

VIRGINIA WATER RESOURCES RESEARCH CENTER

A Look Back over 35 Years of Water News in Virginia



EDUCATIONAL REPORT



**VIRGINIA POLYTECHNIC INSTITUTE AND STATE UNIVERSITY
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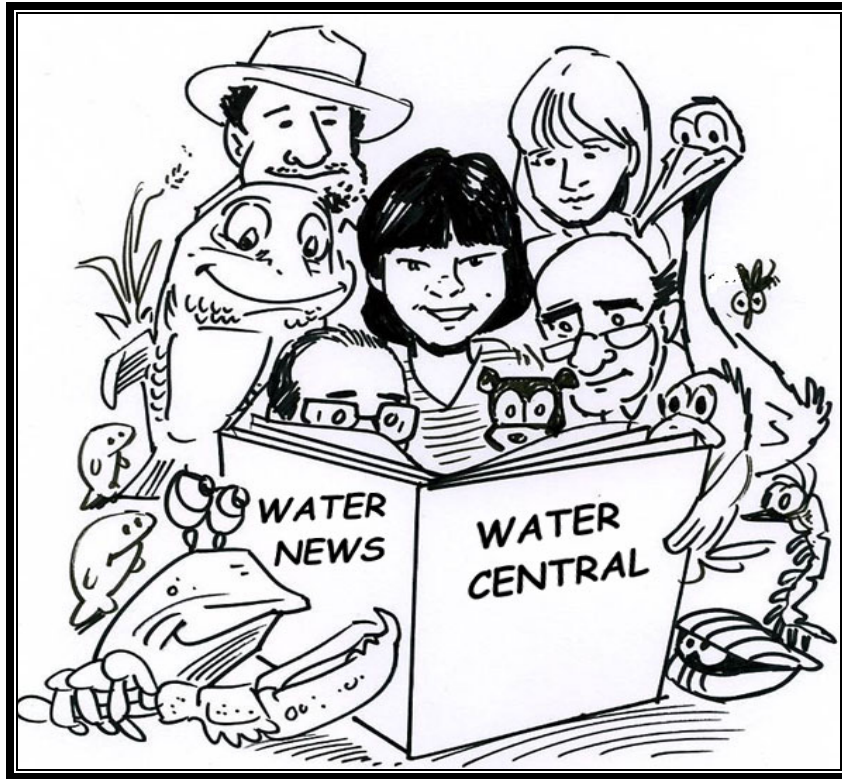
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A LOOK BACK OVER 35 YEARS OF WATER NEWS IN VIRGINIA



Compiled by Alan Raflo
Illustrations by George Wills

Virginia Water Resources Research Center
23 Agnew Hall
Blacksburg, VA 24061

October 2005

Virginia Water Resources Research Center Educational Report No. ER02-2005

Introduction

From 1970 until 1994, the Virginia Water Resources Research Center published a monthly newsletter entitled *Water News* (called simply *News* from April 1970 through August 1975). The newsletter covered current issues of water policy and science affecting Virginia and contained announcements about water-related events and developments at the Water Center. In the early 1990s, reductions in the Water Center's state appropriation resulted in discontinuation of *Water News* after the June 1994 issue.

In June 1998, the Water Center introduced *Virginia Water Central* as the successor to *Water News*. The new newsletter also sought to give readers information on current policy and science issues related to Virginia's waters and watersheds. *Water Central* is published only about once every two to three months, rather than monthly, but typically is somewhat longer than its predecessor. As of August 2005, 35 issues of *Water Central* had been published.

Both in *Water News* and *Water Central*, the Virginia Water Center has sought to provide timely, readable, well-researched, and objective information to help Virginia's citizens and officials make informed decisions on the water resource issues of the day. In addition, both publications used cartoons to add some informative humor to the policy and science discussions.

For the Water Center's 40th Anniversary Research Symposium in October 2005, the Center has produced a sample of newsletter items from nine years selected from the 35-year period since the Water first began publishing a newsletter. The years covered are 1970 (first issue of *Water News* in April), 1975, 1980, 1985, 1990, 1994 (last issue of *Water News* in June), 1998 (first issue of *Water Central* in June), 2000, and 2005. The pages for the years between 1970 and 2000 contain events, issues, quotes, and one illustration each from the respective year's newsletters; the page for 2005 presents a "grand finale" of cartoons by George Wills, the newsletter illustrator since 1982.

Notes in parentheses after each event, issue, and quote indicate the newsletter issue(s) where the items were reported. Please note that the items listed here by no means cover everything of importance in those years and newsletters, and many events and issues listed for one year actually continued over a number of years (even decades, in some cases).

Page 15 lists previous editors and staff of the two newsletters and gives information on how to get back issues of either publication.

The Water Center hopes that you find this special publication informative and entertaining. We would be grateful if you would complete and return to us the short evaluation page at the back of this publication. If you prefer, please send your comments by e-mail. Please send your comments to Newsletter Editor, Virginia Water Resources Research Center (0444), Blacksburg, VA 24061; phone (540) 231-5624; e-mail: water@vt.edu.

Acknowledgements

The Virginia Water Resources Research Center thanks the many people and agencies who have contributed time, effort, knowledge, and financial support to its programs, research, and educational materials since 1965.

We are particularly indebted to our former and current directors: William R. Walker (1970-92), James E. Hackett (acting director, 1970-71), Diana Weigmann (interim director, 1992-96), Leonard Shabman (1996-2002), and Tamim Younos (interim director, 2002-present).

This publication is dedicated to the memory of Nancy Chapman, a former editor of *Water News* and a dear friend to us.

Alan Raflo, *Virginia Water Central* Editor
George Wills, *Virginia Water Central* Illustrator
October 2005

1970

Events of Note

Virginia continued its recovery from Hurricane Camille, which caused many deaths and over \$200 million in damages in August 1969 (Apr. and Oct.).

The 1970 Virginia General Assembly considered 67, and passed 33, water- and environment-related bills; failed measures included a group of about 18 bills comprising a wetlands-protection package (Apr.).

The National Environmental Policy Act (NEPA) was signed into law on January 1, and the first Earth Day was held in April (Apr. and May).

The Economics of Clean Water Report, by the Federal Water Quality Administration, showed that states planned to spend \$10.2 billion on wastewater treatment plants from 1970-74 (May).

In July, President Nixon proposed creation of the Environmental Protection Agency (EPA) and the National Oceanic and Atmospheric Administration (NOAA) (Aug.).

A Virginia Game Commission survey found that 4,026 acres of wetlands were destroyed in Virginia from 1955-69 (Aug.).

Companies such as ALCOA were testing methods for collecting aluminum and other recyclable materials from the public (Oct.).

A report by the commissioner of the Virginia Division of Water Resources¹ identified three main areas of concern over the coming decades: the proper role of the state in water-supply management; funding of water- and wastewater facilities; and state management of flood plains (Nov.).

The October Potomac River Federal-State Enforcement Conference called for Virginia, Maryland, and Washington, D.C., to construct or improve sewage-treatment facilities needed to “clean up” the Potomac River by 1977 (Nov.).

Big Issues

•**Eutrophication**—excessive vegetative growth leading to water-quality and habitat problems—in lakes and streams, and the relative importance of phosphorus, nitrogen, and carbon in causing the problem; in connection with this were efforts to ban phosphates in detergents and to remove phosphorus during sewage treatment (several months).

•**Role of the federal 1899 Refuse Act** in addressing water pollution (several months).

- Use of the pesticide **DDT** (May).
- Potential impacts of the proposed **trans-Alaska oil pipeline** (July).
- Mercury** pollution of waterways, including Virginia’s first fishing ban due to mercury, on the North Fork Holston River (August and October).
- The question of **citizen “standing”** to sue public agencies or private industry over alleged environmental damages (Aug. and Nov.).
- Federal grants for **construction of sewage-treatment facilities** (Sep.).
- Effects of **warm water released from power plants**, including from a proposed nuclear plant on the North Anna River (Sep. and Dec.).
- The **fate and effects of oil spilled** into marine and coastal waters (Oct. and Dec.).

Memorable Quotes

“[The U.S. Department of] Interior is developing hard evidence and will seek court action in any confirmed case of mercury pollution if corrective measures are not taken swiftly on local levels.”—U.S. Interior Secretary Walter J. Hickel (Aug.)

“The problems of mercury pollution weren’t even known by the government or industry until March of this year.”—W. A. Oppold of Olin Chemicals Company (Sep.).



By George Wills, October 2005

¹ An agency in the former Department of Conservation and Economic Development. The division no longer exists in the current Department of Conservation and Recreation.

1975

Events of Note

The U.S. EPA issued its first annual National Water Quality Inventory, required by the 1972 Federal Water Pollution Control Act (FWPCA; later to be known as the Clean Water Act) (Jan.).

“RECON” and “HISARS” were two new computerized information-retrieval systems at Virginia Tech and the Water Center (Feb.).

Litigation reached the U.S. Court of Appeals in Washington, D.C., over Appalachian Power Company’s proposal to build a \$430-million hydroelectric project—consisting of two dams and a 40,000-acre reservoir—on the New River near the Virginia North Carolina Border (several months). (In 1982, APCO finally abandoned the project after the U.S. Supreme Court refused to hear the case).

Proposed exploration and development of oil and natural gas on the Outer Continental Shelf “emerged as on the thorniest and most pressing [resources] issues facing Virginians....” In a related development, The U.S. Supreme Court ruled (March 17) that coastal states have no jurisdiction beyond three miles from shore (Mar. and Apr.).

The State Water Control Board allocated over \$250 million in federal funds for construction of sewage-treatment facilities statewide for the fiscal beginning in July 1975 (Apr.).

The Surface Mining Control and Reclamation Act was vetoed by President Ford in May (June). (An act by the same title became law in 1977.)

A fish kill occurred in the lower James River for the third spring in a row, but the approximately 3,000 fish killed this year was much reduced from 500,000 in 1973 and 5—10 million in 1974. The cause was believed to be chlorine from three wastewater treatment plants in the area; the plants reduced their chlorine use by half in 1975 (June).

Water quality in the Chesapeake Bay had “deteriorated to a point warranting serious concern,” according to a report by the National Commission on Water Quality (Oct.).

Hurricane Eloise in September caused over \$300 million damage in northeastern states, including \$11 million in Alexandria (Oct.).

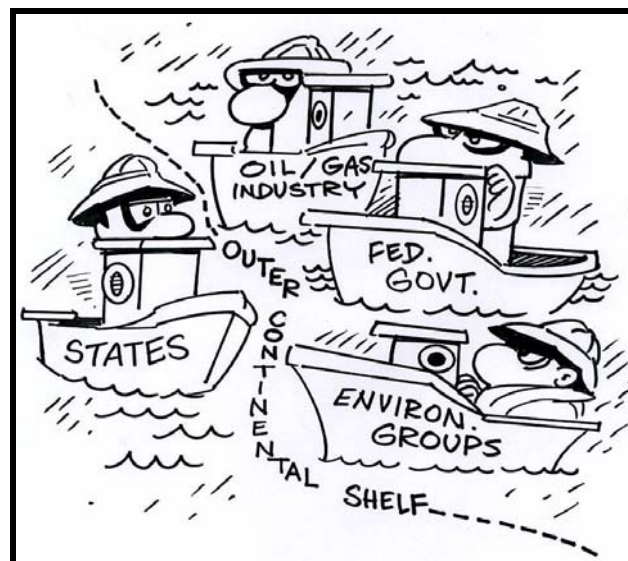
In mid-December, Kepone contamination of the James River at Hopewell became publicly known, leading to closure to fishing of 100 miles of the river, federal and state criminal investigations, a \$29-million lawsuit, Congressional hearings, and plans for state legislation to address such situations (Jan. 1976).

Big Issues

- In a word: **energy** (all year).
- The effort and money that would be needed to comply with **1977 and 1985 pollution-control goals** set by the 1972 FWPCA (several months).
- Growth and development** and their connection to water and sewer facilities and water-resource impacts (several months).
- State **scenic river** designations (Feb.).
- Implications for Virginia localities of **federal flood-hazard designations** and the requirements of the National Flood Insurance Program (Apr.).
- Resource recovery and recycling; water law and policy; land use; and obtaining scientific advice and counsel** (priorities identified by the Virginia Council on the Environment) (Apr.).
- A proposed \$500-million **pumped-storage hydroelectric project** in Bath County (May).
- Combined sewer systems** (storm and sanitary sewers) and chronic overflows (after heavy rainfall) in 13 localities, especially Alexandria, Lynchburg, and Richmond (June).
- Army Corps of Engineers’ **regulations for “dredge and fill” materials** under Section 404 of the 1972 FWPCA, and the related question of what constitutes “navigable waters” (Aug. and Oct.).

Memorable Quotes

“Where once there was a single Public Enemy Number 1 among [water] pollutants, there are now 100.”—Warren Hall, Colorado State University, referring to nonpoint sources of pollution (May).



By George Wills, October 2005.

1980

Events of Note

The Virginia Beach City Council voted to remove a 1,000-foot steel fence located 300 feet offshore. The fence had been constructed in 1973 as for erosion control, but it had created a swimming hazard and its erosion-control effectiveness was questionable (Jan.).

A spill of 200 gallons of home fuel oil killed 500,000 trout fingerlings at a Game and Inland Fisheries hatchery in Marion (Feb.).

A “steadily growing number” of Virginians were using geothermal energy; an estimated 2,000 groundwater heat pumps were in operation (Mar.).

The Cousteau Society selected Norfolk as the headquarters for its worldwide ocean-exploration activities (Mar.).

The tenth annual report of the President’s Council on the Environment criticized Virginia for doing too little to protect the Chesapeake Bay, for continuing Kepone contamination in the James River, and for 20-30 tons of soil lost annually to erosion (Apr.).

Two ruptures in the Colonial Pipeline in March spilled 400,000 gallons of fuel into Bull Run in Prince William County and the Rapidan River near Fredericksburg, and threatened water supplies for 678,000 people (May and June).

The first interstate conference on acid precipitation was held (June).

According to participants at a Water Center conference in June, the most pressing water problem in Virginia was the lack of a statewide water-resources management plan. Later in the year the Water Center submitted a proposed statewide water policy to the State Water Study Commission, but the Commission was expected to reject the proposal (Jul. and Oct.).

The year’s commercial catch of Blue Crabs was expected to be 55 million pounds, 20 million below average (Sep.).

The state suffered a drought affecting over 70 localities and costing \$200 million. Water rationing was imposed in Tidewater in October (Oct. and Nov.).

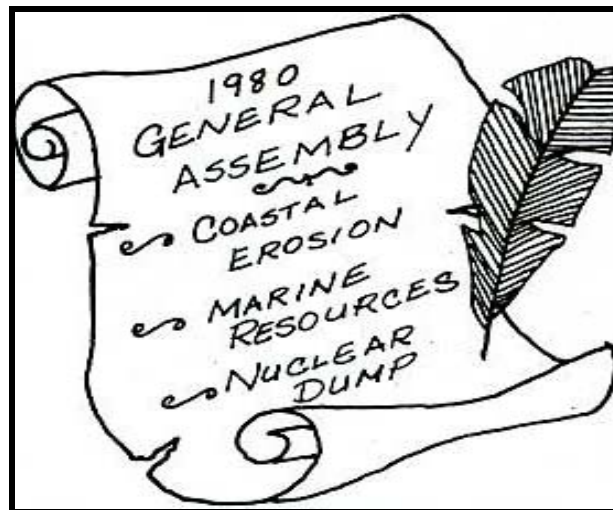
Big Issues

- Three environmental priorities identified by Gov. John Dalton: expanding the **shellfish industry**, **preventing erosion of coastal areas**, and establishing a **low-level nuclear waste-disposal site** (Mar.).
- Corps of Engineers **proposed flood-control dams** on various Virginia streams and rivers (several issues).
- Synthetic fuel development**, such as converting coal to a gaseous or liquid substitute for petroleum (Jan.).
- Whether “**small-scale**” **hydropower sites** could meet a significant part of the nation’s energy needs (Jan.).

- Alternatives onsite sewage treatment systems** to reduce costs of sewage treatment facility construction and improve water quality (Jan. and June).
- Department of Health regulations **requiring sewage-holding tanks on boats and pump-out facilities** at marinas (Jan.).
- The proposed **Coors Company brewery** in Rockingham County (Feb. and Dec.).
- Nitrogen problems in the Chowan River** and its main tributaries (Feb.).
- Disposal of chemical and radioactive wastes by **deep-well injection** (Mar.).
- Impacts of federal policies encouraging **development of barrier islands** along the Atlantic coast (Apr.).
- Regulations on **hazardous materials** (June and Sep.).
- Gathering comprehensive data on **Chesapeake Bay water quality** (Jul.).
- Hampton Roads Energy Company’s proposal to build an **oil refinery in Portsmouth** (Nov.).
- Lingering impacts of the **Kepone contamination of the James River** in 1975, including continued fishing bans and litigation against Allied Chemical (Aug.).
- EPA regulations on **fluoride** in drinking water (Oct.).
- Implementation of **flash flood warning systems** (Jul. and Oct.).
- Disposal of sludge** from wastewater treatment (Nov.).

Memorable Quotes

“I get a little uneasy every time we punch another hole in an aquifer.”—An unidentified Virginia Tech civil engineer, commenting on the potential of geothermal heat pumps to affect groundwater (Mar.).



From the March 1980 *Water News*
(artist unknown).

1985

Events of Note

In December 1984, the Governor's Commission on Virginia's Future recommended that Virginia create a cabinet-level secretariat for natural resources, create a permit process for interjurisdictional water transfers, give additional water policy and management responsibilities to the State Water Control Board (SWCB), and continue to cooperate with other states to develop a Chesapeake Bay restoration program (Jan.).

Virginia Electric and Power Company's \$1.65 billion hydroelectric project in Bath County (mentioned on the 1975 page) began operation (Jan.).

In a lawsuit filed by the Commonwealth in 1977, three companies were found liable for not preventing contamination of the Piney and Tye Rivers by toxic iron-sulfate waste, called "copperas." Improper handling of the material at a Nelson County manufacturing site had been implicated in several fish kills from 1954 to 1981 (Jan., Sep., and Oct.).

Virginia had 12 sites on, or proposed for, the Superfund priority list (May).

The U.S. Fish and Wildlife Service was developing a new master plan for Chincoteague National Wildlife Refuge, which was receiving 1.5 million visitors per year, the most of any federal refuge in the Northeast (May).

A pair of Bald Eagles nested on Buggs Island Lake, the first nesting in the Virginia Piedmont since the 1950s (Jul.).

In public hearings in August and September, the State Water Commission's proposed legislation for comprehensive state water management generated considerable opposition (Nov.).

A federal district court assessed Gwaltney of Smithfield Ltd. over \$1.2 million for illegal discharges into the Pagan River (Aug.).

The SWCB received an EPA grant for \$148,700 to develop a state groundwater strategy (Sep.).

Gov. Robb's administration estimated that the state would need to spend \$150 million over the next decade to clean up the Chesapeake Bay (Nov.).

A record flood in November caused extensive damage in Roanoke, Richmond, and other areas (Dec.).

Big Issues

- General Assembly proposals to remove a ban on **uranium mining**, impose a ban on **phosphate detergents**, and allow a **coal-slurry pipeline** (Jan.).

- Siting of new **hazardous waste disposal facilities** in Virginia (Jan.).

- Threatened legal action by Caroline County against **applying sewage sludge to farmland** (Jan.).

- Attempts to control the invasive plant *Hydrilla* in the Potomac River and elsewhere in the South (Jan.).

- Whether Congress would require **coal "scrubbers" vs. use of lower-sulfur coal** to reduce sulfur emissions that lead to acid precipitation, the cause of an estimated \$39 million in annual damage to structures in Virginia (Feb. and Dec.).

- Virginia **restrictions on Striped Bass harvesting** in the Potomac and its tributaries, following a Congressional mandate in 1984 that Virginia and 11 other East Coast states adopt Striped Bass conservation measures (Mar. and June).

- A court ruling allowing Fairfax County to "**downzone**" (reduce allowable development density), in part to protect the Occoquan River watershed (Oct.).

- More controversy (see the 1980 page) over **proposed dams** for flood control, water supply, and hydroelectric power (May).

- Salinity in the City of **Chesapeake's Northwest River water supply** (Aug. and Nov.).

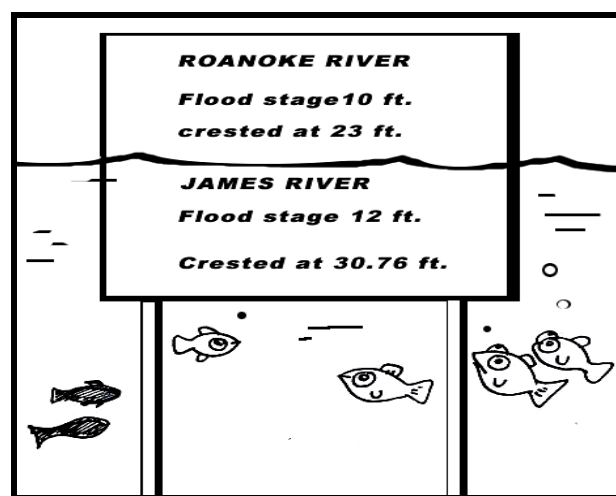
- Toxic substances in the **Elizabeth River** (Sep.).

- A new **underground storage tank registration** program by the SWCB (Oct.).

Memorable Quotes

"We find that many of [Virginia's] conservation programs are neither appropriately designed nor adequately funded."—Governor's Commission on Virginia's Future (Jan.).

"The heaviest rain moved very slowly over Southwest Virginia—it seemed almost anchored there."—Pat Michaels, Virginia State Climatologist, on the rainfall that produced November flooding (Dec.).



From the December 1985 *Water News* (artist unknown).

1990

Events of Note

State and federal officials worked to develop and find money to clean up the closed Avtex Fibers plant in Front Royal. The Virginia Water Control Board had revoked the plant's discharge permit in November 1989 because of permit violations (Jan.).

The Department of Waste Management revoked the operating permit of the Kin-Stan landfill in Alleghany County for failure to meet the financial requirements of 1989 consent decree on closure of the facility and abatement of widespread groundwater pollution (Jan. and June).

Long-running legal battles continued over two proposed water-supply projects for southeastern Virginia: James City County's proposal for a reservoir on Ware Creek and the City of Virginia Beach's proposal to construct a water-supply pipeline from Lake Gaston (several months).

Localities in eastern Virginia were working on maps and plans to comply with the 1998 Virginia Chesapeake Bay Preservation Act (Sep.).

The Virginia Institute for Marine Science asked the Marine Resources Commission for permission to study the ability of "Japanese oysters" to withstand MSX and dermo, diseases that were destroying native oysters (May).

Big Issues

- Various issues having to do with state compliance with **1986 amendments to the federal Safe Drinking Water Act**: questions of state "primacy," capacity of small water utilities to finance upgrades, and federal and state funding (several months).

- **Toxic substances** in rivers and streams (several months).

- **Wetlands regulation**, particularly state regulation of non-tidal wetlands and changes to federal regulations covering "prior-converted" wetlands (areas already drained for agriculture) (several months).

- **Groundwater protection** (Jan. and Feb.).

- State recognition of "**beneficial instream uses**" and the resulting potential for conflict with offstream uses (Jan. and Dec.).

- Virginia's commitment under the 2nd Chesapeake Bay Agreement (1987) to **reduce nutrient inputs to the Bay by 40 percent** (Jan.).

- Tens of thousands of Virginia households **without complete indoor plumbing** (Jan.).

Impacts of **acid precipitation** on western Virginia streams (Feb.).

- Concerns about **oil spills** (Mar.) and debate about offshore oil/gas exploration, particularly after Iraq's invasion of Kuwait (Oct.).

- Developing and funding a statewide program to address **nonpoint source pollution** (May).

- Problems with **funding** new sewage treatment facilities and **fixing** aging and deteriorating sewage-collection systems (Dec.).

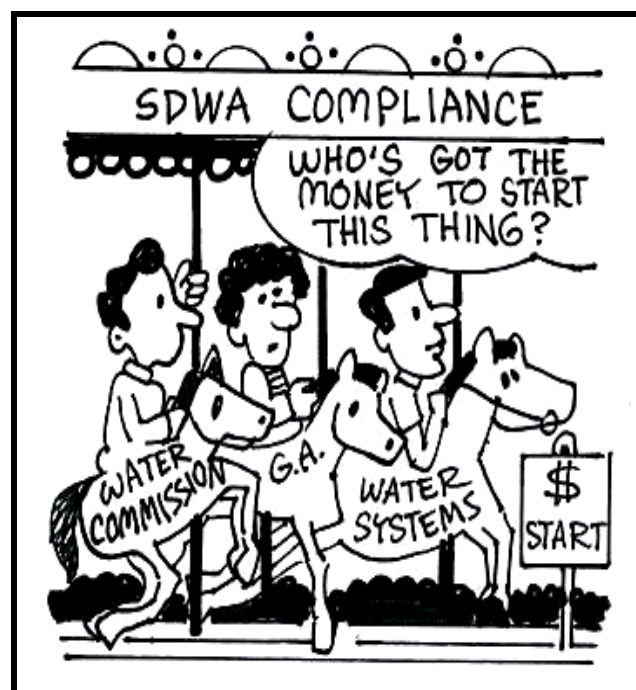
- State-level **drought planning** (Dec.).

Memorable Quotes

"The provision of adequate, safe, and affordable supplies of water for Virginians will continue to be a major concern. Especially difficult will be the disagreements over just what constitutes 'adequate, safe, and affordable.'"—Gerald McCarthy, Virginia Environmental Endowment (Dec.)

"Virginia faces two choices during the 1990s and the 21st Century: develop a management strategy pursuant to a well-conceived water policy, or stumble from crisis to crisis with stop-gap decisions that will maximize social and economic costs."

—William Walker, Water Center director (Dec.).



From the September 1990 *Water News*.

1994

Events of Note

A reduction of about 80 percent in state funding for the Water Center forced significant staff reductions and led the Center to stop publication of *Water News* with the June issue. The final issue reported that the Water Center, in its 30-year history, had supported 235 research projects and 425 students, published over 330 books and reports, and sponsored many conferences (June).

The Commission on Population Growth and Development, created by the 1989 Virginia General Assembly, prepared the “Virginia Growth Strategies Act,” for introduction in the 1994 Assembly (Jan.).

The Chesapeake Bay Local Assistance Department had reviewed 70 Bay preservation plans submitted by local governments, with 14 more localities yet to submit their plans (Jan.).

The Virginia Association of Wetland Professionals was formed and held its first annual meeting (Jan.).

As in 1990 (please see that page), litigation continued over the Virginia Beach’s Lake Gaston pipeline proposal and James City County’s Ware Creek reservoir proposal (Jan.). (The Ware Creek project was never built. The Lake Gaston pipeline project was completed in December 1997 and began service in January 1998.)

Thousands of waterfowl were killed in March by avian cholera. The last outbreak of avian cholera had been in 1978, killing about 100,000 ducks (Mar.).

Virginia Tech researchers developed a method for rapid detection of viruses in drinking water (Apr.).

The Department of Environmental Quality opened an Office of Pollution Prevention, following authorization by the 1993 General Assembly (Apr.).

Big Issues

- Financial problems of **small waterworks**.
- Department of Health regulations increasing the **distance between septic drainfields and the water table** (Jan.).
- Development of a **toxics-reduction strategy for the Chesapeake Bay**, one of the goals of the 1987 Bay Agreement (Jan.).
- Potential for invasive **Zebra Mussels** to reach state waters on recreational boats (Jan.).
- Whether Virginia law recognizes **citizen “standing”** to appeal state permit decisions under the Clean Water Act (Feb. and Mar.).

- Virginia Pollution Abatement **permits for livestock-feeding operations** (Mar.).

- Ability of **riparian buffers** (streamside vegetation) to reduce pollution reaching streams (Mar.).

- Continuing concern about **groundwater protection**, particularly from petroleum tank leaks (Apr.).

- Declining oyster harvests** (Apr.).

- Risk of **oil spills** in the Chesapeake Bay (Apr.).

- Costs and slow clean-up progress under the **federal “Superfund” law** (Apr.).

- Virginia’s water-quality standard for **dioxin** (May).

Memorable Quotes

“Virginia’s waters are watched over by hundreds of hard-working professionals from state and federal agencies, local governments, universities, consulting firms, lake associations, and other water resources organizations—as well as other state residents who volunteer spare time to find solutions to water problems. Often these people disagree with each other, sometimes ferociously, about how to use and protect their waters. But because they try, they are finding solutions. I believe that *Water News* has played a part.”

—Elizabeth Crumbley, *Water News* editor (June).



From the June 1994 *Water News*.

1998

Events of Note

The Water Center launched *Virginia Water Central* as a successor to *Water News*. Elements of the new publication were based in large part on responses from a September 1996 survey of 1,300 former *Water News* readers. In the first issue, Center Director Leonard Shabman listed four major topic areas for the Water Center: drinking water in southwestern Virginia, technical advice for water-quality monitoring, assessing water-pollution control methods, and watershed effluent allowance trading (June).

The 1998 Virginia General Assembly considered about 100 water-related measures. Key water-related issues were animal waste management; transport of solid waste on state rivers; funding for, and acceptable uses of, the Water Quality Improvement Fund; and property tax incentives for wetlands, streamside (riparian) buffers, and erosion control (June and Aug.).

Construction of a fish ladder around Boshers' Dam removed the last James River obstacle for migratory fish between the coast and Lynchburg, allowing shad and river herring to reach this portion of the river for the first time in 200 years (June).

In June, Occoquan Bay National Wildlife Refuge was officially established (Aug.).

The Virginia Department of Environmental Quality was reorganized into divisions for air, water, waste management, environmental enhancement, and pollution prevention and compliance (Aug.).

In July, the American Canoe Association and the American Littoral Society sued the U.S. EPA for failing to ensure that Virginia met certain requirements of the federal Clean Water Act (CWA), particularly establishing Total Maximum Daily Loads, or TMDLs, for waters that did not meet state water-quality standards. Similar lawsuits filed in over 20 states nationwide were a major factor in bringing the TMDL requirement, "impaired" waters, and the CWA's Section 303d to the forefront of water-quality work in Virginia and nationwide (Oct.).

As of December 22, underground storage tanks had to be upgraded or closed if not in compliance with groundwater-protection regulations established in 1988. In 1998, Virginia had an estimated 75,000 regulated tanks, with 40,000 in use and 32,000 that needed attention before the deadline (Dec.).

Big Issues

- As already noted but worth mentioning twice: TMDLs (Oct.).

- Monitoring to detect whether toxic forms of the *Pfiesteria alga* would reappear in Virginia waters, after

the alga was apparently the cause of fish kills in Virginia, Maryland, and North Carolina coastal waters in 1997 (June).

- High levels of **trihalomethanes**, a potentially cancer-causing substance, detected in the City of Chesapeake's drinking water (June).

- State waters being listed as **impaired due to bacteria** (Aug.).

- Management of **poultry waste**, especially in the Chesapeake Bay watershed (Aug.).

- Striped Bass diseases** and **declining Menhaden stocks** in the Chesapeake Bay (Aug. and Oct.).

- Urban nonpoint sources** of pollution (Aug.).

- Removal of no-longer-used dams** in order to open up fish migration pathways in rivers (Aug.).

- "Bacterial source tracking"**: i.e., the use of DNA to identify sources of bacteria in waters (Oct.).

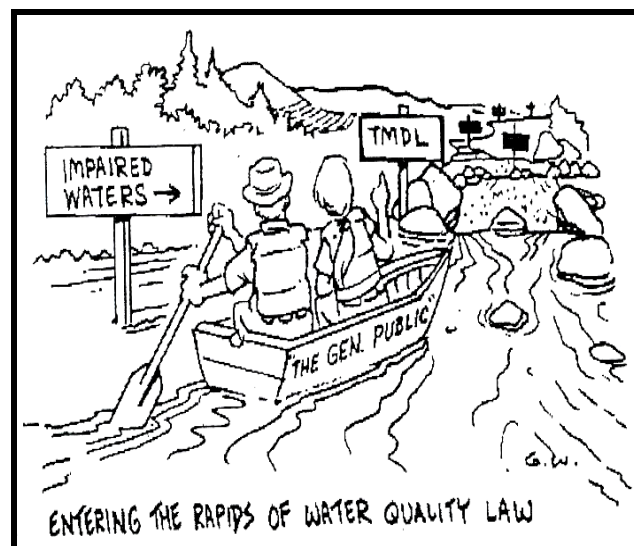
- Contamination of several rivers with **polychlorinated biphenyls, or PCBs**, leading to fish-consumption advisories (Oct.).

- Requirements of the **1996 amendments to the Safe Drinking Water Act**, including source-water assessment and protection and annual reports to water utility customers (Dec.).

- Privatization** of local water utilities (Dec.).

Memorable Quotes

"[The Water Center seeks] to be a water-science information 'broker,' bridging the gap between water-information users and information providers, especially universities' faculty."—Leonard Shabman, Water Center director (June).



From the August 1998 *Water Central*.

2000

Events of Note

A Wisconsin state court approved a \$1.5 million settlement in a citizen lawsuit against Milwaukee and a private company following the 1993 outbreak of the microbial pathogen *Cryptosporidium* in the city's drinking water, which killed over 100 people (Feb.).

The Virginia Supreme Court heard an Amelia County farmers' suit against local ordinances that prevented a land application of sewage sludge (Feb.). (Please see a similar item on the 1985 page.)

The 2000 Virginia General Assembly considered about 125 water-related measures. Among the water-related issues getting significant attention were the following: nontidal wetlands protection; monitoring for toxic substances in state waters; financial assurance for small community sewage treatment systems; wastewater reclamation and re-use; increased state water-quality monitoring; and tax credits for maintaining trees along waterways (Apr. and June).

Chesapeake 2000, a revision and renewal of the 1987 Chesapeake Bay Agreement, was made official in June. The partners in the Bay clean-up plan included Virginia, Maryland, Pennsylvania, the District of Columbia, the U.S. EPA, and the Chesapeake Bay Commission (representing state legislators) (June).

Showing that the Chesapeake Bay is not an isolated problem, a National Academy of Sciences report claimed that marine life in over one-third of U.S. coastal areas was being damaged by runoff of nitrogen and phosphorus (June).

The Chesapeake Bay Foundation's annual State of the Bay Report rated the Bay's water-quality and habitat conditions as a 28 out of a possible 100 (representing pre-European settlement conditions). The score has changed little in recent years. The Bay Foundation's goal is a score of 50 by 2010 (Nov.).

The October spill of 210 million gallons of coal slurry from a mine sediment pond in southeastern Kentucky was called one of the worst ecological disasters ever in the southeastern United States, with effects possibly lasting for years. The mixture of water and by-products of coal processing covered bridges and lawns, smothered aquatic organisms, and fouled municipal water pipes as it made its way into the Big Sandy River and the Ohio River (Nov.).

Big Issues

- Compliance with “Phase II” of federal **stormwater regulations**, which expand regulatory coverage to municipalities under 100,000 people and construction sites of one-to-five acres (Feb.).

- Increasing use of **watersheds** as a unit for water policy, management, and monitoring (Feb.).

- Tributary strategies** for managing nitrogen, phosphorus, and sediment inputs from the major rivers that flow into the Chesapeake Bay (Feb.).

- Expanding technologies and applications for **bacterial source tracking** (June).

- Some water-quality improvements, but some persistent problems, in the **Elizabeth River** (June).

- Creation of a **Blue Crab sanctuary**, an area off-limits to crabbing during the spawning season (June).

- Groundwater contamination by methyl tertiary butyl ether, or **MTBE**, a gasoline additive designed to reduce automobile emissions (June).

- Evolving methods for **mitigating impacts of development on non-tidal wetlands** (Nov.).

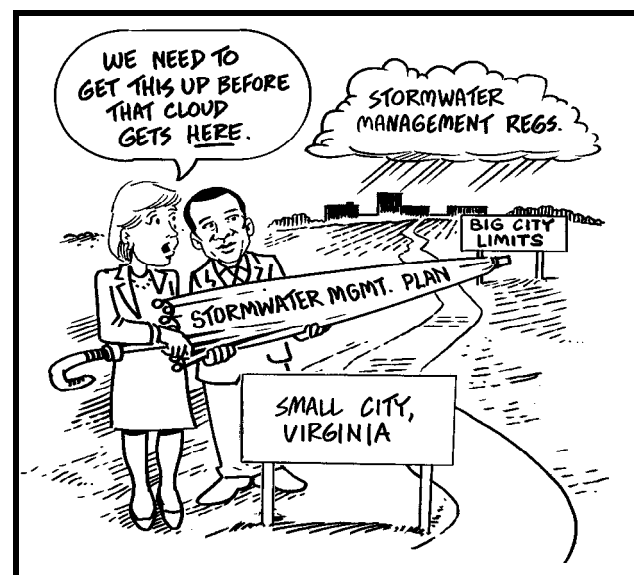
- Exploration of the 56-mile-wide **Chesapeake Bay impact crater**, underwater near Hampton (Nov.).

- Municipal water systems changing their disinfection method from chlorine alone to **chloramine**, a combination of chlorine and ammonia, in order to reduce disinfection by-products (Nov.).

- Management of **waste from large hog farms** (June and Nov.).

Memorable Quotes

“Many factors are converging to cause citizens, scientists, resource managers, and government decision makers to [use] watershed management as an approach for addressing a wide range of water-related problems.”—National Research Council in 1999 (Feb.)



From the February 2000 *Water Central*.

2005 The Year in Cartoons from Virginia Water Central

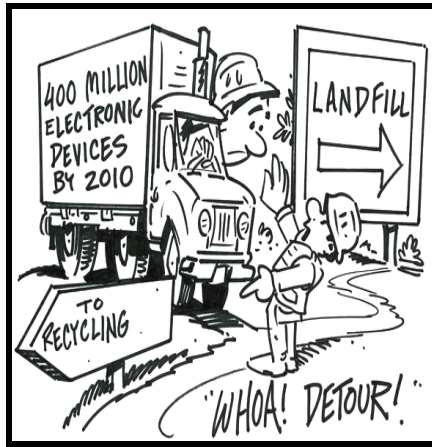
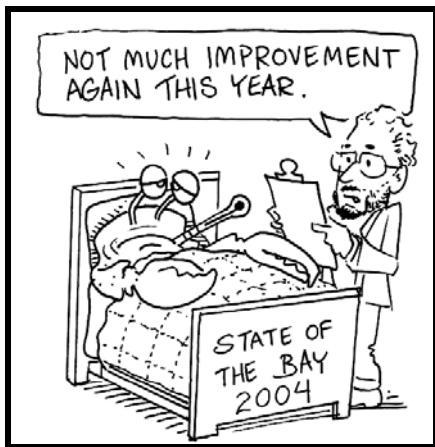
From the January Edition



From the April Edition



From the August Edition



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Photo by Alan Raffo

Lake Drummond, Great Dismal Swamp National Wildlife Refuge, April 2005.