University of Nebraska - Lincoln
DigitalCommons@University of Nebraska - Lincoln

Water Current Newsletter | Water Center, The

2-1-1972

Water Resources News, Volume 4, No. 2, February 1972

Follow this and additional works at: http://digitalcommons.unl.edu/water_currentnews

Part of the Water Resource Management Commons

"Water Resources News, Volume 4, No. 2, February 1972" (1972). *Water Current Newsletter.* Paper 62.
http://digitalcommons.unl.edu/water_currentnews/62

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 4 Number 2 February, 1972

DR. WILLIAM GARNER OF EPA PRESENTS SEMINAR

On Wednesday, February 23rd, Dr. William Garner, Research and Monitoring Representative of the Environmental Protection Agency in Kansas City, presented a seminar on the EPA research and training programs. Dr. Garner discussed details of submitting proposals, research needs, review processes, and other items related to agency functions. For futher information on research opportunities with EPA, contact Dr. William Garner, Research and Monitoring Representative, Environmental Protection Agency, Department of the Interior, 1735 Baltimore Avenue, Kansas City, Missouri 64108 or Dr. Warren Viessman, Jr., Water Resources Research Institute, University of Nebraska - East Campus, 212 Agricultural Engineering Building, Lincoln, Nebraska 68503.

NIXON WANTS TO CONTROL WASTES PUT INTO EARTH

President Nixon is proposing federal control of underground disposal of toxic substances and regulations to control sediment pollution of waterways.

Nixon said he will send congress a "Toxic Wastes Disposal Control Act" to let the Environmental Protection Agency establish federal guidelines and requirements for state programs to regulate disposal of wastes underground. Federal enforcement action would follow if a state failed to establish its own program.

EPA would also set up guidelines to control sediment pollution, which Nixon called "the most pervasive water pollution problem" after urban and industrial wastes. Federal enforcement also would follow failure of a state to implement controls.

In other water related matters, Nixon suggested tax incentives for private recycling plants, but limitation of tax benefits for development on coastal and estuarine wetlands; urged creation of the Big Cypress National Fresh Water Reserve in Florida; proposed a voluntary United Nations Fund for the Environment funded with $100 million over 5 years, and said he hoped to conclude by 1973 international agreements to control ocean spills, sea dumping and undersea exploration.

GLOBAL CIRCULATION STUDY

The government will lease a computer 10 times more powerful than any private computer to study the world's weather and oceans for $4.5 million a year. It will be installed in 1973 at Princeton University by Texas Instruments, Inc.

MAINE CENTER RENAMED

The Maine Water Resources Center has been renamed the Land and Water Resources Center, University of Maine (Orono). University of Maine Vice-President Bruce Poulton stated that the new title reflects an increased commitment by the university to coordinate and conduct comprehensive research in subject areas vital to Maine life.

POWER PLANT SITING CONTROVERSY ADDRESSED BY NATIONAL ACADEMY OF ENGINEERING (NAE): REPORT ISSUED, CONFERENCE CALLED

Announced recently by W. Deming Lewis, President of Lehigh University, is the publication of the results of a twelve-month study undertaken in committee action by a host of nationally prominent power experts and evironmentalists. Dr. Lewis was Chairman of the committee on Power Plant Siting. President of Resources Technology, Inc., E. D. Eaton, served as Executive Secretary for the project. The report, Engineering for Resolution of the Energy-Environment Dilemma, examines siting requirements and engineering approaches to mitigation. The report does not offer complete and final solution to power plant siting questions, but presents recommendations and supporting technical information that can contribute importantly to decision making. A decision forum will be sponsored by the NAE at the Shoreham Hotel in Washington, D.C. on March 7 & 8, 1972. For futher information, contact: 2101 Constitution Ave., N.W., Washington, D.C. 20418 or call the Shoreham Hotel re the Power Plant Siting Forum.

THE NEW WATER GAME

Uncle Same offers a new water game. The pieces are the land and related water resources of the Nation. The players will be governments, and whoever else learns the rules of the game. The stakes--all that ultimately relates to land and water resources.

Proposed rules are now laid out by the Water Resources Council (being a group from the Cabinet, plus others, and headed by the Secretary of Interior).

The new water game would "display" all significant results of water resource actions. Choices--project variations--would be evaluated; also the good and the bad of choosing no action at all would be projected. The dollar values of future benefits would be discounted (brought to present worth) at an annual rate of 7%.

The system is explained in the Federal Register, Part 2, Volume 36, No. 245, "Overview of a New System of Policy, and basis for Judging Federally-Assisted Water and Land Resource Programs and Projects," December 21, 1971.

The register is available from the, "Superintendent of Documents, U. S. Government Printing Office, Washinton, D.C. 20402 (20 cents); pages 24144-24194." The special task force report to the Water Resources Council, of July, 1970, comprises:

"Principles": the basis for Federal participation in water and land resource programs (i.e., broad policy)

"Standards": to fix the mode of judging values.

"Procedures": methods of planning and evaluation.

"Objectives": which include:

1. Increasing the national output of goods and services; enhancing economic efficiency.
2. Enhancing regional development.
3. Enhancing quality of environment.

"Measurements": which may be qualitative as well as quantitative, and also both positive and negative. Effects on "Social Factors" are also to be reported. (but the term "Social Objectives" is no longer listed as an aim).

In an article appearing in The Washington Post, January 31, 1972, some of the following comments were made:

At the heart of the controversy is the Office of Management and Budget (OMB's) insistance on the future use of a new "7 percent discount rule" in computing the ration of a project's future benefits to its costs. There is universal agreement that this will make it much harder to justify building any water project on economic grounds. The OMB says earlier discount rates have been unrealistically low, inflating the apparent benefits of a project.

Until a few years ago, a discount rate of 3¼% was used to compute the real "present" value of future benefits. This was changed to 4 7/8% in 1968 and is presently 5 3/8%.

The OMB, insisting this is too low, wanted to push the rate up to 10%; on the theory that this would preclude any water project that couldn't return in benefits about the same 8 to 12% profit yearly that an investment in the private economy would yield.

The Budget Bureau initially pressed the Water Resources Council to use the 10% figure in drawing up new criteria, but complaints from water construction agencies forced a tentative compromise at 7% in the council's December 21 guidelines which could still be changed.

Experts estimated that no more than one-quarter to one-half of projects now in the planning stage could any longer show a favorable benefit-cost ratio.

Sen. William Proxmire (D-Wis.), for example, said the proposed 7% rate "should save taxpayers $1.5 billion ayear in public works expenditures if the administration really means business in enforcing it."

The conservation organizations forsee the new high discount rate blocking a lot of projects that destroy wild areas and wildlife.

"Big dams ruin a lot of wild and scenic rivers in the West and Southwest," said Tom Barlow of the Natural Resources Defense Council. "They silt up rivers, destroy fish and wildlife, put marginal lands under cultivation, displace jobs elsewhere, encourage eventual use of fertilizer and pesticide which

runs off into the nation's streams, destroys vegetative cover and forest cover. Ultimately the cost to the nation is greater than the benefits,"

Barlow's group is one of nine conservation organizations enthusiastically supporting the tougher discount rate and wishing it could be raised to as high as 10%. Others are the Izaak Walton League, Friends of the Earth, National Wildlife Federation, Citizens Committee on Natural Resources, Sierra Club, Wilderness Society, Wildlife Management Institute and Audubon Society.

On the other side, opponents argue that the 7% discount rate excessively downgrades the value of future benefits from navigations projects, eleminates projects without considering secondary economic benefits like the growth of new industry along a waterway or in a rejuvenated agricultural area, and virtually precludes building a marginal project for social purposes such as economic aid to a depressed area.

"It is cheaper to save some western communities by irrigation than to let them collapse," said Carl Bronn, spokesman for the National Water Resources Association, which represents water users in 17 states of the West.

"We're very much opposed to the new rule. It is discriminatory against navigation projects," said Harry Cook of the National Waterways Conference.

One surprising aspect of this dispute is the political clout which virtually all opponents of the new rule ascribe to the conservation organizations.

It used to be a great political victory for a congressman or senator to land a water project for his area, but now, according to a number of Capitol Hill aides, it's a far smaller plum, because of criticism by conservationists. "Now, if you vote against one of these projects, half the people at home will stand up and cheer," said an aide to a key congressional chairman handling water project legislation.

The Senate Public Works Committee Chairman, Jennings Randolph (D-W.Va.), and Interior Committee Chairman Henry M. Jackson (D-Wash.) have introduced a bill providing for a lower discount rate, about 4% but endorsing many other changes, such as full analyses of the environmental effects of a project and allowances for regional economic benefits as well as broad national effects.

The period of public review ends March 31, 1972. Comments may be written to the Water Resources Council, 2120 L Street, N.W., Washington, D.C. 20036. Those who want to appear in person must write WRC by March 6, for time to testify at a public hearing to be held on March 20 and 21, 1972 at the National Museum of History and Technology, 14th Street and Constitution Avenue, N.W., Washington, D.C.

After the period for review, the principles will be submitted to the President for approval; thereafter, the principles and standards will apply, except for projects submitted to the 92nd Congress prior to the approval date. Also, agencies may request exemptions for ongoing studies.

Authorized projects not started within five years will be reviewed in accordance with the principles and standards.

May we encourage our readers to get a copy of the "Federal Register," study it and take appropriate action.

CLEAN WATER

We encourage our readers to study the following bills: Senate Bill S. 2770 (already passed by the Senate) and House Bill H.R. 11896.

Points of special interest from H.R. 11896, as considered in the December Public Hearings:

About Agriculture

--"point sources" discharging pollutants become unlawful. Pollutants are almost anything induced into water--including specifically agricultural wastes, heat and chemical wastes. "Point sources" include discernible conveyances, specifically ditches, channels, and concentrated animal feeding operations.

--a deadline of the end of 1975 is set to require "the best practicable" control technology for point source pollutants.

--also, requires the Administrator to issue, within one year of effective date, procedures to control water pollution resulting from agricultural and silvicultural activities, including run-off (pollution is any mix of crud different from nature's, in effect).

--agriculturally related non-point sources of pollution are to be identified as part of "areawide waste treatment management." Control to the extent feasible is to be required.

1973 USGS BUDGET FOCUSES ON EARTH SCIENCE DATA

The U.S. Geological Survey, Department of the Interior, will step up efforts to acquire basic earth science knowledge needed for the wise management of land, energy, and mineral resources during fiscal year 1973.

Dr. V. E. McKelvey, U.S. Geological Survey Director, said that "if the Nation is to cope successfully with clashing resource-environmental problems arising from the need on one hand for vast amounts of natural resources, while, at the same time, recognizing the need to avoid environmental degradation, such data are fundamental requisites."

McKelvey noted that the fiscal year 1973 budget estimated for the Survey amounts to $145,665,000 - an increase of $14,615,000 over the current year appropriation.

He said, "Largest increases are requested for programs involving earthquake hazards reduction, land resources analysis, Continental Shelf Investigations, geothermal resources investigations and lease management, and the Interior's EROS (Earth Resources Observation Systems) program administered by the USGS."

"Working towards this goal," McKelvey said, "we are initiating a new land resource analysis survey program aimed at improving the Nation's ability to make wise, safe, and efficient use of its valuable land resources,"

"Also during the coming fiscal year," McKelvey noted, "the first unmanned satellite will be launched by NASA to make repetitive surveys of the earth's features

and resources, using conventional and other remote sensing devices. Results of our feasibility studies indicate that earth science data obtained from high altitudes will be a boon to the management of the Nation's natural resources."

NEW REPORTS FROM THE NATIONAL WATER COMMISSION

Announced recently by the National Water Commission is the availability of new reports on hydroelectric power policy, systems analysis in water resource planning, functioning of the New England River Basins Commission, public participation in governmental planning studies, and legal studies on water planning and metropolitan water institutions.

Truman P. Price, a member of the Commission's staff and formerly Power Supervisor for the State of Washington, prepared the report on Hydroelectric Power Policy. It discusses the more significant public policy issues related to hydroelectric power development. The study may be ordered from NTIS under Accession Number PB 204-052, at a cost of $3.00. Orders for all reports should be addressed to the National Technical Information Service, 5285 Port Royal Road, Springfield, Virginia 22151.

MAINE RESEARCHER DEVISES SYSTEM FOR RATING POLLUTION-EUTROPHICATION POTENTIAL OF LAKES

In an unpublished report just released to the Maine Center, Dr. Ronald B. Davis, Associate Professor of Botany, University of Maine (Orono), has developed a system for ranking the probable vulnerability to pollution of certain Maine Lakes. The scheme is based on an analysis and comparison of lake shoreline length, lake surface area, lake mean depth, lake water volume, tributary drainage area, and geologic substrata. Inquiries should be addressed to Dr. Davis, 11 Deering Hall, University of Maine, Orono, Maine 04473. Telephone (207) 581-7861.

REMOTE SENSING PAMPHLET AVAILABLE

A non-technical pahmplet, entitled Studying the Earth From Space, has been prepared by the U.S. Geological Survey, Department of the Interior, to answer questions about remote sensing techniques and how they are applied to earth resources studies.

The 16-page illustrated leaflet is available by purchase from the Superintendent of Documents, Government Printing Office, Washington, D.C. 20402 for 35 cents. It is the latest in a series of more than 50 non-technical publications prepared by the U.S.G.S. to answer questions about the earth sciences and natural resources.

PROPOSED REVISIONS TO GUIDELINES ON ENVIRONMENTAL IMPACT STATEMENTS

The Environmental Protection Agency (EPA) and environmental groups provided the only response to the CEQ request for suggested changes in guidelines on environmental impact statements. Air/Water Pollution Report for January 17 state that no comments were received from industry by the January 11 deadline.

EPA recommended an overview statement where projects involve several agencies and several environmental considerations. The agency suggested that government agencies should notify the public if they are planning to prepare a statement to facilitate public comment prior to completion. It also proposed a benefit/cost analysis of project's environmental impact.

As a general guideline for the preparation of impact statements, EPA recommended that each agency should:

1. identify environmental considerations,
2. categorize actions likely to need a statement,
3. identify needed basic information,
4. identify time within which decision on need for project would be made,
5. set guidelines for determining if a statement is necessary, and
6. set procedures for implementing the decision reached.

The EPA is now preparing sample guidelines for the preparation of environmental impact statements for sewage treatment plants.

RESEARCH AND DEVELOPMENT SOURCES SOUGHT

The purpose of the research is to develop methods and procedures for use by the Corps of Engineers in analyzing impacts of potential technological and social changes on water resources needs of the future. Specific areas of research include application of future study methods such as delphi analysis and contextual mapping to problems of long range assessment of water resource management alternatives. Organizations having interest and demonstrated capabilities are invited to submit complete information to this office within 10 days from publication date. This is not a request for proposal. Respondents will not be notified of the results of the evaluation of the information submitted, but the sources deemed fully qualified will be considered when requests for proposals are solicited.

The address is: Institute for Water Resources, Center for Advanced Planning, 2461 Eisenhower Ave., Alexandria, VA 22314.

RETURN OF WASTES TO THE LAND

Muskegon, Michigan, plans to construct a $30 million system that will put its waste effluents back on the land this year. The sewage will be piped 15 miles to an aerating lagoon where it will remain for several days while bacteria, encouraged by the sun and air, will consume a great part of the odor-causing organisms. The wastewater will then be released into storage lagoons where solids will be settled out. The remaining wastewater will be pumped to center pivot irrigation rigs which will spray the water on 10,000 acres of what has been barren earth. The town fathers plan to make the plan pay for itself by leasing out 6,000 acres of irrigated land for animal-food and industrial-crop production. They are confident that the waste nutrients will make the land tillable and, eventually, fertile. New jobs in the area will be prompted by the system's construction and operation, thereby helping to alleviate Muskegon's high unemployment rate.

CLOUD SEEDING TO BE PUSHED HARDER UNDER '73 BUDGET

The Bureau of Reclamation says that progress already made in cloud seeding justifies an increased effort of $6.2 million for the program in the 1973 fiscal budget.

The Bureau also says the fiscal 1973 atmospheric research program will stress large-scale pilot projects, such as the 2-year-old cloud seeding program being carried out in the San Juan Mountains of Colorado.

Studies and planning of operational projects in water-short areas will also be undertaken in fiscal year 1973.

HOLIFIELD WARNS CALIFORNIANS ON BALLOT PROPOSAL

A "clean environment" amendment on the primary ballot would bankrupt California says Rep. Chet Holifield, D-California, dean of the California Congressional delegation.

"It is such a radical approach to environmental problems that, if enacted and implemented, our state can not escape bankruptcy."

The initiative, which 500,000 voters forced on the ballot, would change California's water, public resources, motor vehicle, public resources and agricultural laws. Holifieldsaid that if these were implemented, the changes would ruin industry and agriculture.

'73 BUDGET COST FOR ENVIRONMENT STILL CLIMBS

President Nixon will deliver a 2nd special message on the environment indicating a spending level in fiscal 1973 triple the amount spent on the environment in fiscal 1969. President Nixon's State of the Union message sent to Congress on January 20, 1972, said "to fail in meeting the environmental challenge...would be even more costly." He also said "the most striking fact about environmental legislation in the early 1970s is how much has been proposed and how little has been enacted."

The President also said his budget includes increased funding for the "most promising" of atomic and other power projects to produce what he called "clean energy."

"By acting this year, we can avoid having to choose in some future year between too little energy and too much pollution," Nixon said.

Nixon said the need for action on environmental protection "is urgent" and "the forces which threaten our environment will not wait while we procrastinate."

RESEARCH REVIEW

Project Title: Hydrologic Models for Poorly Defined Drainage Areas

Principal Investigator: Dr. Warren Viessman, Jr.

Dates: July, 1970 to June, 1972

A central issue confronting state water resources planners and managers is that of determining the most effective policy to follow in solving significant water problems. A very useful aid in the decision making process can be a reliable working mathematical model of the system under consideration. The information obtained from such a model can often point out optimal or near-optimal decisions and the consequences of these decisions.

In central Nebraska and many other areas of the Midwest, complex water management problems often arise due to:

(1) the flat relief;
(2) large surface depressions;
(3) rising groundwater levels due to surface irrigation or canal seepage;
(4) intense summer storm activity; and
(5) poorly defined surface channels.

This research is designed to develop modeling techniques for such areas. These models could then be used to establish effective policy for overcoming drainage problems, determining joint groundwater-surface water irrigation schemes, and establishing flood control measures. The research is of regional and national significance. The results will be directly applicable to the state water resources planning program.

NEW PUBLICATIONS RECEIVED BY INSTITUTE - FEBRUARY

1. "Proceedings Irrigation Short Course," University of Nebraska, January 18-19, 1971.

2. "Irrigation Short Course Proceedings," University of Nebraska, January 13-14, 1969.

3. "The Penn State Water Resources Center After Six Years," Penn State, 1971.

4. "Engineering for Resolution of the Energy-Environment Dilemma: A Summary," Nationa Academy of Engineering, 1971.

5. "Effects of Oxygen Demand on Surface Reaeration," E. R. Holley, T. Micka, H. Pazwash, F. W. Sollo, University of Illinois and Illinois State Water Survey, September 1970.

6. "Methodology for Synthesis and Optimization of Diffusion Patterns in Flow Systems," W. Hall, C. Maxwell, Kuo-Cheng Chang, University of Illinois, August 1971.

7. "Legal Aspects of Water Pollution in New England - A Bibliography," U.S. Department of the Interior, October 1971.

8. "Projects of the Industrial Pollution Control Branch," Environmental Protection Agency, July 1971.

9. "Research Supplement to Journal Water Pollution Control Federation," for the Environmental Protection Agency, June 1971.

10. "John Wiley & Sons, Inc., 1972 Catalog," 1972.

11. "Economic and Organizational Issues in Alaska Water Quality Management," G. K. Erickson, A. R. Tussing, University of Alaska, September 1971.

12. "Research Reports Supported by Office of Water Resources Research Under the Water Resources Research Act of 1964," July - December 1971, U.S. Department of the Interior.

13. "Thesaurus of Water Resources Terms," U.S. Department of the Interior, Bureau of Reclamation, First Edition, 1971.

14. "Identification of Management and Planning Problems of Urban Water Resources in the Metropolitan Area of Greater San Antonio," J. K. Garner, C. S. Shih, Texas A & M University, September 1971.

15. "Honey Hill: A Systems Analysis for Planning the Multiple Use of Controlled Water Areas," Volume 1 of 2, Institute for Water Resources, Department of the Army, October 1971.

16. "Honey Hill: A Systems Analysis for Planning the Multiple Use of Controlled Water Areas," Volume 2 of 2, Institute for Water Resources, Department of the Army, October 1971.

17. "A Compilation of Flood Abatement Projects in Oregon," R. E. Emmer, K. W. Muckleston, Oregon State University, December 1971.

18. "An Engineering - Economic Study of Cooling Pond Performance," for the Environmental Protection Agency, May 1970.

19. "Proceedings Second National Symposium on Food Processing Wastes," Pacific Northwest Water Laboratory, EPA and National Canners Association, March 23-26, 1971.

20. "A Report on Safety Control of Small Dams in Tennessee," K. N. Spencer, B. A. Tschantz, University of Tennessee, December 1971.

21. "Environmental Guidelines for Road Construction in Alaska," Environmental Protection Agency, August 1971.

22. "A Method of Determining the Quantity of Irrigation Water to Achieve Optimum Growth of Bottomland Hardwoods in North Louisiana," C. W. Wilson, W. O. Miller, L. E. Banks, Louisiana Tech University, February 1970.

23. "Economic and Institutional Analysis of Wastewater Reclamation and Reuse Projects," Leeds, Hill and Jewett, Inc., December 1971.

24. "Municipal Sewage Effluent for Irrigation," C. W. Wilson, F. E. Beckett, Louisiana Polytechnic Institute, July 1968.

25. "Irrigation Systems Designed for the Use of Sewage Effluent in Lincoln and Jackson Parish," C. W. Wilson, F. A. Calvo, Louisiana Polytechnic Institute, May 1968.

26. "Pollution Abatement by Fiber Modification," for the Environmental Protection Agency, January 1971.

27. "Cooperative Water Research and Training - 1971 Annual Report," U.S. Department of the Interior, Office of Water Resources Research, 1971.

28. "Phosphorus Removal with Picle Liquor in an Activated Sludge Plant," for the Environmental Protection Agency, March 1971.

29. "Development and Evaluation of Citizen Participation Techniques for Inland Lake and Shoreland Management," J. K. Fulton, Huron River Watershed Council, December 1971.

30. "The Availability of Ground Water in New Castle County, Delaware," R. W. Sundstrom, T. E. Pickett, University of Delaware, July 1971.

31. "Evaluation of Recreational and Cultural Benefits of Estuarine Use in an Urban Setting," A. M. Levenson, Queens College, Autus 1971.

32. "Characterization and Separation of Secondary Effluent Components by Molecular Weight," for the Environmental Protection Agency, March 1971.

33. "Application of Borehole Geophysics to Water-Resources Investigations," U.S. Department of the Interior, Geological Survey, Book 2, Chapter E1.

34. "Regulations for Disposal of Rural Domestic Liquid Wastes in Wisconsin: A Review," J. A. Kusler, University of Wisconsin, November 1971.

35. "Nitrate and Orthophosphate in Several Nebraska Streams," R. A. Engberg, Geological Survey, 1971.

36. "Occurrence of Phosphorus and Nitrogen in Salt Creek at Lincoln, Nebraska," R. A. Engberg, T. O. Renschler, Geological Survey, 1971.

37. "Problem Lakes in the United States," M. J. Ketelle, P. D. Uttormark, University of Wisconsin, 1971.

38. "A Compilation of Flood Abatement Projects in Oregon," R. E. Emmer, K. W. Muckleston, Oregon State University, December 1971.

39. "Dry Caustic Peeling of Tree Fruit for Liquid Waste Reductions," for the Environmental Protection Agency, December 1970.

40. "Directory of Faculty Engaged in Water Resources Research at Michigan State University," Michigan State University, November 1971.

41. "Pilot Plant Installation for Fungal Treatment of Vegetable Canning Wastes," for the Environmental Protection Agency, August 1971.

42. "Combined Treatment of Municipal Kraft Linerboard and Fiberboard Manufacturing Wastes," for the Environmental Protection Agency, February 1971.

43. "Aerated Lagoon Treatment of Sulfite Pulping Effluents," for the Environmental Protection Agency, December 1970.

44. "Demineralization of Wastewater by the Transport-Depletion Process," for the Environmental Protection Agency, February 1971.

45. "Water Quality Criteria Data Book - Volume 3," for the Environmental Protection Agency, May 1971.

46. "Control of Mine Drainage From Coal Mine Mineral Wastes," for the Environmental Protection Agency, August 1971.

47. "Inorganic Fertilizer and Phosphate Mining Industries -- Water Pollution and Control," for the Environmental Protection Agency, September 1971.

48. "Evaluation of Conditioning and Dewatering Sewage Sludge by Freezing," for the Environmental Protection Agency, January 1971.

49. "Water Resource Observatory Solar Radiation Data Water Years 1970 and 1971," V. E. Smith, T. J. Swartz, University of Wyoming, November 1971.

50. "PCB In Water - A Bibliography," U.S. Department of the Interior, January 1972.

51. "The Flood Plain As a Residential Choice Resident Attitudes and Perceptions and Their Implications To Flood Plain Management Policy," L. D. James, E. A. Laurent, D. W. Hill, Georgia Institute of Technology, October 1971.

52. "Remedial Flood Plain Management as the Focus For an Experiment in Interdisciplinary Team Research," L. D. James, Georgia Institute of Technology, October 1971.

53. "The Peachtree Creek Watershed as A Case History in Urban Flood Plain Development," L. D. James, G. J. Kelnhofer, G. R. Elmore, E. A. Laurent, Georgia Institute of Technology, October 1971.

54. "Pollution Abatement and By-Product Recovery in Shellfish and Fisheries Processing," for the Environmental Protection Agency, June 1971.

55. "Reverse Osmosis Renovation of Primary Sewage," for the Environmental Protection Agency, February 1971.

56. "Feasibility Study of Water Resource Pollutant Identification by Digital Computer Identification of Remote Infrared Sensor Spectral Signatures," B. E. Gilliland, Clemson University, January 1972.

57. "Water Pollution Potential of Spent Oil Shale Residues," Colorado State University, December 1971.

58. "Economic and Environmental Evaluation of Development Alternatives for Beaufort County, South Carolina," Clemson University, February 1972.

59. "Foreign Deep Water Port Developments - A Selective Overview of Economics, Engineering, and Environmental Factors," Volume I of III, Institute for Water Resources, Department of the Army, December 1971.

60. "Foreign Deep Water Port Developments - A Selective Overview of Economics, Engineering, and Environmental Factors," Volume II of III, Institute for Water Resources, Department of the Army, December 1971.

61. "Foreign Deep Water Port Developments - A Selective Overview of Economics, Engineering, and Environmental Factors," Volume III of III, Institute for Water Resources, Department of the Army, December 1971.

62. "Ecological and Physiological Implications of Greenbelt Irrigation," V. D. Youngner, W. D. Kesner, University of California, A. R. Berg, L. R. Green, U.S. Forest Service, University of California, 1971.

63. "Water Resources Center - Annual Report July 1970 - June 1971." University of CAlifornia, 1971.

64. "Seventh Annual Report," University of Rhode Island, October 1971.

65. "Reservoir Temperature Stratification," Users Manual, U.S. Army Corps of Engineers, January 1972.

66. "Hydrologic Factors in the Determination of Watershed Yields," G. R. Higgins, J. M. Colonell, University of Massachusetts, July 1971.

67. "A Microbiotic Ecoassay for Environmental Pollutants," H. B. Gunner, R. A. Coler, University of Massachusetts, 1971.

68. "Closed Systems for Animal Sewage Treatment," J. T. Clayton, University of Massachusetts, 1971.

69. "The Mill River and Its Floodplain in Northampton and Williamsburg, Massachusetts: A STudy of the Vascular Plant Flora, Vegetation, and the Presence of the Bacterial Family Pseudomonadaceae in Relation to Patterns of Land Use," E. D. Robinton, C. J. Burk, University of Massachusetts, 1971.

70. "A Socio-Economic Analysis of Hunting in Salmon River Basin Subproject," D. Gordon, University of Idaho, April 1971.

71. "Water Quality Subproject," F. J. Watts, University of Idaho, November 1971.

72. "Irrigation Subproject," C. C. Warnick, University of Idaho, June 1971.

73. "Detergents in Water - A Bibliography," U.S. Department of the Interior, December 1971.

74. "Mercury in Water - A Bibliography," U.S. Department of the Interior, January 1972.

75. "Patterns of Politics in Water Resource Development: A Case Study of New Mexico's Role in the Colorado River Basin Bill," H. M. Ingram, University of New Mexico, December 1969.

76. "Water Resources of the Big Black River Basin, Mississippi", U.S. Department of the Interior, 1971.

77. "Quality of Surface Waters of the United States, 1967," U.S. Department of the Interior, Parts 3 and 4 - Ohio River Basin And St. Lawrence River Basin, 1971.

78. "Surface Water Supply of the United States 1961-65," Part 1. North Atlantic Slope Basins, U.S. Departmei of the Interior, 1970.

79. "Surface Water Supply of the United States 1960-65," Part 16. Hawaii and other Pacific Areas, U.S. Department of the Interior, 1971.
80. "Treatment of Selected Internal Kraft Mill Wastes in a Cooling Tower," for the Environmental Protection Agency, August 1971.
81. "State-of-Art, Sugarbeet Processing Waste Treatment," for the Environmental Protection Agency, July 1971.
82. "Characteristics of Wastes from Southwestern Cattle Feedlots," for the Environmental Protection Agency, January 1971.
83. "Role of Animal Wastes in Agricultural Land Runoff," for the Environmental Protection Agency, August 1971.
84. "Water Resources Research in Oklahoma," Oklahoma State University, December 1971.
85. "Determination of Soil Moisture Content with Airborne Microwave Radiometry," U.S. Department of Commerce, September 1971.
86. "Development and Demonstration of Low-Level Drift Instrumentation," for the Environmental Protection Agency, October 1971.
87. "Foam Separation of Acid Mine Drainage," for the Environmental Protection Agency, October 1971.
88. "Engineering Methodology for River and Stream Reaeration," for the Environmental Protection Agency, October 1971.

NEWSLETTER ITEMS

Newsletter items and inquiries should be sent to: Dr. Warren Viessman, Jr., Director, NW.R.R.RI., 212 Agricultural Engineering Building, University of Nebraska - East Campus, Lincoln, Nebraska 68503.