

WATER RESOURCES RESEARCH INSTITUTE OF THE UNIVERSITY OF NORTH CAROLINA

Number 157

March 1979

CONTENTS

	<u>Page</u>
Editorial: Soil Erosion Problem Grows	1
NRCO Forms Chowan River Task Force	2
Hearings Set For State Draft Water Quality Management Plan	3
Better Utilization of Groundwater In the Piedmont and Mountain Regions of the Southeast	3
North Carolina Urban Stormwater Planning Workshop March 14	4
Stormwater Expert Featured at Shaw Lecture	4
**Triangle J COG's Monitors 15 Alternative On-Site Wastewater Systems: Part II	4
Natural Resources Colloquium	5
SWRSIC-Not Just Another Acronym	5
EPA Publishes Water Quality Assessment Study	5
Water Conservation and Comprehensive Resources Management	6
Respected Researcher Dies	6
World Bank Makes Biggest Loan Ever For Hydroelectric Project	7
Rural Water Association Meeting March 16-17	7
Water Resource Conditions in North Carolina	7
Positions Available	8
Conferences, Symposia, and Workshops	8
Water Resources Legislation in North Carolina	10
New Publications Received by the Institute	13

* Special Report: <i>Looking To The Future: The Federation in 1990</i>	14
* Presented by WPCF President Martin Lang	14

EDITORIAL

SOIL EROSION PROBLEM GROWS

By James M. Stewart

Strengthening conservation programs is a must if this nation is to maintain its agricultural prominence. Each year this nation supplies its own food and fiber needs and exports around \$25 billion worth of farm products. That production, with existing conservation efforts, is taking a toll on our environment. The cost is seen in increasing erosion especially from marginal soils and hilly terrain.

Severe water erosion is draining topsoil from the nation's land at rates, estimated by conservation officials, at twice the rate that topsoil can replace itself. The problem is so critical that protecting this resource should be one of the nation's top priorities.

Federal and state funds have grown substantially to assist urban areas to reduce stream pollution from point sources. Substantial funding is needed in the rural areas if farmers are to have the assistance essential to keep the soil on the land and to keep sediments, fertilizer and herbicides out of the water.

(continued on page 2)

Proposed funds in last year's U.S. Department of Agriculture funding bill would have directed resources for increased cost sharing to control non-point sources of pollution in rural areas. Senate debate over which department would control the new funds resulted in no new funding. While the discussions continue the erosion problem grows worse. Regardless of the results of the federal debates on this issue there is a need for more state and local financial support for cost sharing, technical assistance, research, and education to control erosion. Achieving water quality through strengthening soil and water conservation efforts is in the public interest.

**NRCD FORMS CHOWAN
RIVER TASK FORCE**

The North Carolina
Department of Natural
Resources and Community
Development has formed

a Task Force to assist in the development of new programs to control pollution in the Chowan River. Initiated by Secretary Lee and Deputy Secretary Jones, the Task Force held its first meeting January 25.

Among the first tasks of the group is to assess knowledge of Chowan problems leading up to a concise presentation to Chowan dischargers about what the State knows about the algal problem.

Members of the group are:

Dr. Neil Grigg
Assistant Secretary for Natural Resources
Department of Natural Resources and
Community Development

Dr. E. Walton Jones
Deputy Secretary
Department of Natural Resources and
Community Development

Mr. A. F. McRorie, Director
Environmental Management
Department of Natural Resources and
Community Development

Mr. David Howells
Water Resources Research Institute
N. C. State University

Dr. Frank Humenik
Extension Biological and
Agricultural Engineering
N. C. State University

Dr. Jay Langfelder
Center for Marine and Coastal Studies
N. C. State University

Dr. Jim Lamb
Environmental Science and
Engineering
UNC-Chapel Hill

Dr. Don Francisco
Environmental Science and
Engineering
UNC-Chapel Hill

Dr. Gus Witherspoon
Botany Department
N. C. State University

Mr. Ralph Heath
U. S. Geological Survey

Mr. Ron Raschke
U. S. Environmental Protection
Agency
Surveillance and Analysis Division
Athens, Georgia

Mr. Don Kennedy
Bass, Nixon, and Kennedy Engineers

Mr. Bill Raney
Attorney General's Office

Mr. Al Peroutka
Division of Environmental
Management
Department of Natural Resources
and Community Development

Mr. Barry Adams
Division of Environmental
Management
Department of Natural Resources and
Community Development

Dr. Jim Gregory
School of Forest Resources
N. C. State University

HEARINGS SET FOR STATE DRAFT WATER QUALITY MANAGE- MENT PLAN

The Public Involvement Unit of the Division of Environmental Management has scheduled the following public hearings to receive comment on the Draft Water

Quality Management or 208 Plan.

March 12, 1979, 7:00 p.m.
Regional Development Institute
East Carolina University
Greenville, NC

March 19, 1979, 7:00 p.m.
University of North Carolina
Carmichael Humanities Lecture Hall
Asheville, NC

March 27, 1979, 7:00 p.m.
County Commissioners Meeting Room
Hall of Justice, 7th Floor
Main Street
Winston-Salem, NC

The hearing in Asheville will also be open for comments on the Water Quality Management Plan prepared by the Land-of-Sky Regional Council. This is an areawide plan which, if adopted, becomes part of the statewide plan.

At each hearing comments will be received on the documents concerning Silviculture, Construction Urban Stormwater, Solid Waste, On-site Waste Disposal, Mining, Point Sources, and Agriculture.

The Agriculture portion of the plan was prepared by the Agricultural Task Force. The chairman of the Soil and Water Conservation Commission will sit as a hearing officer (along with the hearing officer designated by the EMC or the Division director) to receive comments concerning agriculture.

In addition to the public hearings, the following public informational meetings are scheduled:

February 26, 1979, 7:00 p.m.
Cape Fear Technical Institute
Wilmington, NC

February 28, 1979, 7:00 p.m.
Agricultural Extension Building
Lenoir, NC

March 6, 1979, 7:00 p.m.
Region L. Council of Governments Office
Rocky Mount, NC

March 22, 1979, 7:00 p.m.
Education Center
Second Street
Charlotte, NC

BETTER UTILIZATION OF GROUNDWATER IN THE PIEDMONT AND MOUNTAIN REGION OF THE SOUTHEAST*

The history of water supply development in the Piedmont and Mountain Regions of the Southeast reveals a transition from sole dependence on groundwater in

early years to primary dependence on surface waters in the present era. Indeed, groundwater is viewed as a forgotten resource in terms of the consideration now given to its potential for further development for municipal water supplies in these two regions of the Southeast.

Water use is expected to triple in the next 40 years. To meet this need there will have to be serious efforts in conservation and the development of alternative sources. Further surface water development is severely constrained by lack of adequate reservoir sites, inability to protect potential reservoir sites, and a steady loss of storage capacity in existing and future reservoirs through erosion and sedimentation. Because of problems associated with reservoir storage, the development of groundwater supplies and conjunctive use of surface water and groundwater will become increasingly important in the years ahead.

The location of wells for the production of large supplies of groundwater must be given the same degree of consideration given to the selection of dam sites. Too often in the past, municipal supply wells have been located on the basis of such expediencies as existing land ownership rather than the geologic features necessary for high productivity. Failure to apply best available technology is a major cause of the limited success experienced in groundwater development.

To obtain maximum yield in the Piedmont and Mountain Regions, wells must be located near perennial streams at points where geologic formations are most favorable. Water produced by such wells is derived from groundwater storage in valley alluvium, inflow from adjoining uplands, and stream infiltration. Where best technology is applied an average well yield of 150 gallons per minute can be anticipated. A well field of 5 wells would produce 1 million gallons per day and could be easily managed. Development costs are increasingly competitive with surface water. There are many advantages in terms of water quality and treatment costs. Groundwater from properly constructed well systems has distinct advantages over surface water in terms of protection from water-borne disease and hazardous chemicals.

While well fields located in flood plains must be elevated or placed in water proof well houses, they will have minimum impact on other uses of the flood plain.

There are good reasons for groundwater to be seriously considered as a sole or supplemental source of municipal and industrial water supply in the Piedmont and Mountain Regions. To assure that such supplies are developed efficiently, additional information is needed with respect to:

- . hydraulic characteristics of groundwater systems,
- . factors controlling stream infiltration, and
- . most efficient well design.

*Summary of paper by Ralph C. Heath, District Chief, U. S. Geological Survey, Raleigh, NC, at Southeast Conference on Water Conservation and Alternative Water Supplies, November 8-9, 1978.

**NORTH CAROLINA
URBAN STORMWATER
PLANNING WORKSHOP
MARCH 14**

A special workshop for personnel involved in state and local government stormwater management and water quality programs will be held at the Ramada

Inn, Apex on March 14.

The workshop program is as follows:

- 8:30- 9:00 Registration
- 9:00- 9:30 Stormwater Management in North Carolina - Neil S. Grigg, Director Water Resources Research Institute
- 9:30-10:15 National Overview of Stormwater Management - M. B. McPherson, Director of the ASCE Urban Water Resource Research Program
- 10:15-10:45 Break
- 10:45-11:30 State-Local Urban Runoff Program Dean Cunningham, Division of Environmental Management - Harlan Britt, Sedimentation Specialist, Land Quality Section, Division of Land Resources
- 11:30-12:00 Urban Runoff Quality Modeling - Dr. Miguel Medina, Department of Civil Engineering, Duke University
- 12:00- 1:00 Lunch
- 1:00- 2:00 Researching North Carolina Local Government Stormwater Problems - H. Rooney Malcom, Jr., Department of Civil Engineering, North Carolina State University

- 2:00- 3:00 Urban Runoff Control Program - M. B. McPherson
- 3:00- 3:30 Break
- 3:30- 4:30 Panel Discussion-Solving North Carolina Urban Stormwater Problems (Panel composed of all previous speakers)
- 4:30 Adjourn

Cosponsors of the workshop are: Water Resource Research Institute, Division of Environmental Management, Division of Land Resources - Land Quality Section, Triangle J Council of Governments, Department of Civil Engineering, N.C. State University, North Carolina Working Group on Urban Storm Drainage, and Land-of-Sky Council of Governments.

For additional information write the Water Resources Research Institute, 124 Riddick Building, North Carolina State University, Raleigh, NC 27650, or call 919:737-2815.

**STORMWATER EXPERT
FEATURED AT
SHAW LECTURE**

M. B. McPherson, Director of the Urban Water Resources Research Program of the American Society

of Civil Engineers will be the speaker for the Shaw Lecture at 8:00 p.m. on March 13. The Lecture will be held in Conference Room 242, Riddick Building on N.C. State University Campus. Mr. McPherson will discuss national and international research in urban water resources.

The Henry M. Shaw Lecture in Civil Engineering was established in 1966 at North Carolina State University by the family and friends of Mr. Henry Marchand Shaw, Sr., President of North Carolina Products Corporation, in recognition of his contributions to the growth of North Carolina and of his continuing interest in the University's School of Engineering. The purpose of the endowment is to enable the civil engineering department to present an annual lecture in the various areas of civil engineering by a speaker of international stature.

**TRIANGLE J COG'S
MONITORS 15 ALTERNATIVE
ON-SITE WASTEWATER
SYSTEMS: PART II**

Fifteen alternative on-site wastewater systems are being monitored by Triangle J Council of Governments as part of the Individual Wastewater

Project. Triangle J has been conducting the project as the top priority continuing planning activity of its Section 208 Areawide Water Quality Management Program.

These demonstration sites, located at private residences and businesses throughout the six counties in Region J are carefully monitored for water quality, maintenance requirements and overall performance. "We are especially interested in seeing how these systems operate under the hydraulic stress of rainy weather, explains Ed Holland, Environmental Scientist with the project. "Most of the county Health Departments participating in the project would like to have at least twelve months of data before judging the acceptibility of the alternative systems."

Six alternative systems are receiving intensive monitoring for water quality. These sites include 2 Mounds, 1 Recirculating Sand Filter, 1 Individual Spray Irrigation and 2 Low Pressure Pipe Distribution systems.

Routine sampling of the systems measure fecal and total coliform, nitrate, ammonia, Kjeldahl nitrogen, total phosphorus and pH. Samples are collected from influent, effluent (where applicable) and shallow groundwater locations adjacent to the sites.

Local county health departments visit the sites regularly and maintain performance records of the individual systems. Water sampling is conducted through the NC State University Soil Science Department under the direction of Dr. R. L. Uebler and Dr. Bobby Carlile.

These and other alternative systems are described in Triangle J's Task B Report: "Summary of Alternative On-Site Wastewater Treatment and Disposal Methods." The document provides a comprehensive overview of a wide variety of alternatives for on-site treatment and disposal of individual wastewater. Copies may be obtained from Triangle J Council of Governments, P.O. Box 12276, Research Triangle Park, NC 27709, or call 919:549-0551.

NATURAL RESOURCES COLLOQUIUM

A Natural Resources Colloquium is scheduled at North Carolina State University with two

sessions per month thru April. Colloquium topics and dates are as follows:

Currituck Banks-Whether we goest? - March 1

The Chowan-Green Forever? - March 29

Rare II - What does it do? - April 12

Land Use Policy-A Fleeting Fancy? - April 26

All colloquium sessions are held between 1:00 and 2:00 p.m. in room 234 Riddick Building, North Carolina State University. Individuals interested

in any of the scheduled topics are invited to attend,

Dr. David Adams is the coordinator of the program which is sponsored by: Department of Forestry and Zoology, Center for Marine and Coastal Studies, Water Resources Research Institute, and Division of University Studies. For additional details call 919:737-2815.

SWRSIC-NOT JUST ANOTHER ACRONYM

SWRSIC is not just another acronym. This one can be important to you.

The Southern Water Resources Scientific Information Center conducts computerized literature searches in the area of water resources. For a fee of \$25 SWRSIC will tailor a search to your needs. The result is a printout containing full citations and abstracts to literature in your area of interest. Recent search requests have covered such topics as pre-treatment of sea water, weather modification, risk assessment in cost-benefit analysis for water resources projects nitrogen fixation in rivers, land disposal of municipal wastes, biodegradation of crude oil using dispersants, leachate attenuation, and gaming simulation of land and water resources management. Contact Jean M. Porter, SWRSIC, D. H. Hill Library, NCSU for your water resources information needs (919)737-2683.

EPA PUBLISHES WATER QUALITY ASSESSMENT STUDY

A screening technique for assessing the gross effects of land use and other river basin variables

on water quality is described in a report published recently by the U.S. Environmental Protection Agency's Environmental Research Laboratory in Athens, GA. The methodology, which is applied to the Susquehanna River Basin in the report, is potentially applicable to any river basin or study region for which adequate data are available.

The report, "Multiple Regression Modeling Approach for Regional Water Quality Assessment," was written by Dr. David J. Lystrom and coworkers of the U.S. Department of Interior, Geological Survey. Project officer for the study, which was performed under an interagency agreement, was Dr. Ray R. Lassiter, Chief of the Athens Laboratory's Environmental Systems Branch.

The report presents a framework for assessing statistical relationships between water quality and several factors of climate, physiology, and land use. Identified were 17 water quality characteristics representing annual mean concentrations or

calculated annual yields of suspended sediment, dissolved solids, and various chemical species of nitrogen and phosphorus. Using multiple-linear regressions, these water quality characteristics were related to six river basin characteristics.

The models can be used to estimate water quality at specific stream sites or to simulate the generalized effect of land use characteristics on water quality. For example, observed nitrate yields were as much as 20 times greater than the simulated background yields. This increase is the result of chemical fertilizers, animal wastes, and urbanization.

The report (EPA-600/7-78-198) is available from the Environmental Research Laboratory, USEPA, College Station Road, Athens, GA 30605.

WATER CONSERVATION AND COMPREHENSIVE RESOURCES MANAGEMENT

In a recent memorandum from Guy Martin, Assistant Secretary for Land and Water Resources of the

Department of Interior an elaboration was made on the concept of "water conservation and its companion concept of "comprehensive resource management" as used by the Task Force seeking implementation of the President's water policy initiatives. An understanding of the use of these terms in water policy implementation is considered to be critical to understanding the basic thrust of the President's water policy reforms. The following is taken from the second progress report on the implementation of the President's Water Policy.

First, water conservation is just one element of comprehensive resource management as is environmental protection, development of new water supplies and other management practices. With this in mind the President stated:

"Managing our vital water resources depends on a balance of supply, demand, and wise use. Using water more efficiently is often cheaper and less damaging to the environment than developing additional supplies. While increases in supply will still be necessary, these reforms place emphasis on water conservation and make clear that this is now a national priority." (President's Message of June 6, 1978, p. 6)

Thus the policy clearly contemplates the development of water supplies but focuses on conservation in the context of a need to take seriously the demand reduction side of the water management equation. The following definition was adopted for use by the Task Forces:

Action to implement the President's policy on water conservation should consist of proposed changes that will (a) reduce the demand for water; (b) improve efficiency in use and reduce losses and waste; and (c) improve land management practices to conserve water.

A clear contrast is drawn by the policy which distinguishes between the above conservation elements and storage facilities, which are treated elsewhere in the President's policy and in Federal water development programs.

Water conservation is an important element of the President's water policy initiatives. Seven of the 13 initiatives relate totally to water conservation. A portion of the first initiative calls for water conservation to be incorporated into the Principles and Standards, the guidelines which Federal agencies use to plan and evaluate water resources projects and water-related resource management plans. The fourth initiative calls for legislation that would make \$25 million in matching grant funds available to States for water conservation technical assistance.

Martin contrasted water conservation with resource management as follows:

"In many respects, the Presidential intent with regard to water conservation in this policy is not substantially different from that suggested by the President on energy conservation. That is, conservation is a resource management technique which has always been present and has always been discussed and to some extent has always been practiced, but never with the emphasis or priority it deserves.

Water conservation is simply one resource management tool, neglected in the past and now given its proper emphasis; but the President's water policy deals with comprehensive resource management as its central issue.

RESPECTED RESEARCHER DIES

Water professionals around the world mourn the passing of Joe Radziul. He had

followed a dedicated career of water management research unique in the country. He headed the Philadelphia Water Department's Research and Development Division. In that capacity, he was widely known for the many progressive innovations which he conceived or developed.

His innovations included the creation of a network of electronic stations to monitor pollution in the Delaware and Schuylkill Rivers, the linking of these stations by radio wave to U.S. Geological Survey space satellites, the development of laboratory-equipped motor boats for streams surveillance, the organization of automation plans for Philadelphia's water system, the establishment of an engineering computer center, and the development of the first pilot plant by any American community to study new techniques for removing trace organics from drinking water.

Mr. Radziul also represented the Water Department on various technical committees of the Delaware River Basin Commission, the Water Pollution Control Association of Pennsylvania, the American Water Works Association, and other governmental or engineering groups.

"Joseph Radziul was a loyal and outstanding City official, who always worked hard for the best interests of the public," commented Water Commissioner Carmen F. Guarino today. "He was a very able engineer - highly respected by engineering colleagues all over America. His passing is a great loss to the City. We who knew him will miss him very much."

Mr. Radziul began his City service in 1947, and while working for the Water Department he studied engineering at night at Drexel University. He received a B.S. in engineering from Drexel in 1953, winning a gold medal as the top scholar in his class. Later he did graduate studies at Drexel and took technical courses offered by the University of Pennsylvania, the Philadelphia Engineers' Club, and other organizations. He was recognized as an authority on water quality, automation, and electronic controls.

A civil service employee, Mr. Radziul rose through a series of civil engineering positions. He was chief of Research and Development almost from the inception of that unit in 1957.

Shortly before his death, Mr. Radziul received a national award from the 26,000-member Water Pollution Control Federation, honoring him for his "many contributions to the advancement of the water and wastewater fields." He also received an official City of Philadelphia citation and an outstanding-service award from the Water Pollution Control Association of Pennsylvania.

WORLD BANK MAKES BIGGEST LOAN EVER FOR HYDROELECTRIC PROJECT

which ranks as the largest single credit made by the Bank in its 18 years of operations.

Among the loans approved by the Inter-American Development Bank in 1978 was one for \$210 million for hydroelectric project,

The loan was extended to the Entidad Binacional Yacyreta' (EPY), an institution created by a treaty between Argentina and Paraguay, to help build the 2.7 million-kilowatt Yactreta' hydroelectric complex on the Parana' River, located on the border of the two countries. The total cost of the project exceeds \$4.5 billion.

The project will not only increase the region's hydroelectric power but will bring about other development benefits. These include the improvement of navigability along the Parana' River and the irrigation of some 361,650 acres of land in Argentina and Paraguay.

In addition, the project will facilitate development of the area's tourism potential and expansion of fish production, spur construction of new housing for resettled people, and generate direct and indirect employment opportunities. The project will also encourage the construction of a binational integrated development pole in the region.

When the loan was approved, Guillermo Oscar Zuberán, Executive Director for Argentina, as well as his colleague Alternate Executive Director Desiderio Enciso, stressed the importance and historical significance of the project. Mr. Enciso recalled that the first formal instrument between Argentina and Paraguay for the exploitation of the Upper Parana, near the Yacyreta-Apipe island, was signed February 1, 1926, in Washington.

Mr. Enciso said that now 52 years later in Washington the first stage of financing for this complex has materialized—a hydroelectric complex considered to be one of the largest in the world. Mr. Enciso also noted that, with the approval of the loan the Bank can participate in an effective and real manner in the execution of this project—thus perpetuating Simon Bolivar's age old concept and idea of integrating Latin America.

RURAL WATER ASSOCIATION MEETING MARCH 16-17

The North Carolina Rural Water Association will hold its Second Annual Meeting at the

Sheraton-Crabtree in Raleigh on Friday and Saturday March 16 and 17. Sessions will include reports from the National Water Association, the Environmental Protection Agency, Farmers Home Administration, and the State Department of Health Services.

For Additional details contact the N.C. Rural Water Association, PO Box 540, Welcome, NC 27374.

WATER RESOURCE CONDITIONS IN NORTH CAROLINA

Streamflow increased during the month and was well above normal throughout the State. Heavy rains

on the 2nd caused moderate rises on most streams. On the 21st rains from a fast-moving winter storm caused minor flooding along smaller streams. As compared to long-term averages for January, mean-

monthly flows ranged from 1 1/2 times normal in the mountains to 2 1/2 times normal in eastern Piedmont streams.

Groundwater levels continued to rise slowly. Except in areas affected by heavy groundwater withdrawals, levels during the month generally ranged from several inches to several feet above normal.

POSITIONS AVAILABLE

Engineer with background in sanitary and water resources fields to work for the Commonwealth of Virginia. Contact K. C. Das, Director, Division of Special Projects, Piedmont Regional Office, 4010 West Broad Street, P. O. Box 6616 Richmond, Virginia 23230. Telephone: (804)257-1006.

CONFERENCES, SYMPOSIA, AND WORKSHOPS

The 8th National Conference and 1st Exhibition on Municipal Sludge Management--Impact of Industrial

Toxic Materials on POTW Sludge is scheduled for March 19-21, 1979 at the Deauville Hotel in Miami Beach, Florida.

Technical sessions include:

- . Impact of Industrial Pre-treatment Guidelines and RCRA on Control of Heavy Metals and Organics on Sludges
- . Municipal Management of Industrial Pre-treatment residues
- . Characterization of Sludges Containing Industrial Contaminants
- . Design of Municipal-Industrial Source Control
- . Disposal of Industrial Wastewater Sludges
- . Disposal of Industrial Organics on the Land
- . New Data on Transformations of Heavy Metals and Organics in Soil Systems
- . Acceptable Sludge Utilization Methods

For additional information contact: Sludge Management Conference and Exhibition, c/o Information Transfer Inc., 9300 Columbia Blvd., Silver Spring, MD 20910, attention: Beverly Walcoff. Telephone: (301)279-7969.

Short Course on Design of Water Quality Monitoring Networks. The Short Course will develop, in detail, a systematic procedure for designing a water quality monitoring network with the objectives of determining ambient water quality, assessing trends and detecting streams in violation of standards. The network design is developed by delineating the water quality variables to be observed and establishing the criteria used to determine sampling station location, sampling frequency and data analysis in such a manner that representatives and quantitative data are obtained.

The Short Course is directed to persons actively involved with the design, operation and/or management of a water quality monitoring network. The Short Course assumes that attendees have little or no background in statistics.

The course is scheduled for July 23-27, at Colorado State University, Fort Collins, Colorado.

For details contact: Kristine L. Schneider, CSU Research Institute, P.O. Box 342, Fort Collins, CO 80522 USA. Telephone: (303) 491-8450 or (303) 491-8652.

Short Course on Analysis of Water Sheds and River Systems - This Short Course is designed for individuals dealing with the analysis of watersheds and rivers. Practical applications concerning physical processes will be emphasized.

The objectives of the course are:

- . To provide the opportunity to learn techniques oriented to solving practical problems associated with the analysis of watersheds and rivers.
- . To become acquainted with the physical processes governing the response of watersheds and rivers.
- . To enhance the participant's insight of mathematical modeling techniques related to watersheds and river analysis.
- . To demonstrate several levels of integrated methodologies for the analysis of watersheds and rivers.
- . To provide and utilize documented copies of programmable calculator programs.

Two identical sessions are scheduled: Session I: May 28-June 1, 1979 and Session II: June 4-June 8, 1979. The course will be held at Colorado State University, Fort Collins, Colorado, Andrew G. Clark Building.

For more details contact: Mrs. Kris Schneider, CSU Research Institute, P.O. Box 342, Fort Collins, Colorado 80522, USA. Telephone: (303)491-8450 or (303)491-8622

The 8th Annual Short Course on Hierarchical Approach in Water Resources Planning and Management - The short course theme is risk-benefit analysis in a multiobjective framework. This course will be held May 14-18, and is co-sponsored by the International Water Resources Association and the American Geophysical Union, Section of Hydrology.

The purpose of this short course is to present the state-of-the-art in the field of large-scale systems engineering as applied to the planning and management of water and related land resources systems. In particular, to discuss the applications of decomposition and multilevel optimization methodologies to multiobjective functions in water resources, conjunctive use of ground and surface water, water quality management, water and energy interface, risk-benefit analysis, capacity expansion, and recent research results and applications in current literature. Two-evening panel discussion sessions will focus on this year's theme and link systems methodologies to water resource policy decisions.

For short course details contact: Dr. Y. Y. Haimes, Rm. 612C Crawford Building, Case Western Reserve University, Cleveland, Ohio 44106. Telephone: (216)368-4076.

AGU Organizes International Urban Hydrology Symposium - At the Spring annual meeting May 28, the American Geophysical Union (AGU) will host an international symposium on Urban Hydrology under the basic sponsorship of the Urban Hydrology Committee. The symposium has been organized by Murray B. McPherson, Director of the Urban Water Resources Research Program of the American Society of Civil Engineers.

Representative reporting on National Events in stormwater include: Australia, Canada, United Kingdom, USSR, Federal Republic of Germany, Sweden, France, The Netherlands, Poland, India and the USA

Under the International Hydrological Program (IHP) 12 national reports were assembled on Urban Hydrological Modeling and Ketchum research. Urban drainage was featured. These reports were released in the period 1955-1957 and have been published by UNESCO. In this symposium assessments will be presented about what is new, what advances have taken place and what progress has been made in each of the 12 nations.

Third Conference on Water Chlorination: Environmental Impact and Health Effects - Confer-

ence sessions and workshops will include: Chlorination Processes, Practices and Effects of Biofouling Control, Industrial Practices, Health Effects, Chemistry and Chemical Methods, Freshwater and Marine Aquatic Ecosystems, Human and Ecological Effects, and Risk Assessment and Regulations.

Several objectives of this conference are; (1) improve communication between scientists and practitioners in water chlorination fields, (2) present important research and developments that have taken place since the 1977 conference, (3) review current chlorination and industrial practices, (4) learn how and to what extent health and environmental consequences of chlorination are being evaluated, (5) thoroughly discuss and analyze the risks and benefits of chlorination practices and develop an understanding of these and other factors which lead to regulations, and (6) through publication of the proceedings to inform the scientific community and interested public concerning the conference presentations and conclusions.

The Conference is scheduled for October 28-November 2 at the Antlers Hotel, Colorado Springs, Colorado. A formal announcement detailing conference chairmen, sponsors, and sessions will be made soon. Further information concerning the conference program and registration may be obtained from Robert L. Jolley, Oak Ridge National Laboratory, P.O. Box X, Oak Ridge, Tennessee 37830.

Workshop: Wetland and Estuarine Processes - The U.S. Army Corps of Engineers, Waterways Experiment Station, Vicksburg, Mississippi, is sponsoring a workshop on wetland and estuarine processes and their relationship to mathematical water quality modeling. The workshop will be held June 18-20, 1979, in New Orleans, Louisiana.

The objective of the workshop is to assess our present understanding and ability to quantify important wetland and estuarine processes. Topics to be discussed include estuarine circulation, sediment transport processes, and biological and chemical aspects of wetland-estuarine coupling. The ability to model these complex systems mathematically will be the workshop theme with emphasis on water quality.

The workshop will include invited review papers by eminent specialists. Abstracts of papers should be submitted to Peter Hamilton, Science Applications, Inc., 4900 Water's Edge Drive, Suite 255, Raleigh, North Carolina 27606

WATER RESOURCES LEGISLATION IN NORTH CAROLINA

Bills Introduced

Senate

S 19 Dam safety law amendments

"To amend the dam safety law to provide for certain technical amendments and for the clarification of judicial review of administrative decisions involving dam safety." Amends GS 143-215.27(a) to give Dep't of Natural Resources and Community Development option of referring application for repair, alteration or removal of dam to other appropriate state and local agencies for review (now, agency referral mandatory). Rewrites GS 143-215.33 to provide judicial review of orders to be held in accordance with Administrative Procedure Act.

S 38 Amend industrial/pollution bond law
H 213

"Amending Chapter 159C of the General Statutes of North Carolina, as enacted by Chapter 800 of the 1975 Session Laws of North Carolina, as amended, which authorizes counties to create authorities to issue bonds to finance industrial and pollution control projects, to revise the provisions thereof to permit the use of land agreements and sale agreements in addition to lease agreements, to provide that Article 9 of the North Carolina Uniform Commercial Code, which relates to secured transactions, shall apply to transactions under Chapter 159C, and to permit the Secretary of the Department of Commerce to approve a project where the operator thereof pays an average weekly manufacturing wage not less than ten percent above the average weekly manufacturing wage paid in the state." As title indicates. Amends GS 159-3(b) to broaden acceptable financing arrangements by replacing term "lease agreement" with "financing agreement" to allow financing agreements including installment sale and purchase, conditional sales, secured or unsecured loans, and similar contracts. Amends G.S. 159C-11 to delete requirement that county financing authority not operate project and sets forth permissible extent of authority's interest in project (owner, lessor, lessee, conditional or installment vendor, mortgagor, mortgagee, secured party, etc., but authority need not have any ownership or possessory interest in project). Amends G.S. 159C-7(1)(a)(ii) to prohibit Sec'y of Commerce from approving project unless operator pays average weekly manufacturing wage of not less than 10% (now, 20%) above average weekly manufacturing wage paid in state. Confirms validity of all authorities already formed under GS Ch. 159C.

S 85 Flood insurance eligibility

"To amend G.S. 143-215.54 to provide local governments the necessary authority for eligibility for participation in the National Flood Insurance Program." Amends GS 143-215.54 allowing local gov't to issue permits for establishment of certain land uses in floodway where gov't finds authority necessary for participation in National Flood Insurance Program (now, land uses in 143-215.54 established as of right in floodway). Provides that act to be construed to facilitate ability of local gov'ts to participate in program.

S 143 Human Res dept approve water system

"To require that plans for public water supply systems and some sewer systems be approved by the Department of Human Resources rather than the Commission for Health Services." Amends GS 130-161.1(b)(4), 161.1(c), and -165 to transfer authority from Comm'n for Health Services to Dep't of Human Resources for following activities: (1) approval of detailed plans and specifications for all public water supply systems, and (2) approval of waste purification systems where sewage or industrial waste flows or discharges into source from which public drinking water supply taken.

S 194 Environmental comm'n procedures

"To make uniform the review procedures of the Environmental Management Commission in accordance with the Administrative Procedures Act." Amends GS 139-47(b) to require publication of notice of public hearing for preliminary project investigation concerning watershed improvement or drainage projects before approval or disapproval of project under GS 139-47(d) (Environmental Management Comm'n review). Amends GS 139-47(c) to require public hearing be held in county where project of major part thereof located (now, requires hearing in every county in which any part of project lies); requires that public hearing be "informational in nature". Amends various sections of Art. 21 and 21B, G.S. Ch. 143 to conform procedures to Administrative Procedures Act's rulemaking, contested case, and judicial review provisions (including water use permits, Comm'n special orders, and criteria regarding complex sources on air quality).

S 200 Estuarine water dredging permits

"To consolidate under a single administrative process permits for excavation and filling under G.S. 113-229, wetland orders under G.S. 113-230, and permits for development in wetlands and estuarine waters under G.S. 113A-118." Amends GS 113-229 and 113-230 by transferring to Coastal Resources Comm'n all authority now exercised by Marine Fisheries Comm'n concerning dredging and filling in or near estuarine waters, state-owned lakes, or coastal wetlands. Authorizes Coastal Resources Comm'n to establish conditions and procedures for granting permits. Amends GS 113A-118(c) to allow Coastal Resources Comm'n to authorize its agent to issue permits; applicant denied permit has right to appeal to comm'n. Makes conforming changes in GS 113A-122 and GS 143B-286(2)(i).

S 212 Environmental comm'n powers

"To amend Article 21 of Chapter 143 in order to preserve delegation to the state from the United States Environmental Protection Agency of the national pollutant discharge elimination systems governing discharges of wastewater to the waters of the state." Adds new GS 143-213(27) to define "management practice" as any practice designated by Environmental Management Comm'n to reduce or prevent contribution of pollutants to waters in state, including treatment requirements, operating and maintenance procedures, schedules and prohibitions of activities. Amends GS 143-215 to require Environmental Management Comm'n to adopt, modify, etc., management practices in addition to effluent standards and limitations, as necessary to control and abate water pollution; management practices to be promulgated in Comm'n's regulations per GS 143-215.3(a)(1); Comm'n to be guided by considerations set forth in federal law for guidance of federal agencies administering Federal Water Pollution Control Program. Amends GS 143-215.1 to require permit for disposal of sludge from treatment works or for causing pollutant to enter defined managed area of state waters for production of harvestable fresh water, estuarine or marine plants or animals. Amends GS 143-215.1(b) to authorize Comm'n to grant variances: (1) for treatment works discharging to publicly-owned works where construction required for publicly-owned treatment works to achieve limitations under GS 143-215, (2) for facilities installing innovative technology, or (3) based upon factors relating to discharger's equipment if factors shown to be fundamentally different from those considered by EPA in development of effluent limitations and standards. Deletes Comm'n power to delegate to local health dep't power to issue permits for discharge to surface waters of domestic wastes for single family dwellings of 1,000 gallons per day or less. Adds new GS 143-215.3(a)(14) to give Comm'n power to certify and approve requests by publicly-owned treatment works to implement pretreatment program for control of pollutants passing through or interfering with treatment processes; publicly-owned works pretreatment program must include adoption of pretreatment standards, permit, or equally effective system for control of pollutants contributed to works, and ability to effectively enforce compliance program. Amends GS-143-215.6(a)(1) and (2) to increase maximum civil penalty to \$10,000 per day (now, \$5,000) and making same apply to violations of management practices established by Comm'n. Amends GS 143-215.6(a)(3) to require Comm'n also to consider money saved by violator by not making necessary compliance expenditures in determining amount of penalty. Amends GS 143-215.6(b)(1) to increase maximum criminal fine to \$50,000 per day (now, \$15,000 per day with maximum of \$200,000 per 30 day period). Amends GS 143-215.6(c) to allow Comm'n to seek injunction for violation of terms of permits issued under Article.

House

H 175 Amend oil pollution law

"To amend the Oil Pollution Control Act of 1973; G.S. 143-215.75, et seq." Amends Oil Pollution Control Act (GS 143-215.75 et seq.) to bring control of hazardous substances within cited Act. Makes numerous statutory changes to make "hazardous substances" subject to same provisions as "oil". Defines "hazardous substances" as substance, other than oil, designated by Environmental Management Comm'n whose discharge into state waters presents imminent and substantial danger to public health or welfare, or to fish, shellfish, wildlife, or vegetation, and any substance designated by US Environmental Protection Agency as hazardous unless Comm'n objects to additions or deletions on EPA list within 120 days of Federal Register publication. If Comm'n objects, substance not added to state list pending public hearing. Amends GS 143-215.83 excepting discharges "caused solely" by act of God, war, gov't negligence, actions of third parties or public safety officers (now, simply "caused"). Amends GS 143-215.84 and .85 by requiring removal by offending party of prohibited discharges, and notice to Dep't of Natural Resources and Community Development of discharge, if resulting from activities not authorized by Comm'n regulation or permit (now, these requirements apply if activities "in violation of Article"). Amends GS 143-215.88 to require Sec'y of Dep't to make demand for reimbursement payment for state expenses in discharge cleanup upon responsible party if activity not authorized by Comm'n regulation or permit (now, demand made unless discharge exempt pursuant to GS 143-215.83(b)). Rewrites GS 143-215.90 to impose restitution liability upon party discharging oil or other hazardous substances; requires restitution be paid state for costs of reasonable and necessary Comm'n investigations in connection with violation and for restocking, replenishing, and restoring natural resources to condition before damage (now, restitution only for restocking, replenishing and restoring). Party assessed may request Dep't in writing to mitigate damages or to offer administrative hearing pursuant to GS 143-215.4. Estimates of replacement costs of flora and fauna destroyed and costs of restoring natural resources prima facie evidence of actual costs. If damage assessment not paid within 30 days of receipt of notice or Dep't order, Dep't may request Att'y Gen'l to bring suit for damages in Wake Superior Court or county where damage occurred; scope of review pursuant to GS 150A-51. Money recovered from party transferred by Comm'n to appropriate state programs to best mitigate damage incurred. Comm'n may initiate any investigation of damage to natural resources or water quality. Civil penalties apply to party who "unlawfully discharges, or causes to be discharged" (now, "intentionally or negligently discharges") oil or hazardous substances. In setting penalties Comm'n to take into account amounts spent by violator complying with mitigation requirements of GS 143-215.84 and amount of estimated damage attributable to violator.

H 185 Sales tax refund water districts

"To provide for sales and use tax refunds to certain water and sewer districts." Rewrites GS 105-164.14(c) to permit metropolitan water districts and county water and sewer districts (now, counties, incorporated cities, sanitary districts, and metropolitan sewerage districts) to receive refund of sales and use tax paid on direct purchases of tangible personal property. Provides metropolitan water district may apply within six months of ratification for refund of sales and use taxes paid within three years before ratification; if application not within six months, subject to penalties under GS 105-164.14(d).

...Daily Bulletin
The General Assembly of North Carolina
Institute of Government,
University of North Carolina at
Chapel Hill

NEW PUBLICATIONS RECEIVED BY THE INSTITUTE

(Residents of North Carolina may borrow these from the Institute for a two-week period. Where individual copies are desired, readers are encouraged to request copies from the organization issuing the publication. The addresses are provided by the *News* for this purpose.)

Water Resources Planning

"Paying for Pollution - Water Quality and Effluent Charges," 1978, by The Conservation Foundation, 1717 Massachusetts Ave., N.W., Washington, DC 20036. (06C)

"Methods to Effect Cost Reductions in Municipal Water Systems," 9/78, by W. E. Boyet, *et al*, WRII, MSU, Mississippi State, MS 39762, Price - \$2.00. (06C Economics)

"Some Impacts of Safe Drinking Water Standards on Rural Water Systems," 10/78, by L. R. Cheatham, WRII, MSU, Mississippi State, MS 39762, Price - \$3.00. (05F)

"Principles of Water Resources Planning (Phase II)," 11/78, by W. Whipple, Jr., WRII, Rutgers U., New Brunswick, NJ 08903. (06A)

"A Proposed Revision of Kentucky's Water Rights Legislation (No. 114)," by R. C. Ausness, 10/78, WRII, U. of Kentucky, Lexington, KY. (06E)

Water Quality Management

"Computer Model of Two-Dimensional Solute Transport and Dispersion in Groundwater," by L. F. Konikow, *et al*, avail. from USGPO, Washington, DC 20402. (02F)

"Implementation of Federal Water Pollution Control Act - Hearings before the Subcommittee on Investigations and Review of the Committee on Public Works and Transportation, U.S. House of Rep.," 7/11-13/78, by USGPO, Washington, DC 20402. (Leg.)

"Influence of Nitrogen Fertilization on the Quality and Quantity of Streamflow from a Forested Watershed," (No. 115), 10/79, by G. B. Coltharp, *et al*, WRII, U. of Kentucky, Lexington, KY. (05B)

"Summary of Hudson River PCB Study Results," 7/78, by L. Hetling, avail. from NYS Dept. of Env. Conservation, Bureau of Water Research, 50 Wolf Rd., Albany, NY 12233. (05B)

"Development of a New Technique for the Analysis of Pesticides in Water," (No. 116), 10/78, by P. K. Bhagat, *et al*. WRII, U. of Kentucky, Lexington, KY. (05A)

"Estimating Runoff Pollution from Large Urban Areas - The Delaware Estuary," 9/78 by W. Whipple, *et al*, WRII, Rutgers U., New Brunswick, NJ 08903. (05B)

"Implementation Plan to Control Sediment Non-Point Source Pollution from Agricultural Land in North Carolina," 9/78 by USDA, Soil Conservation Service, P. O. Box 27307, Raleigh, NC 27611. (05B)

"Bark as a Medium for Gravity Dewatering of Secondary Sludge from Pulp and Paper Mills," 10/78, by G. R. Lightsey, *et al*, WRII, MSU, Mississippi State, MS 39762, Price - \$1.75. (05D)

"Water Quality Management Plan for Construction (Draft)," 1/79, by Division of Environmental Management, NRCD, P.O. Box 27687, Raleigh, NC 27611. (208)

Water Quantity Management

"Development of a Drainage and Flood Control Management Program for Urbanizing Communities - Part I and II," 9/78, by E. J. Riordan, *et al*, Environmental Resources Center, CSU, Ft. Collins, CO 80523. (04A)

"Urban Runoff Control Planning," (EPA-600/9-78-035), 10/78, by M. B. McPherson, for EPA ORD, Washington, DC 20460. (04A)

SPECIAL

LOOKING TO THE FUTURE: THE FEDERATION IN 1990

*by Martin Lang
President Water Pollution Control Federation*

Editor's Note: This article appeared in the January 1979 issue of the Journal Water Pollution Control Federation and is reprinted by permission of the Journal.

This issue of the *Journal* begins the countdown of the last year of the decade. The seventies have been a turbulent time, marked by great public debates on the environment a historical commitment by the country to improve the quality of our waters with initial federal financing and under federal regulation, and continuing bickering between local governments and federal agencies as federal control followed federal money.

As president of the Federation, it would be easy for me to open the 1979 year by a ringing denunciation of federal ineptitude, citing anew many instances of costly, erroneous decision, vacillating policy, lack of expertise in design, construction, and maintenance, and somewhat elitist condescension toward the operators, scientists, and engineers who have striven to improve our waters long before the creation of the Environmental Protection Agency (EPA). In turn, EPA would counter, as it has before, with instances of errors by some of those who designed, built, or operated some of the existing systems.

Indeed, some readers would relish a further exacerbation of this rancorous dispute, each eager to add a personal anecdote to fuel the controversy.

However, the end of a year is an appropriate time for contemplation, for review, and for looking ahead to the next decade. At our Conference in Anaheim, there were at least a thousand young men and women, eager, knowledgeable, zestful, and diligent, only a few years out of school, who will be among the leaders of the Federation and managers of our water quality mission in the year 2000. At, say, the 1990 Conference they will be properly impatient when some old timer reminisces about the bitter controversies associated with names like Ruckelhaus, Train, Quarles, and yes, Costle and Jorling. It will all be dry, historical dust to be exhumed by the Archives Committee for our hundredth anniversary.

Now, I am not writing as a maundering dotard, generating pious peaceful platitudes in an aura of incipient senility. I am viewing the next decade as a former commissioner who survived many years in a city where fang and claw infighting was not unknown, and I never shrank from a fight for a good cause. I have total recall of the bright, ambitious, and sometimes ruthless young people successive mayors brought on the scene to "turn things around," "make giant leaps forward," and see that "everybody shaped up or shipped out." I certainly did not gain favor when I pointed out that, however bright they were, they would flash across the administrative sky like meteorites and disappear. Instead I addressed myself, in the 1960s, to those people who would be on the scene in the 1980s, and planned our water resources future around them.

In the same way, let us set aside for the moment our proper preoccupation with current controversies and the transient personalities involved, and address ourselves to our younger future leaders and the status of water pollution control and the Federation itself in the year 1990.

The shape of the future began to emerge in the Anaheim Conference, when the Board of Control adopted a constitutional change in language that has both symbolic and substantive importance. As recommended by our Aims and Objectives Committee, the words "water quality" begin to start gently nudging over "water pollution control." This betokens increasing recognition that our essential mission is *not*, I repeat *not*, just treatment of wastewater. The real mission is to preserve and enhance water quality.

Our success or failure will not be measured by percentage removal, sludge captured, effluent quality, or federal and local dollars spent (however comfortable such measurements are to EPA), but only by the response of the receiving waters.

Some protents of this approach are already discernible. The Clean Water Act of 1977, the "mid-course correction" to PL 92-500, provides the possibility of varying degrees of treatment in some coastal waters, based on predicted water quality, rather than a rigidly predetermined degree of treatment. The recent congressional oversight hearings inexorably homed in on the response of the receiving

waters to costly advanced waste treatment (AWT) facilities, and the lack of rational water quality consideration in such decision making. The increasing delegation of program administration from EPA to the states provides for greater input of local knowledge to diverse local situations. Even the Section 208 projects, however rambling and diffuse, inevitably focus on water quality.

At the same time, EPA is belatedly, but properly, concentrating on toxic pollutants, in recognition of the fact that the ultimate assessment of the huge program, that will expend some \$50 billion, will be made in the quality and use of the receiving waters. This shift in emphasis from obsession with simplistic dependence on fixed "percentage of removal" of conventional parameters of pollution may indicate that the 1970s era of federal faddism is ending. Perhaps there will no longer be the "treatment process of the week" that will supersede everything that went before.

Another indication of the future may be inferred from "value engineering." At this time it is intrinsic in design and equipment selection. The concept should go beyond niggling nitpicking of the choice of a pump or gear reducer. A more enlightened leadership will apply value engineering to the entire system and *extend to the value, use, and desired quality of the receiving waters.*

Rational decision making based on known and expected water quality calls for the gathering of data on baseline conditions, the ability to array and analyze chemical, biological, and hydraulic data, the valid quantification of all inputs, and the creation of credible and verified mathematical models. This involves, of course, the identification and quantification of nonpoint sources as well. It is indeed a multidisciplinary enterprise. These talents are already discernible in our membership. For the last decade, the universities have anticipated and recognized the needs for such skills, and the next decade will see their full flowering.

One other dominating issue of 1990 is already at hand. The looming energy shortfall may well compel some form of energy rationing by the end of the decade. The energy crisis has made the public acutely aware of the fact that their *total environment* transcends pure air, pure food, and pure water and also encompasses employment, housing, transportation, recreation, education, and energy. Under stress, the public will be in no mood for 10-year lead times for environmental debates and assessments of energy decisions. This austere stringency will also create a climate for rational and cost-effective decisions on setting and maintaining desired water quality, based on hard and quantified facts, rather than impassioned rhetoric.

One other reality of 1990 is perceptible now. The first wave of new or upgraded facilities, funded under PL 92-500, are on line, the forerunners of some 10,000 new or rehabilitated plants. It is obvious they will run well into the 21st century. It will also be obvious that, if some prudent provisions were incorporated into the design for flexibility in process lines, they will be readily amenable to incorporate constantly improving process technology. There will be vindication for those of us who challenged EPA in the 1970s on the projected useful life of a water pollution control system, and for those whose motives were questioned when they sought to prudently incorporate some additional piping, pumping, or process units to ensure reliability and future process improvement.

Therefore, based on the transitions in policy and practice already perceived, I can make a reasonable prediction for 1990.

By then the rules and regulations that fleshed out PL 92-500 and the Clean Water Act of 1977 will have been subjected to some years of congressional overview, will have undergone the glacial process of needed revision, and, in general, will have become familiar and accepted. The utopian goal of "zero discharge" and "fishable, swimmable" water everywhere will have been superseded by the grim realities of the 1980s. Water quality, in general, will have been dramatically improved, particularly in stream and lake systems yielding potable water.

Most significantly, this will be done by reversion to an engineering and design logic that has been derided by the constantly shifting federal cast of characters who thought there was a bottomless cornucopia of money, manpower, and resources. This logic calls for determining the water quality that is necessary and desired in the receiving waters, full exposition of the initial and continuing costs of maintaining that quality, and devising a system for the *minimum* cost and *minimum* degree of treatment

to reliably achieve the continued quality goal. This logic inexorably leads to a mix of processes and systems, each optimum for the *local* situation, rather than a simplistic fiat for uniform treatment everywhere. This logic also inevitably compels the accumulations of baseline data on receiving waters, however belatedly. At last the public will understand that the payoff of this vast program will be measured, not in the plants, but in the response of the receiving water.

There are changes now apparent in the Federation itself, which give us an insight into its activities in 1990.

At the Anaheim Conference, a "Public Education" Committee was created by the Board of Control to supersede the "Public Relations" Committee. This was not an empty gesture to dispel the "Public Relations" connotation of slick Madison Avenue word manipulation. It was a real response in our obvious inadequacy to effectively convey information to the public at large.

Education is a basic mission of the Federation. The Federation is chartered as a "not for profit, educational institution." We have done well in our internal education, in technical practices, manuals, our publications, safety, and operator training. We, along with EPA, local and state governments, as well as some in the consultant community, have failed in public education. This is clearly epitomized in the proper growing furor over inadequate operation and maintenance. When a community reaches out for federal and state funding, it should be adequately informed as to the full extent of the operating and maintenance obligation for the life of the facility. All too often it is well after the initial euphoria of a ribbon-cutting ceremony that the community belatedly realizes the full extent of the local funding required thereafter. The revelations of operation and maintenance deficiencies have now heightened the public consciousness to the fact that increased budgets and local taxes are inherent in this program, and they are active partners in water quality management, and not passive recipients of federal largesse. Sure, some of us tried to convey the message, but it is obvious we did not succeed. It is obvious, because in many cases, instead of the real analysis of the possible multiple causes of deficient operation and maintenance all problems were simplistically attributed to inept operations.

In considering our chartered obligation to convey factual, objective information to the public we should consider another "communications gap" that should be closed.

This is the serious dichotomy between the zealous, exuberant youth of this country who have newly discovered air, water, and land, and coalesced under the rubric of "environment," who do not fully understand the trade-offs implicit in any action involving the geosphere, and those of us who can more validly style ourselves "environmentalists" by continuing to improve the quality of life by action rather than rhetoric.

Do not underestimate the clout of these organizations by swapping anecdotes about the snail darter or the furbish lousewort.

We can disregard the extremist fringe who want to return to the Stone Age, but our public education mission should offer lines of communication to a large and influential segment of society who should be fully informed as to the scope, cost and mission of water pollution control.

There is already an extraordinary example of an organization, which represents the citizens at large, which is well informed, and which has been keenly objective about the national water pollution control mission; this is the League of Women Voters.

Since the Federation is a broadly based organization, encompassing all who are devoted to protecting and upgrading the nation's waters, the active participation in our membership of all such concerned citizens should be affirmatively pursued.

The initial dialogues toward this end, initiated by Past-Presidents Smith and Engelbrecht, will be continued and amplified. This is simply a rededication to the policy of our Board, adopted in 1974, which states "The public must be made fully aware of the consequences of water pollution and the costs of its control. Only in this way can the public be prepared to sponsor and support water pollution control measures."

In the industrial wastes area, we can safely extrapolate the past decade. By 1990, industry will have gone through the shakedown period on pretreatment, will be reconciled to it (albeit grudgingly), and will long since have passed the cost on to the consumer. They will make great contributions to water pollution control technology under the spur of industrial wastes user charges. They will probably move faster than government laboratories and university research, as they develop their own expertise unencumbered by administrative delays and inadequate budgets.

Within the Federation itself, our publications must meet the needs of our expanding interest. *Deeds and Data*, *Highlights*, special bulletins, and the Monitor and Washington Notebook features of our *Journal* all are part of our response. It is not enough. The scientific and academic community want more space and timelier publications. The Industrial Wastes Committee is pressing for a separate printing of Conference papers in their field. The operators press for more papers on diagnosis and solution of operation problems, in nuts-and-bolts language, stripped of esoteric jargon, but directly relevant to day-by-day system operation. All elements of the Federation are eager for concise and timely summaries of rules and regulations since it now transcends human capability to grasp the turgid logorrhea of the *Federal Register*. Therefore, some change is inevitable in the scope and diversity of our publications.

Based on these present trends involving an informed public, a broad spectrum of membership, effective dissemination of information, and above all, a return to rational decision making, I have an exciting vision of a dynamic Federation in 1990.

There will be a tremendous ferment of innovation in processes, equipment, and management. There will be acceptance of a new generation of credible models with predictive powers for the response of receiving waters. There will be increasing recognition of the roles of biologists, chemists, computer experts, and managers in this multidisciplinary enterprise. All the energies inherent in our membership will be unleashed in a great wave of intellectual enterprise as soon as the country recognizes that a diversity of local administrative and technical approaches can best serve our diverse needs, ranging from intermittent desert streams to vast estuaries. They will be supported by a more sophisticated public, which will no longer be deceived by a phony facade of a "Lake Tahoe" plant as a universal panacea.

When Past-President Engelbrecht called our attention to the fact that "the effluent outfalls and potable water intakes are getting closer," he implied the increasing convergence of the interests involved in wastewater treatment, reuse of effluents, and water supplies. Our broadening interests may well presage that by 1990 we may well be the "Water Quality Federation."

WATER RESOURCES RESEARCH INSTITUTE
OF THE UNIVERSITY OF NORTH CAROLINA
124 RIDDICK BUILDING
N. C. STATE UNIVERSITY
RALEIGH, NORTH CAROLINA 27607

ADDRESS CORRECTION REQUESTED

PRINTED MATTER

NONPROFIT ORG.
U. S. POSTAGE
PAID
RALEIGH, N. C.
PERMIT NO. 549