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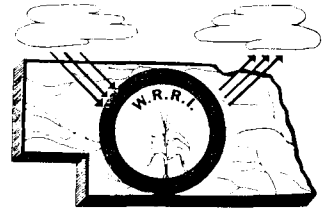
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# WATER RESOURCES NEWS

NEBRASKA WATER RESOURCES RESEARCH INSTITUTE  
212 AGRICULTURAL ENGINEERING BUILDING

THE UNIVERSITY OF NEBRASKA  
LINCOLN, NEBRASKA 68503



Volume 5 Number 12

December 1973

FROM THE DESK OF THE DIRECTOR . . .

For years resource planners have functioned in a partitioned manner, often ignoring the interdependence and relative importance of their planning processes to other alternatives in achieving a specified goal. With the onset of the environmental movement this began to change and with passage of the National Environmental Policy Act of 1969, water resources professionals squarely faced the fact that water is only one component of a broader system of physical, social and economic constituents. This recognition has changed and improved the entire planning process so that it will ultimately serve water and other interests far more effectively than the fragmented approaches of the past. In the short run, water issues may be obscured by others such as energy, environment, and quality of life, but in the long run concern over the complete scenario should revitalize the entire water resources field as the significance of water to all major social issues is finally driven home. The energy crisis is a case in point.

Water and energy are inextricably bound. Energy is consumed and sometimes produced by every form of water resources system. Opportunities for development and production of energy resources abound as well as those for reductions in energy consumption through prudent water development and management. Technological, political, social, economic and environmental factors all impact on the energy-water mix. The role of the water resources planner must expand to include assessment of water-energy interrelationships in addition to traditional planning considerations.

Since passage of the Water Resources Planning Act of 1965, there has been a shifting from multi-purpose to multiple objective planning. In the Principles and Standards issued by the Water Resources Council and approved by the President in 1973, two major objectives emerged

- enhancement of national economic development and
- enhancement of environmental quality.

### Adding a third major objective

--enhancement of the national energy pool by prudent water resources development, wise management in all sectors of the economic and regulatory policies to assure optimal use of the nation's water resources--

should be considered. Inclusion of an energy-water evaluation in the planning process is not only natural but essential to social welfare and national security. Energy impact statements may be as necessary to planning and decision-making processes as environmental impact assessments.

More efficient energy-water relationships can be attained by shifting water from low-value uses to higher value uses. The planning process should carefully evaluate gross inefficiencies which result from current pricing policies and legal structures. In analyzing energy-water relationships, wasteful and destructive uses of these resources should be guarded against. Through more realistic pricing and minimization of the concept of unlimited supplies, a tendency toward conservation and "best" allocation will result. The planning process must incorporate not only the "best available technologies" but also identify and press for implementation those economic, political, legal and social mechanisms which have the greatest potential for solving the immediate and long-term resource development and management problems of the nation.

Water and energy are currently cheap and public attitude is adjusted to this philosophy. In the short run, important decisions related to the energy crisis will clearly fall more in the realm of the socio-political-economic arena than in the area of technology. The need for a rational and carefully developed program to explore major social, political and economic aspects of energy-water inter-relationships is urgent.

## INSTITUTE ACTIVITIES

The Nebraska Water Resources Research Institute will once again sponsor a Water Resources Spring Seminar during the second semester 1974. This year a series of seminars will be presented on various contemporary issues including energy, water, agriculture and the environment. These will be held only on the Mondays indicated from 3:00-5:00 p.m. in Room 206 Ag. Engineering Building on East Campus. An exception will be the April 5 session which will be held at 11:00 a.m. at the Nebraska Union in connection with E-week activities of the College of Engineering and Technology.

Students who are interested should enroll under their department Seminar number, as was done last year, to receive credit. A short paper will be required. For further information, contact: Warren Viessman, Jr., Director, Nebraska Water Resources Research Institute, 212 Ag. Engineering Building, University of Nebraska, telephone 472-3307.

A program outline of the Seminar Series follows:

### JANUARY 21

ENERGY, WATER AND AGRICULTURE  
William E. Splinter, Chairman  
Dept. of Agricultural Engineering  
University of Nebraska-Lincoln

### JANUARY 28

ENERGY-WATER ISSUES -- PLANNING  
AND RESEARCH IMPLICATIONS  
Karen E. Stork, Administrative Ass't  
Warren Viessman, Jr., Director  
Water Resources Research Institute  
University of Nebraska-Lincoln

### FEBRUARY 4

NATIONAL AND INTERNATIONAL FOOD AND  
FIBER NEEDS -- TODAY AND TOMORROW  
Donald M. Edwards, Assistant Dean  
College of Engineering & Tech.  
University of Nebraska-Lincoln

FEBRUARY 25

DEVELOPMENT OF COAL RESOURCES  
IN THE NORTHERN GREAT PLAINS  
Dale O. Anderson, Director  
Water Resources Research Inst.  
North Dakota State University

MARCH 4

LAND-WATER PLANNING WITH EMPHASIS  
ON SHORELINE AREAS  
M. Wayne Hall, Director  
Water Resources Center  
University of Maine

MARCH 11

ASSESSING THE ENVIRONMENTAL  
IMPACT OF WATER DEVELOPMENT  
PROJECTS  
Roger S. Sharpe, Ass't Prof.  
Department of Biology  
University of Nebraska-Omaha  
  
Carl W. Wolfe, Section Chief  
Research Division  
Nebraska Game & Parks Comm.

APRIL 5

THE WORLD IN CRISIS  
SPECIAL SESSION - Friday 11 a.m.  
Centennial Room, Nebraska Union.  
Arranged by the College of  
Engineering & Technology in  
Connection with E-Week 1974  
Jay W. Forrester,  
Germes Hausen, Professor  
Alfred P. Sloan School of  
Management  
Massachusetts Institute of  
Technology

APRIL 22

REGIONAL WATER RESOURCES PLANNING -  
A QUANTITATIVE APPROACH  
Warren Viessman, Jr., Director  
Water Resources Research Inst.  
  
Gary L. Lewis, Ass't Professor  
Dept. of Civil Engineering  
University of Nebraska-Lincoln

#### CONFERENCES

##### Water Quality Planning Symposium

Cornell University will host a National Symposium on Water Quality Planning June 26-28, 1974. The symposium is sponsored by the Technical Council on Water Resources Planning and Management of the American Society of Engineers (ASCE). The TCWRPM is chaired by Victor Koelzer of Colorado State University.

The symposium will focus primarily on three issues: (1) water quality planning methods; (2) the relationship of water quality planning to resources, conservation and environmental protection; and (3) water quality planning and social progress.

Authors wishing to make presentations for this symposium should send abstracts (200-word maximum) of their papers to the appropriate technical committee chairman or to the Program Chairman, Walter Lyon, Director, Department of Environmental Resources, Bureau of Water

Quality Management, P.O. Box 2063, Harrisburg, Pennsylvania 17120. Preregistration forms and additional information regarding lodging, transportation, etc. may be obtained from General Co-Chairmen Leonard B. Dworsky or Daniel P. Loucks, Water Resources and Marine Sciences Center, 468 Hollister Hall, Cornell University, Ithaca, New York 14850.

International Conference Site: Paris

The 1974 conference of the International Association of Water Pollution Research will be held in Paris, France on September 9-13, 1974.

A broad range of topics is slated including: water quality standards, legal and administrative problems, wastewater treatment technology and research on pollution effects. The program will also include workshop sessions at which invited authors will present papers on wastewater disposal by pipeline, rural wastewater disposal, sludge disposal, water reuse, technology transfer, biological pollution parameters, monitoring, and disinfection.

For further information, contact: S.H. Jenkins, Committee Chairman, C/O 156/170 Newhall Street, Birmingham, B3 1SE, England.

FEDERAL HIGHLIGHTS

Flood Insurance Increased

The House has approved a new bill (H.R. 8449) which requires flood-prone communities to participate in the National Flood Insurance Program.

The bill, which must pass the Senate, would increase the total amount of flood insurance available from \$6 to \$10 billion. The amount of subsidized insurance available for a single family home would be increased from \$17,000 to \$35,000 and for other residential and nonresidential property from \$30,000 to \$100,000. Total coverage available through private insurance companies would double those amounts.

In order to qualify for government assistance in financing acquisition or construction, such as government-guaranteed mortgage loans, homeowners and businessmen in flood-prone areas would be required to buy flood insurance.

Before passing the bill, the House agreed to several amendments-- including one extending coverage to losses from erosion and undermining shorelines.

The House Banking Currency Committee said the expanded flood-insurance program was intended as a substitute and eventual replacement for federal disaster relief programs to help flood victims.

While the legislation gives the Secretary of Housing and Urban Development authority to designate communities as flood-prone, an amendment agreed to on the House floor would grant communities a right to a public hearing and review by the National Academy of Sciences of such a finding by the Secretary.

#### EPA Not Revealing Economic Impact To Public

The House Appropriations Committee reprimanded the Environmental Protection Agency for failing to warn the general public of the economic impact of its projects. The Committee stated in their report that a \$1.4 billion supplementary appropriations bill for FY 1974 included \$10.5 million for EPA development programs and research.

The report also criticized EPA for making decisions "without adequate consideration" of either cost or environmental impact. The Committee concluded that if the public had been adequately informed, many of the decisions would not have been so hastily established, for many of the actions seem too costly and unwise.

#### Future Assessment of Nation's Resources

The "1975 Assessment" of the nation's water and related land resources is available for review and comment. Interested parties should contact Mr. Arden O. Weiss, Chief of the Council's National and Assessment Division, 2120 L Street, N.W., Washington, D.C. 20037 (202) 254-5684.

The Assessment is designed to identify, describe and emphasize the need to resolve the nation's severe existing and emerging water problems from both a national and more localized state/regional viewpoint. The results will be useful to decision makers--federal, state and local--in determining how to spend the nation's water

dollars. The report identifies the nation's severe water-related problems in more geographical detail and with greater regional and public participation than did the 1968 Assessment.

For the "1975 Assessment", problem severity will be measured by the economic, environmental and social consequences of not having adequate water supplies to meet existing and potential future water needs. Severity will be determined for four future time periods:

Immediate Problems	1975 - 1980
Near Term Problems	1980 - 1990
Middle Term Problems	1990 - 2000
Far Term Problems	2000 - 2020

This Assessment will be accomplished by the cooperative activities of state, regional and federal agencies under the direction of the Water Resources Council. Regional assessment activities will be coordinated and conducted by selected regional sponsors--one for each of the Council's twenty-one water resource regions.

#### NSF Seeks Proposals

The National Science Foundation is seeking proposals for research projects that would obtain facts for improvement of the organization and delivery of public services. The projects will be directed by the Division of Social Systems and Human Resources (SSHR) in the Foundation's directorate of Research Applications. Up to \$2 million could be provided for the research.

The Foundation is primarily interested in finding out which branch of government (county, municipal, etc.) is most capable of delivering certain public services in particular areas and the following restrictions on projects have been set:

- (1) The services to be dealt with are police, public health (excluding mental health), fire, solid waste collection and disposal, and water and sewage management.
- (2) The research will be conducted within metropolitan areas, in conjunction with those using the research data. Standard Metropolitan Statistical Areas for these projects are limited to those which are within the boundaries of a single state and that have populations under 1,500,000 in the 1970 U.S. Census.



- (3) The deadline for submitting any project proposals is 5 p.m. EST, January 22, 1974. Proposals may be submitted by academic institutions and by profit or nonprofit non-academic organizations.

Copies of Program Solicitation 73-28, "Decision-Related Research on the Organization of Service Delivery in Metropolitan Areas", may be obtained from Forms and Publications, Room 236, National Science Foundation, 1800 G Street, N.W., Washington, D.C., 20550. (202) 632-4128.

### Train Speaks On Environment VS Energy Crisis

At the National Forum on Growth With Environmental Quality held September 24, 1973, Russell E. Train, Administrator of the EPA, made clear his sentiments on the energy crisis vs. environmental control. Train warned that abandonment of environmental controls for the purpose of easing the "energy crunch" could not help matters but would definitely make them worse.

Although environmental controls are a small part of the energy problems, Train made it quite clear that other factors such as lack of research programs in new energy sources and technologies, international events, oil import quotas and inadequate planning on the part of government and industry have also contributed to the present "crunch".

Train emphasized the fact that any kind of environmental improvement will help the economy because it will directly help the American people in terms of public health and welfare. His reasoning is that as soon as the environment is under control, more time and money can be spent on alleviating the energy crisis.

### Economy VS Environment

Russell Peterson, new Chairman of the Council on Environmental Quality, told members of the Senate Interior Committee that CEQ's programs should be balanced between environmental protection and quality of life standards - that economic factors should be considered in pollution control programs. Peterson also denied that environmental controls were a leading factor in the current energy crisis. He stated that additional legislation on such matters as coastal zoning and refinery siting could help ease the crisis.

### Water Resources Cost-Sharing Proposals Pending

The Administration is assembling new legislation for cost-sharing of water resources programs. The aim of the new legislation is 100 percent cost-sharing; that is, the direct assessment of costs of non-federal interests to the users and beneficiaries.

Using an Interdepartmental Task Force report on the impact of cost-sharing at different levels, the U.S. Water Resources Council and the Domestic Council at the White House are hammering out differences in order to submit joint policies to Congress. Interior Secretary Rogers C.B. Morton, as a member of both groups, will most likely do the final shaping of the policies.

### WRC Water Policy Views

The Water Resources Council was handed a list of written questions submitted by Sen. Frank Church of Idaho who is chairman of the Water and Power Resources Subcommittee of the Senate Interior and Insular Affairs Committee. The list was submitted after the Water Resources Council was unable to orally answer Senators' questions at a mid-July hearing.

In a written reply, the Council stated that: The Executive Branch has not considered the impact waterway user charges would have upon the national energy system. The National Water Commission's recommendation of full cost recovery from beneficiaries for flood protection is entirely feasible by contracting with states, river basin authorities, commissions, or any major public entities with the authority to enforce laws, collect funds and bargain with the federal government. Any final assessment of individual taxpayers would be left to the local government or cooperating public agencies.

### Senator Church Against "Direct Beneficiaries"

Senator Frank Church, Chairman of the Water and Power Resources Subcommittee, is not convinced that the "direct beneficiaries" approach to cost-sharing is valid. "One wonders who the 'direct beneficiaries' of a large flood control project might be, and how they might be separated from the rest of the inhabitants of the downstream drainage basin, in order to assess them for their pro rata share of the cost? The practical difficulties of such a calculation boggle the imagination," he said.

Senator Church was also critical of a recommendation that would allow the federal government to stop taking new reclamation projects. From Church's point of view, it would be a mistake in face of the shortage of agricultural projects.

#### Higher Interest Rates Blasted Again

In agreement with many others, Harry N. Cook, Executive Vice President of the National Waterways Conference, is fearful and critical of the new higher interest rate proposed by the Water Resources Council. "Comprehensive river basin programs cannot survive the arbitrary criteria now in force," Mr. Cook said. Cook also felt that the higher interest rates would cause the multi-purpose long-term water projects including navigation, reclamation or flood control to become a thing of the past, because such projects could not yield immediate returns in benefits.

#### Atkins Relates Energy To Water

In a speech before the Ohio Valley Improvement Association, Orin E. Atkins, board chairman of Ashland Oil, Inc., explained his views on the energy-water resources relationship. Atkins said that energy supplies could be increased and improved only as water resources are developed and improved. Without this development, the petroleum industry would suffer. He called for rapid improvement of flood control and navigation. "We have entered an era when we must undertake a program of comprehensive conservation and development of our water resources on a scale far greater than anything we have ever experienced. The cost of neglect is beyond calculation."

#### Research On Wastewater Application and Nitrogen Use

The Agriculture Department has granted \$94,000 to the University of Minnesota's Agricultural Experiment Station for research on how to achieve maximum nitrogen use by crops watered with sewage water. The principal investigator on the project is William P. Martin, head of the University's soil science department. The research project will consist of laying out drainage plots and installing drainage systems and measuring equipment to develop practices that will assure maximum nitrogen use under maximum application of wastewater.

### New Rules For Weather Modification Programs

The National Oceanic and Atmospheric Administration (NOAA) has proposed new rules for weather modification programs whereby all reports on such programs must include information on safety and environmental precautions.

Under a 1971 law (P.L. 92-205) all non-federal weather modification activities must be reported to NOAA. However, because of a Presidential directive, the additional information on precautions taken to protect persons, property and the environment is being required. The proposed changes in reporting rules were published in the November 6 issue of the Federal Register.

### PUBLICATIONS

#### Pamphlet Available On Water Recycling

A 28-page pamphlet on water pollution has recently been published by the Public Affairs Committee. Gladwin Hill, author of the pamphlet entitled "Cleansing our Waters," says the recycling of domestic water will become widespread in the future because the national demand will far exceed the easily recoverable supply. The publication summarizes the problem and describes what is being done about it.

The pamphlet is available for 35¢ from the Public Affairs Committee, 381 Park Avenue South, New York, New York 10016.

### RESEARCH REVIEW

Project Title: A Screening Model for the Elkhorn River Basin

Principal Investigators: Warren Viessman, Jr., Director  
Water Resources Research Institute

Gary L. Lewis, Assistant Professor  
Department of Civil Engineering

The Nebraska Water Resources Research Institute in cooperation with the Platte River Level B Study planning board and the Missouri River Basin Commission is engaged in the development of a model whose objective is to provide planners with quantitative information on

which to assess alternatives for development in the Elkhorn River Basin. The tool being employed is a linear programming model which allocates quantities of water for irrigation, recreation, fish and wildlife, flood control, water supply and other purposes. Various objectives are to be assessed including national economic development and environmental quality. The study includes an evaluation of projects proposed by the Corps of Engineers, Bureau of Reclamation and Soil Conservation Service. It is the first time that such a technique has been applied to a river basin containing both small watersheds and large storage works.

Preliminary model runs are scheduled for completion by early January. Final analyses will be completed by early Spring.

### Soak This One Up!!!

Florida's oil-pollution law requires the licensing of many marina fuel docks. The license application asks what cleanup devices are available in the case of oil spills. One marina owner filled in the space with: "A multi-path, expansible, amorphous carbohydrate absorption module sensitive to differential molecular tensions." Translation? It's a sponge.

### PUBLICATIONS RECEIVED BY THE INSTITUTE

1. Publication No. 22, Relative Leaching Rates of Common Nitrogen Carriers From Sandy Soils in Relation to Lake Eutrophication, D.E. Smith, Biology Department, Rollins College, Winter Park, Florida, July 1973.
2. Prescribed Fire Effects on Physical and Hydrologic Properties of Mixed-Conifer Forest Floor and Soil, James K. Agee, School of Forestry and Conservation, Water Resources Center, University of California, Berkeley, California, July 1973.
3. Interaction of Bulk Precipitation, Stream Water and Sewage in a Small Watershed Near Oxford, Mississippi, Konrad J. Banaszak, Charlie B. Whitten and Dan A. Thompson, Water Resources Research Institute, Mississippi State University, Mississippi State, Mississippi, August 1973.
4. Publication No. 23, Biological Control of Water Weeds With Plant Pathogens, T.E. Freeman, R. Charudattan, and F.W. Zettler, Plant Pathology Department, University of Florida, Gainesville, Florida, August 1973.

5. The Optimal Expansion of a Water Resources System, D.M. Himmelblau, Department of Chemical Engineering, The University of Texas, Austin, Texas, August 1973.
6. Tenth Annual Report, Center For Research in Water Resources, The University of Texas at Austin, September 1973.
7. Rookery Bay Land Use Studies, Environmental Planning Strategies for the Development of a Mangrove Shoreline, Study No. 2. The Resource Buffer Plan: A Conceptual Land Use Study, Water Management District No. 6, Collier County, Florida, Albert R. Veri, Arthur R. Marshall, Susan Uhl Wilson, James H. Hartwell, Peter Rosendahl and Thomas Mumford, Center for Urban Studies, University of Miami, Miami, Florida, October 1973.
8. Rookery Bay Land Use Studies, Environmental Planning Strategies for the Development of a Mangrove Shoreline, Study No. 1, "The Demographic, Political and Administrative Setting", Carl Feiss, Ruth McQuown, Paul Roberts and Rodney May, Urban Studies Bureau, University of Florida, September 1973.
9. Rookery Bay Land Use Studies, Environmental Planning Strategies for the Development of a Mangrove Shoreline, Study No. 6, "Applicability of the Interceptor Waterway Concept to the Rookery Bay Area", Eric J. Heald and Durbin C. Tabb, Tropical Bio-Industries Development Company, South Miami, Florida, November 1973.
10. An Experimental Introduction of Coho Salmon into a Landlocked Lake in Northern Wisconsin, Technical Bulletin No. 69, Eddie L. Avery, Department of Natural Resources, Madison, Wisconsin, 1973.
11. One-Dimensional Model of the Movement of Trace Radioactive Solute Through Soil Columns: The Percol Model, R.C. Routson and R.J. Serne, Battelle, Water and Land Resources Department, Pacific Northwest Laboratories, Richland, Washington, 1972.
12. A Selected Bibliography on Surface Coal Mining and Reclamation of Particular Interest to the Great Plains States, Norman N. Dalsted and F. Larry Leistritz, Department of Agricultural Economics, North Dakota Agricultural Experimental Station, North Dakota State University, Fargo, North Dakota, November 1973.
13. Wastewater Disposal on Land: A Terrestrial Ecosystem Model, Technical Report No. 38, Walt Conley and Alan O. Tipton, Institute of Water Research, Michigan State University, October 1973.

14. Simulation Model For Evaluation of Interception Loss From Forest Trees, Part I: Modeling Snow Interception on Conifers, Dr. G.H. Belt of Forestry, Part II: Laboratory Modeling of Snow Interception on Trees, Dr. Myron Molnau of Agricultural Engineering, Water Resources Research Institute, University of Idaho, Moscow, Idaho, September 1973.
15. The Influence of Organic Carbon Decomposition on Carbon Dioxide, Dissolved Oxygen Level and Productions in the Dworshak Dam Impoundment Area, A.J. Lingg, Water Resources Research Institute, University of Idaho, Moscow, Idaho, November 1973.
16. Effects of Heated Discharge on Fish and Invertebrates of White River at Petersburg, Indiana, Water Resources Research Center, Indiana University, Bloomington, Indiana, December 1973.
17. Model For Landscape Resource Assessment, Julius Gyula Fabos, Water Resources Research Center, University of Massachusetts at Amherst, 1973.
18. An Evaluation of Title III Water Resources Planning Grants to States Prepared for the U.S. Water Resources Council by the Institute of Government Research, University of Arizona, Helen Ingram, Michael D. Bradley, David L. Ingersoll, University of Arizona, October 1973.
19. Membrane Potential and Transport of Alkali and Alkaline Earth Metal Chlorides Across Modified Cellulose Acetate Membranes, K.W. Choi, D.N. Bennion, Water Resources Center, Desalination Report No. 55, Energy and Kinetics Department, School of Engineering and Applied Science, University of California, Los Angeles, September 1973.
20. Desalting Irrigation Field Drainage Water by Reverse Osmosis, Firebaugh, California, D. Antoniuk, J.W. McCutchan, Water Resources Center, Desalination Report No. 54, School of Engineering and Applied Science, University of California, Los Angeles, August 1973.
21. Policies and Prodedures for Preparation of Research Proposals, University of Illinois, Water Resources Center, 2535 Hydrosystems Laboratory, Urbana, Illinois, July 1969.
22. Annual Report '72-'73, Water Resources Research Center, University of Hawaii-Honolulu, Hawaii.

23. Erosion Control: Stability of Rock Sausages, Report No. 19, Chesley J. Posey, Institute of Water Resources, The University of Connecticut, November 1973.
24. 1973 Western States Conference On Water Information Dissemination, Proceedings of a Conference Held June 8, 1973, Water Resources Research Center, University of Arizona, Tucson, Arizona.
25. Use of Finite-Difference Arrays of Observation Wells to Estimate Evapotranspiration From Ground Water in the Arkansas River Valley, Colorado, E.P. Weeks and M.L. Sorey, Department of the Interior, United States Government Printing Office, Washington, D.C., 1973.
26. A Guide to Important Characteristics and Values of Freshwater Wetlands in the Northeast, Joseph S. Larson, Water Resources Research Center, University of Massachusetts at Amherst, July 1973.

#### QUESTIONS AND ANSWERS

Newsletter items and inquiries should be sent to:  
Dr. Warren Viessman, Jr., Nebraska Water Resources Research  
Institute, 212 Ag. Engineering Bldg., University of Nebraska,  
Lincoln, Nebraska 68503 or phone (402) 472-3307.