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# Water Current

Gary L. Lewis, Acting Director  
Volume 11, Number 1

Karen E. Stork, Editor  
January/February, 1979

## ANNUAL REPORT - FROM THE DESK OF THE DIRECTOR . . .

The Nebraska Water Resources Center was established in November 1964 as a result of state and federal actions authorized by the Water Resources Research Act of 1964 and was reauthorized by the Water Research and Development Act of 1978 (P.L. 95-467). The mission of the Center is to foster, coordinate, administer and conduct research, information dissemination, educational and training activities which are responsive to the water resources needs of Nebraska, the surrounding region and the nation. Its major role is in catalytic coordination--to stimulate and guide the efforts of those with interests and responsibilities in water resources research and education, and assist them in building stronger programs.

### Research

During fiscal year 1978 the Center sponsored and administered a research program involving 27 projects totaling approximately \$1.7 million in annual costs. The Center Director also serves as Assistant Director for Water in the Nebraska Agricultural Experiment Station, coordinating all of its water research efforts.

A major thrust of the Center's program was in the definition of water resources policy alternatives and the development of procedures and methodologies for facilitating decision making on these alternatives. Historically, the Center has played a major role with regard to development of the state's water resources policies and programs. Last year, the Center, along with other University units, was heavily involved in the formulation of a comprehensive State Water Planning Program as directed by the State Legislature.

A large research effort during FY 1978 involved the mechanics and potential of artificial recharge of groundwater. Such information will be very beneficial to those debating the policy question of interbasin transfer of water.

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A second area of major technical endeavor was in irrigation scheduling and management. It has been shown that much of the water and energy currently being utilized in irrigation agriculture could be saved with more rigorous management procedures. This information is likely to have significant impact on future decisions at the national and regional level regarding the use of water for irrigation purposes.

A third area of considerable effort which began last year and which is continuing involves the development of a Plan of Study for evaluation of the costs and benefits associated with the Guernsey Silt Run and its pending discontinuance and evaluating alternatives to the silt run.

Another major study, relating to groundwater legislation and institutions in the Missouri River Basin states, began last year and also continues. This effort will impact on the groundwater management policies and institutions of each of the Basin states, and, indeed, on all states which have to deal with the problem of groundwater allocation.

#### Education and Training

The Water Resources Center sponsors a number of educational and training activities designed to provide Nebraska with informed citizens, decision makers, planners and managers. For example, a Water Resources Policy Seminar was held during the spring semester last year, open to students and others, to review and examine water resources planning and policy activities at the national, regional, state and local levels.

During FY 1978, the Center also hosted a Conference on Water Data Programs and Needs in cooperation with the Nebraska Water Data Coordination Committee and the U.S. Geological Survey; co-sponsored a Water Law Short Course; and sponsored a Grantsmanship Training Workshop involving proposal preparation. The Center also hosted various information exchange seminar sessions on artificial recharge, hydrologic modeling, LB 577, (The Nebraska Groundwater Management Act), and other topics. Center staff have also been involved in revising the Graduate Program in Water Resources Planning and Management and have worked on a new Graduate Program in Natural Resources.

#### Information Dissemination

The Nebraska Water Resources Center has engaged in many aspects of scientific information dissemination. These include publication of Center reports, technical articles in important journals, presentation of scholarly articles at scientific meetings, popular articles, press releases, and a bi-monthly newsletter (WATER CURRENT), among others. The Center also periodically distributes a publications list describing recent water-related library acquisitions available for loan to interested persons. A newspaper clipping service of water-related items is also maintained by the Center.

Last year at the State Fair, the Center presented a computer game about Nebraska's water resources. Participants answered questions about Nebraska's water resources on a computer terminal. Answers will be evaluated this year and should give an indication of the areas where further education and public information programs may be helpful. The Center also published a booklet by Roger Welsch entitled "The Summer it Rained," containing water-related tall tales and folk lore from Nebraska's history.

ON THE HOMEFRONT

WATER RESOURCES SEMINARS

The Water Resources Seminar series for February and March is as follows:

- FEBRUARY 21 - WATER QUALITY AND QUANTITY CONFLICTS
- Susan Hoppel, Nebr. Natural Resources Commission
  - William Wayne, Professor of Geology, UNL
  - Deon Axthelm, Ag. Engineering, UNL
- FEBRUARY 28 - GROUND AND SURFACE WATER USER CONFLICTS
- Robert Kutz, U.S. Bureau of Reclamation
  - Clayton Lukow, Farmer, Holstein, Nebraska
  - Richard Dirmeyer, Central Nebraska Public Power and Irrigation District
- MARCH 7 - CONSERVATION FACTS AND FANTASIES
- Dr. Falih Aljibury, Cooperative Extension Service, University of California
- MARCH 14 - TBA
- MARCH 21 - DISCUSSION OF ISSUES PRESENTED AT NEBRASKA WATER CONFERENCE

These seminars are scheduled on Wednesday afternoons from 3:00 - 5:00 p.m. in the East Campus Union Building. Everyone is welcome. For additional information, contact the Nebraska Water Resources Center, 310 Agricultural Hall, University of Nebraska, Lincoln, Nebraska 68583. Telephone (402) 472-3305.

WATER RESOURCES IN NEBRASKA

STATUS REPORT ON HIGHLAND UNIT

The Bureau of Reclamation has released its April 1978 Status Report on the Highland Unit, Elkhorn Division, Pick-Sloan Missouri Basin Program, Nebraska with the transmittal of copies to the Nebraska Congressional Delegation.

Hydrologic studies of several alternatives were made using Elkhorn River streamflows depleted to reflect the effects of high and low levels of upstream private well irrigation development. Conditions "with" and "without" minimum downstream flows and for different storage reservoirs also were utilized.

Two alternatives, a 24,000-acre development and a 45,000-acre development, were selected for more detailed analyses. Both alternatives were based on the projected surface water supply remaining with a low level of upstream private

well irrigation development. They represent the maximum project irrigation development possible "with" and "without" provisions for maintenance of minimum streamflows below the diversion dam. It was determined that the high level of development upstream would limit the size of the project to one that could not be justified economically.

The 24,000-acre development was found to be only marginally justifiable, and the 45,000-acre development was found unacceptable because of the inability to maintain minimum downstream releases.

It is concluded that feasibility studies for the Highland Unit are not warranted at this time.

Copies are being provided for public inspection to the following libraries:

University of Nebraska - Lincoln, Library  
Wayne State College Library  
Norfolk City Library  
O'Neill Library  
Columbus Library  
Madison Library

#### RESEARCH GRANT AWARDED

The Environmental Protection Agency in Nebraska has received notice of a one-year research grant award of \$309,426 to the University of Nebraska, Lincoln to investigate "Ultratrace Analysis of Tetrachlorodibenzodioxin in Environmental Samples."

The primary objective of the proposed research is to obtain analytical data on the presence and quantity of 2,3,7,8 tetrachlorodibenzodioxin in the environment of the United States. These data are considered necessary to provide a sound scientific basis for decisions regarding the continued use of various phenoxy herbicides and other commercial products derived from 2,3,5-trichlorophenol.

#### FEDERAL HIGHLIGHTS

#### USGS 1979 WATER APPROPRIATION TOTALS \$96 MILLION

A total of \$95,990,000 has been appropriated for water resources investigations in the 1979 fiscal year for the U.S. Geological Survey, Department of the Interior. The new water appropriation includes an increase of \$14.8 million over fiscal year 1978 and represents about 15 percent of the total USGS appropriation for earth science and resource investigations in 1979.

The USGS Water Resources Division conducts the nation's largest water-resources investigation and information program and monitors the quantity and quality of surface and groundwater resources at more than 40,000 data stations across the country.

More than a third of the water resources appropriation - \$37,039,000 - will be used to continue and strengthen the USGS federal-state cooperative program. Under this program the USGS matches state and local offerings for water resources studies.

In FY'79, more than 600 state and local agencies will participate in cooperative projects, which are planned jointly by state and federal representatives to provide water resource data to meet both federal and local interests. The FY'79 budget allows for expanded cooperative program efforts in water use studies, areal water resource appraisals, and special studies of critical water problems.

In addition to the cooperative program, the appropriation includes funding for three new regional groundwater aquifer studies, three new river quality assessments, expansion of the National Stream Quality Accounting Network to its planned 525 stations, further development of the National Water Data Exchange, and intensified studies of nuclear waste disposal hydrology.

#### MEASUREMENT OF WELL DISCHARGE IN THE HIGH PLAINS

The National Water Use Data System Program and the High Plains Regional Aquifer System Analysis Project of the U.S. Geological Survey is conducting a test using an eight-county area in Colorado, Kansas, and Nebraska to develop sampling techniques for determining irrigation pumpage. Pumpage will be measured for 200 specially selected irrigation wells in Kit Carson, Phillips, and Yuma Counties, Colorado; Cheyenne and Sherman Counties, Kansas; and Chase, Dundy, and Perkins Counties, Nebraska. Field work will begin in February and end in October, 1979.

The data are being collected by the U.S. Geological Survey as part of a regional study of the High Plains aquifer system. The data-collection techniques developed in the test area will be used to collect pumpage information for the entire High Plains area.

For further information contact Robert A. Pettijohn, Project Chief, U.S. Geological Survey, WRD, Room 406, Federal Building, 100 Centennial Mall North, Lincoln, Nebraska 68508. Telephone (402) 471-5082.

#### INDEPENDENT WATER PROJECT REVIEW

President Carter has directed the Water Resources Council (WRC) to complete an impartial technical review of all new federal and federally-assisted water projects under Executive Order 12113 signed on January 4, 1979. Agency proposals to seek authorization or appropriations for new water development will still require from the Office of Management and Budget (OMB) the traditional advice as to the projects' relationship to the President's program, but the WRC will evaluate a project's technical soundness and compliance with required planning procedures.

The review will be established for the Fiscal Year 1981 budget cycle. Agencies will begin submitting project reports to the Council on April 1, 1979. Within 60 days of receiving a project report, the Council Chairman is to report the results

of the impartial technical review to the agency head identifying areas of noncompliance and necessary steps to assure conformance.

President Carter detailed four areas where compliance must be assured: the Council's Principles and Standards for Planning Water and Related Land Resources; the Council's new planning manual for the P&S; relevant federal laws and regulations; and the goal of wide public participation and adequate consideration of public views.

The President's Executive Order confirms his early water policy initiatives and directs the Council to maintain current Principles and Standards, to develop a planning manual for use in calculating project benefits and costs and to establish procedures for the federal agencies to use in preparing comprehensive regional or river basin plans.

Rules, regulations and procedures necessary to implement the unit will be published in the Federal Register by mid-February. Final rules are to be established by August. Plans to hire staff for the independent review unit within the Council staff are now underway.

## CONFERENCES

### 1979 NEBRASKA WATER CONFERENCE

The 1979 Nebraska Water Conference will be held March 15-16, 1979 at the Nebraska Center for Continuing Education. This year's theme is "Water--Our Diminishing Resource".

Topics on this year's program include the following:

- The State-Federal Role in Water Resources Planning
- Nebraska Planning and Review Process
- Water Data Collection Programs and Needs
- High Plains Aquifer Studies
- Instream Flow Issues
- Emphasis on Water Conservation -- National Water Policy

Of special interest, at a noon luncheon on Thursday, March 15, Mr. Meier Ben-Meir, Water Commissioner for Israel, will discuss water planning and management in Israel.

For additional information; and to obtain a copy of the program, contact Dr. Les Sheffield, 222 Filley Hall, University of Nebraska, East Campus, Lincoln, Nebraska 68583.

### WORKSHOPS ON INTEGRATION OF WETLANDS AND FLOODPLAIN MANAGEMENT

The U.S. Water Resources Council (WRC) has decided to explore the need to integrate wetlands protection and management with floodplain management. It will hold two public workshops in Washington, D.C., on February 22 and April 26, 1979.

The exact time and location of the meetings will be announced later, after the Council determines the number of people who will attend.

The February 22 workshop will focus on the federal, state, local and private roles in wetlands protection and management and floodplain management. The April 26 meeting will review a draft report on the feasibility of integrating the two programs. Issues papers will be available prior to both of the meetings. The Water Resources Council is also holding federal interagency technical sessions to explore possible integration of the program.

During the past few years, numerous development concerning floodplains and wetlands has occurred. Such developments include: Executive Order 11988 on Floodplain Management; Executive Order 11990 on Protection of Wetlands; Sections 208 and 404 of the Water Pollution Control Amendments of 1972 and 1977; The Clean Water Act of 1977; Development of a national wetlands classification system and national wetlands inventory by the U.S. Fish and Wildlife Service; A growing public interest in better floodplain management; and A growing public interest in better wetlands protection.

So that the Council can be sure to accommodate all who are interested in participating in the February 22 and April 26, 1979, workshops, persons interested in attending are asked to notify the Council. The address is: U.S. Water Resources Council, 2120 L Street, N.W., Washington, D.C. 20037. Telephone (202) 254-8290.

#### NORTH AMERICAN LAKE MANAGEMENT

The 1979 North American Lake Management Conference will be held at Michigan State University, East Lansing, April 16-18, 1979. The conference discussion sessions will emphasize applied research and management techniques for lake investigation, protection, and restoration. Enrollment will be limited and no proceedings will be published. Exhibit space will be available.

Topics included in this conference are as follows: Internal cycling of nutrients; Lake water quality and public health; Septic tanks and other on-site waste disposal; Fish management in lakes; Toxic substances in lakes; Lake vegetation control and disposal/use; Special problems of reservoirs and other man-made lakes; Lake dredging and spoils disposal/use; Lake modeling, sampling and data analysis methods; Institutional approaches to lake management.

For further information contact George Gibson, University of Wisconsin-Extention, Environmental Resources Unit, 1815 University Avenue, Madison, Wisconsin 53706.

#### WORKSHOPS ON FREQUENCY ANALYSIS AND RAINFALL DATA ANALYSIS

The University of Illinois at Urbana-Champaign will be holding two workshops; Frequency Analysis (June 5-6, 1979) and Rainfall Data Analysis (June 7-8, 1979). These workshops are co-sponsored by the University of Illinois, the Division of Water Resources of the State of Illinois, and the American Society of Civil Engineers Central Illinois Section.

The major purpose of the workshops in Urbana-Champaign is to acquaint participants with the latest techniques and computer/calculator programs on the subjects. Participants may enroll in either of the two 2-day workshops, although enrollment in both is encouraged. The registration fee is \$125 for each workshop or \$225 for both workshops, and covers all session costs, lecture notes and user's guides for computer/calculator programs, and computer time for solving design examples. Space is limited and advanced registration is suggested.

For enrollment or more information, write Workshop Co-Directors, Dr. Ben C. Yen or Dr. George W. Tauxe, Department of Civil Engineering, University of Illinois, Urbana, Illinois 61801. Telephone (217) 333-0687.

#### SHORT COURSE ON UNSTEADY FLOW IN PIPELINES

A short course on fluid transients in piping systems will be presented at the University of Michigan July 9-13, 1979. The course is intended for practicing engineers who desire an understanding of transient flow in fluid systems and who wish to acquire a capability in problem solutions with the digital computer. Emphasis will be placed on the solution of practical problems in a variety of fields such as fluid transportation systems, cooling water condenser systems in power plants, and complex piping systems that include various boundary conditions.

Topics will include concepts of transient flow; derivation of basic equations for liquids and transformation by method of characteristics; series, branching, and looped systems; boundary conditions such as turbomachines, valves, air chambers, surge devices, condensers, etc.; vapor column separation; natural gas unsteady flow in pipeline systems, transients in liquified natural gas systems.

For further information contact Professor E. Benjamin Wylie, Department of Civil Engineering, University of Michigan, Ann Arbor, Michigan 48109.

#### SHORT COURSE ON DESIGN OF WATER QUALITY MONITORING NETWORK

Colorado State University Research Institute, in cooperation with Colorado State University, Fort Collins, is presenting a Short Course on "Design of Water Quality Monitoring Networks", July 23-17, 1979. The Short Course will develop, in detail, a systematic procedure for designing a water quality monitoring network with the objectives of determining ambient water quality, assessing trends and detecting streams in violation of standards. The network design is developed by delineating the water quality variables to be observed and establishing the criteria used to determine sampling station location, sampling frequency and data analysis in such a **manner that** representative and quantitative data are obtained.

The Short Course is directed to persons actively involved with the design, operation and/or management of a water quality monitoring network. The Short Course assumes that attendees have little or no background in statistics. Each attendee will be furnished with a manual that includes all of the material presented during the Short Course.

The fee for the short course will be \$450.00 which includes tuition, all class material, the course manual, refreshment breaks and the banquet Thursday evening.

For further information contact: Kristine L. Schneider, CSU Research Institute, P. O. Box 342, Fort Collins, Colorado 80522. Telephone (303) 491-8450, or (303) 491-8652.

## PUBLICATIONS

### PROCEEDINGS PUBLISHED

"Storm Sewer System Design" is the edited lectures of the 1978 workshops of the same title at the University of Illinois. Part 1 describes the concepts, hydraulics, and hydrology of sewer design. Part 2 contains user's guides for four computer design programs and one TI-59 calculator program. This is a 282-page publication.

Interested persons are asked to send \$6.50 (payable to the University of Illinois) to B. C. Yen, Department of Civil Engineering, University of Illinois at Urbana-Champaign, Urbana, Illinois 61801.

## POSITIONS AVAILABLE

### CIVIL ENGINEERING FACULTY POSITION

California State University at Sacramento announces the availability of a one-year non-tenure track position in Civil Engineering at the Assistant or Associate Professor level depending on qualifications. The filling of this position is dependent upon the provision of adequate funding on the final budget.

A Ph.D. in Civil Engineering with emphasis in fluid mechanics and hydraulics or hydrology is required. Experience in professional practice, teaching or research would be desirable.

This position would involve teaching undergraduate courses in fluid mechanics and water resources engineering and graduate courses in either hydraulics or hydrology. Also, instructional-related duties, including student advising, academic committee work, curriculum development and graduate student theses advising, are required of all faculty.

Closing date for applications and nominations is March 15, 1979. Interested applicants should contact: J. Gordon Hammer, Chair, Department of Civil Engineering, California State University at Sacramento, 6000 "J" Street, Sacramento, California 95819.

California State University, Sacramento, is an Equal Employment Opportunity/Affirmative Action Employer.

POSITION OPENING IN SANITARY ENGINEERING

The University of Guam Water Resources Research Center is presently seeking candidates for a possible research faculty position in the area of sanitary engineering. Although it is anticipated that this appointment will be at the assistant professor level, rank and salary are open depending on qualifications. The University of Guam will provide for round-trip air fare and shipment of household goods. It is expected that this position will be available beginning the fall 1979 semester.

A Ph.D. degree is required and research experience involving island water problems is highly desirable. This position includes responsibility for developing a research program in water quality. The teaching of one undergraduate course in science or engineering may also be required.

Interested candidates should contact: Stephen J. Winter, University of Guam, Water Resources Research Center, P. O. Box EI, Agana, Guam 96910.

NEWSLETTER ITEMS SOLICITED

The Water Current Newsletter will publish, without charge, announcements, programs for up-coming conferences, employment opportunities or other newsworthy items on hydrology, water resources or related topics. We will be happy to help advertise any water-related job openings in this newsletter. Please send any job openings you would like to have published to the editor, and we will see that they are advertised.

QUESTIONS AND INQUIRIES

Newsletter items and inquiries should be sent to: Editor, Nebraska Water Resources Center, 310 Agricultural Hall - East Campus, University of Nebraska, Lincoln, Nebraska 68583; or phone, (402) 472-3307.

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