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TRIANGLE J COUNCIL OF GOVERNMENTS DEVELOPS WATERSHED MANAGEMENT GUIDE

A new report by Region J Council of Governments outlines four strategies by which communities can help protect the long-term integrity of water supply reservoirs. Specifically the report describes means of reducing nonpoint sources of water pollution from urban and suburban areas that could impact the new Falls of the Neuse and B. E. Jordan Reservoirs. The strategies include:

- A system of urban greenways along tributary streams and drainageways
- Improved site planning and design practices at new residential and commercial developments
- Careful planning of the location, density, and type of new development
- Increased level of certain urban services--especially, street cleaning and sewer line rehabilitation.

The report includes 14 major recommendations which local governments and others should consider in a watershed protection program.

A copy of the report is available from the Triangle J Council of Governments, Post Office Box 12276, Research Triangle Park, NC 27709, telephone: (919) 549-0551.

INTERAGENCY COUNCIL ESTABLISHED FOR AQUATIC WEED CONTROL

Governor Jim Hunt has designated the Department of Natural Resources and Community Development as the lead agency for aquatic weed control in North Carolina. The Governor has also asked Secretary Joe Grimsley to appoint the membership of the Interagency Council on Aquatic Weed Control. Sixteen persons representing local government, state and federal water agencies, industry and the university were asked to serve on the Council.

The purpose of the Council is to coordinate aquatic weed control, education and research efforts in the State. The first meeting of the group was held July 21. Dr. Jay Langfelder, Assistant Secretary for Natural

Resources is Chairman of the Council. (EDITOR'S NOTE: See the July issue of the NEWS for a description of a new research project on the management of hydrilla in North Carolina.)

DEM INVESTIGATES WAKE COUNTY FISH KILL Investigations are underway by the N. C. Division of Environmental Management to determine who is responsible for a major fish kill that

occurred at Beaverdam Creek Reservoir, an arm of Falls Lake, in northern Wake County over the July 4 weekend.

Over 100,000 fish (mostly gamefish such as bass, bluegill, crappie) died when the City of Raleigh drained the lake at the request of the Corps of Engineers. The city owns the dam, while the Corps owns the lake.

The city opened the dam May 27 to lower the water level so the Corps could build boat ramps and a beach. No state permit was obtained and no one monitored the lake as the 3.4 billion gallons of water were drained. As the water drained from the lake the fish died.

N. C. Wildlife Commission officials said a severe fish kill could have been prevented if a permit had been obtained. Wildlife personnel would have been present to monitor the draining.

It is unclear at present where legal responsibility for the incident lies. Corps officials have stated that the Corps, as a federal agency, was not required to get a state permit to drain the lake.

DEM officials are investigating the incident and reviewing contracts between the Corps and the city. The Corps and the city are also conducting investigations.

The responsible party faces a fine from DEM and must pay for the fish, valued at \$55,000, plus cleanup costs.

JORDAN LAKE COMMITTEE FORMED BY EMC The N. C. Environmental Management Commission has appointed a three-member committee to work with the NRCO Office of Water Resources and other agencies on matters pertaining to B. Everett Jordan Lake.

Three items relating to use of the lake come under the purview of the Commission: allocation of water supplies, reclassification of the waters, and any interbasin transfers.

Communities submitted requests to the Office of Water Resources by June 30 indicating their interest in future water supply allocations. The requests will be used to estimate demand for Jordan Lake water. The multipurpose lake in Chatham County, which reached normal elevation February 4, is expected to supply 100 million gallons of water per day for communities in the region.

The EMC Committee, together with staff members from the agencies involved, will determine the best procedures for allocating and reclassifying the Jordan waters.

In other action, the Commission at the July 8 meeting approved a resolution urging Congress to adopt H.R. 5543, a bill to establish an Ocean and Coastal

Resources Management and Development Fund, whereby coastal states could share in outer continental shelf revenues. The fund would provide for the Sea Grant College Program to be carried out and would provide for block grants for coastal resource management and development activities. North Carolina could receive over \$7 million from the fund for the Coastal Zone Management Program and the Coastal Energy Impact Program.

THREE NEW EMC MEMBERS TAKE OATH OF OFFICE Three new members of the N. C. Environmental Management Commission were sworn in at the Commission's July 8 meeting.

N. C. Secretary of State Thad Eure administered the oath of office to Alton G. Elmore of Edenton, Charles P. (Pink) Francis of Waynesville, and M. L. Byrd of Southmont in Davidson County.

Elmore, who is owner of Edenton Furniture Company and president of the Chowan Realty Company, is now in his third term as a Chowan County Commissioner and serves on the Albemarle District Health Board.

Francis is owner of Francis Fruit Farm, president of the N. C. Apple Growers Association, and a member of the Pesticide Advisory Board.

Byrd, who is retired from Byrd Motor Lines in Lexington, a company he founded, is serving a second term as president of the High Rock Lake Association. He served six terms as vice president of that Association. He is also on the Executive Committee of the Yadkin-Pee Dee River Basin Commission.

ANNE GORSUCH PRESENTS SEMINAR AT NCSU Anne Gorsuch, EPA's Administrator, presented a seminar on the NCSU campus on June 25 to review the Toxic Substance Control Act and to respond to questions.

Mrs. Gorsuch pointed to the limited government action taken by the past administration that resulted in a large backlog of unresolved issues and court cases. "The backlogs have been cleared and we are now meeting the court deadline for rule making as required under the Act," she said. Rules and regulations were cited by Mrs. Gorsuch as being costly and regulatory reform was necessary. New testing procedures will be evaluated for the introduction of new chemicals, including negotiated testing requirements between EPA and the chemical manufacturers. EPA in evaluating new substances will attempt to answer the question, "Are the benefits to the public commensurate with the risks?" She said that risk benefits would be determined with a combination of economic, population exposures and health effects information. She admitted that the tools available were less than precise and far from perfect. According to Mrs. Gorsuch, EPA is making more use of its Science Advisory Board and will resolve many of its regulatory actions through the Board. The agency will rely heavily on peer review to evaluate scientific research efforts and findings.

Improved interaction with the states was cited as one of EPA's goals. To assist in this effort, the National Governors' Association is being used as a clearinghouse for much of its environmental information and actions. EPA is attempting to improve its relations with those regulated, according to Mrs. Gorsuch.

In response to a question of what EPA is doing to encourage waste reduction, resource conservation, recycling and process changes to reduce waste,

Mrs. Gorsuch stated that the current emphasis is directed at getting regulations to control disposal methods by land, surface and impoundments rather than recycling.

The EPA Administrator said there would be some reduction in the research and development budget, but there will be increased quality and redirected research emphasis. One example of R&D cutbacks cited was in developing technology for treating waste streams from oil shale.

In response to a question on acid rain, she said that there are many unanswered questions, such as how much of the effects are manmade versus naturally produced, are we getting better or worse, what effects will specific reduction in SO₂ have and will a reduction in SO₂ result in less acidification of lakes? She emphasized that reductions without some measure of benefits could be very costly and perhaps not result in the desired change.

Mrs. Gorsuch stated that EPA will continue its support for research outside the agency. The exchange between scientists within and outside the agency is valuable and will be encouraged, she said. No specific dollar amounts or trends for funding these efforts were discussed.

EPA GROUND WATER POLICY EXPECTED IN SEPTEMBER Anne M. Gorsuch, Deputy Administrator for EPA, in a recent memorandum to administrators in

the organization said that she had appointed a Policy Group to advise her on options regarding EPA's protection of ground water. In the memo she stressed the need to "take special care to protect those resources which are essential to public health and the ecology."

"This policy should recognize the primary role of States in ground water protection. EPA's role should emphasize coordination of our own existing authorities and resources as well as those assigned to other Federal Agencies. The policy should encourage voluntary State strategies for the protection of ground water resources according to their current and projected future uses," Gorsuch said. She indicated that she would like to announce a final policy by September 30.

CUTS IN ENVIRONMENTAL RESEARCH HURT The Reagan Administration split with the environmental community has widened with the release of a Conservation Foundation report. The Foundation report is especially significant because the 34-year old organization, an independent, nonprofit research group, has attempted to remain politically neutral.

According to the 439-page report, the Administration is giving priority to "deregulation, defederalization, and defunding."

Scientific environmental research will be reduced substantially by the Administration. Cuts will reduce even further the amount of scientific information needed for developing environmental policy. With the near fatal curtailment of funds for fact gathering and research, future decisions will be governed more and more by ideology, instincts and self interests" the report says.

The Administration has given emphasis to shifting much of the responsibility for pollution control to the state and the private sector. The Foundation report points out that "for many environmental programs, it was the failure of the private market that led to government action and failure or inaction by state and local governments that led to federal intervention." The report notes that "there is no market for clean air or water or for wilderness and no market is likely to develop. Nor is research . . . likely to be supported adequately by corporations, because no single company can capture the full benefits of research that does not result in a specific product or process change."

Copies of the report, "State of the Environment 1982," are available from The Conservation Foundation, 1717 Massachusetts Avenue, N.W., Washington, D.C. 20036; telephone: (202) 797-4300.

WETLAND PROTECTION GROUP FORMED According to the Wildlife Management Institute, Interior Secretary James Watt has appointed a private sector task force to seek ways of protecting wetlands important to migratory birds and other wildlife.

The task force now consists of 24 members from industry, national conservation groups, sportsmen's organizations, outdoor media and Congress. Watt and Alabama Governor Forrest James co-chair the task force. Watt indicated that other members will be added later.

The goals of the task force will be to advise and counsel public and private officials on wetland protection and to lead an effort to encourage owners to donate wetlands or development rights on wetlands to private groups, state wildlife agencies or federal agencies that will protect the areas in perpetuity.

Watt noted that the federal wetlands protection program, begun in 1929, has not been as successful as would have been desirable. "A new initiative for saving the wetlands from drainage is essential if we are to provide sufficient habitat for our migratory birds," Watt said.

Task force members will not be compensated for their services or expenses, Watt said, to emphasize the private initiative thrust of the effort.

STUDY LOOKS AT SAFE YIELDS FOR CITY WATER SUPPLY MANAGEMENT A recent study by the Research Triangle Institute helped the City of Durham determine the probabilities for specific volumes of water that could be obtained from Lake Michie. The safe yield information is expected to be used as a part of the city's drought management plan.

Two major products were generated according to a summary of the study. "First a graph showing the likelihood of sustaining a particular annual yield--the fraction of time the reservoir could be expected to yield a specified amount, or more. A second product was a set of 40 tables that show, with a specified frequency of occurrence, the yield that can be obtained for the remainder of the year given conditions that exist at the beginning of any month." The report was prepared by Brian J. McCrodden and Richard E. Paddock with the Operations Analysis Division in the Research Triangle Institute.

The probabilities for the study were generated using 2,000 years of synthetic streamflow data in a computer simulation of the water system. The simulation took into account infiltration into Lake Michie, seepage under the dam, evaporation, and the reduced storage volume resulting from siltation.

The simulation also considered the City's demand pattern for water where according to the study the lowest demand was in the months of December through March and the highest July through September.

The data produced in the study can be used as a management tool to alert the community to those times when and to what degree new conservations measures need to be implemented.

WATER SUPPLY RISK MANAGEMENT As part of an overall conservation program more cities are incorporating a concept called risk or drought management.

This concept considers along with water demands and supplies the probability that certain flows will be available. (see previous article) Probability information helps communities plan for conservation efforts. The drought management concept can be used to reasonably determine supplemental water storage requirements. The concept was used by the Washington Suburban Sanitary Commission to accept occasional water restriction and to reduce its supplemental storage requirements from 5.2 billion to 1.3 billion gallons.

SOME DRINKING WATER FILTERS FOUND EFFECTIVE New tests performed for EPA have shown that a number of home drinking water filters are highly effective in removing possibly harmful "halogenated organic" chemicals from ground water used for drinking.

The tests demonstrated that the effectiveness of the 10 activated carbon filters in reducing organic compounds ranged from 76 to 99 percent during the filter's claimed lifetimes.

The organic compounds involved in these tests included the solvents trichloroethylene and tetrachloroethylene, serious contaminants of a small portion of the nation's ground water supplies.

The tests are the third in a series begun in 1978 for EPA by the Gulf South Research Institute of New Orleans. Twenty other activated carbon water filters were studied earlier by this firm.

The 10 filters most recently examined included a pour-through model, faucet-mounted units, a stationary model placed below a sink to filter all the water coming through the faucet, and several line-bypass models which also are mounted below a sink but attached to a separate faucet. The useful life of these filters varies as does their cost: from about \$10 for the pour-through to several hundred dollars for the line-bypass units.

EPA, which is charged with ensuring drinking water safety under the 1974 law, does not certify or approve home water filters. However, the agency had the filters studied both for its own information and as a consumer service. Many of the filters

were tested beyond their manufacturers' claims, which in most cases were limited to improve taste or odor removal.

Other findings from the studies were:

- The performance of activated carbon filters on the drinking water from four cities was similar to their performance in a laboratory.
- Non-pathogenic bacteria do accumulate on the carbon filtering material and do increase in drinking water, but no conclusions can be drawn as to the health significance of these facts at this time.
- More exotic filters, including a reverse osmosis/granular carbon device and a filter using ozone gas and carbon, removed between 70 and 99 percent of halogenated organics from drinking water.

A fact sheet on the third phase filter studies is available from EPA's Public Inquiries Center (PM-215), 401 M Street, S.W., Washington, D.C. 20460, phone 202/ 755-0707.

. . . .EPA Journal-Vol. 8 No. 2

VIRGINIA ESTABLISHES STATE POLICY ON PRESERVATION OF AGRICULTURAL LAND

The Virginia General Assembly has passed a bill stating that all agencies of the Commonwealth, in promulgating regulations and undertaking capital projects, shall encourage the preservation of important farmlands. The State agencies concerned with highways and transportation, health, water control, conservation and economic development, and air pollution control and the Corporation Commission, are required to prepare plans for implementing the policy. The bill passed both houses of the Assembly without a dissenting vote, and it has been signed by the Governor.

CHICOD CREEK WATERSHED PROJECT COMPLETED

Commissioners of Pitt County Drainage District Number Nine recently gave final approval to the completed Chicod Creek Watershed Project in North Carolina. In accepting the completed work from the contractor, the Commissioners drew to a close the once-controversial drainage and flood prevention project. Sponsors of the project are the Pitt and Beaufort Soil and Water Conservation Districts, Pitt County Board of Commissioners, and Pitt County Drainage District Number 9. Technical and financial assistance was provided by the Soil Conservation Service.

Originally scheduled for construction in 1971, the project was halted by a lawsuit filed by five local and national organizations headed by the Natural Resources Defense Council, Inc., of New York, NY. New construction techniques developed during the Chicod Creek negotiations became precedents for drainage improvement projects all over the United States. The Chicod Creek lawsuit became what many have called the landmark suit over channelization in America. Settlement of the suit took six years before a compromise agreement was reached in September 1977. Construction was finally started in November 1978.

The project involved 15 miles of stream channel clearing and snagging and 55 miles of channel excavation. It provides the first area-wide flood prevention and drainage system for the 35,100-acre watershed in Pitt and Beaufort Counties. Fish and wildlife habitat, anadromous fish populations, water quality, and groundwater condition are being monitored to determine the effects of the drainage improvements. These studies are to continue for five years after project completion. The Chicod Creek Watershed project will be maintained by the Drainage District.

. . . .NACD Tuesday Letter

ED HOWARD LEAVES DIVISION OF SOIL AND WATER CONSERVATION--NEW DIRECTOR MAURICE COOK

Dr. C. Edward Howard left the Division of Soil and Water Conservation in the Department of Natural Resources and Commu-

nity Development on July 30 to accept a geology teaching position at North Carolina State University. Howard, a native of Lillington, NC, is a former chairman of the Department of Geology at Campbell University in Buies Creek. Howard holds a doctorate in sedimentary petrology from Louisiana State University, a master's degree in geological engineering from N. C. State University and a bachelor's degree in geology from Duke University.

Dr. Maurice G. Cook will be the new director of the Division effective September 1. Dr. Cook is currently Professor of Soil Science at N. C. State University. According to Dr. Jay Langfelder, Assistant Secretary for Natural Resources at NRC, "Dr. Cook has a great deal of management experience, as well as splendid credentials and experience in soil and water conservation issues."

NEW INSTITUTE REPORTS

Evaluation of Public Participation in the Yadkin-Pee Dee Level B River Basin

Study by John Wright, Report 181.

This report includes the results of a study of the public participation effort in a major river basin planning project, the Yadkin-Pee Dee Level B River Basin Study.

Designed to determine the relative efficacy of particular techniques of public involvement in promoting anticipated learning outcomes among planners and publics, the study combined a series of 3 surveys with participant observation and document analysis. Early in the river basin study interviews were conducted with a) all planners involved in the study; b) a sample of Citizen Advisory Committee members; and c) a matched sample of non-member residents. A second wave of interviews was held midway in the planning project. The final survey included three samples: a) residents in a typical county (general public); b) planning staff; and c) persons targeted for participation and included on the study mailing list. The first group was interviewed and the other two received mailed self-administered questionnaires. Outcomes of interest were the publics' and planners' understanding of role expectations; the publics' awareness of the river basin study and the problems/solutions it addressed; and planners' awareness of publics' concerns, interests, and preferences.

Results of the study included: 1) Although more involvement was associated with more learning on the part of the publics, no one technique was clearly superior to another; 2) Although the planners did not develop an explicit rationale (means-ends statement) for the public participation effort, they considered it successful because no serious public objections were raised concerning the final plan; 3) The public participation effort was shaped less by preconceived ideas of representativeness, desired outcomes, and means-ends relationships than by changing demands and circumstances imposed by the nature of the planning project, the sponsoring agency, and, to a lesser extent, the publics. Skills in identifying, negotiating, and responding flexibly to these demands are vital for public participation efforts. Illuminative evaluation is more appropriate than goal-oriented in cases like this where both the ability to conduct a stable program and the understanding of likely outcomes is uncertain.

Albemarle Sound--Trends and Management Needs (Proceedings) sponsored by The University of North Carolina Water Resources Research Institute and The University of North Carolina Sea Grant College Program.

A conference was held March 3, 1982, to focus on the water quality in the rivers and sounds of the Albemarle region with special emphasis on the Albemarle Sound. The Sound and its associated tributary estuaries represent a vast complex of fresh to brackish-water creeks, rivers, and open-water sounds constitute a significant portion of the North Carolina coastal system. Major presentations in the Conference included: a historical perspective of the Albemarle Sound, its economic and social importance, its ecology and physical characteristics, an overview of the current water quality study plan, environmental factors causing blue-green algal blooms in the Chowan River, fisheries production in the Sound, and agricultural resources and trends of the region. A North Carolina legislative study commission, reviewing the problems and needs of the Chowan River and Albemarle Sound, is expected to make recommendations to the 1983 General Assembly for long-term studies and action plans needed to improve water quality and fisheries in these waters.

(EDITOR'S NOTE: Either of the reports described here may be obtained free from the Water Resources Research Institute, North Carolina State University, 124 Ridlick Building, Raleigh, NC 27650-5999, Telephone (919) 737-2815. A fee of \$8.00 prepaid is charged for out-of-state requests.)

FRENCH BROAD RIVER WEEK SEPTEMBER 11-18

The sixth annual French Broad River Week will be held September 11-18, 1982, in a four-county area of Western North Carolina: Buncombe, Henderson, Madison and Transylvania counties; according to River Week Task Force Chairman William Moore.

As in the past, a number of activities will be held in the Region to reach a wide variety of people. Committee chairmen for sponsoring organizations are reporting plans for hikes, canoe trips, raft floats, a river fun run, the "Friends of the River" dinner, educational workshops, luncheons, and other activities.

According to Mr. Moore, the purpose of the week is to alert the public to the improved water quality of the French Broad River and to publicize the vast potential of the river to meet the needs of the citizens in the

region for drinking water, recreation, fish and wildlife, economic development and other needs. The week will also promote continued involvement by all individuals and groups in further improvement of the river.

Over 30 organizations will be involved in the week long program.

For more information or suggestions on activities during French Broad River Week, contact Bill Eaker, Land-of-Sky Regional Council, (704) 254-8131.

COURSE ON MANAGEMENT OF HAZARDOUS CHEMICALS The departments of Chemical and Nuclear Engineering are jointly presenting a course on Hazardous Waste

Management, which is open to practicing engineers, safety officers, and other individuals responsible for hazardous chemical and/or low level radioactive wastes.

The course will utilize lectures, field trips, and student projects to provide: (1) Information on current practices and regulations for management of hazardous chemical and low level radioactive wastes; (2) Experience with actual waste management problems and solutions. Emphasis is on recycling, land treatment, incineration, waste exchanges and other techniques to minimize the need for waste burial; (3) Information on texts, literature, "experts", short courses, and equipment suppliers to assist individuals in solving the specific waste management problem(s) of their company or institution; and (4) Information on problems associated with siting, ownership, insurance, and ultimate disposal.

Instructors are Professors J. Ferrell and M. Overcash of Ch.E. and J. Kohl of NE.

The 3-unit graduate credit course will meet at NCSU beginning Monday, August 30th on Monday afternoons from 3:00-4:00 and on Wednesday afternoons from 3:00-4:30.

For more information contact J. Kohl, (919) 737-2303.

POSITIONS AVAILABLE The position of Deputy Director of the Hydrologic Research Laboratory of the

National Weather Service is announced. In this position the incumbent assists the Director in the planning and supervision of the activities and personnel of the Laboratory.

Applicants will be evaluated on the type and quality of job-related experience, education and training, and supervisory appraisal.

For further information write to: National Oceanic and Atmospheric Administration, NWS Personnel Branch 8060 13th Street, Room 1225, Silver Spring, MD 20910.

Attention: MB/PER13W, W. Littlejohn (427-7924)

Research Faculty Position Opening in Alternate Energy/ Appropriate Technology Hydraulics/Low Head Hydro at the Water and Energy Research Institute of the Western Pacific at the University of Guam for Fall, 1982, or Spring, 1983.

Duties include research and teaching one undergraduate course in math, physical science, or engineering.

Send latest resume and names of three professional references to: Dr. Stephen J. Winter, Director, Water and Energy Research Institute, University of Guam, UOG Station, Mangilao, Guam 96913.

Executive Director, Water Resources Center. The Desert Research Institute, a division of the University of Nevada System, invites applications and nominations for this position. The successful candidate should have a national or international reputation in some aspect of water resources research and have an appreciation of and familiarity with the broad spectrum of water resources.

The position is state-funded, and the salary is commensurate with experience and qualifications. The Institute aims to have the successful candidate assume the post on or before July 1, 1983.

Applications will be accepted until November 1, 1982, or until a suitable candidate is found. Applications or nominations should be addressed to: The Executive Director Search Committee, Water Resources Center, Desert Research Institute, University of Nevada System, P. O. Box 60220, Reno, Nevada 89506.

WATER RESOURCES CONDITIONS IN NORTH CAROLINA Streamflow during June ranged from near normal in the Mountains to 700 percent above normal on many streams located in the southeastern Piedmont region. Runoff from heavy rains during early and midmonth caused minor flooding in the Piedmont and Coastal Plain regions. Most of the flooding was caused by two storm systems occurring on the 10th and 17th. The most severe flooding occurred on the 17-18th in Cabarrus County where numerous roads, bridges, croplands, and residential areas were inundated. In Concord, floodwaters forced the evacuation of over 200 residents, including about 100 patients at a nursing home. Numerous residential and commercial properties were damaged in the Concord area. Minor flood damages occurred in other Piedmont cities including Charlotte, Durham and Raleigh. No flood-related deaths were reported.

As compared to long-term records for June, monthly-mean flows at USGS index gaging stations ranged from about 85 percent of normal in the French Broad River at Asheville (Buncombe County) to about 700 percent of normal in the Deep River at Moncure (Lee County).

Shallow ground-water levels were relatively unchanged from last month's readings and ranged from about 1/2 to 2 feet above normal.

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

"Pilot Plant Studies of Copper, Zinc, and Trivalent Chromium Removal," (#88), 8/81, by G. T. McIntyre, et al, WRRRC, U. of TN, Knoxville, TN 37916. (05F)

"Landowners, Recreationists, and Government: Cooperation and Conflict in Red River Gorge," (#134), 1982, by E. C. Scott, et al, WRRRI, U. of KY, 165 Anderson Hall, Lexington, KY 40506. (06B)

Water Quality Management

"Bacterial Degradation of Coal Conversion By-Products (Polycyclic Aromatic Hydrocarbons) in Aquatic Environments," (#89), by G. S. Saylor, et al, WRRRC, U. of TN, White Ave. Bldg., Knoxville, TN 37916. (05B)

"Land Application of Municipal Sludge with Regard to Cropping Systems and Pollution Potential," (NJAES #R-03141-10-82), 4/82, by A. J. Higgins, et al, Dept. of Biological & Agricultural Engineering, Cook College, NJ Ag. Exp. Sta., Rutgers U., New Brunswick, NJ 08903. (05E Sludge Application)

"Techniques of Water-Resources Investigations of the United States Geological Survey--Measurement of Time of Travel and Dispersion in Streams by Dye Tracing," (BK. 3--Ch. A9), 1982, avail. from Distribution Br., USGS, 604 South Pickett St., Alexandria, VA 22304. (USGS)

Water Quantity Management

"Proceedings of the Groundwater Recharge Conference 1980," (Conf. Series #3), 1981, by AWRC Tech. Comm. on Under-ground Water, avail. from Australian Government Publishing Service, Canberra, Australia. (04B Groundwater)

"Water Resources Data North Carolina Water Year 1981," (NC-81-1), by USGS, USDI, P. O. Box 2857, Raleigh, NC 27602. (USGS)

SPECIAL

Water Supply Planning and Management in a Highly Developed State

by

William Whipple, Administrator
Water Supply and Watershed Management Administration
New Jersey Department of Environmental Protection

(Editor's Note: This paper is condensed from a presentation by William Whipple to the N. C. Conference on Water Management held May 25, 1982 in Raleigh, N. C.)

I have come to speak to you about New Jersey's water supply. Why New Jersey? When I went to live there about 15 or 16 years ago, someone asked me why I'd chosen to settle in New Jersey and I said, "It is the ideal state for me; it has more unsolved water problems than any other state." To a considerable extent that is still true. New Jersey is very small, with a population of about 6 1/2 million people all crammed in about half the state because the other half is almost undeveloped. We have a tremendous urbanizing area, part of what is sometimes called a megalopolis--generally the corridor between New York and Philadelphia.

We have the highest degree of chemical industry in the country and, perhaps coincidentally, the highest cancer incidence. It isn't only big industry that is responsible; many of the small industries generate toxic pollutants. Things as common as automobile body shops use commercial solvents that are very dangerous and frequently get into the water. We recently found a small garment factory in south Jersey that was using trichlorethylene to dissolve basting stitches rather than taking them out by hand. Trichlorethylene is deadly poison and carcinogen. When there are more than 40 or 50 parts per billion, you ring an alarm bell, and one of the wells in the vicinity was found to have 27,000 parts per billion. Over 100 wells were affected in this small community.

These pollution problems are very serious. Until a few years ago we weren't aware of them because we didn't have the means of analyzing them. We have now, and hardly a week goes by that we don't find these polluted wells in some part of New Jersey and order them out of service for safety purposes. Then what are we going to do about it? Where are they going to get water? From public or private purveyors, municipal or state action?

I have come to you today to explain how we planned a management setup for our state. This does not reflect superior intelligence or farsightedness on the part of the State. We made a virtue out of necessity. Secretary Grimsley has given a moving foretaste of what's in the future for North Carolina; it's in the present for New Jersey, and we have had to move.

A terribly severe drought in 1960-66 scared people and provided the impetus to get us started. An appropriation was made to prepare a water supply master plan for the state; but it didn't get started until 1975, nine years after the drought was over. It took until June 1980 for the consultants to finish their report, the very month that a new, 18-month drought began. The State came out with a revised master plan in September 1981 and the drought ended about two months later, just after the public approved by referendum a large bond issue. So we owe the planning to the short severe drought and the fact that it brought us to the verge of disaster.

We have five basic pieces of legislation: the Water Supply Bond Act of \$350 million; a Water Supply Management Act that gave us a modernized and up-to-date scheme of water allocation; a Water Supply Authority Act that set up a State authority to design and build the projects after appropriation; an Act that allows the take-over of small and inefficient water companies; and the Storm Water Management Act, which sets up a system of storm water management keyed in with water supply that addresses water quality in storm runoff as well as its flood aspects. We are working on implementing regulations to put these pieces of legislation into effect. We have the regulations on water supply allocations (non-agricultural) which have been approved, have had public hearings held, and have been adopted. Allocation fees to pay for this program are now out for public discussion. Hearings will be held next month, and we expect them to be adopted soon and be able to finance the new system effective July 1 from its own revenues. We have water supply allocation (agricultural) because the law distinguishes between these two, and we are still wrapped in negotiations with the farming interests, which are not quite as powerful as they are in North Carolina but potent enough. As a consequence there has been no allocation of water for agricultural purposes since last July and there won't be for several months in the future.

The proposed Storm Water Regulations are very radical but we've got good support for them. We have held our hearings and they will probably be adopted within the next month or six weeks.

We have criteria for water system rehabilitation, another regulation, because loans for this purpose are authorized under our master plan to the amount of \$65 million, and those regulations indicate the criteria and methods by which these loans should be decided upon. And we have a similar one for water system interconnection.

That system of regulation and a couple of others that are coming up of lesser importance will set up the administrative structure for carrying out what we have to do.

Of course there are other implementing actions. There is design and construction of the projects that will be handled under the master plan. That will be carried out by the water supply authority. And they have only one project ongoing now. It is the rehabilitation of our aqueducts.

We're ready to go on the loan programs for water system rehabilitation--water system interconnection as soon as we get the appropriations. In addition, we have systems of special studies and feasibility reports.

In New Jersey our main problems are up in the northeastern part of the state where the Passaic and Raritan Rivers are. The main shortages are in the Passaic River Basin, while the Raritan Basin has two state reservoirs and abundant water even in time of drought. So we approached the drought with no possibility of getting the water to where it was needed.

We now have in our master plan a simple engineering solution, visualized conceptually for at least 20 years, to take water from one basin and put it into the other. We're hoping to be able to build it in the next two or three years. The Delaware and Raritan Canal, an ancient aqueduct built originally as a transportation artery, now carries water from the Delaware and dumps it in the Raritan when needed.

The Manasquan River reservoir project for water supply will be initiated shortly. And we have problems in Camden and Atlantic City that we must study, because in both cases the water supply is impacted, with intrusion of saltwater for one, of polluted water for the other. We have problems of excess drawdown in these aquifers and severe institutional problems and controversies between groups of people. These problems have to be studied so that we can get some better answers.

The master plan had an action program to spend its \$350 million, and we now have introduced in the legislature the appropriations for the \$57 million which will be the first part of spending this money. We had a new governor and a new commissioner and things have been held up a while, but the program has now gone forward and is about to be introduced. The items on the action program are: rehabilitation of antiquated and broken-down water systems--\$65 million; interconnection--\$15 million; the Delaware and Raritan Canal--\$20 million; the Manasquan reservoir project--\$40 million; the Raritan and Passaic diversion to take the water over the mountain--\$65 million; and special studies--\$36.5 million. The special studies include: conservation (best methods of conservation), watershed and aquifer protection, groundwater development, and special water treatment. What is special water treatment? We've found that organics from urban runoff and humic acids from decaying vegetation provide organic materials in our raw water supplies. Treatment of these waters by chlorination, under certain conditions, forms chlorinated hydrocarbons that are themselves very dangerous. This is a very difficult matter that has just recently come to public attention, and we set off a half million dollars to try to solve that problem.

The feasibility studies take the bulk of the money. And we have two projects that are interesting. Wanaque South at \$90 million is going to be built by the purveyors out of their own funds and not by state funds. The Merrill Creek Project, for flow augmentation on the Delaware, will be built by the electric utilities to get themselves out from under the gun for all the water they exhausted in their cooling towers. That is \$100 million.

We have reserved from the bond issue \$108 million that will be deployed later after we get our feasibility studies and see where it ought to go.

What are we going to do under the heading of watershed and aquifer protection? It is a study program. Environmentalists had demanded that the water supply master plan include a plan for watershed and aquifer protection for the state. We refused to say that we would implement such a program. Instead we said that in five years we would come up with the answers and develop such a program. The first part of this program will be county demonstration projects. These are things we think should be done at the local level, and we're going to subsidize trying them out on each county. What are they? One is aquifer protection--how is the county going to organize its land-use powers to protect aquifers? Another is septage management. The maintenance of septic tanks is causing pollution. Who is going to handle it and how? That is going to be a county level project.

We will also have a county-level demonstration approach to nonpoint source control. The diverse sources of pollution causing our urban runoff problems are susceptible to analysis, and we believe the counties and municipalities can find out, for example, what filling stations are doing with their excess lubricating oil better than we can in Trenton. We want them to do it and they want to do it.

Maintenance of detention basins. We're building a lot of detention basins, and there are arguments about maintenance. Who's to do it? Can the developer walk away from it? Do they cause mosquito problems? We will have four county demonstration projects on detention basin maintenance.

We have a million dollars in the program for storm water management planning. Why is storm water planning under water supply when it is really flood control? The answer is that it isn't really flood control. Our brand of storm water management planning controls the particulates in storm water runoff (lead, hydrocarbons) and retains them. A lot of the phosphates and BOD will settle out, so the pollution that comes in runoff can be dealt with as well as the flood effects. This is the only part of the watershed and aquifer protection program that we're implementing statewide at the present time.

Groundwater studies. We have terrible problems pertaining to groundwater--pollution, different uses of aquifers, conjunctive storage. We need to know more about these aquifers and we're going to model some of them, so we have several million dollars for that purpose.

We have a long study, comprehensive analysis. We're going to give the university \$400,000 in 3 1/2 years to do it and say, "You tell us what this program should amount to. What should the watershed and aquifer protection program be?" This is the kind of thing that a university can do because they can think about it eight hours a day.

The safe yield and deficit analysis, Passaic River Basin, is another part of the program we're turning over to a university. What is a safe yield? When the drought comes, how much water could those purveyors really provide? We're going to have the universities do those studies for them. Then everybody will know what they can actually contribute themselves and how much basis there is for the State to come in and provide some reserve supplies that can be used for drought.

How do we organize to do this? We have the Division of Water Resources, which is the biggest part of the Environmental Protection Department, with an authorized strength of over 700 people. The new commissioner is going to cut it because he thinks it's too big and a lot of people agree. We have a Director and Deputy Director of this division and various assistant directors. I'm the head of Water Supply and Management Administration. There is a hearing officer who holds these hearings on water supply allocation and floodplain delineation. We have a Water Allocation Office, a Bureau of Potable Water, and a Bureau of Floodplain Management. And they combine a number of things related to water--everything from the floodplain management to floodplain delineation, stream encroachment, potable water under the safe drinking water act, and all the water supply planning and management--water supply allocation.

I was a severe critic of state and federal government while I was in the university for 15 years. I'm now in the position of the music critic who is told to come down and conduct the orchestra. So I now have a big slice of this inflated state bureaucracy, charged with seeing if I can make it work after I've said that other people were making it work badly. I'm going to do the best I can and I appreciate the chance to talk about it to you good people.

BACKGROUND EVENTS

- Drought 1960-66
- (Consultants) Water Supply Master Plan 1975-80
- Drought 1980-81
- (State) Water Supply Master Plan 1981

IMPLEMENTING LAWS

- Water Supply Bond Act of 1981
- Water Supply Management Act 1981 (as amended)
- Water Supply Authority Act
- Takeover of Small Water Companies
- Storm Water Management Act

IMPLEMENTING REGULATIONS

- Water Supply Allocation (non-agricultural)-adopted
- Water Supply Allocation (agricultural)--draft
- Water Supply Allocation Fees (non-agricultural)--proposed
- Water Supply Allocation Fees (agricultural)
- Storm Water Management Regulations--proposed
- Criteria for Water System Rehabilitation--proposed
- Criteria for Water System Interconnection--draft

OTHER IMPLEMENTATION

- Design and Construction
- Water System Rehabilitation
- Water System Interconnection
- Special Studies
- Feasibility Reports

ACTION PROGRAM 1981-85

Rehabilitation	\$65 million
Interconnection	\$15 million
Delaware & Raritan Canal	\$20 million
Manasquan	\$40 million
Raritan & Passaic Diversion	\$65 million
Special Studies	\$36.5 million
Conservation	
Watershed & Aquifer Protection	
Groundwater Development	
Special Water Treatment	
Feasibility Studies	
Wanaque South	(\$90 million)
Merrill Creek	(\$100 million)
Reserved	108.5 million
TOTAL	\$350 million

WATERSHED AND AQUIFER PROTECTION

County Demonstration Programs
 Aquifer Protection
 Septage Management
 Nonpoint Source Control
 Maintenance, Detention Basins
Storm Water Management Planning
Groundwater Studies
Long Study, Comprehensive Analysis
Safe Yield and Deficit Analysis, Passaic River Basin

ITEMS OF INTEREST:

- Interagency Council Established for Aquatic Weed Control, page 1
- DEM Investigates Wake County Fish Kill, page 2
- EPA Ground Water Policy Expected in September, page 3
- Cuts in Environmental Research Hurt, page 3
- Chicod Creek Watershed Project Completed, page 4
- And more

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