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## ACTIVITIES IN EASTERN OREGON

Before issuing another permit to Boeing Agri-Industrial Company for use of Columbia River water, I requested their management plan describing the wind erosion and irrigable soil conservation practices they intended to follow. Soil types range from coarse textured sands and loamy sands to medium textured loams and silt loams. Soil patterns run generally east and west with major changes occurring north and south. Rainfall averages 7 to 9 inches annually. Prevailing winds come from the west and can gust to extreme velocities. The company came up with the following.

1. All native vegetation is left on the land untouched until the water distribution system is installed and has operated.
2. Land must have sufficient moisture content before the soil is broken.
3. All tillage operations are designed to keep organic residues in or on the surface of the ground to act as a mulch.
4. Cover crops are planted immediately following harvested crops to protect the soil from wind erosion through late summer, fall and winter seasons.
5. Nonirrigated areas adjacent to the circles which have erosion potential are irrigated and planted with a permanent crop to stabilize the soil.

The project currently is engaged in raising livestock, and pasture and alfalfa account for about 80% of total irrigated land, which crops are more permanent and tend to stabilize the farmed area. Boeing has implemented a long range program entitled "operation wind break" calling for planting poplar trees in rows throughout the project. The initial order for the first phase is 70,000 trees which are currently being grown by the State Forestry Department. The trees should be ready for planting within the next two years.

Another permit is for the appropriation of 351 cubic feet per second of water from the Columbia River for irrigation of over 14,000 acres in Gilliam County and was issued last spring. They will be using the same diversion point, pump and pipeline as Sabre Brothers who were also issued a permit for 321.8 cubic feet per second from the Columbia for irrigation and supplemental irrigation of 12,847 acres in Gilliam County. This permit in the names of Lawrence D. Lindsay, et al., was also issued subject to certain conditions to guard against wind erosion. They plan to have water available before farming portions of the new land, and to plant a fast growing Sudan grass for cover. For emergency treatment of "blows" they intend to use straw and manure. (continued next page)

For years they have been stockpiling thousands of tons of feedlot wastes in preparation for this development. A heavy duty custom built manure spreader mounted on a tandem-axle diesel truck will be used to spread a layer of organic fertilizer over any area requiring emergency treatment. A supply of baled wheat straw has also been stockpiled for use in noncropped areas. A 30 foot wide ridging plow with special coulters and a cat 12 patrol grader will be kept available for immediate treatment of emergency areas. Crops will be grown which require minimum tillage. Chisel-type plows and rod weeders which leave all natural growth or crop cover on top of the soil will be used for cultivation. No rototillers, moldboard plows, or other implements which severely tear the soil or turn under the residue will be used. Double-cropping after early crops has proven successful in some instances.

(From a paper by Chris Wheeler delivered at the 47th Annual Convention of the Association of Western State Engineers, August 28-30, 1974, at Big Sky, Montana.)

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#### PUBLIC PARKS

The Oregon Legislature recently passed S.B. 448, authorizing a \$50 million bond issue with proceeds going to cities and counties for acquiring, developing, and maintaining public parks and for maintenance and reconstruction of city and county streets and roads. The funds will be distributed by the Oregon State Highways Division to those cities and counties with the highest unemployment rates.

(Contact: Supt. David L Talbot, Oregon State Parks and Recreation, Oregon State Highway Division, Highway Building, Salem, OR 97310.)

#### NEW ANALYTICAL TOOLS

The Council on Environmental Quality (CEQ) has been instrumental in creating a new data reference system. Federal agencies will be able to shorten the length and improve the quality of environmental impact statements prepared for energy projects by using two new analytical tools developed under the cosponsorship of the CEQ and other federal agencies. The new tools are a computerized data bank called MERES - Matrix of Environmental Residuals for Energy Systems - and a reference book - Energy Alternatives: A Comparative Analysis.

The MERES system, according to CEQ, identifies the water pollution, air pollution, solid wastes, land use and occupational health effects of present and future energy systems, and includes data on energy efficiencies and costs. The data are stored in a computer at the Brookhaven National Laboratory at Upton, Long Island, New York, and, along with computation programs, are available on the Brookhaven computer via a remote terminal arrangement, or can be transferred to other computers. The system can be updated to include new information.

CEQ believes that the system will be of significant interest to state and local governments, regional planning bodies, and the academic and business communities that participate with federal agencies in preparing data for environmental impact statements

Development of MERES was sponsored by CEQ in association with EPA, the National Science Foundation, the Energy Research and Development Administration and the Brookhaven National Laboratory. Much of the data contained in the system was developed by Hittman Associates of Columbia, Maryland.

## GUIDELINES FOR LOGGING ROADS

The Federal Water Pollution Control Act Amendments of 1972, Public Law 92-500, set a national goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and which provides for recreation in and on the waters. This goal must be achieved by 1983. The Act mandates that pollution caused by runoff from forest lands, as well as other nonpoint sources (mining, construction, agriculture, etc.), be controlled in addition to the control of point sources in order to achieve the national goal of water quality.

The report is a state-of-the-art reference on the protection of water quality in planning, designing, constructing, reconstructing, using, and maintaining logging roads based on collected data. It is intended to be an aid for dealing with nonpoint source pollution control; and is designed to inform and assist state, federal and local agencies; industry; and the general public. The report is specifically intended to assist in the (1) identification of potential hazards to water quality, and (2) selection of procedures, practices, or methods suitable for preventing, minimizing, or correcting water pollution problems. It also is a reference source to other publications, information and materials; and it provides some regional data and perspective.

The EPA has already prepared a report entitled "Processes, Procedures and Methods to Control Pollution from Silvicultural Activities", which was published in October, 1973. That report covers all forest practices and is, therefore, general in nature. In contrast, this report deals specifically with one important aspect of forest practices.

"Silvicultural activities" comprises a major portion of those forest land activities which can impact water quality. "Silvicultural activities" is used in a broad context; and covers the actions and results of all forest harvest, production, management and protection systems. Some of the categories of activities included are: logging roads, harvesting methods, silviculture systems, residue management, reforestation, and use of chemicals.

Of all the types of silvicultural activities, improperly constructed and inadequately maintained "logging roads" are conceded to be the principal man-caused source of sediment. Although different logging systems have different road access requirements, all involve to some degree the construction or reconstruction and use of logging roads.

(From "*Logging Roads and Protection of Water Quality*". EPA 910/9-75-007 March 1975. EPA, 1200 Sixth Avenue, Seattle, Washington 98101.)

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Bills have been introduced in both houses of Congress (H.R. 9540 and S. 2371) which would either amend or repeal laws which permit mining in some national parks. Crater Lake National Park is one of the areas where mining is presently permitted.

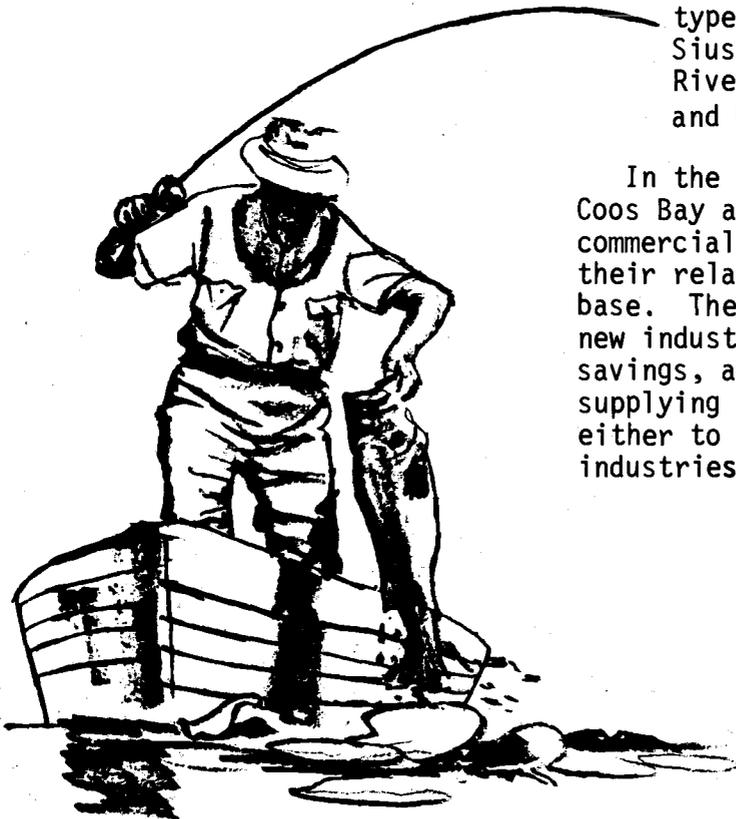
## FUTURE OF OREGON'S PORTS

Two port districts within the coastal area - the Ports of Astoria and Coos Bay - appear prominent in magnitude of both present and future economic importance. Cargo and economic development will continue to gravitate to these two ports with continued improvements in inter-port land and marine transportation, and with expansion of their economic bases. The other coastal ports must continue their trends of diversification to avoid stagnation and decline.

The Port of Astoria, with a much broader economic base relative to the Port of Coos Bay, and geographically situated to serve much of the Columbia Basin, is expected to attract most of the future growth. The Port of Coos Bay, without the development of a broader commercial and industrial base, will be dependent upon service areas of limited size and productivity. In an era of decreasing transportation costs relative to overall costs, these service areas will not belong exclusively to the Coos Bay area, and that port's growth will be limited.

Over the long term, the remaining coastal ports are expected to move out of cargo handling competition because of continued investment in inter-port land transportation and in giant ocean-going barges, super tankers, etc., which decrease the value of their facilities. These ports will concentrate instead on recreation, industrial, and commercial development.

The Ports of Tillamook, Nehalem, Alsea, Bay City, Coquille River, Port Orford, Newport-Toledo, and Gold Beach are examples of these types of ports. A few ports, however, will continue to handle a significant amount of cargo because of their ability to provide transportation cost savings to lumber and other industries. Examples of this type of port are the Siuslaw on the Siuslaw River, Brookings on the Chetco River, Bandon on the Coquille River, and Umpqua at Reedsport.



In the future the Ports of Astoria and Coos Bay are expected to be rather highly commercialized and industrialized because of their relatively large and broad economic base. These ports are expected to attract new industries seeking transportation cost savings, and service or support industries supplying technical assistance and materials either to the port authority or to the area's industries.

This, in turn, will create a greater demand for port service. Personal income, business sales, employment, and population in both Clatsop and Coos Counties are expected to increase as a result of this process. On the other hand, intensified industrial, (continued next page)

commercial, and port activity will compete with recreational boating and fishing uses of the waters of these ports, increase demand for public services (i.e., sewer, water, school, utilities, police services, etc.), and increase environmental pollution.

Increased commercial and industrial activity directly attributed to harbor waterway, and port developments in the remaining coastal port areas appears small relative to the expected future industrial activity in the Astoria and Coos Bay areas. Nonetheless, significant local economic, employment, public service, and environmental impacts are expected. Commercial and industrial activity in these areas appears to be more closely associated with ground transportation costs and the area's economic resource base than with port development.

(From "Oregon Coastal Area, Including Southwestern Oregon Counties: Economic Survey and Analysis". March 1975. State Water Resources Board, Salem, Oregon.)

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### COAST TRAIL

The first 62-mile segment of the Oregon Coast Trail has been designated, and already hikers are pounding the route. This represents only the initial portion of what will be a 350 to 400-mile hiking trail extending the length of the Oregon Coast.

The foundation for the coastal trail concept lies in the foresight of Oswald West, Governor of Oregon from 1911-1915, who declared the almost 400 miles of Oregon beaches as public domain. Sam Dicken, a University of Oregon educator, first proposed the trail in 1959. Two hundred miles of beach can be used for the trail. Where beaches are inaccessible or nonexistent, the trail will utilize portions of existing trails, highways, streets, or when necessary, newly constructed segments.

(Contact: Jack Remington, Coordinator of the Oregon Recreation Trails System, State Parks, Salem, Oregon, 97310.)

### DO YOU KNOW THAT:

- a ten minute shower takes 50 to 100 gallons of water
- a washing machine uses 30 to 40 gallons a cycle
- a toilet flush takes 5 gallons or more
- an almost imperceptible toilet leak can waste thousands of gallons a year
- a pin hole faucet leak with just a periodic drip passes 170 gallons a day ... 60,000 gallons a year
- a 1/16 inch leak ... the kind that runs continuously ... wastes 1,000 gallons a day ... a third of a million gallons a year
- in many communities, the dry-season peak-use period is a water crisis both in terms of water supply and sewage treatment

## URBAN LAND RUNOFF

More extensive study of urban runoff is necessary. At the same time efforts should be made to educate the public to the nature and importance of this non-point waste source. It may be easier to let the public rest, believing point source treatment is the complete answer, but in the long run such a course is not in the best interest of water pollution control. Optimum allocation of public funds for water quality management cannot be realized until sufficient information is available on all pollutant sources potentially capable of impairing water quality.

Urban land runoff is a significant non-point source of pollution; guidelines indicating specific stormwater control standards may soon be issued for urban areas where downstream water quality is partially controlled by urban land runoff. Such regulations typically specify minimum dissolved oxygen concentrations. At present it is virtually impossible to predict, with any assurance of accuracy, the variations of constants associated with oxygen-sag equations during urban runoff events.

The relative effect of urban land runoff on water quality management can be assessed only when the contributions of other non-point sources are qualified. Consequently, additional information is required on all non-point pollution sources including but not limited to forested areas, farmlands, pasture land, and park land. Only by being able to describe accurately the total input of point and non-point sources during wet weather can decisions be made with any certainty.

Urban areas planning to upgrade secondary sewage treatment plants because of possible contravention of stream standards should carefully assess the potential contravention by urban land runoff.

The chemical oxygen demand (COD) test should be considered the most reliable analytical method of assessing the organic content of urban land runoff. The COD uptake technique should be utilized to assess the fraction of COD susceptible to biodegradation and to determine oxygen demand rates.

Watercourses designated as water quality limited should be evaluated with respect to the relative impact of non-point pollution sources.

The scale effect of varying urban drainage basin size on annual pollutional yield from urban land runoff needs additional evaluation.

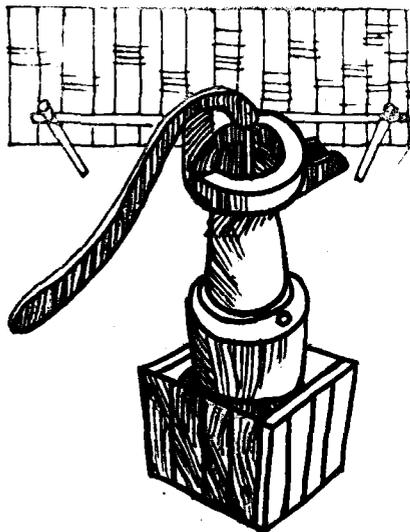
A full-scale evaluation of the efficiency, economics, and applicability of a holding-sedimentation facility to reduce the impact of urban land runoff on water quality should be made. Included within this study should be a careful assessment of the visual effect of the device and the public's acceptance of the facility.

If partial or total treatment of urban land runoff is desirable, combined sewers offer economic advantages over separate systems. It is, therefore, recommended that municipalities re-evaluate the advantages of separate versus combined sewers.

(From "*Characterization and Treatment of Urban Land Runoff*". EPA-670/2-74-096, December 1974. EPA, Cincinnati, Ohio 45268.)

## EFFICIENT WELLS SAVE ENERGY AND MONEY

It is impossible to open a newspaper or magazine, or turn on the radio or TV, without reading or hearing about the energy shortage. It's a subject that's on everyone's lips. Remember what a prominent place energy had in the President's "State of the Union" address to Congress early this year? Recently, we received an invitation to subscribe to a new magazine that will contain articles solely on energy. It is obvious the energy shortage and accompanying high prices are here to stay for as far into the future as we can see.



We are urged to lower our thermostats; the new law has made permanent the reduced highway speed limit; and small cars are becoming popular. What, then, can we in the water well industry do to conserve energy?

We can start with a significant contribution to the effort by designing and constructing wells that have maximum practical specific capacity and consequent reduced power costs.

The diameter of a well does not have much influence on its yield. For example, doubling the diameter only increases the yield about 10 percent to 15 percent. Nor can much be done about the time or duration of pumping required.

We can, however, greatly influence the specific capacity of a well and save energy by making use of modern methods of well design and construction. These include: installing screens with maximum open area at the proper location, minimizing aquifer damage during the drilling of the hole, and completion by developing the well to repair any damage to the permeability of the aquifer caused by the drilling process.

The efficiency of a well can be defined as the actual specific capacity divided by the theoretical specific capacity. Another way to calculate it is to divide the theoretical drawdown by the actual drawdown. In order to determine the efficiency of a well, it is necessary to know the coefficients of transmissibility and storage. This is most accurately done by pumping tests, but estimates can be made based on laboratory tests of samples and knowledge of the geologic conditions at the well site. Most ground water scientists consider a well to be satisfactory if its hydraulic efficiency is 85 percent or 90 percent of the theoretical maximum obtainable.

(From "The Johnson Drillers Journal" May-June 1975, Universal Oil Products Co., P. O. Box 3118, St. Paul, Minnesota 55165.)

### \*\*\*\*\* SOCIAL VALUES ANALYZED

The Bureau of Reclamation is working with Abt Associates of Cambridge, Mass., in developing a handbook which planners can use in attempting to analyze the social impacts of a project. The human element is difficult to evaluate and even more difficult to reduce to understandable factors. If a handbook is successfully produced, the next step would be to provide training for Bureau planners in use of the methods, techniques, and analytical procedures developed.

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### POLLUTION FROM NON-POINT SOURCES

A court earlier this year decided that the permit approach to water pollution sources must be applied to certain previously designated non-point sources which have been exempt from the requirements of the program. By April 10, 1976, regulations must be proposed to cover all identified point sources in agriculture and silviculture practices. Before the court order, certain sources in agriculture, separate storm sewer, silviculture, and animal feedlot categories were not subject to permits.

EPA has asked the Department of Justice to appeal the decision. This is based on a belief that the system would be too cumbersome and difficult to regulate. In the meantime, EPA has begun a series of meetings across the nation to seek the advice of individuals and groups most affected on the questions involved in order to learn, not only how the court order may be properly carried out if this must be done, but whether there are changes which might be made in the Water Act to deal with the problems.

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Stop overheating your home in winter. Turn the thermostat down and wear warmer clothing.