

NEWS

WATER RESOURCES RESEARCH INSTITUTE

OF THE UNIVERSITY OF NORTH CAROLINA

Number 86

March 1973

CONTENTS

	<u>Page</u>
Editorial - Citizen Suits	1
Questions and Answers - State Water Plan	3
Institute Research Program - FY 1974	4
Workshop on Water Resources Planning	5
Review of Results of Groundwater Studies	6
New Institute Report	7
Recent Legal Opinions	9
Infiltration/Inflow Studies	10
New Federal Proposal on Drinking Water	10
Vacancies at EPA	11
State of Streams and Groundwater	11
State Water Resources Legislation	11
Federal Water Resources Legislation	13
New Publications	14

CITIZEN SUITS

An Editorial
by

David H. Howells
Director, WRRI

Much of the debate on North Carolina House Bill 24 to give private citizen standing to sue environmental agencies to require them to enforce their standards of environmental quality has focused on the allegation of opponents that enactment would flood the courts with suits and bog down the State agencies in litigation. There is no better way to examine this popularly held fear than by looking at the experiences of states which have already adopted such legislation.

A March 18, 1973, report of the Consumer Interests Foundation presents an analysis of post-enactment experiences in Michigan, Connecticut, Florida, Massachusetts, and Minnesota. Officials of these states say that conferring standing to sue upon private citizens has not burdened court calendars. Assistant Attorney General Gregor McGregor of Massachusetts labeled as "myth" the idea that citizen suit provisions would lead to excessive litigation. In Michigan, Attorney General Frank Kelley reported that the Michigan Act conferring standing "provides necessary access

to the courts for both public officials and ordinary citizens on important environmental issues. Since Michigan passed its citizen standing legislation in 1970, there is now a considerable record for examination, and this should be useful as a guide as to what to anticipate in North Carolina.

The Michigan statute goes much farther than the North Carolina bill in that it also authorizes any person to bring suit against private entities as well as public agencies for declaratory or equitable relief to protect "air, water and other natural resources and the public trust therein from pollution, impairment or destruction." Thus, if the allegation of "court clogging" had any merit, it would certainly have been demonstrated in Michigan.

The experience in Michigan has been well documented by Joseph L. Sax in Michigan Law Review of May 1972 and a supplemental report of February 10, 1973.

In the 28 months since the Michigan Act became effective, 51 cases have been initiated (about 2 per month). Some cite the Act as the major cause of action and others add it as a count to traditional legal theories. Suits have been widely spread throughout the state, and there has been no appreciable change in frequency.

Public agencies continue to be active users of the Michigan Act--in fact, government entities have been plaintiffs in one-third of the cases. They continue to be defendants in about half the cases. A county health department has been the most active user (seven suits), and the State Attorney General has instituted three cases. Environmental organizations have not been frequent users of the Act. The speed with which cases have been handled "continues to be quite good," with twenty-four completed. Professor Sax interprets the modest number of cases as neither cause for joy or for gloom. It implies, he says, that both the proponents and opponents were wrong. The statute is not as easily accessible a tool as its supporters had hoped or its opponents had feared.

Sax concluded the Act has demonstrated that citizen participation is not an empty slogan. He emphasized several important points:

1. Government and industry are highly inertial, but when prodded from without, they are quite capable of responding to pressures for reform.
2. Regulatory agencies are more often victims than villains, and well-placed lawsuits naming them as defendants can liberate them from unwarranted political pressures.
3. Experts, however well intentioned, do not have all the answers. Far more than is generally believed, the application of well-informed common sense is the vital ingredient in resolving environmental controversies.

Responsible reaction by public agencies to state laws authorizing private citizens to initiate or participate in environmental proceedings is eloquently stated by Ralph A. MacMullen, Director, Michigan Department of Natural Resources, who said:

"It is true that the Natural Resources Commission, upon my recommendation, approved construction. . . . It is likewise true that suit has been brought under the Environmental Protection Act by persons who disagree with that decision. The Act--one of the landmark pieces of environmental legislation in the nation--was passed for precisely that reason; to allow dissenting citizens an opportunity to register their dissents in court. Even though we have been made the defendants in this suit, we welcome it as an expression of public interest in the environment, and another step toward redefining the law so that we can better interpret the wishes of the people."

HOW MUCH DO YOU KNOW ABOUT THE STATE WATER PLAN?

Starting with this issue, the News will run a regular feature on the State Water Plan aimed at increasing reader understanding of this important sector of the State planning process. Readers should address questions to: Editor, News, WRRRI, 124 Riddick Building, NCSU, Raleigh, N. C. 27607. These will be referred to the OWAR - DNER Division of Planning for answers. Questions and answers will be published in the ensuing issue of the News. Anonymity will be preserved.

Question: What is the North Carolina Water Plan?

Answer: A comprehensive series of reports covering every major topic related to man's use or impact on water resources in the State. The Plan will serve as a guide in the conservation, protection and wise use of these resources, and hopefully, will help resolve conflicts arising from the many demands placed upon these resources. The planning is being done on a continuing basis by the State Office of Water and Air Resources. The development of alternate solutions for both short (0-20 year period) and the long range (20-50 year period) are to be presented. Some of the topics included in the plan are as follows:

Population and Economy
(Existing and Projected)
Water Supply
Hydrologic Information
Water Quality
(Including Waste Treatment
and Disposal)
Flood Control
Fish and Wildlife
Recreation
Environmental Preservation
and Enhancement

Land Use
(Including Flood Plain
Management)
Natural, Historical and
Archeological Preservation
Mineral Resources
Electric Power
Transportation
(Including Navigation)
Quality of Life
Aesthetics

INSTITUTE RESEARCH PROGRAM FOR FY 1973-1974

The Office of Water Resources Research, U. S. Department of the Interior, has approved five new matching grants for the North Carolina Water Resources Research Institute for FY 1973-1974 totaling \$129,294. These, coupled with the OWRR annual allotment of \$100,000 and matching State appropriations, will permit the Institute to sponsor the following projects during the coming year:

WATER RESOURCES DATA

1. Use of Multispectral Photography in Water Resources Planning and Management in North Carolina
C. W. Welby, Dept. of Geosciences, NCSU
2. Extension of Data Base of the Hydrologic Information Storage and Retrieval System
E. H. Wiser, Dept. of Bio & Ag Engr., NCSU
3. Southern Water Resources Scientific Information System
W. C. Lowe, F. E. McJunkin, and S. Rose,
D. H. Hill Library and WRRI, NCSU

WATER RESOURCES PLANNING

Techniques of Planning

4. Regional Simulation of Streamflow Data
E. H. Wiser, Dept. of Bio & Ag Engr., NCSU

Evaluation Process

5. Impact of Thermal Power Plants on Water Quantity Planning
F. E. McJunkin, Dept. of Env. Sci. & Engr., UNC-CH

Water Demand

6. Agricultural Water Demand in North Carolina
R. E. Sneed and R. S. Sowell, Dept. of Bio & Ag Engr., NCSU
7. Water Demand Forecasting for State Planning (Municipal and Industrial)
D. T. Lauria, Dept. of Env. Sci. & Engr., UNC-CH

Environmental Impact of Water Development

8. Effects of Stream Channelization and Drainage on Fish and Wildlife
G. B. Pardue, Dept. of Zoology, NCSU
9. Effects of Impoundments on Mosquito Production on High Salt Marshes in North Carolina
K. L. Knight, Dept. of Entomology, NCSU

WATER QUALITY

Sources and Fate of Pollutants

10. Pilot Studies on Fate of Selected Contaminants in Public Water Supplies
R. F. Cole and M. Shuman, Dept. Env. Sci. & Engr., UNC-CH
11. Role of Sewage Effluent and Sludge in the Introduction of Mercury into Marine and Agricultural Systems
R. T. Barber, Duke U. Marine Lab, Beaufort, N. C.

12. Contribution of Fertilizers to the Pollution of Waters in the North Carolina Coastal Plain
J. W. Gilliam and S. B. Weed, Dept. of Soil Science, NCSU

Effects of Pollutants

13. Phosphorus Cycling in Lakes
C. R. O'Melia, Dept. of Env. Sci. & Engr., UNC-CH
14. Availability of Aluminum Phosphate from Alum-Treated Wastewaters for Algal Growth
D. E. Francisco, C. M. Weiss, and C. R. O'Melia, Dept. of Env. Sci. and Engr., UNC-CH

Monitoring

15. Strategies for Water Quality Monitoring
J. K. Sherwani, Dept. of Env. Sci. & Engr., UNC-CH, and
D. H. Moreau, Depts. of City & Reg. Plan. and Env. Sci. & Engr., UNC-CH
16. Development of an Improved System for Monitoring Pesticides and Heavy Metals in North Carolina
F. K. Pfaender and M. S. Shuman, Dept. of Env. Sci. & Engr., UNC-CH

Municipal and Industrial Water
and Wastewater Management

17. Evaluation and Criteria for Use of Soil Systems for Disposal of Industrial and Municipal Effluents
B. L. Carlile, Dept. of Soil Science, NCSU
18. Economic Analysis of Land-Intensive Wastewater Systems
G. A. Carlson, Dept. of Economics, NCSU
19. Use of Waste Heat for Soil Warming in the Southeast
R. W. Skaggs and D. C. Sanders, Depts. of Bio & Ag Engr. and Hort. Sci., NCSU

Agricultural Water and Wastewater Management

20. Overland Flow Poultry Manure Treatment System
M. R. Overcash and F. J. Humenik, Dept. of Bio & Ag Engr., NCSU

Water Quality Control

21. Water Quality Management for North Carolina Streams
J. A. Seagraves, Dept. of Economics, NCSU

Ten additional projects have been selected for funding to the extent that supplemental funds become available. Projects to be sponsored from this group will be announced at a later date.

WATER RESOURCES PLANNING WORKSHOP

Individuals engaged in water resource planning at all levels of government in North Carolina will participate in a Water Resources Planning Workshop on April 4 at the North Carolina State University Faculty Club. The purpose of the workshop is to provide a working knowledge of new concepts, methods, and techniques developed from recent research which can be incorporated in water resource planning.

The program for the Water Resource Planning Workshop is as follows:

9:00 a.m. Registration and Coffee

9:30 a.m. Call to Order Col. Tom Harton
Office of Water and Air Resources

Overview Mr. Pearson Stewart
Triangle J Council of Government

"Planning of Regional Water Resource Systems
for Urban Needs" Dr. David H. Moreau
UNC-CH

"Regional Development of Public Water Supply
Systems" Dr. Daniel A. Okun
UNC-CH

"Water Demand Forecasting for State Level
Planning" Dr. Donald T. Lauria
UNC-CH

12:30 p.m. Lunch

"Current Concepts of State-Regional-Local
Planning Organizations" Professor Philip P. Green, Jr.
Institute of Government
UNC-CH

2:00 p.m. Reconvene Mr. John Wray
Office of Water and Air Resources

"Hydrological Information Storage and
Retrieval System" Dr. Edward H. Wiser
NCSU

"Agricultural Water Needs in North Carolina"
..... Drs. Ronald E. Sneed and R. S. Sowell
NCSU

Summary Professor Eugene McJunkin
Associate Director, WRRI

4:00 p.m. Adjourn

Individuals with interest in water resource planning who would like to attend the workshop should contact Dr. James M. Stewart, Assistant Director for Research Application, 124 Riddick Building, Water Resources Research Institute, North Carolina State University, Raleigh, N. C. 27607, Telephone: (919) 737-2815.

REVIEW OF RESULTS OF GROUNDWATER STUDIES

A review of two important studies relating to groundwater simulation models and changes in groundwater levels and movement is scheduled for May 2 at 9:30 a.m. in the Board Room of the Office of Water and Air Resources. Dr. Jabbar Sherwani of the University of North Carolina will review the development and use of simulation models for monitoring groundwater conditions in the Castle Hayne aquifer. Dr. Sherwani will

also discuss the application of models to various field problems. Mr. Oliver Cosner of the U. S. Geological Survey will review the findings of his study of the Franklin, Virginia, area. Individuals interested in either of these projects are invited to attend. Adequate time for questions and discussion will be provided.

NEW INSTITUTE REPORT

Report No. 80

Water Quality Changes in an Impoundment
As A Consequence of Artificial Destratification
by

Dr. Charles M. Weiss and Benjamin W. Breedlove
Department of Environmental Sciences and Engineering
School of Public Health
University of North Carolina
at Chapel Hill

The authorized development of New Hope Reservoir as a flood control impoundment in the Cape Fear Basin initiated a series of collateral studies principally concerned with the water quality of New Hope Lake. That the quality of the waters to be impounded might be below acceptable standards for intended uses other than flood control followed on extensive stream sampling of the New Hope and Lower Haw Rivers which will be the principal flow into the impounded lake.

The idea that the water quality of New Hope Lake might be managed within the impounded area by techniques that prevent or breakup normal seasonal stratification was proposed. To establish the validity of the idea and the direction of quality change, the destratification project in University Lake, a headwater impoundment on one of the tributaries of New Hope River, was initiated in 1969.

Conclusions

1. In spite of the high summer temperatures of central North Carolina, the 3/4 h.p. installation with five airlift hoses in the summer of 1971 appeared to maintain a systematic destratification of University Lake.
2. Although most of the water chemistry changes were of comparatively small nature in terms of magnitude of change, they appear to have created new ecological conditions which resulted in major shifts in plankton characteristics in both numbers and species.
3. Changes at other points in the food web (benthic organisms and periphyton) were also created by destratification although in the relatively short period of time--only two years--the net effect at the upper end of the food pyramid at the fishery level was not appreciably discernable.
4. The destratification procedure appeared to be in the process of creating a more homogeneous body of water in terms of its suitability for use as a water supply reservoir. However, in this process it produced an increase in chlorine demand. This increase resulted from the overall change in quantity of organic materials distributed throughout the lake. Whether this would have continued after several more years of destratification could not be answered within the comparatively short period of investigation.

Recommendations

1. The successful demonstration of the nature and order of magnitude of change in water quality parameters, both physical, chemical and biological, in University Lake suggests various levels of applicability to other impounded waters in North Carolina.
2. The potential for use of such techniques as artificial destratification for maintaining water of higher quality in New Hope Lake is particularly suggested by the nature of change in the species composition of the phytoplankton populations.
3. Prior to making a final decision as to whether such installations should be developed for New Hope Lake, it is recommended that New Hope Lake be allowed to fill and stabilize in order to establish circulation patterns and other hydraulic features peculiar to the New Hope impoundment. This information would be essential for proper location of the destratification installation.

NOTICE - AVAILABILITY OF CORPS OF ENGINEERS REPORTS ON LAND DISPOSAL

The January issue of the Institute News (p. 5) carried announcements of two recent reports by the Corps of Engineers on land disposal of wastes. While the mailing addresses for these reports had been given in the "New Publications Received" section of an earlier issue, they were inadvertently omitted with the announcement. As a result, the Wilmington District of the Corps of Engineers has been inundated with requests for the reports which they cannot fill. While it is a compliment to the News that the announcement would produce "200 requests from all over the U. S.," it is small solace to the Wilmington District.

Please address requests for copies of these reports as follows:

"Assessment of the Effectiveness and Effects of Land Disposal Methodologies of Wastewater Management" (Wastewater Mgt. Report 72-1)

Available:

Attention: Uwash
HQDA, DAEN-CWP-U
4H028 Forrestal Building
Washington, D. C. 20314

"Wastewater Management by Disposal on the Land" (SR 171)

Available:

Cold Regions Research and Engineering Lab.
Corps of Engineers
Hanover, New Hampshire 03591 Price: \$2

RECENT LEGAL OPINIONS OF NOTE

NEPA-TVA-TELLICO DAM CONSTRUCTION

TVA's continued construction of Tellico Dam constitutes ongoing federal activity that requires preparation of an NEPA environmental impact statement since it is a major federal action significantly affecting the environment even though planning of the dam was completed and construction begun before effective date of the Act.

— Env. Reporter, Decisions No. 27,
Jan. 19, 1973.

WILDERNESS AREA - MINERAL EXPLORATION

Wilderness Act of 1964's establishment of Boundary Waters Canoe Area in Superior National Forest as roadless national wilderness area warrants federal district court injunction barring USDA from permitting any private mineral activities in area, since any mineral exploration would destroy wilderness area.

— Env. Reporter, Decisions No. 27,
Jan. 19, 1973.

NEPA-AEC-ENVIRONMENTAL REVIEW

AEC issuance of operating permits for two Minn. nuclear generating plants requires preparation of NEPA environmental impact statement even though construction permits were issued and construction began before effective date of Act.

— Env. Reporter, Decisions No. 27,
Jan. 19, 1973.

NEPA-FLOOD CONTROL PROJECT

Corps of Engineers environmental impact statement that otherwise meets requirements of NEPA but omits data upon which project's cost-benefit analysis was based satisfies the National Environmental Policy Act.

— Env. Reporter, Decisions No. 28,
Jan. 26, 1973.

NEPA-RIVER CHANNEL PROJECT

Corps of Engineers river channel enlargement project's environmental impact statement that lacks adequate discussion of project alternatives, fails to reflect views of interested state agencies and fails to adequately consider project's effect on such unquantifiable values as wildlife and water quality does not satisfy NEPA.

— Env. Reporter, Decisions No. 30,
Feb. 16, 1973.

NEPA-SUBSTANTIVE REVIEW

Federal court reviewing Corps of Engineers' decision to construct North Carolina dam must consider whether Corps arbitrarily and capriciously violated substantive policies of NEPA as well as whether it complied with Act's procedural requirements.

— Env. Reporter, Decisions No. 31,
Feb. 23, 1973

INFILTRATION/INFLOW STUDIES SEMINAR

The Environmental Protection Agency will sponsor a one-day seminar on Infiltration/Inflow Studies on April 10 at the Atlanta Cabana Motor Hotel, Peachtree at 7th Street, Atlanta, Georgia.

The seminar is being conducted by the Environmental Protection Agency Technology Transfer Program. Participation is offered to Federal and State pollution control officials, consulting engineers, and other professionals concerned with pollution control and abatement.

The seminar will concentrate on the Environmental Protection Agency Regulations and Guidelines addressing infiltration/inflow and the procedures necessary to properly conduct an infiltration/inflow survey and analysis.

Presentations will be made by persons eminent in the area of interest and emphasis will be placed on procedures and controls used today.

The seminar will be limited to 200 attendees. There will be no registration fee. Reservations will be made on a first-come, first-served basis. If interested, you are urged to respond promptly to:

Mr. Asa B. Foster, Jr., P.E.
Chairman, Region IV
Technology Transfer Program, EPA
1421 Peachtree Street, N.E.
Atlanta, Georgia

Information on the program can be obtained from the Institute by calling Mrs. McClung, Institute Secretary, 737-2815.

STATES TO HAVE STRONG ROLE IN ADMINISTRATION BILL ON DRINKING WATER STANDARDS

The Environmental Protection Agency would establish national primary drinking water standards and set reporting and monitoring requirements under the Administration's proposed bill H.R. 5368. Enforcement would be a state responsibility. EPA would be responsible for monitoring the activities of the states and public water supplies to determine whether enforcement programs are satisfactory. More comprehensive legislation (H.R. 1059) has been introduced by Congressman Paul Rogers of

Florida. This would authorize a stronger federal role than proposed by the Administration. This latter bill has the support of the American Waterworks Association.

VACANCIES IN EPA

Environmental Health Letter of March 1, 1973, reports 500 new vacancies in the Environmental Protection Agency with the lifting of the hiring freeze on January 28. Most of the vacancies are in the regional offices. Nationally, EPA expects to establish 800 to 1000 new jobs. Those interested in positions should contact EPA, Personnel Office, Washington, D. C. 20460

STATUS OF STREAMS AND GROUNDWATER IN NORTH CAROLINA

Widespread flooding occurred on many streams of the Piedmont and southern Coastal Plains in February. The floods occurring on February 1 and 2 caused damages in several cities including Raleigh, Lumberton, Chapel Hill, Charlotte, Durham, Winston-Salem, and Fayetteville.

Recharge from snowmelt and general rains caused rising water levels in most wells throughout the State.

— U. S. Geological Survey

WATER RESOURCES LEGISLATION IN THE NORTH CAROLINA LEGISLATURE

Bills Introduced

Senate

S. 314 N. C. Trails System Act

H. 436 "To create a scenic and recreation trails system and to provide for the designation, administration, regulation, and acquisition of scenic trails and trail rights-of-way." Adds new Art. 4 to GS Ch. 113A as title indicates. Provides system of scenic and recreation trails composed of following:
(1) State scenic trails - extended trails located to provide maximum potential for enjoyment of natural and historical areas; chiefly limited to foot traffic (but horses and bicycles permitted on some segments).
(2) State recreation trails - to provide variety of outdoor recreation uses including, for example, bicycle trails, horse trails, historic trails.
(3) Connecting or side trails - to provide additional points of access to recreation or scenic trails.

S. 354 Appalachian Trails Act

H. 460 "To create a North Carolina Appalachian Trail System and to provide for the designation, acquisition, administration, and regulation of recreation, scenic and connecting or side trails and trail rights-of-way." Institutes NC Appalachian Trail System composed of Appalachian Trail lying in counties of Avery, Mitchell, Yancey, Madison, Haywood, Swain, Graham, Macon, and Clay, as defined in Federal Register of National Trails Act, and connecting

or side trails. Coordinates Act with National Trails System Act (PL 90-543) and provides for acquisition of right-of-way and associated tracts including use of eminent domain power as needed to provide suitable environment for Trail.

House

H. 519 Counties regulate oceans

"Authorizing counties to regulate activities in the Atlantic Ocean."
Amends GS 153-9 (powers of county comm'rs) to authorize comm'rs to exercise police power over Atlantic Ocean up to distance of one-half mile from high water line, in area adjacent to county and outside extraterritorial jurisdiction of any incorporated city. Provides that authority granted not intended to prohibit entirely such activities as surfing, sport fishing, etc. and not intended to regulate commercial fishing.

H. 520 Cities regulate ocean

"Authorizing the cities to regulate activities in the Atlantic Ocean."
Adds new GS 160A-176.1 authorizing cities to exercise police power over Atlantic Ocean up to distance of one-half mile from high water line. Provides that authority granted not intended to prohibit entirely such activities as surfing, sport fishing, etc. and not intended to regulate commercial fishing.

H. 524 Land and water conservation fund

"To establish a fund to assist local units of government in the acquisition of lands for parks, recreation areas, scenic areas, green belts, and other purposes." Amends GS Ch. 100 to add new article establishing Land and Water Conservation Fund in Dept. of Natural and Economic Resources. Authorizes Sec'y of N&ER to make grants to local gov'ts to be used for acquisition of lands for parks, scenic areas, green belts, streams and other water courses, etc. and for establishing and enlarging such areas. Fund to consist of state money and other money made available to state. Grants may be made for up to 50% of project costs exclusive of administration and maintenance costs. Grants to be made to governing bodies upon assurance that local share is available. Requires governing body to pass resolution binding itself to retain title in perpetuity to property acquired with grant funds, to manage property in accordance with accepted conservation and recreation principles, and to devote property to use of general public. Authorizes Sec'y of N&ER to adopt rules and regulations to implement act and to establish eligibility and priority criteria. Provides that if local unit fails to complete project or uses funds for other purposes, governing body jointly, severally, and individually liable to state for amount misspent; Sec'y may sue for recovery. Effective Oct. 1, 1973.

H. 525 Amend Clean Water Bond Act

"To amend Chapter 909 of the 1971 Session Laws, in order to make clarifying and technical amendments to facilitate and expedite the award of state grants to units of government for construction and improvement of wastewater treatment works, wastewater collection systems and water supply systems." Amends Sec. 7(c)(1) of Ch. 909, SL 1971 to provide that \$50 million of funds allocated to Pollution Control Account to be used only as grants to pay portion of nonfederal share of constructing wastewater treatment works projects qualifying for federal grants. Amend Sec. 8(4) to require applicant to agree, by resolution, to establish fee schedule producing adequate funds for operation, maintenance, and administration of project.

Rewrites Sec. 9 relating to grant application, environmental impact statement, notice of application, hearing on application. Amends Sec. 10(a) on determination of priorities. Adds new Sec. 10.1 providing for withdrawal of grant commitment if applicant fails, within one year after accepting grant, to arrange for financing of project or to award contract for project construction. Makes technical amendments to various sections. Effective July 1, 1973.

Committee Substitutions

H. 24 Environment-standing to sue

Committee substitute adopted in House 2/16/73 makes minor definitional changes and requires plaintiff in suit under act to be NC resident and states may sue to require State environmental protection agency to enforce "standards applicable to or adopted by it" for environmental protection (now, to enforce "its own standards"). Declares nothing in act to be construed in derogation of existing rights or remedies. Changes effective date from ratification to September 1, 1973.

H. 24 Environment-standing to sue (Committee substitute adopted in House 2/16/73)

Amendments adopted in House 2/19/73 make technical change and provide that the 90 days' notice to agency required as a condition to bringing suit must be in writing and given by registered mail.

WATER RESOURCES LEGISLATION IN THE CONGRESS

Bills Introduced

Senate

- S. 841 To implement the International Convention on Civil Liability for Oil Pollution Damage and the International Convention on the Establishment of an International Fund for Compensation for Oil Pollution Damage.
- S. 923 To provide for the cooperation between the Federal Government and the States with respect to environmental regulations for mining operations.
- S. 924 To establish a national policy encouraging States to develop and implement land use programs.
- S. 946 To authorize Secretary of Interior to enter into contracts with, or make grants to, the several States and other entities to assist them in carrying out demonstration projects involving the reclaiming of lands which have been strip mined.
- S. 1010 To amend the Wilderness Act to preserve the unique and irreplaceable ecological values of wilderness areas by providing for the termination of the application of mining and mineral prospecting activities in such areas.
- S. 1081 To authorize the Secretary of Interior to grant rights-of-way across Federal lands where the use of such rights-of-way is in the public interest and the applicant for the right-of-way demonstrates the financial and technical capability to use the right-of-way in a manner which will protect the environment.

House

- H.R. 4932 To amend the Act of August 3, 1968, relating to the Nation's estuaries
H.R. 4933 and their natural resources, to establish a national policy with respect
to the Nation's beach resources.
- H.R. 4997 To promote commerce and amend the Federal Power Act to establish a
Federal power research development program to increase efficiencies of
electric energy production and utilization, reduce environmental impacts,
develop new sources of clean energy.

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 organizations issuing the publication. The addresses are provided by the News for this purpose.)

Abbreviations used throughout as follows:

EPA	- Env. Protection Agency	USDC	- U. S. Dept. of Commerce
NCDNER	- N. C. Dept. Natural & Econ. Res.	USDI	- U. S. Dept. of the Interior
NERC	- Nat'l Envr. Res. Cent. (EPA)	USGPO	- U. S. Gov. Printing Office
NTIS	- Nat'l Tech. Information Service	WPC	- Water Pollution Control
NWC	- Nat'l Water Commission	WQS	- Water Quality Standards
OWAR	- Off. of Water & Air Res. (NCDNER)	WRC	- Water Research Center
OWP	- Office of Water Programs	WRRI	- Water Resources Res. Institut.
OWRR	- Office of Water Resources Res.	WRSIC	- Water Res. Sci. Infor. Center

Water Resources Planning

Water Cycle - Aquatic Ecosystems

"Studies on Benthic Nematode Ecology in a Small Freshwater Pond," (WRRI Bul. #8),
by T. W. Merritt, Jr., et al, Ala. WRRI, Auburn Univ., Auburn, Ala. 36830,
Feb. 1973.

"Washout Processes in Lake Systems," by J. I. Frea, et al, The Ohio St. Univer.,
Research Found., 1314 Kinnear Road, Columbus, Ohio 43212, Oct. 1972.

Techniques of Planning

"A Selected Annotated Bibliography on the Analysis of Water Resource Systems,"
Third Vol. (WRSIC 72-218), WRSIC, OWRR, USDI, Wash., DC 20240, Dec. 1972.

"The Protection of Water Resources as a Basis for Planning in Developing Areas -
The Christina Basin," by WRC, Univ. of Delaware, Newark, Del. 19711.

"1972 OBERS Projections - Regional Economic Activity in the U. S."

Vol. 1 - Concepts, Methodology, and Summary Data

Vol. 2 - BEA Economic Areas

Vol. 3 - Water Resources Regions, 1-8

Vol. 4 - Water Resources Regions, 9-20

Vol. 5 - States

U. S. Water Resources Council, 2120 L Street NW, Wash., DC 20037, Sept. 1972,
Price: \$15.50 per 5-vol. set.

"Planning and Evaluation of Multiple Purpose Water Resource Projects in a Multi-objective Environment: An Overview and Post-Audit Analyses," ed. by S. Davenport, INTASA, prepared for OWRR, USDI, Wash., DC 20240, Dec. 1972.

"The Upper Bear Creek Experimental Project 1962 to 1972," TVA, Div. of Water Control Planning, Hydraulic Data Branch, Knoxville, Tennessee 37902, Jan. 1973.

"Systematic Development of Methodologies in Planning Urban Water Resources for Medium Size Communities - Expectation of Life in Indiana, 1950-1970," (Rep. No. 29), by E. R. Cooper, et al, WRRRC, Purdue U., Lafayette, Ind. 47907, Jan. 1973.

River Basin Reports

"A Design for Tomorrow," Souris-Red Rainy River Basins Comm., Professional Cen., Holiday Mall, Moorhead, Minn. 56560.

Water Law and Institutions

"An Analysis of Attitudes and Opinions of St. Joe River Basin Landowners Towards Wild and Scenic Rivers," (Scenic Riv. Study Rpt. No. 2), by K. A. Christophersen, WRRRI, Univ. of Idaho, Moscow, Idaho 83843, Dec. 1972.

"The Impact of Institutional and Political Factors on Water Management in the Upper Wabash Basin," (Tech. Rep. No. 35), by M. C. Quinn, WRRRC, Purdue U., Lafayette, Ind. 47907, Jan. 1973.

"The Participatory Role of Citizen Advisory Groups in New England Water Resources Planning: A Preliminary Study," (Rep. FY-73-1), by M. O. Ertel, WRRRC, Univ. of Mass., Amherst, Mass. 01002, June 1972.

"Public Response to Planned Environmental Change: A Study of Citizen Views and Actions on the Proposed Ames Reservoir," by G. Bultena, et al, (Soc. Rpt. 106), Dept. of Soc. & Anthro., Iowa St. Univer., Ames, Iowa 50010, Jan. 1973.

"Water Resources Research Coordination in New England," by R. W. Hardy, R. I. WRC, Univ. of R. I., Kingston, R. I. 02881, Jan. 1973.

Environmental Impact

"Ecologic Simulation for Aquatic Environments," by C. W. Chen, et al, Wat. Res. Engineers, Inc., Walnut Creek, Cal. for OWRR, USDI, Dec. 1972.

"North Carolina Environmental Policy Act," by Gov. R. W. Scott, avail. from Librarian, State Planning Division, N. C. Dept. of Admin., Raleigh, N. C. 27603, July 1972.

Water Quality Management

Identification of Pollutants

"Solvent Extraction Status Report," (EPA-R2-72-073), by L. F. Mayhue, Nat. Environ. Res. Cen., Off. of Res. & Mon., EPA, avail. from USGPO, Wash., DC 20402, Dec. 1972, Price: 75¢.

Effects of Pollution

"Influence of Water Quality in Maintaining Whiteness when Laundrying White Fabrics," (WI-221-015), by C. M. Janecek, N. D. WRRRI, N. D. St. Univ., Fargo, N. D. 58102, Sept. 1971.

"Plankton Populations and Some Effects of Mine Drainage on Primary Productivity of the Coeur d'Alene River; Delta; and Lake," (Res. Tech. Comp. Rpt.), by F. W. Rabe, et al, WRRI, Univer. of Idaho, Moscow, Idaho 83843, Jan. 1973.

Waste Management

"Treatment of Ferrous Acid Mine Drainage with Activated Carbon," (EPA-R2-73-150), by C. T. Ford, et al, for Off. of Res. & Mon., EPA, USGPO, Wash., DC 20402, Jan. 1973, Price: \$2.10.

"Development and Demonstration of Nutrient Removal from Animal Wastes," (EPA-R2-73-095), by R. C. Loehr, et al, for Off. of Res. & Mon., EPA, avail. from USGPO, Wash., DC 20402, Jan. 1972, Price: \$3.45.

"The Disposal of Cattle Feedlot Wastes by Pryolysis," (EPA-R2-73-096), by W. Garner, et al, for Off. of Res. & Monitoring, EPA, USGPO, Wash., DC 20402, Jan. 1973, Price: \$1.25.

"Investigation of Use of Gel Material for Mine Sealing," (EPA-R2-73-135), EPA Off. of Res. & Mon., avail. from USGPO, Wash., DC 20402, Jan. 1973, Price \$1.25.

"Water Infiltration Control to Achieve Mine Water Pollution Control," (EPA-R2-73-142), by F. J. Zaval, et al, for Off. of Res. & Mon., EPA, USGPO, Wash., DC 20402, Jan. 1973, Price: \$2.35.

"Analysis of the Injection of a Heated, Turbulent Jet into a Moving Mainstream, with Emphasis on a Thermal Discharge in a Waterway," (VPI-E-72-24), J. F. Campbell, et al, Aerospace Engr. Dept., VPI & St. Univ., Blacksburg, Va. 24061, Dec. 1972.

"Standards and Specifications for Soil Erosion and Sediment Control," City of Raleigh, N. C. and Wake Soil & Water Conserv. Dist., Raleigh, N. C. 27602, Dec. 1972.

"A Search: New Technology for Pavement Snow and Ice Control," by D. M. Murray, et al, for Off. of Res. & Mon., EPA, avail. from USGPO, Wash., DC 20402, Dec. 1972, Price: \$1.

"The Beneficial Use of Storm Water," (EPA-R2-73-139), by C. W. Mallory for Off. of Res. & Mon., EPA, Washington, DC 20460, Jan. 1973.

Water Quality Control

"Evaluation of Pollution Abatement Procedures, Moraine State Park," (EPA-R2-73-140), by J. W. Foreman, et al, for Off. of Res. & Mon., EPA, avail. from USGPO, Wash., DC 20402, Jan. 1973, Price: \$1.

"A Study of Phytoplankton Dynamics in Lake Fayetteville as a Means of Assessing Water Quality," (Pub. No. 10), by R. L. Meyer, Ark. WRRRC, Univ. of Ark., Fayetteville, Ark. 72701, Aug. 1971.

Water Quantity Management

"Ecological and Physiological Implications of Greenbelt Irrigation," (Contrib. No. 140), by V. B. Youngner, et al, Univer. of Cal. WRC, Los Angeles, Cal. 90024, 1972.

"One Hundred Years of International Cooperation in Meteorology," (IMO-WMO Centenary), (WMP - No. 345), Secretariat of World Meteorological Org., Geneva, Switzerland, 1971.

"Some Meteorological Aspects of the Seasonal Distribution of Precipitation in the Western United States and Baja California," (UCAL-WRC-W-254), (Contribution No. 139), by C. B. Pyke, Univ. of Cal. WRC, Los Angeles, Cal. 90024, Oct. 1972.

"NOAA Technical Memorandum NWS HYDRO-14, National Weather Service River Forecast System - Forecast Procedures," (NOAA TM NWS HYDRO-14), Avail. from NTIS, USDC, Sills Bldg., 5285 Port Royal Rd., Springfield, Va. 22151, Dec. 1972, Price: \$3.

"Hydraulics of Shallow Flows Over Stable Eroded Sand Surfaces Defined by Area Spectra," (Tech. Rep. No. 36), by J. R. Burney, et al, WRRRC, Purdue U., Lafayette, Ind. 47907, Feb. 1973.

"Streamflow Characteristics of the Monongahela River," (Vol. II, Part A), by M. S. Baloch, et al, W. Va. Dept. of Natural Res., Div. of Water Res., Charleston, W. Va. 25301, 1973.

Miscellaneous

"Annual Report 1972," (FTS 701-237-5355), Souris-Red Rainy River Basins Comm., Professional Cen., Holiday Mall, Moorhead, Minn. 56560.

"Research Reports Supported by Office of Water Resources Research Under the Water Resources Research Act of 1964," OWRR, USDI, WRSIC, Wash., DC 20240, July-Dec. 1972.

"Water Resources Seminar Series No. 2," (Papers presented Jan. 1972 to May 1972), WRRRC, Univ. of Hawaii, Honolulu, Hawaii 96822, Dec. 1972.

Water Resources Research Institute
of The University of North Carolina
124 Riddick Building
North Carolina State University
Raleigh, North Carolina 27607

Nonprofit Org. U. S. Postage PAID Raleigh, N. C. Permit No. 549

PRINTED MATTER