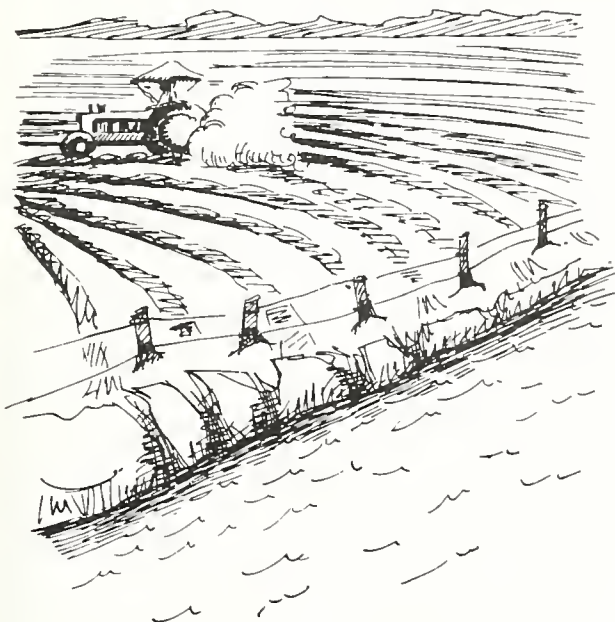


Carolina Blue

Preserving State Water Resources

Coastal North Carolina has about 2.3 million acres of marsh, wetlands, creeks, rivers, and sounds, making up the largest estuarine system on the Atlantic Coast. Productivity of fish and shellfish breeding in this system depends upon an influx of nutrients and fresh water from upland areas. The health of this estuarine system is a good indicator of how well water resources are being protected in North Carolina. Fresh water enters the estuaries from rivers including the Cape Fear, Neuse and Roanoke, which drain millions of acres of the Piedmont and Coastal Plain.

Thus, Mark Dodge's conversation with two Winston-Salem newspaper reporters one hot afternoon last summer, concerning hard times experienced by commercial fishermen, should be taken seriously throughout North Carolina. His living depends on crabbing, oystering, and a boatyard near Rose Bay in Hyde County. Mark Dodge and most other commercial fishermen believe that the conversion of over 200,000 acres of freshwater wetlands by non-family corporate farms in five coastal counties has polluted saline fish breeding areas with fresh water and farm chemicals. These large agricultural interests disagree with Mark Dodge's assessment, claiming that many complex factors have caused seafood catches to decline. Between the two interests there is no consensus on what is happening to coastal water quality.



So when politically powerful out-of-state investors, with almost a half billion in federal subsidies, propose to strip mine 15,000 acres of peat bogs in Washington and Hyde counties, fishermen like Mark Dodge are seriously worried about their future livelihoods. But it is difficult to fight back because of the difficulty in proving what they only know from experience: that changes which funnel fresh water into the estuaries destroy fishing.

This inability to measure the effects of land use projects on water resources frustrates efforts to protect the nation's waters. The U.S. General Accounting Office stated in 1977 that less than one-half of the pollutants from agriculture and forestry activities as well as urban development are major problems. This report was reaffirmed by the President's Council on Environmental Quality in 1980, which found that in contrast with progress made in controlling highly visible industrial and municipal discharges, there had been practically none in cleaning up land runoff.

Because municipal and industrial discharges are not completely understood or controlled, the total threat to water resources posed by land runoff is unknown. This is evidenced by a recent North Carolina study which found that "biocides" -- chemicals used to kill bacteria and other microorganisms -- are being discharged into state streams. "It makes you wonder how many other things are down the pike," said David Howells, a North Carolina Environmental Management Commission member, when he expressed alarm in a recent newspaper article about the report. Howells explained his concern another way. "What business do we have classifying water A-2 (for drinking) about which we do not have definitive information?"

In addition to the problem that water resource regulations do not cover the broad array of pollutants being discharged, another major concern is the inability of regulatory agencies to come to grips with the cumulative effects of land use on surface and groundwater resources. Regulations are based on the concept that it is okay to pollute as long as discharges do not exceed the capacity of nature to handle them.

Todd Miller works full-time for the North Carolina Coastal Federation, a non-profit public interest group involved in efforts to protect coastal water quality.

While one project or land use by itself may not be enough to cause significant water resource problems, more activities, identical or otherwise, may be completely unacceptable.

The environmental impact study is one of the few regulatory constraints on cumulative effects of development. Under guidelines adopted by the Council on Environmental Quality, the total impact of any significant federal action must be determined prior to its initiation. Federal actions include the expenditure of tax dollars or the issuance of permits. Unfortunately, prediction of significant adverse cumulative impacts is difficult. In addition, most land use activities are not considered major federal actions and a review of cumulative impacts is not required.

Another factor resulting in continued degradation of water resources is lack of public awareness that problems exist. Coastal fishermen know that catches are dwindling: their firsthand observations of natural changes lead them to suspect uncontrolled land development. But the urban dweller is not so closely tied to the environment, and finds it easy to assume that what flows from the tap is safe to drink.

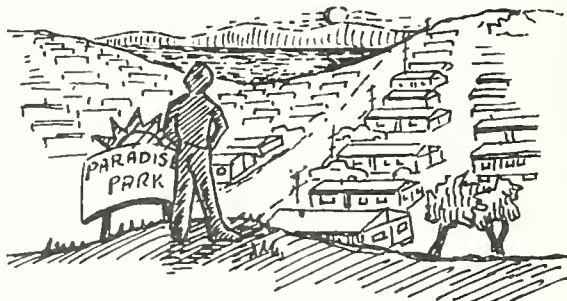
This apathy exists in spite of the everyday press reports of contamination of drinking water supplies. The Council on Environmental Quality reported in 1972 that over 90 percent of the nation's watersheds are more than "moderately" polluted. Tests of drinking water in 113 cities during 1976-77 revealed at least traces of toxic chemicals, including carcinogens, in every metropolitan area studied. Although pollution causes are well-known to public health officials, a recent survey showed that 61 percent of the municipal water supply watersheds in the Southeast are completely unprotected from "source" pollution.

Few North Carolina water system managers believe they have water quality problems, according to a recent survey conducted by the Center for Urban and Regional Studies of the University of North Carolina. Complacency exists despite findings by the survey that "most water supply reservoirs will lose considerable capacity because of sediment from agricultural activities; most water supply watersheds are expected to have more industrial, commercial, and residential development in the next ten years; and most systems will find it necessary to turn to more developed watersheds for future supplies."

This same survey found that while a few local governments have acted independently to protect their drinking water, the vast majority of communities have done nothing. Effective measures to control land uses that degrade water resources will be adopted by localities only as a result of pressure from state and federal agencies. Most communities have absolutely no one

capable of recognizing the need for watershed management.

In spite of this, state and federal agencies are extremely timid in protecting North Carolina's water resources. Over 200,000 acres of freshwater wetlands were destroyed in coastal North Carolina during the 1970's, a period in which the District Colonel for the U.S. Army Corps of Engineers said that the Corps had been "exceedingly lenient in the application of the law and regulations."



In instances where Carolina law applies to the protection of water resources, the approach of state agencies is to let projects go forward, being permissive while attempting to minimize environmental damage. As Dave Owens of the North Carolina Office of Coastal Management describes their approach in a recent magazine article, "We're not prohibiting development; we're managing it."

This state regulatory philosophy accepts tradeoffs between new development and its possible adverse effect on water resources. In order for it to work, however, the agencies must be able to determine the price, based on an estimate of possible pollutants and their present and future impacts. This type of analysis is not encouraged by present water resource protection laws.

On-site engineering to minimize water resource impacts resulting from land use activities is frequently used to make projects more environmentally acceptable. However, sooner or later many runoff control measures fail due to poor engineering, improper installation, or lack of maintenance.

For years Florida has championed a philosophy of trying to manage the environment to reduce flooding and water quality problems, and to provide adequate supplies of clean drinking water. Now, according to Wayne Voight, Staff Director of the Florida Senate Natural Resources and Conservation Committee, "We have a changing attitude that is much more cautious about replacing natural with man-made (water management) systems."

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Public School Water Resource Education.

Many of the materials prepared for Stream Watch could be adapted for classroom curriculums. Students at many grade levels would benefit from learning about aquatic habitats, water and wastewater management, water cycles in nature, and land uses affecting water quality. High school science clubs could participate by developing and executing water quality studies. Since public education is one of the program's primary goals, an effort should be made to reach the state's public school systems.

Control of Urban Runoff. Runoff from urban areas carries sediment, heavy metals, oils and numerous other pollutants to our streams, creeks and lakes. The control of this pollution is expensive and difficult to implement. Individual homeowners and small businessmen could do a great deal to minimize the runoff pollution from their properties. Stream Watch could be used to launch a statewide campaign to educate citizens about this problem.

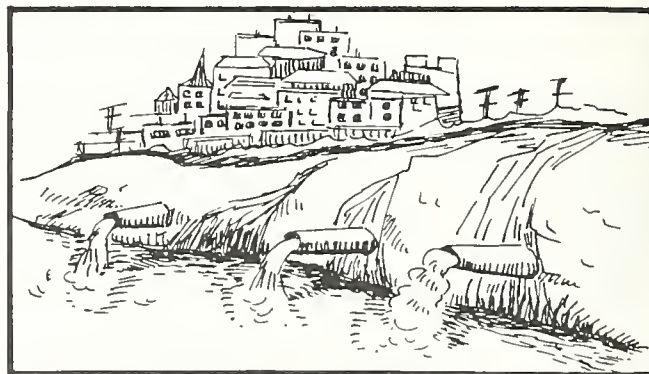
Water Conservation Education. North Carolina is blessed by a rich and plentiful supply of water. However, demands on this supply increase daily and measures should be taken to educate citizens about water conservation. Gerald Meral, Deputy Director of California's Department of Water Resources, describes in "California's Lead in Promoting Water Conservation" (1982) how California used a residential bathroom retrofit project to both increase citizen awareness of water conservation and implement conservation measures. Water conservation kits containing toilet dams and shower restrictors were distributed in southern California neighborhoods. He estimated that over a million toilets were retrofitted and 560,000 showers were adapted. The water savings were estimated to be 24,000 acre-feet of water per year. A similar project could be planned and executed through the Stream Watch network.

Summary and Conclusions

The Stream Watch concept has been rapidly accepted by the citizens of North Carolina. The ideal of resource management through education, participation and cooperation appeals to a broad range of interest groups. The Stream Watch program can build a powerful constituency supporting North Carolina's water resource programs.

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In August of 1983, Governor Bob Graham announced Florida's "Save Our Everglades" program, stating that this natural system should function the same way in the year 2000 as it did in 1900. One component of the program is to remove water control structures and return sheet flow to the Everglades. The South Florida Management District is also considering restoring the channelized Kissimmee River to improve water quality. To the north, the Saint John's Water Management District is spending \$12 million to purchase flood-prone land to avoid constructing flood control structures.



Aggressive action is needed if North Carolina is to avoid the same water resource crises now experienced by Florida and other more populated states. The first step would be for state government to adopt an attitude more farsighted and more selective as to the types of growth recruited and permitted.

The state must identify existing and imminent water resource problems. Critical watersheds and groundwater systems must be identified and protected. And, regulatory and assistance programs have to be instituted to include unregulated land disturbing activities.

"We've reached the point in North Carolina where we can't let everyone do what he or she pleases with our resources," Henri Johnson, attorney for the North Carolina Fisheries Association, said in a recent television interview about the peat mining project. She believes that hard decisions have to be made about how much impact from new growth is acceptable while still protecting water resources.

"With the conversion of freshwater wetlands," Johnson said in a later interview, "we have 24,000 people who depend upon commercial fishing that may lose their way of life. But what is really disturbing is that the same decision-making process that got us in this mess on the coast also applies statewide. People inland are going to have a lot more to worry about than the plight of our coastal fisheries if runoff and chemical pollution is not adequately regulated -- and sometime soon."