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GUEST EDITORIAL

President Announces New Water Policy

by

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President Carter, on June 6, 1978, announced his long-awaited water policy proposals. One controversial portion of the President's earlier water policy proposals was whether the federal government would use its programs to achieve reform of state water allocation policies. In his message to Congress, the President reaffirmed the traditional role of the states in allocating rights to use water. The President's proposals focused on four major areas: (1) federal water resources planning, evaluation, and financing; (2) water conservation; (3) federal-state cooperation and state water planning assistance, and (4) environmental quality.

Federal Water Planning, Evaluation, and Finance. Federal planning of water projects has often been criticized on the ground that planning and evaulation procedures have been inconsistent among the federal construction agencies (Corps of Engineers, Bureau of Reclamation, and Soil Conservation Service). The President directed the federal Water Resources Council to establish project planning and evaluation procedures to be used by all federal construction agencies. Review of project proposals has traditionally been a function of the federal construction agency and the Office of Management and Budget. Because most agencies are less likely to scrutinize their own proposals, and because the OMB is more interested in budget considerations, the President will establish, within the Water Resources Council, an independent review for all federal water projects. The review would

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emphasize: net national economic benefits, how widely project benefits are distributed, consideration of water conservation and non-structural alternatives, evidence of broad public support, an increased level of state cost-sharing, and environmental impacts. Finally, the President proposed that state cost-sharing be increased to include an additional 10% for major irrigation projects and 20% for major flood control projects to be implemented.

Water Conservation. One alternative to dealing with water shortages is to augment existing supplies through water development projects. Another approach is to use existing supplies more efficiently. To encourage water conservation the President directed federal agencies which finance community water supply development to require water conservation programs as a condition for federal grants and loans. The President also directed federal agencies to increase technical assistance to agricultural and urban water users to improve water conservation. In particular, the Interior and Agriculture departments were directed to discourage ground water mining through their agricultural assistance programs. Finally, water service contracts from federal reclamation projects are to be renegotiated every five years (where allowed in the contract) to increase the price of irrigation water to encourage water conservation.

Federal-State Cooperation. The President proposed that federal support for state water planning be increased from the current $3 million per year to $25 million per year. This money would be available for development of state water plans on a matching basis. The President also proposed that $25 million per year be made available for development of state water conservation plans. These proposals would need to be enacted by Congress. The President announced his intention to continue to consult with state and local officials in developing water policy objectives. Finally, the President announced a policy of negotiation regarding resolution of water conflicts involving federal and Indian reserved water rights. (Reserved water rights are water rights the U.S. Supreme Court has declared were reserved to the federal government and Indian tribes when public lands were reserved for federal use or for Indian reservations.)

Environmental Protection. A major conflict in federal water policy is reconciling federal water development programs with the requirements of federal environmental statutes. The President directed federal agencies to more fully comply with existing federal environmental protection statutes. The President also emphasized the use of non-structural alternatives in floodplain management, i.e., land use regulation to prevent further development in floodplains rather than construction of flood control reservoirs. The President required the Soil Conservation Service to require accelerated land treatment (conservation tillage, terracing, etc.) before erosion control structures are built. Finally, the President proposed federal cooperation with the states to establish and protect instream flows for fish and wildlife, water quality maintenance, recreation, etc., and to establish ground water management programs.

Implications for Nebraska. If the President's policy proposals are fully implemented, less federal money is likely to be available for water development but more will be available for water management. Federal water development dollars will be tied to requirements for greater assumption of cost by the state and by water users, strict water conservation requirements, and protection of environmental values.

ON THE HOMEFRONT

RESEARCH OVERVIEWS PLANNED

The Water Resources Center plans to sponsor another Research Overview to present a brief review of the current water-related research being conducted by the Center. On November 13, 1978 the Research Overview will be presented at the Panhandle Station in Scottsbluff, Nebraska, and on November 14, 1978 it will be presented at the North Platte Station in North Platte, Nebraska. The programs begin at 8:45 a.m. and will be only slightly different to incorporate work underway at the two stations.

Current water-related projects have been divided into six priority areas: (1) hydrologic systems analysis; (2) water use efficiency; (3) water quality; (4) drought strategies; (5) institutional and social considerations; and (6) other related research. Staff members from the Water Resources Center and the Agricultural Experiment Station will review various research efforts in progress under each category. At the conclusion, a panel will discuss possible future research needs.

The seminars are open to the general public, state and federal agency representatives, University faculty and students, and other interested persons. There is no fee.

For a copy of the complete program, contact the Water Resources Center, 310 Agricultural Hall, University of Nebraska, Lincoln, Nebraska 68583.

NWRC HOSTS SUCCESSFUL PROGRAMS

On September 15, 1978 the Nebraska Water Resources Center co-hosted a Conference on Water Data Programs and Needs. The conference was very successful with approximately 100 persons in attendance. Staff members from various agencies and industries briefly discussed their prorgrams of data collection related to quantity and quality of atmospheric, surface and groundwater. A general discussion period followed the various presentations. A summary of the questions and answers will be available shortly. Those interested in receiving a copy should contact the Nebraska Water Resources Center, 310 Agricultural Hall, University of Nebraska, Lincoln, Nebraska 68583. Telephone (402) 472-3305.

Another successful program sponsored by the Center was a Groundwater Management Seminar held on October 11, 1978. Entitled "Local Management of Groundwater Resources Using LB 577," the seminar presented the following speakers: Ralph R. Marlette, Professor of Civil Engineering; J. David Aiken, Water Law Specialist; Raymond J. Supalla, Associate Professor of Agricultural Economics; Marvin V. Damm, Research Associate, Nebraska Water Resources Center; and John Turnbull, General Manager of the Upper Big Blue NRD. Over 50 people attended the seminar, and a very informative general discussion was held after the presentations. Those interested in obtaining copies of the speakers comments should contact them directly.

GRANTSMANSHIP TRAINING WORKSHOP

On September 18-22, 1978 the Nebraska Water Resources Center sponsored a Grantsmanship Training Workshop in Lincoln. The workshop was taught by a member of the staff of the Grantsmanship Center in Los Angeles.

Twenty-five (25) people attended the workshop which focused on three major areas: (1) program planning; (2) the translation of project goals into funding proposals; and (3) locating and approaching government and private funding sources. Comments from participants indicated that the workshop was most informative and worthwhile.

The Water Resources Center will again sponsor a Grantsmanship Training Workshop in Lincoln, Nebraska in the spring of 1979. Further information on this program will be available in the near future.

NEW STAFF MEMBER

The Water Resources Center is proud to announce the addition of a new staff member. Mr. Denis P. Gilbert recently joined our staff as a Water Scientist, replacing Mr. Marshall Taylor who resigned to return to graduate school at Cornell University.

Mr. Gilbert completed work on his Master's Degree in Watershed Hydrology at the University of Arizona in June 1978. He received his B.S. in Watershed Management from the same institution in 1976. While at the University of Arizona, Denis developed a soil moisture computer model for predicting forage yield on semi-arid rangelands. This model then was used as an input to optimize management decisions for grazing practices on rangelands.

The Water Resources Center is pleased to welcome the newest member of our staff.

WATER RESOURCES IN NEBRASKA

CONSERVATION AND SURVEY DIVISION

For Nebraskans interested in the water quality of their groundwater supplies, a new resource atlas is now available. Titled GROUNDWATER QUALITY ATLAS OF NEBRASKA, the 9" x 14" Resources Atlas No. 3 is published by the Conservation and Survey Division of the Institute of Agriculture and Natural Resources. The new publication, the first of its kind ever produced in the state, was written by R. A. Engberg of the U.S. Geological Survey and R. F. Spalding of UNL's Conservation and Survey Division.

Fourteen maps depict the areal extent of different concentration ranges of such major chemical constituents of the state's groundwater as dissolved solids, hardness (calcium and magnesium), sodium plus potassium, alkalinity (bicarbonate and carbonate), sulfate, chloride, fluoride, silica, boron, iron,

manganese, selenium, phosphorus, and nitrate. To these is added a section on trace constituents. The constituents mapped were chosen on the basis of their relative abundance, aesthetic considerations, public health significance, and availability of data. A page of narrative text accompanies each map. Because irrigation is a major use of groundwater in Nebraska, the quality of the water used for irrigation is emphasized in the atlas. Since all but two Nebraska communities having public water supply systems derive part or all of their supply from groundwater, this new publication should be useful to most communities in the state. For this reason, the authors have emphasized public health standards and limits in their discussion of each constituent.

Copies of the Resource Atlas No. 3 are available at $3.00 each (plus sales tax for Nebraska residents) from the Conservation and Survey Division, 113 Nebraska Hall, University of Nebraska, Lincoln, Nebraska 68588. Orders may be telephoned to (402) 472-3471.

FEDERAL HIGHLIGHTS

FEDERAL STUDIES INVESTIGATE OGALLALA AQUIFER

Three federal studies are currently underway that will focus on the High Plains and/or the Ogallala Aquifer. These studies are being funded primarily by the federal government, with some financial support by state and local agencies.

U.S.G.S. Ogallala Study

The U.S. Geological Survey has planned an extensive study concentrating on the High Plains and the Ogallala Aquifer. The project is expected to take five years and will include the development of a computer model of the entire Ogallala Aquifer which underlies portions of the states of Texas, Oklahoma, New Mexico, Kansas, Nebraska, Colorado, Wyoming and South Dakota.

The purposes of the study are to: (1) describe the water resources and the operation of the hydrologic system; (2) develop a regional water resources (and related) data storage and retrieval system; (3) design and develop a digital computer model(s) of the High Plains aquifer system; and (4) evaluate selected groundwater management alternatives to demonstrate the applicability of the model(s) and provide a hydrologic basis for the economic evaluation of management alternatives.

EDA Study

In October 1976, Congress passed the Water Resources Development Act and authorized a $6 million study generally referred to as the High Plains-Ogallala Study. This authorization directed the Economic Development Administration of the U.S. Department of Commerce to work with other governmental agencies and departments of all levels, and with private interests, to study the natural resources of the areas of the states of Colorado, Kansas, New Mexico, Oklahoma, Nebraska and Texas which are using the water of the Ogallala Aquifer and to develop a means of increasing the water supplies of or to those areas.

The EDA study will attempt to determine the effect of declining groundwater supplies on the economic growth or stabilization of the areas overlying the Ogallala Aquifer. The study will cover the states directly affected by mining groundwater, and its impact on other areas of the country that depend on the High Plains states to supply raw materials and food supplies and on the ability of the High Plains states to continue as ready markets for products and services from the other states of the nation. The study will also assess the impact to the area of moving from an irrigated agricultural base to a dry land farming base, with a resultant decline in crop yields.

With an initial appropriation of $3 million for the first year of the study, EDA is preparing to contract out most of the work to a general contractor who will be responsible for the major parts of the study. The general contractor will contract with the individual states for certain portions of the study pertaining to their particular areas of state farm-level research, energy production impacts and overall state impacts. Approximately $1 million will be allocated to the six states for state-level research.

Bureau of Reclamation Study

The third federal study is the Bureau of Reclamation's "Llano Estacado Total Water Management Study." The area covered by this study encompasses the High Plains of eastern New Mexico and northwest Texas and those portions of Colorado, Kansas and Oklahoma lying south of the Arkansas River.

The principal objectives of the study are to: (1) identify water supply problems and needs; (2) determine the quantity and quality of surface water resources; (3) evaluate the possible uses of playa lake water; (4) study related water supply concepts; and (5) study the economic impacts due to the declining groundwater.

*Information obtained from "The Cross Section" published by High Plains Underground Water Conservation District No. 1.

CONFERENCES

AWWA PAPERS SOLICITED

The American Water Works Association (AWWA) Research Committee is seeking papers on research work in the water supply field for presentation at the 1979 Annual Conference to be held in San Francisco, California, June 24-29, 1979. Two sessions at the Annual Conference have been requested for presentation of research papers.

Papers will be chosen from abstracts received no later than December 4, 1978. Research papers dealing with water quality control, distribution, management and water resources are being sought.

Eight copies of both an information sheet and a 300 to 1,000 word abstract of the research paper should be submitted to: E. F. Spitzer, Secretary, American Water Works Association, T&P Research Committee, 6666 West Quincy Avenue, Denver, Colorado 80235. Abstract information sheets can be obtained from the same source

EPA TO SPONSOR CONFERENCE ON WATER CONSERVATION AND MUNICIPAL WASTEWATER

The U.S. Environmental Protection Agency will sponsor a two-day National Conference on Water Conservation and Municipal Wastewater Flow Reduction in Chicago on November 28-29, 1978. Sessions will be held at Ramada - The O'Hare Inn (Chicago O'Hare Airport).

Conference attendance will be limited to 500, with no registration fee required. Issues covered in the conference will include:

(1) Water and wastewater management issues;

(2) Regulations affecting water supply, wastewater and their treatment;

(3) Water and wastewater conservation technology;

(4) Public participation, education and information in water conservation;

(5) Case studies of water conservation, wastewater flow reduction projects.

Persons interested in attending or wanting additional information should write: Richard E. Tucker, U.S. Environmental Protection Agency, c/o Enviro. Control, Inc., P. O. Box 1687, Rockville, Maryland 20850.

WATER REUSE SYMPOSIUM

A Water Reuse Symposium will be held March 25-30, 1979 in Washington, D.C. Under the direction and sponsorship of the American Water Works Association Research Foundation, Office of Water Research and Technology (U.S. Department of the Interior), U.S. Army Medical Research and Development Command, National Science Foundation, U.S. Environmental Protection Agency, and Water Pollution Control Federation, the week-long meeting will be devoted to the renovation and reuse of wastewaters from municipalities, industry, and agriculture.

With the theme of "Water Reuse - From Research to Application," pertinent case histories, new water recycling research and practical community applications will be covered. Plenary, concurrent sessions and poster presentations will emphasize innovative approaches, national, state, regional, and local reuse standards development, institutional and legal problems. Technical tours through two important water recycling facilities will be available.

The program is directed to individuals from water/wastewater utilities, consulting firms, federal, state and private research organizations, regulatory agencies, research divisions of manufacturers and universities.

A preliminary program and registration form is available from: Water Reuse Symposium, AWWA Research Foundation, 6666 West Quincy Avenue, Denver, Colorado 80235, U.S.A. Phone: (303) 794-7711, Ext. 251, 259, 267.

THIRD HYDROLOGY FIELD CAMP, OWENS VALLEY, CALIFORNIA

The Department of Earth Science, California State University, Fullerton, will be conducting their 3rd Annual Field Camp in Hydrology June 18-30, 1979. The locale for the field course is the Owens Valley Region, on the Eastern Sierra foothills.

The course is taught in cooperation with several agencies, including the Los Angeles Department of Water and Power, and utilizes the hydrological networks of the Department. The field techniques covered are: stream gauging procedures, spring mapping, aquifer tests, snow surveys, vegetation surveys, lake study and hydrothermal measurements. The course carries three units of upper division credit, and the tuition and supplies fee is approximately $185. A background in hydrology or water resources is strongly recommended.

For further information write to: Dr. Prem K. Saint, Associate Professor, Earth Science Department, California State University, Fullerton, Fullerton, California 92634.

INTERNATIONAL SYMPOSIUM ON URBAN STORM RUNOFF

Interested persons are invited to submit an abstract (250 words or less) of a paper to be presented at the SIXTH INTERNATIONAL SYMPOSIUM ON URBAN STORM RUNOFF - July 23-26, 1979. Abstracts on the following topics are invited:

(1) Quantifying rainfall, runoff, sediment production, and non-point source water quality in urban areas;

(2) Case studies and innovative methods for controlling urban storm water runoff and sediment;

(3) Hydraulics and hydraulic structures used in urban drainage facilities; and

(4) Legal implications and socio-economic trade-offs associated with urban storm water management.

The Symposium is intended to provide practicing engineers with useable information. Papers reporting research results, design and analysis techniques are encouraged. A limited number of theoretical papers will be accepted. The subject of wastewater treatment will not be included.

Initial selection will be based upon review of the abstracts. The final acceptance will be based on the content of the paper and how well it meets the description of the abstract. The following deadlines will be followed:

Receipt of 250 word abstracts .....January 4, 1979

Invitation to submit paper based on abstract .....January 15, 1979

Receipt of photo-ready manuscript .....March 12, 1979

Notification of acceptance .....April 2, 1979

Abstracts and papers should be mailed to Ms. Elizabeth R. Haden, Coordinator, Office of Continuing Education, College of Engineering, University of Kentucky, Lexington, Kentucky 40506. Attention: International Symposium. Telephone (606) 257-3971.

Inquiries should be mailed to Ralph R. Huffsey, Water Resources Institute, 161 Anderson Hall, University of Kentucky, Lexington, Kentucky 40506. Telephone (606) 257-1832.

PUBLICATIONS

LOW HEAD HYDRO

John S. Gladwell and Calvin C. Warnick have compiled a new book entitled "LOW HEAD HYDRO" which taps the expertise of a wide-ranging group of engineers, economists and government officials to examine all aspects of low-head hydroelectric production. Various topics include:

(1) The economics of specific low-head installations now on line,

(2) The methodology used to determine the power potential of irrigation systems,

(3) The complex government procedures concerning low-head,

(4) Environmental and aesthetic considerations,

(5) Marketing low-head power,

(6) Economic analysis techniques for low-head projects,

(7) Legal and institutional considerations,

(8) The technology of tube, bulb, cross-flow and straflo turbines,

(9) Potential sites,

(10) The changing role of private utilities,

(11) Federal low-head programs,

(12) The legislation outlook.

The cost of the "LOW HEAD HYDRO" (a 206-page illustrated edition) is $10.00 postpaid. Requests should be sent to the Idaho Water Resources Research Institute, University of Idaho, Moscow, Idaho, U.S.A. 83843.

POSITIONS AVAILABLE

CONSULTING ENGINEERING/MANAGEMENT

DAMES AND MOORE are looking for an individual with a combination of management skills, technical background and career objectives to fill a key technical management role for a 150 man-year water resources project. Qualifications must include report preparation; planning, scheduling and coordination of complex projects; and written and verbal communication. Technical experience is also required and should include surface water hydrology/hydraulic engineering, flood plain mapping and water resource analysis.

DAMES AND MOORE provides technical expertise in the Environmental and Applied Earth Sciences to designers, builders, owners and governmental agencies from more than 40 offices around the world. The firm's Bethesda office has experienced a steady, high rate of expansion, providing professional opportunities for rapid growth.

This is a high visibility career position to be filled by an individual confident in his/her ability to manage people and evaluate technical problems. Those interested are asked to send resumes, including salary history to: W. Bond, Dames & Moore, 7101 Wisconsin Avenue, Bethesda, Maryland 20014. Dames & Moore is an Equal Opportunity Employer.

FACULTY POSITION IN HYDROLOGY

The Department of Environmental Sciences at the University of Virginia invites applications for a tenure-track faculty position in HYDROLOGY. The department offers a broad-based interdisciplinary program at both undergraduate and graduate levels with particular strength in the areas of meteorology, ecology, geology and hydrology/water resources.

Candidates should have an earned doctorate and a strong committment to research (including the ability to develop an externally-funded research program within the context of an interdisciplinary department.) Preference will be given to applicants with a background in experimental hydrodynamics (e.g. channel hydraulics) and an interest in sediment transport.

Interested applicants should send resumes, reprints and three references to G.M. Hornberger, Department of Environmental Sciences, Clark Hall, University of Virginia 22903. The University of Virginia is an Equal Opportunity Affirmative Action Employer.

TEACHING POSITION AVAILABLE

Water resources teaching applications now being accepted by California State University, Sacramento. Courses to be taught include undergraduate fluid mechanics and water resources and graduate courses in hydrology and/or hydraulics. The position is expected to be available Spring Semester (starts January 29, 1979), but may not be filled until Fall depending on availability of applicants. Ph.D. expected. Possibly a tenure-track position at assistant or associate professor rank. Deadline for applications is December 1, 1978.

For additional information contact: Dr. Ajit Virdee, Chairman, Department of Civil Engineering, California State University, Sacramento, 6000 J Street, Sacramento, California 95819. Telephone (916) 454-6982.

CIVIL ENGINEERING FACULTY POSITION

Old Dominion University in Norfolk, Virginia announces the availability of a faculty position as Civil Engineering Assistant/Associate Professor. Area of expertise must be hydraulic engineering. This individual will be expected to help lead the development of the research and academic program in the area of hydraulics and water resources of the department. A Ph.D. degree is required and professional registration is highly desireable. Salary and rank are negotiable depending on experience.

Interested applicants should send resume and references by January 15, 1979 to Dr. William A. Drewry, Chairman, Department of Civil Engineering, Old Dominion University, Norfolk, Virginia 23508. An Affirmative Action Equal Opportunity Employer.

ENVIRONMENTAL ENGINEERING POSITION

The University of Iowa is seeking applicants to fill a newly established position in its Environmental Engineering Program. The position will involve primarily the coordination of teaching and research activities in the water and wastewater laboratories. Depending on individual qualifications and interests, the position could involve some teaching and the development and conduct of research. It is desired that applicants have education and/or experience backgrounds in the environmental engineering and applied science area. Actual degree requirements are open.

It is planned that the position will be filled no later than January 1, 1979. Resumes should be forwarded to: Richard R. Dague, Professor, Civil and Environmental Engineering Program, College of Engineering, University of Iowa, Iowa City, Iowa 52242. An Equal Opportunity/Affirmative Action Employer.

ENVIRONMENTAL CONSERVATION FELLOWSHIPS AVAILABLE

The National Wildlife Federation is now accepting applications for their Environmental Conservation Fellowship. The fellowships cover the following study topics:

(1) ecosystem analysis and modeling for natural resource management;
(2) fish and wildlife management;
(3) range management;
(4) economics of natural resource conservation;
(5) forestry;
(6) conservation education;
(7) water resources planning and management;
(8) conservation law;
(9) marine resources;
(10) pollution control and abatement;
(11) soil conservation;
(12) park administration and management;
(13) outdoor recreation;
(14) political science and public policy;
(15) public relations and journalism (with conservation emphasis);
(16) energy conservation; and
(17) petroleum related problems in any of the above subject areas.

Applications must be submitted no later than December 31, 1978 to the Executive Vice President, National Wildlife Federation, 1412 16th Street, N.W., Washington, D.C. 20036.

Application forms can be obtained by writing to the National Wildlife Federation at the above address or from the Nebraska Water Resources Center, 310 Agricultural Hall - East Campus, University of Nebraska, Lincoln, Nebraska 68583.

RESEARCH REVIEW

PROJECT TITLE: Development of a Multiobjective Screening Model for Water Resources Planning in Nebraska

PRINCIPAL INVESTIGATORS: Jerald P. Dauer and Robert J. Krueger, Department of Mathematics and Statistics, University of Nebraska - Lincoln

The development of water resources systems in Nebraska is concerned with maximizing multiple noncommensurable objectives such as flood control, irrigation capabilities, and wildlife and recreational benefits while minimizing the corresponding costs. The problem being addressed in this two-year project is the development of an adequate screening model for such a multiobjective water resources system.

The approach to the solution of this problem will be to develop an interactive screening model which combines the key features of two distinct multiobjective optimization techniques, namely, goal programming and the method of constraints.

Much of the emphasis during the first year of the project centers on the computer and educational bases needed for the mathematical developments. (These will be discussed below.) However, the research aspects of the project were pursued at this time as well and yielded substantial, albeit preliminary, results. In particular, an initial research model for multiobjective river basin planning was developed. The mathematical concepts of this model were subsequently extended and these results were presented at the meeting of the Society of Industrial and Applied Mathematics in Albuquerque, New Mexico in November, 1977. A paper containing these results as applied to a small river basin model has been submitted to the Journal of Applied Mathematical Modelling. This research also identified and developed techniques for solving a related multiobjective optimization problem in majorization from statistics. Additional applications of this research were applied to two case studies being compiled by C. Carlsson, A. Törn and M. Zeleny for a book on multiobjective modeling techniques. These varied applications have confirmed the usefulness of the technique under development.

One of the main areas of emphasis in the project for the first year has been the establishment of a computer base to test and examine the research ideas and results. One aspect of this base is the implementation of multiobjective examples for numerical calculations. A small hypothetical river basin has been developed for the computer and is operational. A number of calculations have been completed using this example. A second multiobjective example was also implemented on the computer. The second example is distinct from the first in that nonlinear functions were used to describe several of the objectives. These nonlinearities reflect realistic curves for flood benefits, budget costs, etc. This model will be used to analyze the extensions of the research techniques to separable multiobjective models.

The other aspect of the computer base which was pursued was the analysis of mathematical programming techniques which are relevant to this type of model. A literature search on the recent multiobjective programs has been completed and analyzed. At this point, prime candidates for suitable algorithms are GRG2 by Leon Lasdon, University of Texas at Austin, and the Dantzig-Wolfe decomposition. These are mathematical techniques used for solving large optimization systems, such as those encountered in a river basin screening model. Particular attention was focused on the relation of these techniques to multiple objective planning problems, such as those arising in water resources planning. The relation to decentralized planning models was also analyzed. Indeed, it is felt that a very significant result of the project thus far is the identification of the common structure shared by these two types of models.

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.