

2-1970

## Water Resources News, Volume 2, No. 2, February 1970

Follow this and additional works at: [http://digitalcommons.unl.edu/water\\_currentnews](http://digitalcommons.unl.edu/water_currentnews)



Part of the [Water Resource Management Commons](#)

---

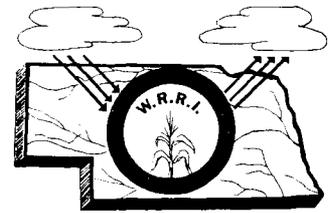
"Water Resources News, Volume 2, No. 2, February 1970" (1970). *Water Current Newsletter*. 43.  
[http://digitalcommons.unl.edu/water\\_currentnews/43](http://digitalcommons.unl.edu/water_currentnews/43)

This Article is brought to you for free and open access by the Water Center, The at DigitalCommons@University of Nebraska - Lincoln. It has been accepted for inclusion in Water Current Newsletter by an authorized administrator of DigitalCommons@University of Nebraska - Lincoln.

# WATER RESOURCES NEWS

NEBRASKA WATER RESOURCES RESEARCH INSTITUTE  
212 AGRICULTURAL ENGINEERING BUILDING

THE UNIVERSITY OF NEBRASKA  
LINCOLN, NEBRASKA 68503



Volume 2 Number 2

February 1970

## EVAPORATION REDUCTION

According to a U.S. Agriculture Department scientist, floating concrete blocks and other lightweight materials can cut evaporation losses in stock tanks and farm ponds.

Perlite, styrafoam, butyl rubber, and other items have been used in water saving tests, by Keith Cooley, a meteorologist at the Water Conservation Laboratory at Phoenix Arizona. Evaporation consumes more ranch water than is used by livestock in the desert Southwest and cutting evaporation means saving time and from \$4 to \$10 a 1,000 gallons on hauled water.

So far, Cooley says, wax has proven to be best. It cuts losses 100% and is easier to handle than the buoyant blocks. The wax is squirted in a molten state directly onto the water forming 6 to 8 inch circles 1 to 1½ inches thick. Unfortunately, the wax melts in torrid sunshine, but Cooley thinks a wax with a higher melting temperature could be developed.

The floating concrete blocks contain perlite ore instead of sand and gravel. Their efficiency in reducing evaporation is 60%.

## NATIONAL SCIENCE FOUNDATION ANNOUNCES A NEW PROGRAM

The National Science Foundation has announced a new program of support for scientific research under the heading "Interdisciplinary Research Relevant to Problems of Our Society." General criteria will include the long-range implications of the proposed research for resolving major problems of society and the over-all scientific merit of the proposed program. The Foundation will be receptive to proposals for relevant research, dealing with problems areas such as: poverty, population control, the urban environment and environmental quality. Investigators should concentrate on a clearly defined problem or problems where the special mix of available talent can be expected to make significant contributions.

Special emphasis for this new program will be upon the support of comprehensive projects organized around a particular goal. Funds will also be available for exploratory research and planning, and for supporting the growth and development of interdisciplinary groups that have not yet initiated a coherent program.

"THE UNIVERSITIES AND ENVIRONMENTAL QUALITY"

According to a recent White House report, educational programs dealing with environmental problems may have to be expanded by one to two orders of magnitude. These statements appeared in a White House report entitled, "The Universities and Environmental Quality."

GUIDELINES WILL BE ISSUED FOR FEDERAL PROGRAMS  
AFFECTING THE ENVIRONMENT

Guidelines will be issued by the President's new Council on Environmental Quality to assure that all Federal agencies give proper consideration to environmental and ecological questions. An executive order to outline the duties and authority of the Council, is being drafted by the President. One Provision of the executive order will charge the Council with "reviewing all such activity and issuing guidelines to assure that they will not be detrimental to the environment," reported Russell E. Train, former Under Secretary of the Interior and chairman of the Council.

CONSERVATION AND THE ENVIRONMENT -- BIG POLITICAL ISSUE?

President Nixon has announced that he will release the full \$800 million appropriation for water pollution abatement this year, and issued an executive order ordering all Federal installations to end air and water pollution by December 31, 1972. These two steps were taken by the President after proclaiming the 1970's the "Decade of the Environment."

The growing public appeal of "environmental quality" has made it a super political issue. The many environmental legislative proposals have now created some jurisdictional problems in the Congress. Several congressmen and senators have introduced bills which would set up a special Senate-House committee on the environment in an attempt to avoid the bitter jurisdictional disputes.

NATIONAL LAND USE POLICY ACT OF 1970

Senator Henry M. Jackson, chairman of the Senate Interior Committee, has introduced a bill that would put the Water Resources Council in charge of establishing national land use policy. Sen. Jackson wants the Nation to decide now what rivers and land will be developed in the future and which will be preserved in their natural state. His bill would provide money for the states to develop land-use plans. The program would be administered and reviewed by the Water Resources Council, whose name would be changed to Land and Water Resources Planning Council.

## THE SAFETY OF COMMUNITY WATER SUPPLY SYSTEMS

The Bureau of Water Hygiene of the Environmental Control Administration of H.E.W. has launched a nationwide sampling survey of community water supply systems. So far, the Bureau has made some preliminary findings which underline the need for upgrading our water treatment and distribution systems and illustrate the danger of complacency with regard to drinking water safety. The field work is still in progress. A final report will be available in several months.

## "RIVER SYSTEM ENGINEERING" -- SUMMER SHORT COURSE

The University of Nebraska, Department of Civil Engineering and the Omaha District, Corps of Engineers are sponsoring a Summer Short Course at the University of Nebraska, August 16 to 28, 1970. The title of the program is, "River System Engineering." The staff will consist of James C. Brice, Professor of Geology, Washington University, St. Louis; James M. Malkowski, Director, Fontenelle Forest, Omaha; Ralph R. Marlette, Associate Professor of Civil Engineering, University of Nebraska; Howard E. Christian, Chief, Channel Stabilization Section; and Warren J. Mellema, Hydraulic Engineer. For more information, please write to: Professor R.R. Marlette, Department of Civil Engineering, University of Nebraska, Lincoln, Nebraska 68508.

## OWRR HOLDS FIFTH ANNUAL WATER RESOURCES RESEARCH CONFERENCE

H. Garland Hershey, Director of the Office of Water Resources Research, addressed the Fifth Annual Water Resources Research Conference February 3, in Washington, D.C.

Dr. Hershey said: "In his State of the Union address last month President Nixon spoke of the quest for a new quality of life in America. He posed the following challenge: 'The great question of the '70's is, shall we surrender to our surroundings or shall we make peace with nature and begin to make reparations for damage we have done . . .?' Responsive to this challenge, the OWRR has focused this conference on ecological consideration in water resource management and urban water resource problems."

Future goals and relationships of the Water Resources Council, a national water commission, and the Committee of Water Resources Research were discussed by Warren A. Hall, Chairman of the Committee on Water Resources Research of the Federal Council for Science and Technology.

Ecological considerations in water resources management were reviewed by Eugene B. Odom of the Institute of Ecology of the University of Georgia.

## ENVIRONMENTAL HEALTH SERVICE ORGANIZED AT HEW

The new Environmental Health Service at HEW has been created, effective February 1. At the top is the Administrator (C.C. Johnson), Deputy Administrator (Dr. John Hanlon) and Associate Administrator (Albert H. Stevenson). Below that level is an associate administrator for air pollution control (Dr. John T. Middleton) and an associate administrator for environmental programs now in the Environmental Control Administration.

Radiological health, occupational safety and health, solid waste management and water hygiene, are four programs which have been retained. In general, it is the same organization minus FDA.

## ALGAE-EATING FISH -- A POSSIBLE WAY TO CONTROL EUTROPHICATION?

Lake Clear in California has been so choked with algae that swimming was impossible and waterfowl nesting along its shores have died by the thousands. In a research effort, ecologists at the Davis campus of the University of California introduced a small fish called the Mississippi silverside. This fish eats the nutrients on which algae thrive. The result has been a 75 to 80 percent decrease in algae. Entomologists emphasized that while Lake Clear was far along in the eutrophication process, its problem was not as complex as those of lakes closer to populous areas and manmade pollution.

## RESOURCES FOR THE FUTURE CONSIDERS NON-MONETARY BENEFITS FOR CONSERVATION GOALS

Resources for the Future, Inc. considers non-economic benefits when they promote consideration of environmental and conservation goals, but for none of the other "secondary" and "well being" benefits. In its year-end report, RFF President Joseph L. Fisher states: "We shall need to think in terms of balancing an efficient and plentiful production of material goods with the protection of the environmental base of land, water and air. We shall need always to improve the ways in which benefits and costs are related for particular resource development activities and to let these estimates have proper influence over our decisions, without ever falling into the trap of thinking that all benefits and all costs can be translated into dollar amounts."

AGREEMENT TO REQUIRE DISCHARGERS OF WASTES INTO  
THE NATION'S WATERWAYS TO REVEAL THEIR POLLUTION EFFECTS

The Corps of Engineers has agreed to require discharges of wastes into the Nation's Waterways to reveal their pollution effects. The Corps' change of position is contained in a letter addressed to Reuss, Chairman of the House Conservation and Natural Resources Subcommittee, by Maj. General R.R. Ploger, Acting Chief of Engineers, who said he agreed that under existing Corps of Engineers' regulations "an Applicant is not specifically required to identify the effluent that will be discharged." General Ploger promised that "to eliminate this imprecision, a change in the regulation is being prepared to particularize the requirement." Under long standing law, the Corps has the duty to issue or deny permits to anyone who wants to construct a sewer outfall along one of the Nation's waterways. Reuss complained last October that the Corps was issuing permits without requiring the polluter to disclose anything about the nature of the wastes.

1971 SALINE WATER AUTHORIZATION BILL INTRODUCED

The authorization bill for the saline water conversion program for fiscal 1971, S. 3426, has been introduced by Sen. Henry Jackson. Under the measure, an authorization of \$16.6 million would be for research and development.

NATIONAL WATER COMMISSION

The following studies related to the mission of the National Water Commission have been announced:

List of Special Studies

<u>Number</u>	<u>Purpose</u>
1	To provide a forecast of probable and possible technological developments and their effects upon alternative futures.
2	To provide a forecast of probable changes in the preferences and life styles of the general public, and the probable effects of such changes upon the nature of water resource development activities in the future.
3	To provide projections of regional water use and problems for various alternative futures, and to compare the projected uses with available supplies of surface and ground water, taking into account the capabilities for increasing supplies revealed by special study number 5.

- 4 To provide basic information on the values--not limited to economic values--resulting from the use of water for various purposes in different regions: The results of this study to be used in, (a) reaching conclusions on the desirability or changing present uses and program, (b) revealing the types of areas in which economic development could be accelerated, at a justifiable cost, by the augmentation of the present water supply or by more intensive development of that supply, (c) developing criteria to govern transfers of water between major river basins, and (d) appraising the value of water resource development under various sets of conditions.
- 5 To investigate and evaluate the means by which future water supplies may be increased; this study to encompass, (a) means for making the most of the available supply by the encouragement of more efficient utilization practices, by metering, by modifying pricing policies or providing economic incentives, by minimizing pollution of the natural supply, and by treating and reusing polluted waters; and (b) means for increasing the supply of water presently available to selected regions by desalting, by weather modification, by development of underground supplies which are not being utilized to the optimum extent, or by importation from other regions, and by further development of the native supply
- 6 To provide estimates of the investments that will be required to meet the needs for water resource development for assumed alternative futures.
- 7 To ascertain the factors and conditions which determine the effectiveness of water resource development in inducing economic development in underdeveloped regions, and in other ways enhancing the well-being of the people thereof; this study to encompass both a theoretical analysis of the role of water development in economic development and investigations of the effectiveness, in this respect, of water projects previously installed.
- 8 To provide information on the effects--both adverse and favorable--of water resource development activities upon the environment, including its impacts upon scenic beauty, historic and wild areas, fish and wildlife resources and recreational opportunities, and to develop means for weighing such effects against the loss of possible material gains.
- 9 To achieve a better understanding of the role which water resource development could play in increasing the growth rate of smaller cities, and in encouraging the creation of new cities, in the event the Nation were to undertake a program to influence the distribution of its people.
- 10 To provide a summary and comparison of existing Federal water policies, accompanied by brief summaries of recent expressions of view--either critical of or in support of--existing water policies.

- 11 To provide material for use in developing a policy to govern the distribution of responsibilities for water resource development, utilization and conservation, among the Federal Government, the States, local governments, and non-governmental entities, including private enterprises.
- 12 To provide a comprehensive analysis of cost-sharing practices for water resource development as a basis for recommending any modifications found to be desirable.
- 13 To provide a comprehensive analysis of the water problems of metropolitan regions, including waste disposal problems, to ascertain the scope and nature of the programs required to meet the needs of such regions, and to make available other basic material needed in developing policy proposals.
- 14 To provide information on alternative regional organization for water resource development, as a basis for findings and recommendations on institutional problems.
- 15 To provide a critique of methods presently used in the formulation of water resource plans, and material for use in developing recommendations for the improvement of such methods; special attention to be given to the formulation of comprehensive river basin plans.
- 16 To develop criteria for use in evaluating contemplated projects for transferring water between major river basins; the criteria to be based upon a preliminary examination of selected water transfer proposals in the light of the results of special studies 3, 4 and 5.
- 17 To provide a critique of present methods for the economic evaluation of contemplated water resource developments, and material for use in formulating recommendations for the improvement of such methods.
- 18 To provide material for appraising present practices for the authorization, programming and financing of water resource developments, and for use in formulating recommendations for the improvement of such practices.
- 19 To provide information on the operation of state laws of water resources and water rights, Federal-State relations in the law of water rights, legal problems in interbasin transfers, legal structures for river basins and metropolitan areas, and the law of water pollution control and flood plain regulation, for use in formulating recommendations for changes.
- 20 To provide an appraisal of the adequacy of present programs for supplying the research results and the trained manpower required for the optimum development, utilization and conservation of the Nation's water resources.

- 21 To provide an appraisal of the Federal water pollution control program as a component of the Nation's overall water program, and material for use in formulating recommendations for the possible improvement of this program.
- 22 To provide information on the present participation of the general public in the formulation of water policies and plans, and material for use in formulating recommendations designed to increase public knowledge and participation.

#### RESEARCH REVIEW

Project Title: "Input-Output Analysis of Water Use for Nebraska Industries

Principal Investigator: Dr. A.W. Epp and Dr. Maurice Baker

Dates: July 1965 to June 1971

The objectives of this research are: to develop methods for determining the optimum allocation of irrigation water; to develop procedures for optimizing crop yields commensurate with varying water supplies; and to test the developed procedures on a specific area -- the Linwood Project in central Nebraska.

The specific problem under study is the evaluation of net benefits obtainable from water available in the Platte River, when applied to various acreages of land. Present plans indicate the irrigation of 10,500 acres from storage or from direct diversion. Benefits obtainable under this plan were compared with benefits from using the available water to irrigate 21,000 acres.

Results of the analyses completed indicate that a greater return can be expected if the large area is irrigated. For the two sizes of operations considered, the development of storage does not appear to be nearly as attractive as the direct diversion of flow for irrigation.

The techniques developed on this project should prove useful to planners of irrigation projects. The findings clearly show that alternative sizes of irrigated areas as well as alternative means for developing water supplies should be considered before new irrigation projects reach the final design stage.

The remainder of calendar year 1969 was spent in completing analyses and preparing the findings of the project for publication.

#### NEW PUBLICATIONS RECEIVED BY THE INSTITUTE

- 1) "Cooperative Water Resources Research and Training, 1969 Annual Report," United States Department of the Interior, Office of Water Resources Research.
- 2) "Catalog of Information on Water Data, Index to Ground Water Stations," U.S. Department of the Interior, Edition 1968.

- 3) "Acid Mine-Drainage Problem of the Patoka River Watershed, Southwestern Indiana," by D.M. Corbett, University of Indiana, August 1969.
- 4) "Annual Report, The National Water Commission - 1969."
- 5) "Catalog of Books," The Ronald Press Company, New York, 1970.
- 6) "Publications List," Vol. ii, No. 2, University of Hawaii, Fall 1969.
- 7) "Seasonal Patterns in Evapotranspiration by Irrigated Alfalfa in the Central Great Plains," by N.J. Rosenberg, University of Nebraska, Reprinted from AGRONOMY JOURNAL, December 1969.
- 8) "A Kinetic Approach to Biological Wastewater Treatment Design and Operation," by A.W. Lawrence & P.L. McCarty, Cornell University, December 1969.
- 9) "Patterns of Politics in Water Resource Development: A Case Study of New Mexico's Role in the Colorado River Basin Bill," by H.M. Ingram, University of New Mexico, December 1969.
- 10) "Neutron Activation Analysis in Water Resources Management in North Carolina," by J.R. Bohannon, K. Verghese, J.N. Weaver, University of North Carolina, December 31, 1969.
- 11) "Kinetics of Aerobic Utilization of Mixed Sugars by Heterogeneous Microbial Populations," by S. Ghosh, Georgia Institute of Technology, November 1969.
- 12) "The Transport of Radioisotopes by Fine Particulate Matter in Aquifers," by J.B. Francis Champlin, Georgia Institute of Technology, December 1969.
- 13) "The Effect of a Permeable Sand Bed on Sediment Motion," by C.S. Martin and M.M. Aral, Georgia Institute of Technology, November 1969.
- 14) "Changes in the Clay-Water System with Depth, Temperature, and Time," by C.E. Weaver and K.C. Beck, Georgia Institute of Technology, October 1969.
- 15) "Metropolitan Water Resource Management," by J.R. Sheaffer, S.A. Starr, G. Davis, and A. Richmond, University of Chicago, 1969.
- 16) "Proceedings Water Quality Management Symposium," by A.F. Pillsbury, University of California, December 1969.
- 17) "Investigation of a Linear Model to Describe Hydrologic Phenomenon of Drainage Basins," by F.A. Schmer, Texas A & M University, December 1969.
- 18) "A Study of the Economic Impact of Water Impoundment Through Validity Testing of a Comparative-Projection Model," by J.E. Pearson and K.E. Heideman, Texas A & M University, August 1969.
- 19) "Requirements for Effective Use of the Water Resources Scientific Information Center (WRSIC)- Determined by Field Evaluation. Vol. 1, by J.B. Herbich, E.B. Smith, and J.D. Benson, Texas A & M University, November 15, 1969.
- 20) "An Inventory of Water Resources Developments in Texas," by W.L. Trock, Texas A & M University, August 1969.
- 21) "A Systems Approach to Urban Planning," by G.W. Reid, University of Oklahoma, November 1969.
- 22) "Some Notes on the Rational Method of Storm Drain Design," by M.B. McPherson, American Society of Civil Engineers, ASCE Urban Water Resources Research Program, January 22, 1969.

23) "A Study of the Expenditures for Urban Water Services," by L.H. Clem, American Society of Civil Engineers, ASCE Urban Water Resources Research Program, February 1969.

24) "Availability of Rainfall-Runoff Data for Sewered Drainage Catchments," by L.S. Tucker, American Society of Civil Engineers, ASCE Urban Water Resources Research Program, March 3, 1969.

25) "Rainage Networks in the Largest Cities," by L.S. Tucker, American Society of Civil Engineers, ASCE Urban Water Resources Research Program, March 17, 1969.

26) "Sewered Drainage Catchments in Major Cities," by L.S. Tucker, American Society of Civil Engineers, ASCE Urban Water Resources Research Program, March 31, 1969.

#### NEWSLETTER ITEMS

Newsletter items and inquiries should be sent to: Dr. Warren Viessman, Jr., Director, N.W.R.R.I., 212 Agricultural Engineering Building, East Campus, Lincoln, Nebraska.