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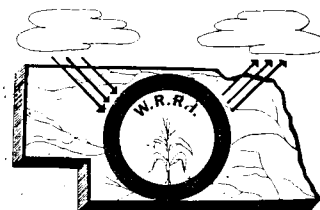
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WATER RESOURCES NEWS

NEBRASKA WATER RESOURCES RESEARCH INSTITUTE
212 AGRICULTURAL ENGINEERING BUILDING

THE UNIVERSITY OF NEBRASKA
LINCOLN, NEBRASKA 68503



Volume 5 Number 1

January 1973

FROM THE DESK OF THE DIRECTOR . . .

The complexity of today's problems, coupled with society's demands for an accelerated response, places planners, designers and managers under staggering pressures for performance. There is little time for in-house research or interpretation of research results. Proven methodologies and reliable information presented in useful and understandable form are needed.

Since the Senate Select Committee on National Water Resources report in 1961 and the formation of the Committee on Water Resources Research (COWRR) in the Office of Science and Technology in 1963, important changes have occurred in emphasis and values regarding water resources research. Interest has shifted from water supply to environmental impact and other contemporary issues. Citizens are concerned about social and environmental consequences of water-related activities. Getting research results put into practice is being emphasized.

A continuing review of legislation, planning recommendations and attitudes of citizen groups is needed to identify research goals. Translation of these into appropriate research projects is not easy. Goals must be carefully assessed by both researchers and users to see that they relate to important problems. Research topics considered important today are not the same as those of ten or even five years ago. Urgent problems of the near future will likely be different from those we perceive today. Research needs must be continually reviewed and modified to meet changing objectives and interests of society.

The rapid pace of technological development has caused a major shifting in social attitudes and values. Emphasis has changed from material growth to moral and aesthetic fulfillment. A whole host of social problems has been generated. These demand a new research outlook. Not only must research be designed to impact on important contemporary issues, but greater effort must be made to wed research results with practical application. Research and technology transfer are no longer independent issues. They must be considered jointly from the time of research design until projects are completed and results applied. Research users and producers have many obstacles to overcome in coordinating their efforts, but this must be done if we are to maximize the potential of limited resources for providing information vital to our national well-being.

INTERDISCIPLINARY WATER RESOURCES SEMINAR

This year's Water Resources Seminar theme is "Regional Planning for Natural Resources with Special Emphasis on the Missouri River Basin." The seminar is held every Monday afternoon at 4:00 p.m. in Room 206 Ag. Engineering on the East Campus. All interested persons are welcome to attend.

Seminar topics and speakers for the coming month are as follows:

<u>Date</u>	<u>Topic</u>	<u>Speaker</u>
February 5	Basin Resources - Land	Keith F. Myers State Conservationist Soil Conservation Service
February 12	Basin Resources - Water	Gus J. Karabotsos, Chief Planning Division U.S. Army Corps of Engineers
February 19	Basin Resources - Minerals and Gas	Marvin P. Carlson Assistant Director Conservation & Survey
February 26	Economic Analyses and Projections	Daniel G. Piper Agriculture Economist Economic Research Service

REGIONAL NEWS

EXON TESTIFIES ON WATER COMMISSION REPORT

Nebraska Governor J. J. Exon presented the state's views on the highly controversial National Water Commission Report at a two-day hearing in Phoenix, Arizona on January 11 and 12. A written report on the state's position will be submitted to the National Water Commission before February 15, 1973.

The text of the Governor's comments may be obtained from the Nebraska Water Resources Research Institute, 212 Ag. Engineering Building, Lincoln, Nebraska 68503, 472-3307.

OWRR DIRECTOR COMMENTS ON WATER RESOURCES PLANNING

Dr. Warren A. Hall, Acting Director of OWRR, met with western state water institute directors on December 21, 1972 in Denver to present his views on regional water research.

Dr. Hall stated that research must be more "problem-oriented" and less "discipline-oriented" if it is to be effective. Funds should not be allocated simply on the basis of an individual researcher's interest in a particular problem. Systematic procedures are needed to identify problems and layout alternative solutions and possible consequences.

Dr. Hall encouraged more cooperation among colleges and universities and between universities and government agencies in water research planning. He believes that government involvement in research planning is necessary because government people are responsible for solving the problems that research is supposed to attack. There is no need to create a special class of experts to translate research results into a usable form for government officials. Government officials would be more receptive to research results if they were more involved in the planning process.

Dr. Hall mentioned that no guidelines on information dissemination or technology transfer have been developed. Institutes should correct this deficiency on their own initiative. He suggested that collaboration among the centers might enhance their capabilities in the information area as well as in the research area. Directors may want to consider pilot studies to determine what groups in their states have the greatest need for information.

Dr. Hall concluded "Good research planning has to be intimately associated with people solving problems. Otherwise, researchers may overlook an important aspect of the problem they are working on, thus rendering their work useless."

WESTERN RESOURCES FIFTEENTH ANNUAL CONFERENCE

The fifteenth annual Western Resources Conference entitled "Salinity: A Critical Review of Causes and Control" will be held July 9-11, 1973 at the University of Colorado, Boulder.

Speakers and workshop groups will assess the state of the art of diagnosing causes and designing efficient controls over salinity in water supplies.

For further information, contact:

Bureau of Conferences and Institutes
Division of Continuing Education
University of Colorado
Boulder, Colorado 80302

BASIN PLANNING GUIDE ADOPTED

A planning guide for the Missouri River Basin Commission has been developed for the 10-state region's water resources between now and the year 2020.

By 1980 the report envisions federal, state, local and private expenditures will be \$6.5 billion; by 2000, \$7.9 billion; by 2020, \$10.0 billion.

Features of the study include: (1) 11 million acres of land irrigated from ground and surface water; (2) reservoirs for 47 million acre-feet of storage; (3) 10,000 grade stabilization structures for erosion control; (4) improved drainage of 800,000 acres of cropland; (5) 5,000 miles of levees and channel improvements for flood protection; (6) 2,000 miles of bank stabilization, four million acres for recreational development, 1,000 miles of scenic rivers and 1.2 million acres of wetlands preservation.

One major program of the plan is flood plain land use management to be implemented at the state-local level. The study contends that about 2.2 million acres of flood plain lands can be converted to light farming activity, recreation, wildlife and general environmental enhancement.

Investigations are recommended for developing resources of the James River Basin in North and South Dakota, the Platte in Nebraska, the South and North Platte basin in Colorado and Wyoming, western Iowa streams, the Kansas River basin and the Yellowstone in Wyoming and Montana.

The study forecasts a shortage of water in the Missouri Basin during the next 50-100 years, reduction in hydroelectric power, a decrease in commercial navigation, and a cut in the outflow to the Mississippi by as much as 30 per cent annually.

NATIONAL

WATER POLLUTION CONTROL DEBATE

National and state governments are contesting the amount of money to be spent on water pollution control. Public Law, 92-500, allocated \$18 billion in federal funds for construction of sewage treatment plants, but the Executive Branch announced that only a portion of that amount will be released.

The bill calls for the "best practical" control by July 1, 1977 and the "best available" control for eliminating the discharge of pollutants by July 1, 1983. The law takes into consideration "economic capability of industry" and calls for a "balance between economic and social costs."

Major points of the law are:

- (1) A goal of "zero discharge" by 1985.
- (2) Spending levels for construction of sewage treatment plants (\$18 billion in contracts for federal grants to municipalities through 1975, federal share 75%).
- (3) EPA to provide grants to a state, after approving the state's plans for treatment works.
- (4) Grants allotted to the states on the basis of need, not population.
- (5) Limitations on the amount of effluents a plant can discharge, with EPA revising existing standards and adopting new ones in the future.
- (6) Requirement that municipal treatment plants identify all industrial users and their effluents and enforce violation of the standards.
- (7) Requirement that EPA issue regulations to control thermal discharges.
- (8) Authorization for EPA to issue permits for the discharge of pollutants into U. S. waters or in the oceans along the coastlines, and to set guidelines for state permit programs.
- (9) Stipulation that citizen suits can be brought against violators of the bill if the citizen or group has an interest which is adversely affected.
- (10) Exclusion of EPA from the requirement for environmental impact statements under the National Environmental Policy Act.

Educational institutions will be granted additional funds for undergraduate training in wastewater treatment or water quality management. The establishment of regional river study centers was also authorized under this law. These centers would conduct and report on interdisciplinary studies on the nature of river systems.

EPA DISCHARGE PERMITS

Proposed regulations for issuing wastewater discharge permits under the new Water Pollution Control Act have been released by the Environmental Protection Agency.

Under these rules, EPA will issue permits when state and other jurisdictions have no authority to do so because of failure to meet federal requirements.

Applicants are required to provide the best practicable water pollution control technology currently available by July 1, 1977. Cities are required to achieve secondary treatment by the same date. Under the new law, all applicants must comply with the water quality standards.

Federal facilities would receive permits from EPA whether or not the state where the facility is located has permit authority.

Following are a few highlights of the proposal:

--Any person applying for a permit under the Refuse Act of 1899 permit program need not reapply, unless the discharge has changed substantially in nature, volume or frequency.

--Any potential discharger desiring to begin operation before June 16 must give a minimum of 60 days advance notice or seek a special waiver from the EPA regional administrator.

--Applications from corporations must be signed by a vice president or higher officer.

--Each application involving no more than one major wastewater outlet is to be accompanied by a \$100 fee. Each additional outlet will cost \$50.

--No fees will be charged city, state, federal or other governmental bodies.

--Any applicant whose discharge is less than 50,000 gallons per day will be required to pay only a \$10 fee unless EPA decides the outlet will have a significant environmental impact.

--Permit requirements do not apply to sewage from vessels, to water, gas, or other material injected into a well for production of oil or gas, to aquaculture projects, or to dredged or fill material.

Comments on the proposed regulations (published in the January 11, Federal Register) should be submitted to Office of Enforcement and General Counsel, Environmental Protection Agency, Washington, D. C. 20460 before February 11, 1973.

SUMMARY OF RESEARCH NEEDS BY ASCE GROUNDWATER COMMITTEE

The ASCE Hydraulics Division held its 20th Annual Specialty Conference in Ithaca, New York on August 16-18, 1972. During a meeting of the Groundwater Committee, the following areas were identified as needing more research:

1. Mechanics of flow including pollutants, chemicals and the study of systems in their natural state.
2. The physical system, including determination of flow properties, boundaries and geologic conditions.
3. Management of groundwater systems including multiple pumping and recharge well systems, effects of landfills on groundwater and land subsidence caused by groundwater pumpage.

THREATENED EXISTENCE: OFFICE OF SALINE WATER

The Office of Saline Water may become extinct if cutbacks in funds continue. About \$26.8 million was appropriated to OSW for the current fiscal year but the agency's 1974 budget may be reduced as much as 50 per cent.

OSW has gradually moved from searching for new desalting methods to testing existing techniques in large-scale pilot plants. These studies could make a major contribution toward providing more water for arid areas near the sea.

CITY WATER FUNDS CUT

George Romney, Housing Secretary, made an announcement to the National Association of Home Builders that the administration is freezing new housing, water and sewer grant projects.

Senate Banking Committee Chairman, John Sparkman, (D-AL), and House Banking Committee Chairman Wright Patman, (D-TX), have promised to fight the cutbacks. The withholding of federal spending programs by the Executive Branch is a major concern of Congress.

Senator Gale McGee, (D-WY), warned that impoundment and Nixon budgetary policies may result in Senate refusal to approve budgets for government agencies.

HUDSON CANYON LIVES

According to the National Oceanic and Atmospheric Administration, the Hudson Canyon, about 120 miles from New York City, may be transporting pollutants out to sea.

Dr. George H. Keller headed a team of scientists who studied the area from a small research submersible. They found that sediments, most likely from the Hudson River or from offshore dump sites, follow the canyon to the depths of the ocean.

Dr. Keller stated "We know that New Jersey, for example, has been considering piping wastes out to one of the offshore canyon heads. It is best that we know more about the dynamic processes in the canyons if people are planning to use them as a pipeline to the deep sea."

Prior to the underwater study, the canyon was thought to be "dead". However, there are currents which carry nutrients out to deep water where scientists have discovered large crabs and fish with potential commercial value.

HOUSE INTERIOR COMMITTEE SHAKEUP

Rep. Harold T. Johnson (D-CA), will remain Chairman of the Irrigation and Reclamation Subcommittee despite the shakeup of the House Interior Committee. The shakeup was brought about by the loss of several high-ranking members. Rep. James A. Haley of Florida is likely to become Chairman of the full committee. He will succeed Rep. Wayne N. Aspinall (D-CO) who lost the democratic primary.

PROPOSED FLOOD INSURANCE BILL

Following the damage caused by Tropical Storm Agnes, Congress may give life to a new flood insurance bill. Senator Harrison Williams (D-NJ) proposed increasing single family unit coverage from a maximum of \$17,500 to \$25,000. It is felt that this would give individuals more incentive to purchase flood insurance.

EROSION AND SEDIMENT CONTROL GUIDELINES

EPA recently announced publication of "Guidelines for Erosion and Sediment Control Planning and Implementation." The guidelines explain how to determine potential sediment and erosion problems and how to plan and manage control programs. These guidelines are used by EPA in design of wastewater treatment plants, by HUD in their construction guidelines, and by HEW in their hospital construction program.

The publication is available from the U. S. Government Printing Office, Washington, D. C. 20402, for \$1.75, EPA No. R2-72-015.

WATER QUALITY SUMMARIES AVAILABLE

The Environmental Protection Agency has prepared state-by-state summaries of approved water quality criteria. These summaries are available in a series of pamphlets, each dealing with a particular subject. The following criteria are included: turbidity, settleable solids, phosphates, oil mixing zones, disinfection, dissolved oxygen, dissolved solids, mercury and heavy metals, antidegradation, radiation, acidity/alkalinity, bacteria, nitrates, and general stream use designation.

A pamphlet entitled "Questions and Answers on Water Quality Standards," complements the summaries.

To receive the series of pamphlets, contact the Public Inquiries Branch, Office of Public Affairs, EPA, Washington, D.C. 20460.

RESEARCH REVIEW

PROJECT: Development of a Generalized Watershed Model for Nebraska

PRINCIPAL INVESTIGATOR: Dr. Warren Viessman, Jr.

This project was initiated on July 1, 1972. The Nebraska Water Resources Research Institute is the project coordinator. The objectives are: (1) to develop a generalized watershed simulation model for use in water resources planning, design, development and management; (2) to design a special program of continuing education to train state agency and other personnel in the application of modeling techniques; (3) to translate research findings into useful practical documents; and (4) to acquaint the public with project results.

Documentation of recharge potentials across the state of Nebraska is in progress. This is being done to provide an indication of areas most susceptible to artificial recharge. Individual locations will be studied in more detail to determine technical feasibility.

Surface runoff components of the overall simulation model have been developed for several processes including infiltration and evapotranspiration. Work continues on the development of a modified recharge equation and on algorithms to better distribute surface and subsurface flows. At present, routing models are being developed to handle the streamflow segment.

A preliminary storm-event model has been completed and is designed so that the output can be presented in graphical form. This model is being tested on a trial area.

The overall digital modeling program is moving along at a rapid pace and by the end of the year several operational models will be available for use. Plans are being made to modify and improve current modeling capabilities. In particular, heavy emphasis is being placed on the surface water component of the overall modeling process so that this can be more effectively interfaced with a groundwater digital model being developed by Dr. Huntoon in a comparison project.

PUBLICATIONS RECEIVED

1. "Feasibility Study of Electromagnetic Subsurface Profiling," R. M. Morey, W. S. Harrington, Jr., for EPA, October, 1972.
2. "Transactions for the American Society of Civil Engineers," Volume 135, 136, and 137, 1972.
3. "Water Quality Criteria Data Book, Vol. 4, An Investigation Into Recreational Water Quality," B. J. Mechals, K. K. Hekimian, L. A. Schinazi, R. H. Dudley, for EPA, April, 1972.
4. "Carbon Dioxide Exchange in Water-stressed Sorghum," L. L. Sherman, J. D. Eastin, C. Y. Sullivan, E. J. Kinbacher, Reprint from CROP SCIENCE, July-Aug. 1972.
5. "Impact of a Proposed Reservoir on Local Land Values: Anthropological Analysis of Social and Cultural Benefits and Costs from Stream Control Measures--Phase 3," P. Drucker, University of Kentucky, 1972.
6. "Proceedings Eighth Biennial Conference on Ground Water," University of California, September 22-23, 1971.
7. "Storm Sewer Design--An Evaluation of the RRL Method," J. B. Stall, M. L. Terstriep, for EPA, October, 1972.
8. "Report 157, A Survey of the Subsurface Saline Water of Texas," 8 volumes, Texas Water Development Board, September, 1972.
9. "Directory of Faculty Engaged in Water Research at Connecticut Universities and Colleges," Report No. 17, Institute of Water Resources, University of Connecticut, October 1972.
10. "Analyzing Organizational Conflicts in Water Resource Management," R. J. Martel, D. McLaughlin, Analytic Sciences Corporation, September, 1972.
11. "Oxidation of Pyrites in Chlorinated Solvents," J. C. Troy, J. A. Boros, D. R. Breneman, for EPA, November, 1972.
12. "Proceedings of the 1972 Cornell Agricultural Waste Management Conference.

13. "Green Land Clean Streams; The Beneficial Use of Waste Water Through Land Treatment," R. M. Stevens, Temple University, 1972.
14. "Photochemical Methods for Purifying Water," C. Y. Cha, J. M. Smith, for EPA, November, 1972.
15. "Full Scale Parallel Activated Sludge Process Evaluation," E. D. Toerber, for EPA, November 1972.
16. "Initial Mixing in Coagulation Processes," R. J. Stenquist, W. J. Kaufman, for EPA, November 1972.
17. "Nebraska Conservation Needs," Nebraska Conservation Needs Committee, 1969.
18. "Nutrient Removal by Waterhyacinth," H. H. Rogers, D. E. Davis, Reprinted from WEED SCIENCE, September, 1972.
19. "Quantitative Methods for Preliminary Design of Water Quality Surveillance Systems," C. V. Beckers, S. G. Chamberlain, G. P. Grimsrud, for EPA, November, 1972.
20. "Selected Irrigation Return Flow Quality Abstracts 1968-1969," G. V. Skogerboe, V. T. Hahni, W. R. Walker, for EPA, October, 1972.
21. "Soil and Water Management for Salinity Control; Technical Completion Report, New Mexico State University, July 1968-August 1972.
22. "1962 Publications of the Geological Survey, 1970"
23. "Salinity Problems in Arid Lands Irrigation; A Literature Review and Selected Bibliography," H. E. Casey, University of Arizona, 1972.
24. "Nematode Community Structure a Tool for Evaluating Water Resource Environments," V. R. Ferris, J. M. Ferris, C. A. Callaham, Purdue University, November, 1972.
25. "An Investigation of Phosphorus Removal Mechanisms in Activated Sludge Systems," W. E. Morgan, E. G. Fruh, for EPA, November 1972.
26. "Acid Mine Drainage Treatment by Ion Exchange," J. Holmes, E. Kreuzsch, for EPA, November, 1972.
27. "Proceedings Third National Symposium on Food Processing Wastes," March 28-30, 1972, New Orleans, Louisiana, November, 1972.
28. "Pyritic Systems: A Mathematical Model," A. H. Morth, E. E. Smith, K. S. Shumate, for EPA, November, 1972.

29. "Patterns in Water Resources Planning; Some Comparisons Between Planning in NM, NE, ID and ME," E. A. Imhoff, University of Nebraska, February, 1972.
30. "A Preliminary Report on Research Centers and Institutes at Land Grant Universities," S. O. Ikenberry, R. C. Friedman, Pennsylvania State University, April, 1972.
31. "Water Resources Review for Streamflow and Ground-Water Conditions," December, 1972.
32. "Proceedings Workshop on Home Sewage Disposal in Colorado," R. C. Ward, Colorado State University, June, 1972.
33. "Columbia River Interstate Compact, Politics of Negotiation," H. R. Doerksen, Washington State University and the University of Washington, August, 1972.
34. "The Impact of Public Water Utility Pricing Policy on Industrial Demand and Reuse," R. Ridge, General Electric, 1972.
35. "Effects of Saline Waters Upon Survival of Fish Eggs and Larve and Upon the Ecology of the Fathead Minnow in North Dakota," J. J. Peterka, North Dakota State University, January, 1972.
36. "Water Balance in Sewage Stabilization Lagoons," G. O. Fossum, University of North Dakota, February, 1972.
37. "Causes and Control of Algal Blooms in Spiritwood Lake, North Dakota," J. J. Peterka, J. W. Held, North Dakota State University, February, 1972.
38. "Rates of Hillslope Lowering in the Badlands of North Dakota," L. Clayton, J. R. Tinker, Jr., University of North Dakota, December, 1971.
39. "Applications of Systems Analysis Techniques to Water Resources," J. A. Dracup, V. S. Budhraj, S. G. Grant, Environmental Dynamics, Inc. June, 1972.
40. "Optimal Pricing Policies for Conjunctive Urban Water Supply and Waste Water Treatment Systems," S. E. Jacobsen, J. L. Midler, Environmental Dynamics, Inc., October, 1972.
41. "Water Pollution Aspects of Street Surface Contaminants," J. D. Sartor, G. B. Boyd, for EPA, November, 1972.
42. "Avalanches: A Bibliography," U. S. Dept. of the Interior, G. L. Knapp, November, 1972.

43. "Theory and Experiments in the Prediction of Small Watershed Response," E. F. Schulz, V. Yevjevich, Colorado State University, December, 1972.
44. "Experiments in Small Watershed Response," E. F. Schulz, V. Yevjevich, Colorado State University of Colorado, December, 1972.
45. "Groundwater Water Recharge as Affected by Surface Vegetation and Management," A. Klute, R. E. Danielson, D. R. Linden, P. Hamaker, Colorado State University, December, 1972.
46. "Agricultural Water Demands Future Water and Land Use: Effects of Selected Public Agricultural and Irrigation Policies on Water Demand and Land Use," E. O. Heady, Iowa State University, November 1971.

INQUIRIES

Newsletter items and inquiries should be sent to: Dr. Warren Viessman, Jr., Director, Nebraska Water Resources Research Institute, 212 Ag. Engineering Building, East Campus, Lincoln, Nebraska, 68503, 402-472-3307.