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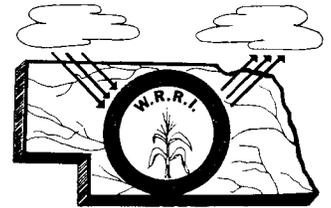
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# WATER RESOURCES NEWS

NEBRASKA WATER RESOURCES RESEARCH INSTITUTE  
212 AGRICULTURAL ENGINEERING BUILDING

THE UNIVERSITY OF NEBRASKA  
LINCOLN, NEBRASKA 68503



Volume 4 Number 9

November 1972

## CONFERENCE PROCEEDINGS AVAILABLE

Proceedings of a two-day conference sponsored by the Nebraska Water Resources Research Institute are now available. The conference, entitled "Technology Transfer - The Interface Between Producers and Users," was held on September 25-26, 1972.

A section entitled "Conference Highlights" is included in the Proceedings to summarize conference findings and facilitate their use.

Anyone desiring a copy should contact the Water Resources Research Institute, 472-3307.

## ASSISTANCE GRANTS FOR NEBRASKA

Nine grants totaling \$240,750 were approved by the Bureau of Outdoor Recreation to assist in the development of Nebraska recreational facilities.

The projects total \$481,500. The state will provide \$88,300 and the communities \$152,450. Included in the projects are three swimming pools, two ballfields and two parks.

Communities receiving grants are: Wilcox, Hemingford, Harrison, Blue Hill, Ravenna, Grand Island, Chadron, Oconto, Valentine.

## NIOBRARA, NEBRASKA--MOVING

The U.S. Army Corps of Engineers is moving the small town of Niobrara, Nebraska. The town is in danger of flooding by Gavins Point Dam and Lewis and Clark Lake.

The project will not be affected by the President's veto increasing project funding from \$7.8 million to \$11.4 million.

Congress apportioned \$3 million in fiscal year 1973 for the project with the stipulation that the authorization level be increased. Senator Roman L. Hruska stated plans to introduce legislation in the next session of Congress to increase funding.

### CONGRESS HEAPS CEQ REPORT

In the Third Annual Report of the Council on Environmental Quality, President Nixon stated that the report is "a sober realization that we have not done as well as we must, that changes in laws and values come slowly, and that rendering our priorities is difficult and complicated." More than 20 environmental bills are still pending in Congress. The President noted that "the record of final congressional action is entirely inadequate," and requested their enactment this year.

CEQ Chairman Train told members of the press that public opinion toward use of natural resources must be altered through schooling and public information programs.

The CEQ report estimates costs to clean up the environment at a new level of \$287 billion. This is a large increase over previous estimates and covers a ten-year period from 1971-1980.

The impact of environmental cleanup costs on the GNP will be small, representing only two percent. Chapters dealing with the energy situation deemed too controversial were deleted from the report on recommendation of the White House Staff. The report revealed no major trend in water pollution except that land runoff is a more meaningful problem than originally thought.

### BUREAU STUDIES SALINE WATER

A study to generate a dependable way of evaluating the economic effects of salinity in irrigation water on agriculture throughout Colorado River's 1,400 mile long system was announced by Secretary of the Interior, Rogers C. B. Morton. The \$25,221 research contract was received by the Department of Economics of Colorado State University at Ft. Collins, Colorado.

Major efforts have only recently been directed toward the measurement and identification of principal sources of salts and corrective steps to reduce salinity in irrigation water.

Commissioner Armstrong said that some of the important factors involved are characteristics of the irrigated land, the concentration and composition of the salinity, tolerance to salinity of crops grown, and irrigation management practices followed.

The Colorado State University study will be concerned only with the effects of salinity on agricultural uses of water.

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BURNING BRIDGES BEHIND YOU  
ALSO POLLUTES THE WATER

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### NEW ADMINISTRATIVE REGIONS FOR U. S. G. S.

Four new administrative regions have been established by the Water Resources Division of the U. S. Geological Survey -- the Nation's largest water resources investigating agency.

E. L. Hendricks, the Survey's Chief Hydrologist, stated that "each of these new regions - Northeastern, Southeastern, Central and Western will have a Regional Hydrologist who will provide policy guidance and coordination over water resources activities within the area and provide liaison with all other federal, state and local agencies."

The four regional headquarters will be located in Arlington, Virginia; Atlanta, Georgia; Denver, Colorado; and Menlo Park, California. Regional hydrologists for each of the areas are follows: Northeastern Region, Joseph T. Callahan; Southeastern Region, Rolland W. Carter; Central Region, Edward A. Moulder; and Western Region, Elwood R. Leeson.

### UNFAIR ATTACKS ON PESTICIDE POLLUTION

Senator Maurice Kremer said "I think it's time we took the offensive and told people what will happen if we are not allowed to use these chemicals." This comment came at a meeting of the legislative study committee on pesticides called to hear testimony from structural pest control operators (firms which spray homes.)

Monroe Usher, Secretary of the Nebraska Pest Control Association, told the committee that much of the opposition to the use of chemicals is emotional. Usher said some type of licensing procedure was needed for pest control firms. He favored giving the responsibility for controlling home pest operators to the State Health Department.

### NUMERICAL DESIGNATION OF BUREAU REGIONAL OFFICES OBSOLETE

As of July 1, 1972, the numerical designation for Bureau of Reclamation's regional offices became obsolete. Each region will now be in geographical order. New designations are as follows: Pacific Northwest, Mid-Pacific, Lower Colorado, Upper Colorado, Southwest, Upper Missouri and Lower Missouri.

Each region will be related to four of the ten Federal Regions which have been established to aid interagency coordination. The Pacific Northwest is in Federal Region 10, and the Southwest is in Federal Region 6. Responsibility for those regions will be undertaken by the Reclamation Regional Directors located at Boise, Idaho and Amarillo, Texas.

Reclamation Regional Coordinators will be assigned to handle the responsibilities at Denver for Federal Regions 7 and 8 serving Upper Colorado, Upper Missouri, and Lower Missouri regional offices; and at Sacramento for Federal Region 9, serving Mid-Pacific and Lower Colorado regional offices.

#### WATER POLLUTION CONTROL MEASURE BECOMES LAW

The bill to expand federal water pollution control programs and re-write the Federal Water Pollution Control Act, S. 2770, has been assigned P.L. 92-500. The bill was vetoed by the President, but Congress overrode the veto.

The new law authorizes \$7.5 million for fiscal 1973 for pilot training programs in the operation and maintenance of water treatment works; \$2.5 million in fiscal 1973 for developing a system to forecast the supply and demand of trained personnel; \$10 million for each of the fiscal years 1973 and 1974 for agricultural pollution prevention research; and \$10 million for each fiscal year for comprehensive studies on the effects and methods of controlling thermal pollution. An authorization of \$10 million for each fiscal year is for grants to colleges and universities to conduct research on the structure and function of fresh water aquatic eco-systems.

Training programs for college faculty and students and water treatment scholarships have received authorizations of \$25 million each for fiscal years 1973 and 1974.

#### GAVINS POINT DAM

The Council on Environmental Quality has received the draft environmental statement on Gavins Point Dam and Lewis and Clark Lake on the Nebraska-South Dakota border.

The Gavins Point project is part of a system of six main Missouri River projects. These projects serve irrigation, flood control, navigation and power generation.

The draft statement is being reviewed by federal, state and local governments. This is required by the National Environmental Policy Act of 1969 and Council on Environmental Quality guidelines.

### WATER DOLLARS DOWN THE DRAIN

The past president of the American Water Works Association (AWWA) said rates must rise to meet the supply of drinking water. Funds are scarce for building water plants, training and keeping plant operators and research.

The Environmental Protection Agency recently found viruses in three water supplies in New England. Industries discharge chemicals into rivers, and a large sum of money is needed to insure healthful drinking water.

Water is said to be the cheapest public utility. A family pays less than the price of a pack of cigarettes for water usage for one day. It was stated that no amount of money can clean rivers to the extent they are fit to drink. All such waters will have to be chemically treated.

### FEDERAL POLLUTION LAWS

Federal regulation of air pollution will begin in Lancaster, Jefferson, Gage, Thayer, and other counties in a few weeks.

The Federal Clean Air Act of 1970 gives the Environmental Protection Agency the power to curb pollution if the state does not.

EPA created an "air quality region" by gathering data from air pollution samplers and information on the number and types of potential pollution sources.

Most towns in Lancaster County have agreed to let the health department curb air pollution but EPA will step in where this is not the case.

### NEW FOOD INDUSTRY USES HEATED WATER

A new industry which will use heated-water emissions from a power plant for breeding commercial seafood is being planned east of Fremont power plant's cooling coils. The heated water will provide a comfortable, year-round habitat for channel catfish, clams, and Malaysian prawn to be commercially available in December if all goes well.

Elliot Hectman, of Aquarium Farms, said corn and beef will have to move over to make room for this new food industry. The fish farm is based on the conversion of thermal pollution to thermal enrichment for the purpose of producing food from waste. Fish wastes will be used as fertilizer.

### WAR BETWEEN THE WORLDS

A study by the University of Nebraska's Civil Engineering and Zoology Departments found that the aquatic plant life in small lakes around Lincoln is rapidly increasing. The more aquatic plant life living in our lakes, the less desirable the waters are for recreational use.

The eutrophication study is headed by Dr. Mark Hammer, Civil Engineering and Dr. Gary Hergenrader, Zoology. Holmes, Stagecoach, Wagon Train, Pawnee and Branched Oak Lakes were pointed out as main problem areas. This study, funded through the Nebraska Water Resources Research Institute by the Office of Water Resources Research, was begun in July, 1969. The following conclusions have been drawn: (1) Runoff waters impounded in the Salt Valley reservoirs contain sufficient nutrient salts to support abundant growths of aquatic plants. (2) Reservoirs that are light-limited by soil turbidity support neither heavy aquatic plant growth nor dense algal blooms. (3) Clear-water reservoirs, those with low soil turbidity, are very eutrophic. Weed-choked shorelines, dense bluegreen algal bloom, odorous emissions and occasional fish kills are typical characteristics of these impoundments. (4) In clear-water reservoirs, the rate of eutrophication is rapid and appears to be directly related to age. Projections based on existing data indicate that the useful life of these reservoirs for body-contact recreation may be limited.

### WASTE DISCHARGE EXEMPTIONS BANNED

According to the Environmental Protection Agency some waste discharge permits may not allow exemptions in the future.

The federal operation of issuing discharge permits has now been turned over to the states under a new clean-water bill. Approval of state programs is under EPA's jurisdiction. Proposed guidelines will dictate what is required in a state program before approval is granted. Under these rules, state programs must: (1) include public participation in permit processing; (2) prohibit discharge of highly radioactive, chemically toxic and biological warfare materials; (3) set clean-up schedules with deadlines no later than July 1, 1977; (4) require large dischargers to monitor and report discharges; (5) contain enforcement authority capable of seeking both civil and criminal fines against violators of permit conditions; (6) bar from membership of permit-review boards anyone drawing substantial income from permit holders or applicants.

Proposed conditions in permits are expected to curb water pollution. State programs must be designed to conform to federal requirements and give states legal authority to enforce the law.

NATIONAL WATER COMMISSION REPORT

Among 300 recommendations made by the National Water Commission in a preliminary report on its \$5 million study of the nation's water needs is an immediate halt to federal subsidies for irrigation projects and an end to the water pollution grant program by 1982. A review draft of the NWC report has been circulated in preparation for public hearings to be held throughout the United States. While noting that water projects have had a "very significant" impact on economic development and population distribution in the past, the Commission feels this role now has "greatly diminished."

The draft states that the Bureau of Reclamation's program--subsidizing construction of irrigated projects--is in direct conflict with agriculture subsidy programs whose objective is to take farmland out of production. The Corps of Engineers and the Soil Conservation Service's flood control and drainage programs have resulted in lands being converted to croplands. This practice was criticized as providing "windfall benefits" for landowners. The report also says that there is no need for federally subsidized water resource development programs to increase the agricultural land base of the country within the next 30 years.

The Commission says the water pollution construction grant program has been a failure and should be terminated by 1982. "The program was not funded sufficiently to be effective, limitations spelled out in the statutes produced serious inequities, and by frequent increases in grant percentages the program rewarded procrastination." Costs for halting pollution should be levied on those directly benefitting from the goods and services produced by polluters. The Commission takes a dim view of making industry pay effluent charges.

Another recommendation of the Commission would seem to obviate future interbasin water transfer--the topic which led to the formation of the National Water Commission in 1968 at the insistence of Senator Henry M. Jackson (D. Wash.). An interbasin water transfer project which Senator Jackson opposed at that time was the proposed \$12.8 billion scheme to divert water from the Columbia River to the Colorado River. The Commission review draft does not rule out transfers but recommends that costs be borne by the region receiving the water. Federal subsidies would be authorized if there was an "overriding social purpose." The report also recommends the area of origin receive compensation for its water, the amount to be determined by Congress. According to the Commission, unless water is cheap, available and used in the best possible way, no interbasin transfer should be made. Also ruled out by the report would be the rescue of an area that has mined its groundwater resource. It was noted that all states involved in interbasin transfers should reach agreement among themselves and the federal government before submitting projects to Congress.

If the NWC report is adopted, two major proposals will be affected: (1) the \$10 billion Texas Water Plan for carrying Mississippi River water as far west as New Mexico; and (2) a \$1.4 billion project to divert water from the Snake River in Idaho.

The National Water Commission's recommendations are scheduled for public hearings in 1973 on the following dates: January 8-9 in Spokane, Washington; January 11-12 in Phoenix, Arizona; February 5-6 in New Orleans, Louisiana; and February 8-9 in Washington, D.C. Anyone interested in testifying should notify the NWC five days in advance at 800 No. Quincy Street, Arlington, Virginia 22203, (703) 557-1960.

#### RESEARCH REVIEW

TITLE: "Protection of a Unique Ecological Area Through Irrigation and Fertility Management"

PRINCIPAL INVESTIGATOR: Paul E. Fischbach

DATES: January 1, 1973 - January 1, 1976

The need to protect our water resources from inefficient use and pollution is great. Intelligent planning, valid assessment of detrimental effects of development and minimization of these effects through innovative design and management practices will be required if environmental blunders are to be avoided. The nature of the soils in the Sandhills makes that region more susceptible to damage by pollution from agricultural sources and by changes in water table levels than many other regions of the United States. It is imperative that problems associated with this development be carefully studied and solutions found before it is too late to influence changes which will occur.

The objectives of this project are as follows:

- (1) To develop water and fertility management practices to maximize the efficiency of water use and minimize the nitrate pollution hazard related to intensive agricultural development on sandy soils;
- (2) To plan and execute programs for technology transfer and implementation of research results on an intensive area-wide basis.

The following experiments will be performed:

- (1) (a) Determination of the optimum amount and frequency of irrigation. Three irrigation frequencies and four amounts of water will be applied to corn with an automated solid set sprinkler system.

- (1) (b) Determination of several methods for scheduling irrigation including the use of weather factors (computer scheduling), tensiometers and electrical resistance blocks.
- (2) Comparison of the effectiveness of ground application of nitrogen fertilizer versus increment application through irrigation systems. Treatments will include applying all fertilizer by one or the other method and combinations of methods.
- (3) Determination of water loss and leaching of nitrates over a range of conditions which represent extremes of management expected under irrigated agriculture in the Sandhills.
- (4) Study the timing and amount of nitrogen application in relation to the timing and depth of application of irrigation water.

#### ADDRESS CORRECTIONS

The Nebraska Water Resources Research Institute is currently in the process of updating the newsletter mailing list.

If your name or address is incorrect, please notify Jeanne, 472-3307.

#### PUBLICATIONS RECEIVED - NOVEMBER

1. "State Water-Rights Laws and Related Subjects: A Supplemental Bibliography," 1959 to mid-1967, Miscellaneous Publication #1249, Economic Research Service, U.S. Department of Agriculture.
2. "Agricultural and Water Policies and the Environment: An Analysis of National Alternatives in Natural Resource Use, Food Supply Capacity and Environmental Quality," E.O. Heady, H.C. Madsen, K.J. Nicol, S.H. Hargrove, Iowa State University, June 1972.
3. "A Program for Metropolitan Water Management," G.E. Willeke, F.W. Kroeck, Georgia Institute of Technology, July 1972.
4. "Annual Report: Delaware," Water Resources Center, University of Delaware, September 1972.
5. "Trace Metals in Several Delaware Watersheds," Progress Report, R.B. Biggs, J.C. Miller, M.J. Otley, University of Delaware, June 1972.
6. "Preliminary Study of Operating Guide Curves for Power Production," Vol. II, U.S. Army Corps of Engineers, November 1971.

7. "The Composition and Distribution of the Fish Fauna of the Navasota River," E.R. Rozenburg, R.K. Stawn, W.J. Clark, Texas Water Resources Institute, Texas A&M University, August 1972.
8. "Mass Transport Controlled Microbial Growth," E.J. Maguire, Jr., University of Rochester, 1972.
9. "New Technology for Treatment of Wastewater by Reverse Osmosis," Envirogenics Company, for EPA, September 1970.
10. "Effect of Surface Groups on Adsorption of Pollutants," R.W. Coughlin, Lehigh University for EPA, June 1970.
11. "Application of Hyperfiltration to Treatment of Municipal Sewage Effluents," K.A. Draus, for EPA, January 1970.
12. "A Study of Nitrification and Denitrification," B.J. Mechalas, P.M. Allen, III, W.W. Matyskiela, Envirogenics for Federal Water Quality Administration, July 1970.
13. "Study and Experiments in Waste Water Reclamation of Reverse Osmosis," I. Nusbaum, J.H. Sleigh, Jr., S.S. Kremen, for Federal Water Quality Administration, May 1970.
14. "Feasibility of Treating Wastewater by Distillation," University of Florida for EPA, February 1971.
15. "Activated Sludge Dewatering: Factors Affecting Drainability," C.W. Randall, P.H. King, J.K. Turpin, Virginia Polytechnic Institute, March 1970.
16. "The Interrelation of Carbon and Phosphorous in Regulating Heterotrophic and Autotrophic Populations in Aquatic Ecosystems," P.C. Kerr, D.F. Paris, D.L. Brockway, July 1970.
17. "Phosphate Study at the Baltimore Back River Wastewater Treatment Plant," by the City of Baltimore, Maryland for EPA, September 1970.
18. "An Electrochemical Method for Removal of Phosphates from Waste Waters," S.E. Sadek, for Federal Water Quality Administration, February 1970.
19. "Electroosmotic Pumping for Dewatering Sewage Sludge," J. Greyson, for the Federal Water Quality Administration, July 1970.
20. "Transactions of the Fourteenth Annual Conference on Sanitary Engineering," University of Kansas Publications, 1964.
21. "Transactions of the Nineteenth Annual Conference on Sanitary Engineering," University of Kansas Publications, 1969.

22. "Storage of Wastes from Watercraft and Disposal at Shore Facilities," General Dynamics, April 1970.
23. "Annual Report: Wyoming," Water Resources Center, 1972.
24. "Water Resources Research," Volume 8, June 1972, No. 3, American Geophysical Union.
25. "Water Resources Research," Volume 8, April 1972, No. 2 American Geophysical Union.
26. "Water Resources Research," Volume 8, October 1972, No. 5 American Geophysical Union.
27. "Assessment of Turbidity, Color, and Odor in Water," D.H. Harris, Anacapa Sciences, Inc., October 1972.
28. "The Grass Roots and Water Resources Management," Water Research Center, Washington State University, July 1972.
29. "The Efficacy of the Complete Mix Activated Sludge Process in Modular Mode," E. Corbin McGriff, Jr. Mississippi State University, July 1972.
30. "The Effect of Organic Amendments from Garbage Grinding on a Biological Treatment System," J.L. Mahloch, Mississippi State University, June 1972.
31. "Wastewater Engineering: Collection Treatment Disposal," Metcalf & Eddy, Inc., 1972.
32. "Primary Considerations in Regional Wastewater Treatment Planning," Adnan Shindala, Mississippi State University, June 1972.
33. "Research Report #4: The Influence of a New England Wetland on Water Quantity and Quality," F.R. Hall, R.J. Rutherford, G.L. Byers, Water Resource Research Center, University of New Hampshire, May 1972.
34. "Water Resources Data for Nebraska: Part L; Surface Water Records," U.S. Department of the Interior, Geological Survey, 1971.
35. "A Study of the Effects of Island Development on Lake Water Quality," M.A. McClanahan, A.W. Hoadley, Georgia Institute of Technology, September 1972.
36. "Transition Metals of Impounded Waters," J.J. Heise, Georgia Institute of Technology, June 1972.
37. "Aquatic and Wetland Plants of Southwestern United States," D.S. Correll, H.B. Correll, Environmental Protection Agency, January 1972.

38. "A Program for Estimating Runoff from Indiana Watersheds: Part III, Analysis of Geomorphologic Data and a Dynamic Contributing Area Model for Runoff Estimation," M.T. Lee, J.W. Delleur, Purdue University, September 1972.

39. "Water Resources Review for Streamflow and Groundwater Conditions," U.S. Department of the Interior, Geological Survey, October 1972.

40. "Annual Report North Carolina July 1, 1971 - June 30, 1972," University of North Carolina.

41. "The Effects of Sewer Surcharges on the Level of Industrial Wastes and the Use of Water by Industry," R.D. Elliott, J.A. Seagraves, North Carolina State University, August 1972.

42. "Nutrients and Eutrophication," G.E. Likens, Michigan State University, 1972.

#### QUESTIONS - INQUIRIES

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