits 5 percent coliform positives during any month. The water may be creeping back into a problem area, a potential indication that past bad habits of deferred maintenance and poor management of the distribution system may be returning as the spotlight on the problem has faded.

INORGANIC CONTAMINANTS

Cyanide

National Standard (MCL)
200 ppb (average)

National Health Goal (MCLG)
200 ppb

2000 Levels[13]
Not reported as detected

2001 Levels[14]
50 ppb maximum

LEVELS PRESENT SOME CONCERN

Cyanide—a known poison that is the by-product of mining, metal and other manufacturing processes and chlorination treatment of some wastewaters—can cause weight loss, rapid breathing, tremors, and thyroid and nerve damage at below-fatal doses.[15] WASA does not describe any specific source of the cyanide in the city's tap water, but both Maryland and Pennsylvania are among the top six states for release of cyanide into water and onto land.[16] It is cause for concern that such a substantial level of cyanide suddenly occurred in the city's water. If cyanide contamination incidents recur, it would be important that a source be identified and addressed, and/or that improved treatment is installed to remove this chemical from tap water supplies.

Lead

National Standard (TT)
15 ppb (action level, at 90th percentile)[17]

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

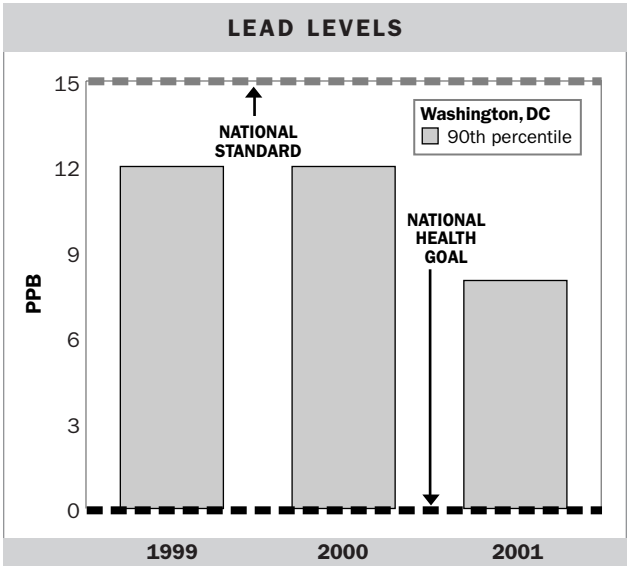
1999 Levels[18]
12 ppb at 90th percentile home; 3 of 55 homes tested exceeded national standard

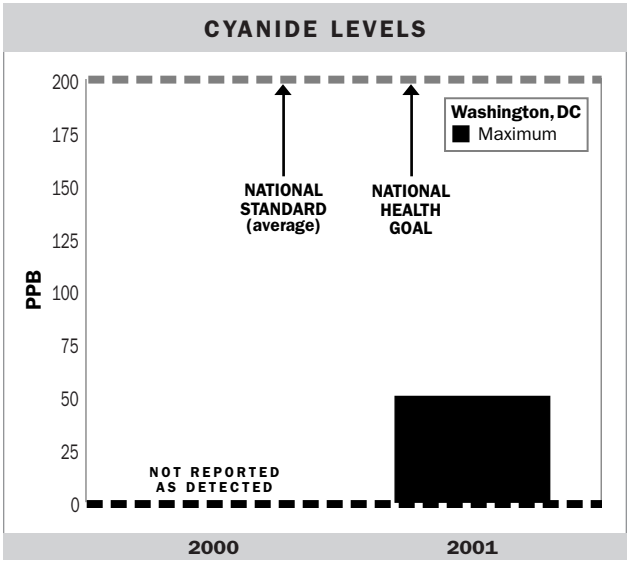
2000 Levels[19]
12 ppb at 90th percentile home; 3 of 55 homes tested exceeded national standard

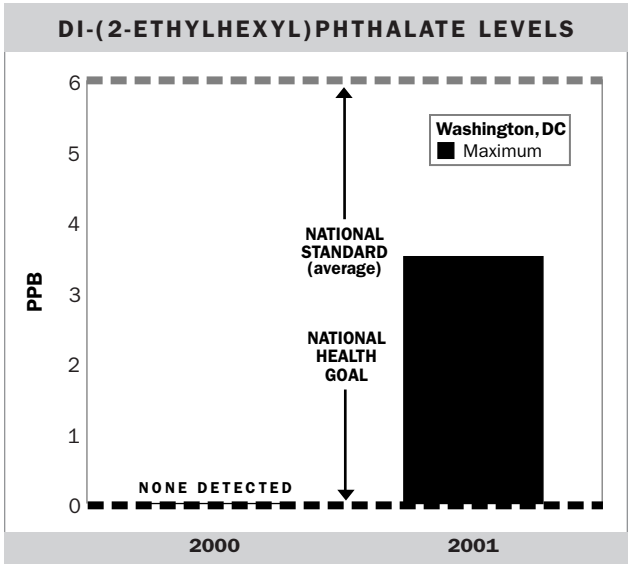
2001 Levels[20]
8 ppb at 90th percentile home; 4 of 50 homes tested exceeded national standard

LEVELS PRESENT HIGH 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. Under the EPA's Lead and Copper Rule, Washington is required to reduce lead levels at the tap by going to the source: it treats the water to reduce its ability to corrode pipes and impede its ability to leach lead into tap water. For many years, Washington, D.C., had not complied with the requirement; in fact, it remains unclear, from records provided to NRDC in response to Freedom of Information Act requests, whether the city is now in full compliance.[21] While past levels approached the national action level, lead levels apparently dropped in 2001.

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

Di-(2-Ethylhexyl)Phthalate (DEHP)

National Standard (MCL)
6 ppb (average)

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

2000 Levels
0 detected

2001 Levels	Lowest nondetected	Average reported	Maximum 3.5 ppb

LEVELS PRESENT SOME CONCERN

Di-(2-ethylhexyl)phthalate—a plasticizing agent used widely in the chemical and rubber industries and contained in many plastics—is a probable human carcinogen and also causes damage to the liver and testes. DEHP was found in 2001 in city tap water at levels below the EPA standard but above the national health goal of 0. The source of DEHP in Washington's tap water is not known, but its appearance at more than half the standard is troubling. The source should be found if it continues to be detected, or treatment must be adjusted to remove it.

Haloacetic Acids

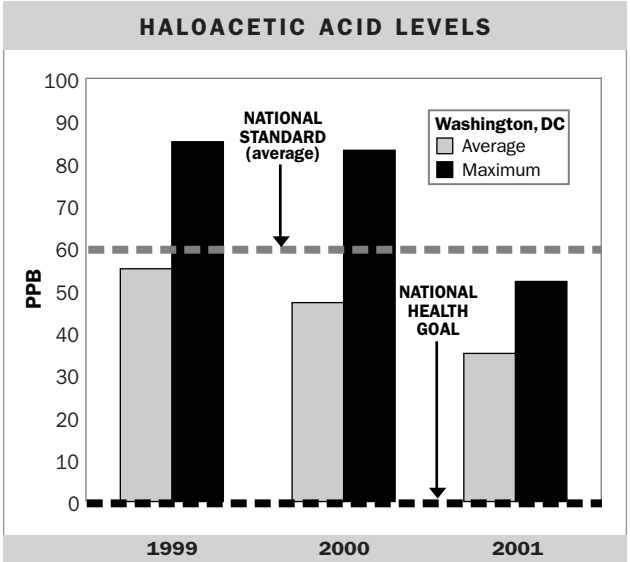
National Standard (MCL)
60 ppb (average) effective 2002; no previous standard

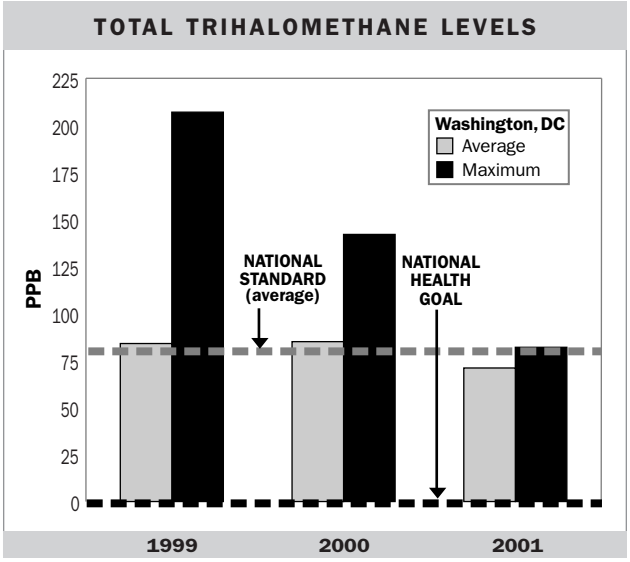
National Health Goal (MCLG)
0—there is no known fully safe level[22]

1999 Levels	Average[23] 55 ppb	Maximum 85 ppb
2000 Levels	Average[24] 47 ppb	Maximum 83 ppb
2001 Levels	Average[25] 35 ppb	Maximum 52 ppb

LEVELS PRESENT HIGH CONCERN

Haloacetic acids (HAAs), by-products of chlorine disinfection, may cause cancer and, potentially, reproductive





and other health problems. Washington HAA levels peaked above the EPA standard for haloacetic acids in 2000. Levels came down with the switch to chloramines.

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[26]

1999 Levels	Average[27] 84 ppb	Maximum 207 ppb
2000 Levels	Average[28] 85 ppb	Maximum 142 ppb
2001 Levels	Average[29] 71 ppb	Maximum 82 ppb

LEVELS PRESENT HIGH 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 high levels of TTHMs in Washington's water remain a concern. Washington switched to chloramines as a secondary disinfectant in 2001 in order to reduce TTHM and HAA levels. While average levels have been brought modestly below the new EPA standard, spike levels sometimes still exceed the new standard (which is based on an average, so there appears to be no threat of a violation). According to Dr. David Ozonoff, director of the Environmental Health Department at Boston University School of Public Health, however, D.C.'s past spike levels of TTHMs well over 100 ppb were a potential concern for pregnant women and their babies, and a careful eye should be kept on spikes in the future, though it appears that the switch to chloramines may have reduced those peak levels substantially.

RADIOACTIVE CONTAMINANTS

Gross Alpha Radiation

National Standard (MCL)
15 pCi/L (average)

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

2000 Levels (most recent reported)	Range 1.0–1.8 pCi/L	Maximum 1.8 pCi/L

Gross Beta Radiation

National Standard (MCL)
50 pCi/L (average)

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

2000 Levels (Most recent reported)	Range 2.5–4.7 pCi/L	Maximum 4.7 pCi/L

Tritium

National Standard (MCL)
20,000 pCi/L (average)

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

2000 Levels (most recent reported)	Range 650–1,570 pCi/L	Maximum 1,570 pCi/L

LEVELS PRESENT SOME CONCERN

All of the radioactive contaminants found in D.C. tap water cause cancer, and no known level of exposure to any of them is considered safe. None of the radioactive contaminant readings violated national standards, although they all occurred at levels above EPA health goals. Alpha emitters generally get into tap water from erosion of radioactive minerals into source water. Beta emitters can also be naturally occurring or can result from human use of radioactive elements in nuclear or other industries. According to the EPA, tritium can form naturally at low levels or from human activities that involve the use of concentrated radioactive materials—production of electricity, nuclear weapons, nuclear medicines used in therapy and diagnosis, and various commercial products including smoke detectors and television sets.[30] Release into the environment is usually "the result of improper waste storage, leaks, or transportation accidents."[31]

The District's Past History of Serious Violations of Drinking Water Standards

The District of Columbia Water and Sewer Authority has a long history of health-based and monitoring violations for total coliform bacteria and occasionally for turbidity. In 1996, Washington, D.C., tap water contained high levels of coliform and had at least four violations of federal drinking water standards.[32]

The city has issued at least three boil-water advisories; in NRDC's judgment, more were warranted by additional violations—two for fecal coliform levels and one for turbidity. The water provided by the Corps of Engineers to WASA violated the turbidity MCL in July and December 1993; the latter triggered the first city-wide boil-water order. Before 1996, local officials had been warned repeatedly by the EPA to modify procedures for reducing coliform contamination. The District had at least one city-wide violation of the total coliform bacteria standard in 1996 and many positive samples of fecal coliform. The District also incurred at least two city-wide violations of fecal coliform in October and November of 1995. Overall, the federal standard for total coliform in tap water was exceeded eight times from 1991 to 1993, according to the Army Corps of Engineers, which sells water to WASA.[33] On most, if not all, of these occasions, D.C. issued no boil-water advisory.

After a review of Washington Aqueduct drinking water data in 1994, the Corps found that on at least 32 occasions after a positive coliform sample was detected, the required repeat sampling was delayed by several days rather than conducted within 24 hours of sample detection, as legally required.[34] Eventually, WASA entered into a consent decree in January 1997 after the EPA issued an administrative order as a result of repeated problems with coliform contamination. WASA prepared a remediation plan for the water distribution system, a requirement under the consent decree.[35]

Apparently, WASA's and the Army Corps' joint efforts to reduce the coliform and turbidity problems have been fairly successful. However, the trend toward more coliform in the peak months in D.C. tap water exhibited over the past three years is cause for concern. While apparently no violations have been reported, WASA will need to redouble its efforts to ensure that the system does not fall back into disrepair.

WASHINGTON'S RIGHT-TO-KNOW REPORTS

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

On the good-citizen side of the ledger:

- They included a helpful map showing the locations of source water and treatment plants, as well as some information on health effects of certain contaminants found at levels below EPA's enforceable standards. For example, brief information on the carcinogenicity of trihalomethanes is provided, although no information is given on possible reproductive effects.
- The reports solicited public input into utility decisions, invited public participation in the source water assessment, including detailed information on how to get involved, discussed a cross-connection control program, and provided information on community meetings and board meetings in which citizens can participate.
- The reports included a diagram and explanation of how the water is treated.

► The reports included information about lead and highlighted how citizens can reduce it in their tap water.
► Information for vulnerable populations was placed in a prominent box on page 2 of the 2000 report and on page 5 of the 2001 report.
► The reports revealed levels (and likely sources) of certain unregulated contaminants in tap water, such as sulfate and nickel.
► The reports contained information in Spanish and Korean on how to obtain translated copies of the report, and cassette recordings of the report are available on demand.
► The reports are available online in English and Spanish and were distributed in the advertisement section of the *Washington Post*. For customers who do not receive the *Post,* WASA mailed the reports directly.[36]

On the could-be-a-better-citizen side of the ledger:
► The cover pages of the 1999, 2000, and 2001 right-to-know reports included prominent and unqualified statements of safety: "Your Drinking Water is Safe!" These statements were misleading because the city's water contains contaminants, including TTHMs, HAAs, and lead, at levels in excess of health goals, posing health risks and, in some cases, occurring at levels nearly at EPA standards. Under NRDC's grading system, any water system that makes such a prominent unqualified safety claim can earn no grade better than Fair because such claims could dissuade immunocompromised or other vulnerable people from reading further, thus missing important information that can greatly affect their health. But for this prominent assertion, Washington's right-to-know reports would have earned at least a Good.
► The 2000 and 2001 reports incorrectly claimed, "Tests of the source water prior to treatment have not found cryptosporidium." While apparently in 2001 no *Cryptosporidium* was found, *Crypto* has been detected on several occasions in D.C.'s source (raw) water in the past.
► The reports did not include information on specific polluters in the watershed. EPA rules require utilities to name any specific known sources of a contaminant found in tap water.[37]
► The reports also did not provide information on the health effects of some contaminants found at levels below EPA standards but above EPA health goals—haloacetic acids and phthalate, for example. Although not legally required, this information would have assisted citizens in protecting their health and fighting for better protection of their water.

THREATS TO WASHINGTON'S SOURCE WATER

Washington, D.C., Earned a Source Water Protection Rating of Fair

The D.C. Water and Sewer Authority purchases surface water from the Washington Aqueduct, which is operated by the Army Corps of Engineers.[38] The aqueduct takes water from the Potomac River at two locations, Great Falls and Little Falls, Maryland. The EPA's Index of Watershed Indicators (IWI) has determined that the Potomac River watershed has less serious contamination problems, but that it is highly vulnerable to contamination. Therefore, the index scores Washington's source water with an overall rating of 4 on a scale of 1 to 6, with 6 as the worst possible grade. NRDC has given Washington, D.C., a source water protection grade of Fair.

The index lists no significant sources of drinking water impairment for the Potomac River, but WASA and other area drinking water authorities have identified contamination sources. There is little or no heavy industry in the Potomac watershed upstream of the Washington, D.C., intakes. However, potential nonpoint sources of fecal coliform bacteria that have been identified, including failing septic systems, contamination from wastewater treatment plants, combined sewer overflows, pet waste, wildlife, direct deposit of livestock waste in streams, runoff from pasture and feedlots, and runoff from manure applied to crop land.[39] In addition, other sources of impairment may include total toxics, pathogens, and other nonpoint sources of pollution such as runoff.[40]

The Potomac River Watershed is highly susceptible to contamination by urban runoff, pollution that occurs when water passes through an urban environment, picking up particles, dirt, and chemicals and flows into the water resources of the area. According to IWI data, in 1990, the most recent year for which data is available, 27 percent of the watershed's land area is more

than a quarter (or 25 percent) impervious to rainwater.[41] Washington's watershed, and consequently its drinking water sources, is likely to experience a heavy loading of pollutants as a result of urban runoff. Based upon available data, therefore, NRDC has rated Washington as having fair source water protection.

In addition, the Potomac River is likely to be affected by agricultural runoff.[42] The vulnerability indicator of agricultural runoff potential—a composite of nitrogen runoff, pesticide runoff, and sediment delivery—shows a moderate level of potential impact, with a moderate potential for nitrogen, pesticide, and sediment delivery from farm fields to rivers and streams.

The District is currently developing a source water assessment program in conjunction with state governments and partnership organizations. Federal law requires the assessment to be completed by 2003. This process involves identifying protection areas surrounding drinking water intakes, identifying and cataloging significant contaminants in these protection areas, determining the susceptibility of the drinking water supply system to the pollutants in the protection area, and providing the public with the results of the study.[43]

PROTECTING WASHINGTON'S DRINKING WATER

The following are approaches to treating Washington's drinking water and information on how residents can help protect their local water.

Treatment Options Available for Contaminants of Greatest Concern

The Army Corps of Engineers operates the Dalecarlia and McMillan treatment plants, both of which are located in Washington, D.C. Raw water served to the District of Columbia and Fairfax and Arlington Counties currently undergoes a process of presedimentation, mixing, sedimentation, filtration, primary disinfection with chlorine and chloramines, lime, and fluoride to disinfect the water it provides to the public.[44] In November 2000, the Corps switched to chloramines as a secondary disinfectant to drinking water, as a way to modestly reduce the high level of disinfection by-products in the tap water.[45]

Chloramine disinfection is not a foolproof solution to the problem, however, because it still contributes to the formation of such disinfection by-products as TTHMs. In addition, people undergoing kidney dialysis are at risk if their drinking water is not pretreated to remove chloramines before consumption. Ultraviolet light disinfection, ozone, or reverse-osmosis water treatment would reduce the by-product levels. Granular activated carbon (GAC) and other treatments could also substantially reduce by-products and virtually eliminate many of the organic chemicals found in the city's water; other cities have installed GAC technology at a cost of about $25 per household.

Capital Improvement Program for Washington

Washington's drinking water infrastructure is in need of modernization. The distribution system and treatment plants are aged and the technology outdated. Maintenance issues are a problem as well. The Dalecarlia Reservoir, used to collect water prior to treatment, was left largely unattended for more than 40 years, and large quantities of debris and sludge accumulate on the filters. Finished water storage facilities were not cleaned for decades.[46]

To upgrade the city's water and wastewater infrastructure, WASA is implementing a $1.6 billion capital improvement plan.[47] In addition, the D.C. Department of Health set out a plan that outlined priority projects for fiscal year 2002. The top prospective priority projects include controlling combined sewer overflows, primary and secondary treatment upgrades, a security plan, and filtration and disinfection facility upgrades, to name a few.[48]

WASA's capital improvements program will rehabilitate, replace and extend water mains, storage facilities, and pumping stations in order to provide service to new developments, maintain an adequate water supply, fire protection, protect the quality of the water, and upgrade the meter system. Highlights include:[49]

- water pumping facilities—$77.3 million
- water storage facilities—$42.5 million
- water distribution system—$229.0 million for:
  - valve replacements

- cross connection elimination
- dead end elimination
- main extension and replacement
- large diameter water main rehabilitation
- distribution/transmission mains
- cleaning and lining large diameter water mains
- small diameter water main rehabilitation

▶ ongoing water projects—$ 44.3 million
- extension of water mains to service new developments
- repair of water main breaks
- replacement of valves and fire hydrants
- minor water main rehabilitation work

▶ DPW water program—$ 30.2 million (assistance in rehabilitation, replacement and extension of water mains)

▶ water service area management—$28.8 million (engineering program management, planning, and design for the capital improvements)

▶ metering—$40.0 million

▶ Washington aqueduct—$147.3 million (DCWASA's share only), plus
- possible residuals/solids recovery
- possible backwash treatment project

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.

WASHINGTON, D.C.

Libby Lawson
District of Columbia Water and Sewer Authority[50]
WASA Public Affairs Office
5000 Overlook Avenue, SW
Washington, D.C. 20032
202-787-2200
www.dcwasa.com

Washington Aqueduct
U.S. Army Corps of Engineers
5900 MacArthur Boulevard, NW
Washington, D.C. 20315-0220
202-764-2753
http://washingtonaqueduct.nab.usace.army.mil/

WATER UTILITY INFORMATION

▶ **Attend meetings of the local water supplier,** the District of Columbia Water and Sewer Authority. Check the right-to-know report or call the supplier for specifics.

▶ **Get involved in source water assessment and protection** efforts by contacting the Interstate Commission on the Potomac River Basin, 301-984-1908.

▶ **Learn more from these groups:**
- Clean Water Action, www.cleanwater.org
- NRDC, www.nrdc.org

Peer reviewers for the Washington, D.C. report included Paul Schwartz, Clean Water Action/DC; and Andy Fellows, Clean Water Action/DC.

NOTES

1 Under NRDC's grading system, water systems that violate a final standard that is fully enforceable get a Failing grade. On the other hand, a system that violates a final standard that is not yet enforceable (there is a three-to five-year lag from the date of issuance until a new standard is enforceable) earns a Poor. This admittedly tough grade is earned, in NRDC's view, because large cities have plenty of advance knowledge that standards are being issued years before they are finalized and are well aware of the health risks posed by high levels of the contaminants. They cannot plead ignorance and often can take simple steps-as Washington did in this case by simply switching chemical disinfectants at a low cost—to avoid the health problem. See the chapter on the NRDC grading system for more details.

2 Safe Drinking Water Information System (SDWIS-Fed). U.S. Environmental Protection Agency database, available online at http://oaspub.epa.gov/enviro/sdw_report.first_table?report_id=538014&pwsid=DC0000002&state=DC&source=Purchased%20surface%20water%20&population=595000&sys_num=0, last visited February 2003.

3 Washington, D.C., Water and Sewer Authority, *2000 Drinking Water Quality Report*, available online at www.dcwasa.com.

4 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 the EPA, NRDC, public health groups, cities, and the water utility industry. See Ibid for the "FACA Stakeholder Agreement in Principle."

5 See www.epa.gov/enviro/html/icr/utility/report/D.C.000001960620094921.html. The Army Corps of Engineers' Washington Aqueduct states in its annual water quality reports for 1999 and 2000 that "EPA does not require that finished water be tested if the *raw* water does not have concentrations that exceed 10 oocysts per liter. Washington Aqueduct tests the raw water regularly and results are substantially below that threshold." This clearly suggests that some *Crypto* (albeit at less than 10 oocysts/liter) were detected. See note 8 below.

6 D'Vera Cohn and Amy Goldstein, "Water Parasite Tests Due Today; Early End to Alert Possible; Human Error May Have Aggravated Emergency," *The Washington Post*, December 10, 1993.

7 See www.epa.gov/enviro/html/icr/utility/report/D.C.000001960620094921.html.

8 NRDC obtained monitoring data collected for the Washington Aqueduct, which serves as the wholesale water supplier for WASA, under the Freedom

of Information Act from EPA's Region 3. These data and the ICR data cited above show that *Crypto* has been found in Washington's source water in past years. However, *Crypto* apparently was not found in raw water in 2001. See Army Corps of Engineers, Washington Aqueduct, Annual Report of Water Analysis, 2001, available online at http://washingtonaqueduct.nab.usace.army.mil/AnnualReports/2001WaterAnalysisReport.pdf.

9 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.

10 WASA, "1999 Drinking Water Quality Report," available online at www.dcWASA.com.

11 See note 3.

12 WASA, "2001 Drinking Water Quality Report," available online at www.dcwasa.com.

13 See note 3.

14 See note 12.

15 EPA, "Consumer Fact Sheet: Cyanide," available online at www.epa.gov/safewater/dwh/c-ioc/cyanide.html.

16 Ibid.

17 The action level standard for lead is different from 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.

18 See note 10.

19 See note 3.

20 See note 12.

21 These data were obtained under the Freedom of Information Act from EPA, Region 3.

22 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.

23 See note 7.

24 See note 3.

25 See note 9.

26 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.

27 See note 7.

28 See note 3.

29 See note 9.

30 EPA, "Implementation Guidance for the Radionuclides Rule," at page IV-8 (draft, January 2002), available online at www.epa.gov/safewater/rads/fullradsimpguide.pdf.

31 Ibid.

32 Memorandum from Carol M. Browner, administrator of the U.S. EPA, to W. Michael McCabe, Region III Administrator, October 1996.

33 Memorandum from Rodger Rudolph, chief, Water Supply Management Branch, U.S. Army Environmental Hygiene Agency, to Army Corps of Engineers, Washington Aqueduct. May 23, 1994, p. 3.

34 Memorandum from Rodger Rudolph, chief, Water Supply Management Branch, U.S. Army Environmental Hygiene Agency, to Army Corps of Engineers, Washington Aqueduct. May 23, 1994, p. 2.

35 *Remediation Plan, Water Distribution System, EPA Administrative Order III-96-001-DS.* District of Columbia Water and Sewer Authority. January 23, 1997.

36 Phone conversation with Seema Bhat, with WASA. July 31, 2001.

37 See EPA regulations at 40 C.F.R. §141.153(d)(4)(ix), which provide that the right-to-know report must include "the likely source(s) of detected contaminants to the best of the operator's knowledge. Specific information about the contaminants may be available in sanitary surveys and source water assessments, and should be used when available to the operator." While the EPA allows reliance upon general lists of potential sources where the water system is not aware of the specific source of pollution, where the water system is aware of the pollution source, the rules require that polluter to be identified.

38 Washington Aqueduct, US Army Corps of Engineers. Brochure explaining water treatment process.

39 Materials provided during District of Columbia Source Water Assessment Informational Meeting, September 6, 2001. Hosted by the Metropolitan Council of Governments.

40 D.C. Report on Water Quality. January 2001.

41 Index of Watershed Indicators, U.S. EPA database. Available online at www.epa.gov/iwi. Visited March 12, 2002.

42 Ibid.

43 Materials provided during District of Columbia Source Water Assessment Informational Meeting. September 6, 2001. Hosted by the Metropolitan Council of Governments.

44 See note 3.

45 Informational brochure provided to NRDC in September 2001 by the Washington Aqueduct, Department of the Army, US Army Corps of Engineers. See also WASA, 2000 Drinking Water Quality Report.

46 Cohn, D'Vera and Eric Lipton, "Costly Repairs Piling Up for Water System." *The Washington Post*, July 28, 1996; see also, Sanitary Survey for Washington Aqueduct.

47 See note 3.

48 Department of Health and District of Columbia Water and Sewer Authority, *District of Columbia FY 2002 Construction Grants Project Priority List for Water Pollution Control Projects*, July 30, 2001.

49 See, D.C. WASA, Capital Improvement Program: Water Distribution, available online at www.dcwasa.com/about/cip/water_distribution.cfm.

50 See note 3.