

WATER RESOURCES RESEARCH INSTITUTE

OF THE UNIVERSITY OF NORTH CAROLINA

Number 170

May 1980

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PRESIDENT'S ENVIRONMENTAL ADVISOR SAYS CRITICS TRYING TO UNDERCUT HEALTH AND ENVIRONMENTAL REGULATIONS

news release that some critics of government regulation are trying to undercut federal health and environmental programs through expensive advertising campaigns "to convince the American people that government regulation is out of control."

Gus Speth, Chairman of the President's Council on Environmental Quality, said such critics are "merely using regulatory reform as a kind of shibboleth masking their real motivation, which is to pull the teeth from health and environmental programs.

"These critics hide their intentions under a flourish of slick public relations sophistries which, for lack of a better word, I might call the immobilization of truth," Speth said.

In a speech to the Fifth National Conference of the Environmental Industry Council, Speth praised the nation's pollution control industry and other segments of the business community that have moved to eliminate "situations that create the need for regulation."

President Carter's environmental advisor said in a recent

"If the critics really want to reduce the burden of government regulation," Speth said, "they must take steps to eliminate the situations that create the need for regulation. That, it seems to me, is the enlightened response to a changing society. And those companies that are increasingly taking this approach deserve our praise, support and thanks."

NEW STUDIES TO BEGIN

The following new Institute research projects were approved recently:

Treatment of Pulp Mill Wastewater. The pulp and paper industry ranks third in the nation in terms of its water consumption using some two trillion gallons annually. A burning process destroys many of the pollutants in the spent pulping liquors. This burning, however, is precluded in the case of the bleach plant wastes because of the corrosiveness of chlorine, the most widely used bleaching agent. These wastes, which contain many toxic compounds, are sewered directly to treatment plants.

Dr. Thomas W. Joyce and Dr. Hou-min Chang of the Department of Wood and Paper Science at N. C. State University will begin a technical and economic

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analysis of a bleaching process based on oxygen, a process that would allow recycling of the bleach plant liquors. The researchers will compare pulp properties of both oxygen and chlorine bleached pulp. They will also analyze the bleach liquors in regard to the feasibility of energy recovery. By determining the relative treatability of the liquors and probable effluent characteristics, they will document the environmental benefits of oxygen bleaching. Results of this research will be immediately available to the bleached kraft industry since this is a cooperative project between the University and the industry. Funds for the project are from the Water Resources Research Institute and the kraft industry.

Hydrologic and Water Quality Modeling for Instream Flow Needs. New research by Dr. Miguel A. Medina, Jr. of the Duke University Department of Civil Engineering concerns the integration of both quantity and quality considerations in the assessment of instream flow needs.

To mesh the hydrologic, biologic and water quality aspects of instream flow into an integrated methodology, Medina will develop a continuous computer simulation model to derive cumulative frequency and duration curves of flow and relevant water quality parameters. He will calibrate and verify model predictions with historical data at selected reaches of the Yadkin-Pee Dee River system in North Carolina. Medina will also interpret the results of such modeling with the application of the U. S. Fish and Wildlife Instream Flow Group's habitat model (HABTAT) to reaches of the Yadkin-Pee Dee where extensive field surveys have been conducted by North Carolina officials.

Paper Mill Discharge Effects on the Neuse. Deteriorating water quality in the Chowan River has prompted much concern and extensive research in recent years. Now two of North Carolina's other estuaries, the Neuse and the Pamlico, are displaying similar symptoms, including the appearance of algal blooms and a decline in fish catches.

Dr. Donald W. Stanley of the Institute for Coastal and Marine Resources, East Carolina University, is beginning research on the biological impacts of one source of effluent discharge, pulp and paper mills, on the Neuse. Pulp and paper mill effluent is significant because of its large volume. Stanley's research objectives are (1) to test the use of lignins as a tracer for paper mill effluents, (2) to assess other effluent tracing procedures and test those judged applicable to the Neuse River, and (3) to gather preliminary data for future study on paper mill effluent impacts on water quality.

STREAM CHANNELIZATION RULES The Soil Conservation Service (SCS) and the Fish and Wildlife Service (FWS) will publish new rules and regulations for stream channelization in the *Federal Register* on or about May 1, 1980. The rules and regulations will formalize the guidelines which were originally promulgated March 1, 1978, and have been followed and monitored by the two agencies since that time. Experience gained from the use of the guidelines over the past two years will be assessed to determine needed changes. Two alterations already incorporated are:

- The description of "selective snagging"--the selective removal of obstructions from the stream channel and banks--has been changed to emphasize the use of hand-operated equipment so as to minimize damage to the channel.
- Technical or financial assistance will not be provided by SCS for draining certain types of wetlands unless the plot has been used to cultivate food, feed, or fiber for at least three of the five years prior to the assistance request. This change provides additional protection for wetlands in accordance with Executive Order 11990.

. . . *Natural Hazards Observer*
March 1980

INSTITUTE HAS SPECIALTY NEWSLETTER ON STORMWATER

Stormwater runoff is a major contributor of pollutants to our waters.

In fact, research now shows that such non-point, or dispersed, sources of pollution can equal or exceed pollution from point sources such as sewage plants or factories. Urban areas, with their impervious surfaces and varied pollutants, are among the worst contributors to the problem.

The Institute last year developed a newsletter especially for those faced with controlling or working around stormwater runoff. The North Carolina Stormwater Manager is now received by public works directors, city engineers, planners, consultants, and state and federal officials across North Carolina and by institutes and officials in several other states.

The newsletter features articles on urban stormwater-related research at the Institute and elsewhere (including regular coverage of new developments in the U. S. Environmental Protection Agency's Nationwide Urban Runoff Program), news of available programs and services and of innovative management techniques being used by local officials in North Carolina and across the country and announcements of stormwater workshops and conferences. Topics are generally related to drainage and detention, erosion and sedimentation control, flood plain management, and stormwater pollution control.

The Stormwater Manager is bi-monthly and is available free of charge. To receive the newsletter regularly, call or write the Institute.

NEW YORK CITY LOSES ON OCEAN DUMPING

New York City officials failed in a recent attempt to continue ocean dumping of sewage sludge after December 31, 1981. A House committee rejected an amendment that would have allowed the city to continue ocean dumping until the end of 1984 on a case-by-case basis if EPA determined that land-based disposal alternatives posed a greater threat to health and environment. New York City officials say the only way they can meet the 1981 deadline is by stockpiling dewatered sludge at sites around the city.

N. C. PLUMBING CODES FOR CONSERVATION NOW IN EFFECT

State plumbing codes in North Carolina now

require water conservation fixtures. The new codes for water closets is as follows: "The average maximum flushing capacity shall not exceed 3 1/2 gallons per flush." For shower heads the code is "all showers used for other than therapeutic or safety purposes shall be equipped with a flow regulating device to limit total flow to a maximum of 3 gpm per head." The new codes which became effective April 1, 1980, require that all new buildings, both residential and commercial, use such fixtures.

the Survey's operating divisions, having an operating budget of about \$185 million per year, or over 20 percent of the Survey's total budget. With over 40,000 monitoring stations in operation, the division works in cooperation with state, local, and other federal agencies to appraise the quantity and quality of the nation's surface and groundwater resources.

USGS Also Names New Associate Water Chief. Mr. R. Hal Langford, 54, of Arlington, Virginia, has been appointed associate chief hydrologist for the U. S. Geological Survey, Department of the Interior, to assist in the administration of the nation's largest water resources investigations program. He succeeds Mr. O. Milton Hackett who held the position from 1968 until his retirement in January 1980.

NORTH CAROLINA STUDY SHOWS WAYS TO REDUCE CHLOROFORM FORMATION IN DRINKING WATER

Results from field and laboratory studies indicated that trihalomethane levels in

drinking water can be reduced by a change in disinfection practices and in-plant modifications. Research at the University of North Carolina examines natural organics present even in unpolluted sources. The research demonstrates that modifying the point of application of chlorine can have a marked influence on chloroform formation and that coagulation conducted prior to chlorination can reduce chloroform production dramatically. This was affirmed in 1977 when the City of Durham moved its point of chlorine application from ahead of the rapid mix tanks to a point between the sedimentation tanks and filters. This is also a highly cost-effective step since less chlorine is required. A further shift of chlorination to post-filtration would add to the reduction in chloroform. Current research in North Carolina is investigating 12 other water supplies in North Carolina to relate trihalomethane concentrations to total organic carbon concentrations and to determine how trihalomethanes are formed within the treatment plant.

EPA ANNOUNCES NEW HANDBOOK ON ENVIRONMENTAL REGULATIONS

The speed with which regulations are legislated, adopted

and changed often leads to uncertainty as to how components of the Federal environmental framework fit together and what they mean to the people who are affected by them.

To help put existing environmental regulations into perspective as they relate to each other, EPA's Industrial Environmental Research Laboratory (IERL) at Research Triangle Park has published "A Handbook of Key Federal Regulations and Criteria for Multimedia Environmental Control."

T. Kelly Janes, Chief of IERL's Fuel Process Branch, said "The new handbook concentrates on information about specific pollutants, concentrations, industrial control levels, and definitions of areas to which each regulation applies. It also provides an overview of substances officially designated as hazardous or environmentally significant."

Ten legislative acts which authorize environmental control activities are outlined in the handbook. They are:

- Clean Air Act
- Federal Water Pollution Control Act
- Safe Drinking Water Act
- Occupational Safety and Health Act of 1970
- Atomic Energy Act
- Toxic Substances Control Act
- Federal Insecticide, Fungicide and Rodenticide Act
- Noise Control Act of 1972
- Resource Conservation and Recovery Act of 1976
- Marine Protection, Research and Sanctuaries Act

The 272-page handbook was prepared for EPA by the Research Triangle Institute at Research Triangle Park. The information was compiled by D. R. Greenwood, G. L. Kingsbury and J. G. Cleland. Janes was EPA's project officer for the effort.

Single copies of the handbook are available in limited quantity through ORD Publications, Center for Environmental Research Information, USEPA, Cincinnati, Ohio 45268. When ordering, refer to publication number EPA-600/7-79-175.

NEW INSTITUTE REPORT: *Phosphorus Dynamics in a North Carolina Piedmont Reservoir* by Edward J. Kuenzler and Linda E. Greer. and Ms. Greer have studied the movement of phosphorus in a Chapel Hill area reservoir

The study is being conducted by Dr. Phil Singer in the Department of Environmental Sciences and Engineering at the University of North Carolina at Chapel Hill with support from the Water Resources Research Institute and the Office of Water Research and Technology.

U. S. WATER SCIENTIST TAKES UNESCO POST

Dr. John Stuart Gladwell, Director of the Idaho Water Resources Research Institute

located at the University of Idaho, has accepted a two-year renewable appointment with the United Nations Educational, Scientific, and Cultural Organization (UNESCO) as Senior Advisor in the Division of Water Sciences, beginning in late April in Paris, France.

USGS CHIEF HYDROLOGIST NAMED

Mr. Philip Cohen, 48, of Vienna, Va., has been named chief hydrologist for the U. S. Geological Survey (USGS), Department of the Interior, and will assume administration of the nation's largest water resources investigation program. He succeeds Mr. Joseph S. Cragwall, Jr., who held the position from 1974 until recently when he was named associate director of the Survey.

Cohen, a career hydrologist-geologist with the USGS since 1956, is a specialist in the management of programs involving the application of earth science knowledge to the solution of natural resource and environmental problems.

In his new assignment, he will head the more than 4,000-member water resources division, largest of

to help identify the relationships between nutrient availability and algal growth in Piedmont impoundments. This is the first study of nutrient kinetics in a Piedmont lake. Such lakes are important to local residents for water supply, recreation and fishing. Their ability to serve adequately as a resource and their ultimate value is linked to water quality. The authors note the importance of preventive and corrective measures to protect water quality and the trophic state of impoundments such as Universty Lake, the site of this research project.

Nutrient supply is an important factor in any lake. Increased nutrients increase algal growth, which is undesirable for a number of economic and esthetic reasons. A better understanding of nutrient kinetics and nutrient loading to a lake from a watershed, which this project has begun to provide, is necessary for proper management of Piedmont impoundments.

Results of the research indicate that nutrient concentrations during the period of study were low. The ratio of inorganic nitrogen to inorganic phosphorus was relatively high indicating that phosphorus would be a limiting factor on an annual basis. This suggests that increased phosphorus inputs to the lake would tend to increase algal productivity more than increased nitrogen loadings.

The rate of phosphate uptake by algae, bacteria, and suspended sediment varied with depth and season. Phosphate potential curves showed that suspended sediments functioned as a sink for phosphate during the winter when runoff caused an abundance of suspended sediment and phosphate concentrations were high. During spring and early summer the sediment was a source of phosphate. Sediments sinking to the bottom in winter and algae and bacteria settling out during other seasons tend to strip phosphate out of surface waters and thereby maintain the high N:P ratio.

RECEPTION FOR NORTH CAROLINA CONGRESSIONAL DELEGATION

The North Carolina Congressional Delegation will be the

guest of honor at a reception and dinner to be held in the Rayburn House Office Building restaurant, Washington, DC, on the evening of June 3, which will be sponsored by the North Carolina Water Resources Congress.

Advance registration is necessary in order that the Security Police can be notified of names of those attending.

The Water Resources staff of the North Carolina Congressional Delegation will be the guests at a luncheon to be held in the Rayburn House Office Building restaurant on June 4. Mr. Errol Tyler, Associate Counsel, House Committee on Public Works and Transportation will present a summary of legislation being considered.

Members and guests of the North Carolina Water Resources Congress are encouraged to attend. Further information may be obtained by calling 919/733-4064 or writing to the North Carolina Water Resources Congress, P. O. Box 12204, Raleigh, NC 27605.

OWRT ASKS STATES TO ASSESS WATER PROBLEMS AND RESEARCH PRIORITIES

The Office of Water Research and Technology

is asking each state water resources research institute to review current water problems and its past research performance and to set some definite goals or priorities for the next 5-year period. The North Carolina Water Resources Research Institute is beginning the process of collecting comments and research ideas which will then lead to recommendations and goals. Institute staff members will be conducting interviews, sifting ideas, forming conclusions, and making recommendations. The results will be discussed with the Advisory Committee for their input into a final report for the State of North Carolina. The report will be integrated with inputs from other South Atlantic-Gulf states in defining goals for our region and with other regions in formulating goals for the total national water research program involving many agencies besides OWRT.

Draft copies of first statement of water resource problems and research needs are available from the Institute Office, 737-2815, for review and comment.

POSITIONS AVAILABLE

The University of Maine at Orono is mounting a broad-

based research initiative dealing with the effects of atmospheric deposition on ecosystems. They are seeking to hire an individual who would play a key role in the development of this interdisciplinary program.

This position is for a Ph.D. in a natural science who has a record of research support and publication on the effects of atmospheric deposition on ecosystems. Applicants should have a broad knowledge of the ecology and biogeochemistry of terrestrial and fresh-water ecosystems.

Applications should be forwarded to: Professor Stephen A. Norton, Department of Geological Sciences, University of Maine, Orono, Maine 04469.

Editorial Assistant. Work with state agency in informing general and special publics about water and air quality programs. Must be excellent writer and editor able to convey technical information to a lay audience. Also, must have outstanding proof-reading skills. Prefer someone with knowledge of publications production processes, but this is not absolutely necessary. Ideal candidate will have bachelor's degree with major in environmental studies and minor in English or vice-versa. Work in Raleigh. NO PHONE CALLS. Send resume to J. Davis, Division of Environmental Management, P. O. Box 27687, Raleigh, NC 27611.

The USDA-SEA Hydrology Laboratory in Beltsville, Maryland, plans to advertise for two interdisciplinary positions (GS-11 through 13) for a research scientist.

As a research scientist in the Hydrology Laboratory, the incumbent would be responsible for initiating and conducting research which relates to the Science and Education Administration, Agricultural Research (formerly ARS) national program on watershed

hydrology directed toward evaluating the impact of watershed and river basin management systems on water quantity and quality.

For further information and application details, please contact Dr. E. T. Engman, Chief, USDA-SEA, Hydrology Laboratory, Room 139, Building 007, BARC-West, Beltsville, MD 20705 (301) 344-3490 (FTS 344-3490).

Water Quality Project Director: Responsible for design development and implementation of water quality project activities for Triangle J Council of Governments. Thorough knowledge of water quality management planning and implementation activities. Ability to work with local, state and federal officials. Substantial communication, project management and leadership skills required. Submit resume to Executive Director, Triangle J COG, PO Box 12276, Research Triangle Park, NC 27709 by 5/16/80.

CONFERENCES AND SHORT COURSES

Unified River Basin Management Symposium. The American Water Resources Association (AWRA) is

sponsoring a symposium on the special subject of UNIFIED RIVER BASIN MANAGEMENT. The symposium's objectives:

- (a) To examine, in concept or through case histories, the goals, strategies, institutions, issues (technical, environmental, economic), informational requirements, accomplishments, capabilities, limitations, adaptability to change, and other aspects of integrated River Basin Management (including significant lakes, bays, estuaries).
- (b) To evaluate, in an historical perspective, the identified River Basin Management strategies which addressed the diverse goals sought by society from its rivers and related resources.
- (c) To definitively describe and develop existing and alternative River Basin Management strategies, institutions, technical criteria, data and information programs, and operations procedures to meet the Nation's expectations from its rivers in the next 20 years.

The symposium will be held May 4-7, 1980, in Gatlinburg, Tennessee. For details write or call AWRA, St. Anthony Falls Hydraulic Laboratory, Mississippi River at 3rd Avenue, S.E., Minneapolis, Minnesota 55414, 612/376-5050.

Fundamental Hydraulics and Hydrology of Dam Design. The short course will provide fundamental to intermediate instruction involving watershed hydrology, runoff, storage, reservoir discharge, and routing.

The course will be held May 19-23 at the University of Missouri-Rolla. For technical information please contact Jerry Bayless, Civil Engineering Department, University of Missouri-Rolla, Rolla, MO 65401, 314/341-4462.

Floodplain Hydraulics - Water Surface Profile Computation Using HEC-2. This short course presents basic principles and practical application of river hydraulics related to floodplain studies. The objective of the course is to enable the participant

to perform water surface profile computations using the computer program HEC-2, developed by the U. S. Army Corps of Engineers.

The course is designed for engineers involved in Flood Insurance and Floodplain Management studies. It should be useful in floodplain delineation studies conducted in support of wastewater collection and treatment facility planning.

The course will be held March 31-April 3 at Eau Claire, Wisconsin. For details contact the Department of Engineering and Applied Science, University of Wisconsin-Extension, 432 North Lake Street, Madison, WI 53706. For program information, call (608) 262-3516 and for enrollment, phone (608) 262-5797.

Groundwater Computer Models. This technical short course teaches basic methods of finite differences and finite elements applied to groundwater flow. Computer solutions to regional flow systems, flow to wells and seepage problems will be taught. Both steady and nonsteady states are reviewed. Extensive use of University computing facilities will be made to provide the participants a basic understanding of groundwater computer models.

A bachelor's degree in engineering, geology, or a water-related science, or the equivalent and some knowledge of FORTRAN (or BASIC) is required.

The course will be held June 2-6. For further information contact C. Allen Wortley, Program Director, Department of Engineering & Applied Science, University of Wisconsin-Extension, 432 North Lake Street, Madison, WI 53706. For program information and content, phone (608) 262-2061.

Finite Elements in Water Resources. This program is intended as a forum for the review of the state-of-the-art, the presentation of new research results, and exchange of ideas in the field of Finite Elements in Water Resources.

The conference is scheduled for May 19-23 at the University of Mississippi Oxford Campus. For further technical information contact Dr. S. Y. Wang, School of Engineering, The University of Mississippi, University, MS 38677, (601) 232-7219, and for general information contact the Division of Continuing Education, The University of Mississippi, University, MS 38677, (601) 232-7282.

WATER RESOURCES CONDITIONS IN NORTH CAROLINA

Streamflow during March was above normal.

As compared to long-term records, mean monthly flows ranged from about 1 1/4 times normal in streams of the Mountain region to well over 1 1/2 times normal in western Piedmont streams. Runoff from near-record rainfall amounts (for March) caused significant rises on most streams throughout the state; however, flooding was minor and occurred primarily on small streams located in the western Piedmont.

Groundwater levels rose in the Mountain and Piedmont regions and declined in the Coastal Plain. Levels were above long-term averages across most of the state.

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 publications. The addresses are provided by the *News* for this purpose.)

Water Resources Planning

- "Problems of Hydroelectric Development at Existing Dams," (CONS-5085-T1), 4/79, by R. J. Raylor, et al, avail. from NTIS, Springfield, VA 22161, price - \$9.50. (W&E)
- "Alternatives for Water Management," (Report of the Legislative Study Commission to the N.C. General Assembly), 3/80, avail. from Legislative Library, Room 2126, 2226, State Legislative Bldg., Raleigh, NC 27611. (06E)
- "Participation in Water Resources Planning: Leader and Non-Leader Comparisons," (#107), 2/80, by H. R. Potter, et al, WRRRI Purdue U., West Lafayette, IN 47907. (06B)
- "Public Water Supplies: The Effect of Federal and Tennessee Water Resource Law," (#72), 12/79, by V. A. Sikora, WRRR, U. of TN, Knoxville, TN 37916. (06E)

Water Quality Management

- "Treatability of Carcinogenic and Other Hazardous Organic Compounds," (EPA-600/2-79-097), 8/79, by E. G. Fochtman, et al, avail. from NTIS, Springfield, VA 22161. (EPA)
- "Degradation of Selected Herbicides by Aquatic Microorganisms," (#84), 2/80, by P. A. Ellis, et al, WRRRI, Clemson U., Clemson, SC 29631. (05B)
- "Sources and Behavior of Natural Radioactivity in Fall Line Aquifers Near Leesville, South Carolina," (#83), 2/80, by W. Moore, et al, WRRRI, Clemson U., Clemson, SC 29631. (05A)
- "An Environmental Study of the Origin, Distribution, and Bioaccumulation of Selenium in Kentucky and Barkley Lakes," (#122), by B. E. McClellan, et al, WRRRI, U. of KY, Lexington, KY 40506. (05C)
- "Verification of the Water Quality Impacts of Combined Sewer Overflow," (EPA-600/2-79-155), 12/79, T. L. Meinholz, et al, NTIS, Springfield, VA 22161. (EPA)
- "Automatic Sludge Blanket Control in an Operating Gravity Thickener," (EPA-600/2-79-159), 11/79, by R. C. Polta, et al, avail. from NTIS, Springfield, VA 22161. (EPA)
- "Development of Methods and Techniques for Final Treatment of Combined Municipal and Textile Wastewater Including Sludge Utilization and Disposal," (EPA-600/2-79-160), 12/79, by J. Suschka, avail. from NTIS, Springfield, VA 22161. (EPA)
- "Monitoring Septage Addition to Wastewater, (Vol. I: Addition to the Liquid Stream)," (EPA-600/2-79-132), 11/79, by B. A. Segall, et al, avail. from NTIS, Springfield, VA 22161. (EPA)
- "Joint Municipal and Industrial Wastewater Treatment in Rural Communities: Simulation Analysis with Poultry Processing Plants," (#1615), 3/80, by D. Rossi, et al, avail. from USDA, Economics, Statistics, and Cooperative Services, Washington, DC 20250. (05D)
- "Maximum Utilization of Water Resources in a Planned Community, (Chlorine and Ozone Toxicity Evaluation)," (EPA-600/2-79-05e), 8/79, by B. Hammond, et al, avail. from NTIS, Springfield, VA 22161. (EPA)

Water Quantity Management

- "A Methodology for Point-to-Area Rainfall Frequency Ratios," (#24), 2/80, by V. A. Myers, et al, avail. from Env. Sci. Info. Center (D822), Env. Data & Info. Service, NOAA, USDC, 6009 Executive Blvd., Rockville, MD 20852. (02B)
- "Simulation of Effects of Urbanization on Stormwater Runoff and Quality," (#74), 12/79, by D. E. Overton, et al, WRRR, U. of TN, Knoxville, TN 37916. (04A)
- "Benefits of Long-Range Streamflow Prediction," (#181), 2/80, by W. Yeh, et al, WRC, U. of CA, 2102 Wickson Hall, Davis, CA 95616. (02E)
- "Water Distribution and Movement in an Unsaturated Piedmont Soil Profile," (#82), 1/80, by J. T. Ligon, et al, WRRRI, Clemson U., Clemson, SC 29631. (02G)
- "Water Supply Should Not Be an Obstacle to Meeting Energy Development Goals," (CED-80-30), 1/80, by Comp. Gen., Report to the Congress of the US, avail. from USGAO, Distribution Sec., Rm. 1518, 441 G St., NW., Washington, DC 20548. (W&E)

Miscellaneous

"Effects of Organic Compounds on Amphibian Reproduction," (#121), 1980, by W. J. Birge, et al, WRRRI, U. of KY, Lexington, KY 40506. (05C)

"Bibliography of the Interagency Energy/Environment R&D Program," (EPA 600/9-79-015), 8/79, by F. S. Jacoff, et al, avail. from NTIS, 5285 Port Royal Rd., Springfield, VA 22161. (EPA)

"Environmental Quality & Residuals Management," 1979, by A. V. Kneese, et al, avail. from Johns Hopkins Press, Baltimore, MD 21233, price - \$7.95. (05E)

"Soil Survey of Edgecombe County, North Carolina," 11/79, by R. A. Goodwin, Jr., avail. from USDA, SCS, P.O. Box 27307, Raleigh, NC 27611. (SCS)

"Floodplain Tree Species: A Bibliographic Literature Search With Abstracts," (ETL-0193), 9/79, by C. R. Bell, et al, avail. from U.S. Army Corps of Engineers, Engr. Topographic Laboratories, Ft. Belvoir, VA 22060. (021)

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New Studies Begin:

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Announcing a Special -

WATER RESOURCES MANAGEMENT LUNCHEON

The Water Resources Research Institute is sponsoring a Water Management Luncheon at the North Carolina State University Faculty Club on Friday, May 9 at 12:00 noon. The featured speaker will be L. Bennett Coy, Founder and Charter President of the Water Management Association of Ohio. Mr. Coy is now the General Manager and Secretary of the Miami Conservancy District in Dayton, Ohio, and is a venerable and active conservationist and sportsman. He will speak on the applicability of a water management association in North Carolina.

If you are interested in attending this luncheon, please call Eva McClung (737-2815) by May 5 so that necessary arrangements will be possible. The luncheon cost is \$6 per person, payable upon arrival.

REMINDER

The State Water Resources Conference is Wednesday, April 30, 9:00 AM at the N. C. State University Faculty Club. Please plan to attend.