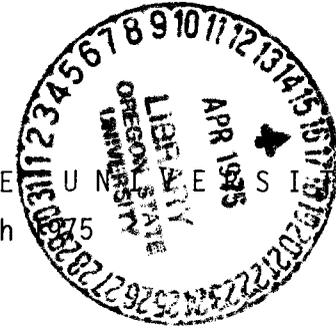


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Oregon's Environment

Number 21

OREGON STATE UNIVERSITY
March 1975



ENERGY AND WATER PROBLEMS

In developing "Project Independence", a "blueprint" to achieve self-sufficiency in energy production, the Federal Energy Administration canvassed the states regarding water problems related to energy. In brief, the major responses included:

Water Rights -- The states held strong opinions regarding Federal jurisdiction over water rights. They felt that (1) Energy self-sufficiency would be impeded due to litigation if the Federal government were to move strongly into the water rights area. (2) Definition of Indian water rights would help identify water truly available for use. (3) The Federal government already has some water rights and should not intrude further. (4) Interstate water issues should be viewed as matters to be solved by interstate compacts. (5) Under most present systems, water rights can be acquired by negotiated purchase or by condemnation and most state water laws are well adapted to provide water for self-sufficiency.

Legal Impediments -- Almost all states indicated that compliance with water rights acts and water quality control acts would impede energy developments. Various states added scenic river, power plant siting, flood plain management, strip mining laws, etc.

Water Quality Deficiencies -- Thermal pollution was considered a major problem. Oil reserves states indicated that present trouble caused by salt water would be increased as production increased. Transportation, handling, and refinement of petroleum entails a high pollution hazard. Poor water quality can make power plant siting very difficult.

Environmental Constraints -- In general, the states believe that water can and will be made available for energy related developments. However, the social and environmental effects (beneficial and adverse) in addition to the economic benefits, must be evaluated and used to guide how and where energy development activities are conducted.

Increased Efficiency of Water Use -- Everyone agreed efficiency was a good idea, but acceptance of specific methods produced something less than consensus. For example, one state felt recycled waste water would be useful, while another felt the closed system would only cause greater problems later, when the water finally had to be changed.

Competitive Use of Water -- This problem area was recognized across the board. It was suggested that a complete comprehensive plan could solve many of the problems arising from competitive use, but lack of an administrative agency with legal authority to manage water resources could prevent full utilization of water.

SEMINAR SPEAKERS SCHEDULED

A series of public seminars will be held during Spring Quarter on the general topic of "Water Resources Policy Issues -- 1975". Weekly lectures will be conducted on Thursday from 1:30 to 2:30 p.m. in Room 149, Weniger Hall, Oregon State University. The proceedings will be published in July. The schedule of speakers is as follows:

- April 3 *Overview*
DONEL J. LANE, Chairman
Pacific Northwest River Basins Commission
Vancouver, Washington
- April 10 *Water Requirements for Energy*
LARRY E. WILKINSON, Consultant
Salem, Oregon
- April 17 *Pollution from Non-Point Sources*
WILLIAM D. CLOTHIER, Environmental Protection Agency
Seattle, Washington
- April 24 *Fish Management in Forestlands*
ROBERT PHILLIPS, U. S. Forest Service
Portland, Oregon
- May 1 *Water Diversion and the Moratorium*
PROFESSOR RALPH W. JOHNSON, School of Law
University of Washington, Seattle, Washington
- May 8 *Wild and Scenic River Problems*
ROBERT E. PFISTER, Department of Geography
Oregon State University
- May 15 *How Should Water Be Priced?*
DR. WILSON E. SCHMISSEUR, Department of Agricultural Economics
Oregon State University
- May 22 *Water and Food Production Demands*
DR. LARRY BOERSMA, Department of Soil Science
Oregon State University
- May 29 *Indian Water Rights*
RICHARD NEELY, U. S. Department of the Interior
Portland, Oregon

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SCENIC RIVERS

In January, President Ford signed a bill (P.L. 93-621) which provides for feasibility studies of proposed additions to the Wild and Scenic River System. Segments of 29 rivers are identified in the bill. In Oregon, the South Fork of the Owyhee and the John Day are to be involved. Recently, the coordinator of the state's system of scenic waterways was also placed in charge of the Willamette Greenway program.

WATER COMMISSION REPORT

The National Water Commission Report does not have a strong possibility of implementation. This is the conclusion reached by three scholars whose study can be read in the February 1975 issue of Water Resources Research, published by the American Geophysical Union. Helen M. Ingram, Theodore G. Roefs and David J. Allee have entitled their article "The National Water Commission Report: A Review".

According to the three authors, the report is a kaleidoscopic assembly of findings and recommendations. It is left to the policy makers to pick and choose recommendations while gambling on the practical consequences. Without question the National Water Commission Report's creators meant to change the costly fragmented distributive politics of water in which a variety of interests, even contradictory ones, are served. Instead, the report, itself fragmented and disjointed, is likely to become a part of and reinforce the existing decision-making process, say the trio.

The article concludes that "events have not served to reinforce commission recommendations. Food shortages and increased food prices have strengthened the demand for irrigation. The energy crisis has prompted the serious consideration of resource development such as oil shale, which is highly water consumptive. There is an increased impetus for development schemes that will increase water supply to the Southwest and Rock Mountain areas. Neither commissioners nor staff are among the career policy actors who can implement recommendations".

"Few of the members of the commission are active in water policy and the chairman, Charles F. Luce, though forceful and influential, is at present outside government. By law there were no congressmen on the commission, and in operation, continuous contact

with legislators was not maintained. The top-ranking commission staff was purposely chosen to be men close to or at retirement in order to avoid the dangers of construction agency bias. Some of the report, especially that part related to equity and new federalism, may be favorably received by the president. At the same time, presidents have seldom demonstrated a real commitment to alter the politics of water.

"The best chance the National Water Commission Report might have had for impact was through the force of its quality as a professional document upon the students of water policy who are oriented toward innovation. It is very unlikely that the report itself will or could ever be used as a platform for reorganization of water policy. It is too discursive over too many separate unrelated topics. As we have already illustrated, the report essentially has no comprehensive framework to indicate what is important and what relates to what.

"The usefulness of the commission report as a blueprint for change is also severely limited by the lack of any theory that explains how we got where we are in water policy and how to go about changing. The commission needed to identify the incentives and disincentives that operate upon current participants in making water policy and the means by which and extent to which they might be changed."

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REMEMBER THE OFF-HOURS. Using appliances that consume substantial electricity in the early morning, late evening, or on weekends can be helpful. Washing, ironing, and cooking done during these off-hours helps to relieve heavy demands made on utility companies during the day by offices, factories, and schools.

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Turn out yard lights in the daytime.

FIELD BURNING IN CALIFORNIA

The Solid Waste Management Board, the Department of Food and Agriculture and the Air Resources Board unveiled a prototype rice straw baler at a press demonstration February 10.

This unique machine may offer rice farmers a feasible alternative to burning rice straw, thus contributing to improved air quality. It may also provide a more profitable crop by preserving the straw as a marketable product.

Developed at a cost of \$32,300 by Ben Thompson of Gridley, California, a designer of farming equipment, the hybrid machine combines the benefits of a conventional rice harvester and baling equipment. The baler provides access to rice straw which is unobtainable with conventional baling devices, since they cannot operate in muddy rice fields. Tractor treads allow it to navigate the marshy ground in which rice grows.

The straw, collected in a manner similar to that used to harvest the rice crop, is wound into round bales that resemble over-sized tumbleweeds, as large as six feet in diameter and weighing as much as 2,000 pounds. According to Thompson, it is easier to bale rice straw in this form than in conventional cubes because the long, wiry stalks are difficult to break.

Currently, farmers burn rice straw not only because it is difficult to gather, but also to control "stem rot", a fungus disease which can reduce crop yield as much as 40 percent. Controlling this fungus by plowing the straw underground has not proven effective, since rice straw does not easily decompose and the fungus remains in the soil to contaminate the next planted crop.

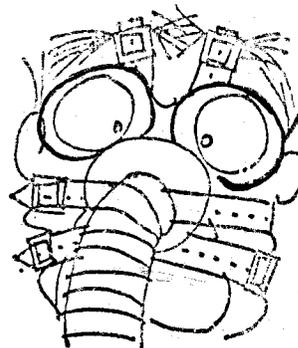
Although gathering and baling rice straw may not eliminate stem rot completely, removal of the straw will permit less smoky forms of burning. After the rice straw is removed from the fields, farmers can utilize propane burners to singe the remaining stubble, eliminating the need for open fires.

The baler retains the rice straw in a potentially useable form, providing the farmer with an opportunity to increase profit and eliminate waste.

The machine was developed as a joint project of the Solid Waste Management Board and the Department of Food and Agriculture. The Air Resources Board has monitored the project's progress closely and will contribute funds to support the next phase of development, which will include machine modifications and exploration of new uses for the straw, such as particle-board and brick manufacturing, feed for animals, and fuel for power plants.

If use of the machine becomes widespread, it will improve air quality in the Sacramento and San Joaquin Valleys by eliminating visibility-reducing, eye-irritating smoke during post-harvest season.

Approximately half a million acres, which produce nearly two million tons of straw, are planted annually in Northern California. There are not enough days during the harvest season with adequate weather conditions to allow gradual burning of such a large supply of fuel. More smoke is generated during permissive burn days than weather conditions can disperse. In order to alleviate this condition, the ARB is considering the possibility of limiting the amount of agricultural waste that can be burned on any one day.



Other methods of controlling smoke generated by agricultural burning have been investigated by the ARB. Research recently conducted by the University of California for the ARB revealed that open fires which burn against the direction of the wind reduce smoke and particulate emissions considerably, although the procedure is more time-consuming for the farmer than burning with the direction of the wind. Also, the study recommends burning of dry fuel, which produces less smoke than fuel with a high moisture content.

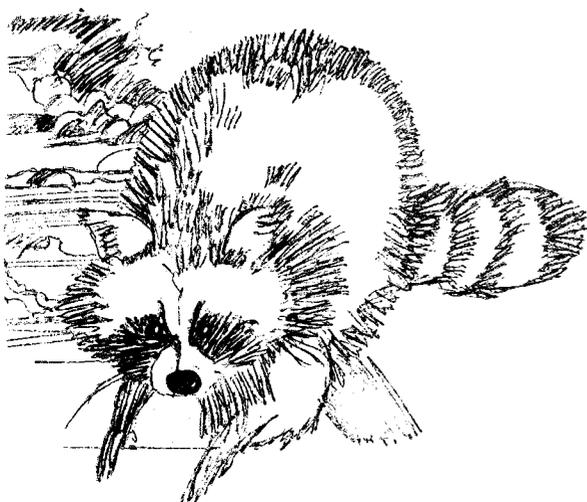
Thompson's rice straw baler is in the prototype state and may be several years away from full production. When developed, the machine will probably be used only in Northern California since, according to Thompson, this is the only region of the country in which several rice crops are planted in the same fields in a single year, without permitting time for decomposition of the straw. (Reprinted from "California Air Resources Board Bulletin", Sacramento, California, Vol. 6, No. 2, February 1975.)

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ENVIRONMENTAL WEEK

Environmental awareness will be highlighted during the week of April 19-26, with a variety of exhibits, special events, and community actions around the nation. Five years have passed since the first Earth Day was observed--on April 22, 1970--a day marked by hundreds of environmental teach-ins at educational institutions throughout the country.

Later in the year, the Sierra Club and the National Audubon Society will co-sponsor an international EARTH CARE Conference on wilderness problems. This will open in New York City on June 5, World Environment Day, and will continue through June 8. Participants from six continents are expected to attend.



TOTAL RE-CYCLING

In Florida, the city of St. Petersburg has committed itself to total wastewater recycling and zero discharge to surrounding bays, according to an article in "Water in the News".

Among incentives for this goal are a requirement for advanced waste treatment or equivalent; the value of wastewater nutrients to the land, perhaps reducing the need for commercial fertilizers; and the potential of digested sludge as a soil conditioner. Recycling is also seen as a way to ease the drain placed on the Floridan aquifer by lawn sprinkling, which is said to use 15-40% of public water supplies.

St. Petersburg has conducted a comprehensive research and development program in wastewater recycling, with aid from regional, State, and Federal agencies. The city now plans improvements to its four regional wastewater treatment plants, expected to be completed in 1977.

The primary use of the treated wastewater will be for lawn sprinkling. Digested sludge will be reused for controlled truck spraying at selected sites and as a fertilizer on a 150-acre, city-owned sod farm and nursery.

In-plant bacteria and virus inactivation, controlled natural utilization of nutrients, and 100% backup by deep well injection are the key factors in the design of the St. Petersburg system.

URBAN STORMWATER MANAGEMENT

A text has been developed by Metcalf and Eddy, Inc. of Palo Alto, California, to identify and assess existing and available techniques to control urban runoff and combined sewer outflows. Funded by EPA, the state-of-the-art study seeks to identify processes which control and/or treat in a manner not harmful to the environment and to guide those responsible for developing and implementing corrective action.

The scope of this text includes the following with respect to management alternatives:

1. Sewer separation, its functions, purposes, limitations, and true perspective based on modern technology.
2. Control and/or treatment capabilities of facilities intended to function as alternatives to sewer separation.
3. New developments in sewer construction, repairs, and usage.
4. Basis for design.
5. Levels of treatment efficiency to be expected from unit processes or from typical combinations of treatment and/or control processes.
6. Types and ranges of pollutant most amenable to removal or conversion.
7. Mathematical modeling techniques for "predictive" and "decision-making" purposes.
8. Flow measurement methods and sampling devices.
9. Economic evaluations.
10. Facilities and systems application assessment.

(From *"Urban Stormwater Management and Technology"*, EPA-670/2-74-040, December 1974. EPA, Cincinnati, Ohio 45268.)

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CHANGES IN STATE AGENCIES

A bill now resting in the Agriculture and Natural Resources Committee of the House would change the structure of state agencies whose primary duties are involved in water resources. HB 3180 seeks to abolish the State Water Resources Board and the office of State Engineer. The duties, functions and powers of both agencies would be transferred to a Water Policy Review Board to be created.

The Governor would appoint as Water Resources Director "an engineer qualified by training and experience" to serve for four years. The Director would administer a new Water Resources Department and be responsible to the Review Board.

At the same time, a different kind of bill sits in the Joint Ways and Means Committee. SJR 2 calls for a sub-committee of the Joint Interim Committee on Environmental, Agricultural, and Natural Resources to study the management of water in Oregon and recommend legislation to the 59th Legislative Assembly.

RESEARCH AND CLEAN WATER

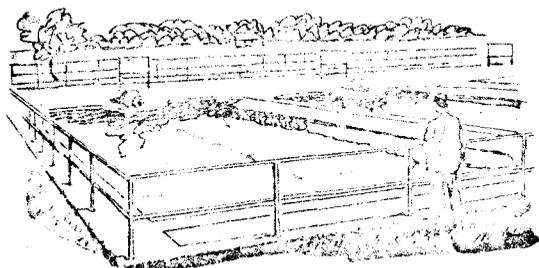
The new era inaugurated in the United States with the enactment of Pub. L. 92-500, and in other countries of the world with similar legislation, poses a variety of challenges for those in the water pollution control field. Unfortunately, the technological and analytical tools presently available to respond to these challenges are limited. The analysis and treatment of the complex organic and heavy metal compounds that have appeared since World War II continue to present extreme difficulties.

The ability to conceptually handle viruses is primitive at best. Today's treatment technologies on which the private and public sectors are spending billions of dollars annually are expensive and often incapable of effecting levels of pollutant removal that protect water quality. Sludge disposal continues to be the Achilles' heel of the treatment cycle as municipalities have increasing difficulty in disposing of growing mounds of sludge in an environmentally acceptable manner.

This backdrop of growing problems and new challenges serves to bring us full circle to the original concern that is the fundamental reason for this paper -- the woeful inadequacy of the present federal research effort. Municipal wastewater treatment technology offers an example.

Today, spending for municipal technology research is one-third of what was being spent in 1967. For sludge disposal alone, which many municipalities rank as their top priority in water pollution control, funding has declined from \$2.6 million in fiscal year 1968 to \$668,000 in fiscal year 1973. The fact that almost 40 percent of the cost of municipal wastewater treatment lies in sludge handling and disposal costs, and the fact that cost-effective techniques are still unavailable makes such cuts ill-advised.

According to the Environmental Protection Agency's own estimates, it will take 30 years at current research funding levels to reach program objectives that Pub. L. 92-500 envisions being completed by the latter part of this decade. Furthermore, the disparity between funding and goals does not account for new problems that may come to the fore that could make priority claims on future research dollars.



The Federation believes that it is not unreasonable to contend that the limited present federal research effort in water pollution control represents little more than a surrender with regard to the nation's goal of clean water.

(Reprinted from *"Research and the Quest for Clean Water"*, October 10, 1974. A position paper of Water Pollution Control Federation, 3900 Wisconsin Avenue, N.W., Washington, D.C., 20016.)

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URBAN WATERWAYS

Urban streams can be made the focal point of recreation activities. The needs of cities are numerous, and not the least of them is the creation of visually attractive water-oriented environments. Unfortunately, these in-city streams are more often eyesores than they are community treasures. Trash, litter, and rubble are dumped along their banks, vegetation is removed, channels are straightened, and concrete stream beds are constructed.

The reclamation of downtown sections of the San Antonio River in the commercial heart of San Antonio, Texas, is perhaps the best known and most encouraging example of the scenic and cultural potential of America's urban streams. From a modest beginning with WPA labor in the mid-1930's, the restoration of about a one-mile portion of the river threading its way through the central business district has resulted in the creation of the Paseo Del Rio, or River Walk. Depressed below the level of adjacent streets, heavily landscaped with native and tropical vegetation, the river is bordered with pleasant promenades along which diners relax in outdoor cafes. Fountains and waterfalls add to the visual attractiveness, and open barges carry groups of tourists or water-borne diners to historic buildings, restaurants, clubs, and a River Theater.

More popular with both local residents and tourists each year, the River Walk has proved to be a significant social and economic development, attracting commercial enterprises to a previously blighted and unattractive area. The River Walk is widely visited and studied as a prototype for urban river reclamation, and it demonstrates that urban rivers can serve as the environmental skeleton on which an entire community amenity of major proportions can be built.