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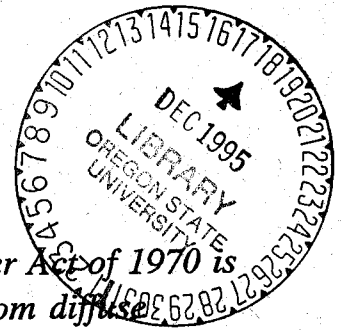


OREGON
WATER RESOURCES
RESEARCH INSTITUTE

OREGON STATE UNIVERSITY • CORVALLIS

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Hydrologic Unit Areas help for water quality-limited rivers



Part of the continuing challenge of the Clean Water Act of 1970 is addressing nonpoint source pollution, pollution from diffuse sources such as fields, forests, and urban area runoff. The U.S. Department of Agriculture (USDA) has taken an active role in this challenge.

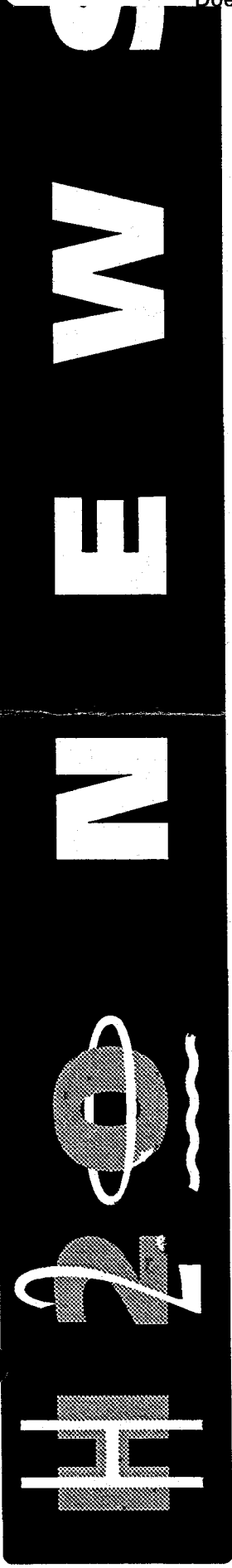
As required by the Clean Water Act of 1970, the Oregon Department of Environmental Quality has identified water quality limited rivers in the state, rivers whose water quality has been compromised by both point and nonpoint source pollution. Significant progress has been made in cleaning up point source pollution, pollution coming from an identifiable source such as a pipe, well, or boat. Nonpoint source pollution, however, has proven more difficult to control.

In November 1990, the USDA began a national program to address the problem of nonpoint source pollution by establishing **Hydrologic Unit Areas** (HUA). The HUAs will have management practices to reduce the levels of nonpoint source pollution that affect water quality. The voluntary program is designed to provide technical and financial assistance to agricultural and livestock producers, as well as forest land owners, to reduce soil erosion, sedimentation in streams, to prevent animal waste from polluting surface and groundwater, and to improve management of fertilizers.

Of the 74 HUAs throughout the U.S., two are in Oregon. One is located in Malheur County, comprising 156,000 acres in the Ontario Basin. The other is in Washington County, in the Dairy-McKay Creek watershed near Hillsboro.

The USDA program has been funded through 1995, with each HUA receiving approximately \$700,000 per year of cost-sharing funds. The money is distributed through the USDA Agricultural Stabilization and Conservation Service.

Livestock producers and farmers with cropped land are taking part in the program, and it shows promise of significantly reducing nonpoint source pollution.



Agencies Administering Oregon's HUAs

The U.S. Department of Agriculture supervises HUAs through a number of local agencies:

- **Soil Conservation Service (SCS)** Provides technical assistance through the local Soil and Water Conservation Districts to ranchers, farmers, and forest land owners. SCS works with local landowners to appraise a given situation, develop alternatives and assist in implementing conservation practices to reduce nonpoint source pollution.
- **Agricultural Stabilization and Conservation Service (ASCS)** Responsible for distributing funds and administering long-term agreements (LTAs). The ASCS also administers the Agriculture Conservation Program (ACP) which provides cost-share dollars for erosion control, water quality improvement, riparian zone management, and agricultural waste management practices on agricultural and forest lands.
- **Washington County Soil and Water Conservation District (WCSWCD)** Oversees and coordinates the efforts of federal and other agencies to implement the locally-developed conservation program. The WCSWCD is also responsible for oversight and approval of landowners' conservation plans.
- **Malheur County Soil and Water Conservation District (MCSWCD)** Designated as the lead agency, the MCSWCD is responsible for implementing and coordinating water quality protection programs in that HUA, and also provides technical assistance and information. In addition, the District works with the Oregon DEQ on a well-monitoring program.

- **Oregon State University Extension Service (OSU-ES)** Conducts information and education programs to increase awareness of nonpoint source pollution problems from agricultural and forest lands.
- **Oregon State University Malheur Experiment Station** Conducts research on cropping systems to improve water quality in the Malheur county HUA.

Landowners generally contact the SCS first. Together the SCS and landowner appraise the situation and develop management and structural alternatives to address resource concerns. This may include conservation practices that address erosion reduction, animal waste management systems, nutrient management and others.

Once a conservation plan is developed, the landowner should sign up for financial/cost-share assistance with the ASCS. In the Washington county HUA, the ASCS will pay for 75 percent of the landowner's actual cost of installation of a conservation practice. The practice must be installed to SCS standards and specifications to be eligible for the cost-share.

Strategies to reduce soil erosion in cropland include straw mulching, straw mulching combined with interseeding, or "double-cropping" and interseeding alone. Experiments at the Malheur Experiment Station indicate that straw mulching may reduce sediment and phosphorus runoff by up to 68 percent. Interseeding also reduces erosion, and a well-established cover crop (such as red clover) can also limit the amount of nutrients that leach into groundwater.

Reducing runoff in Washington County

A number of agencies in Washington county are working with farmers in the Dairy-McKay HUA to identify sources of runoff and propose solutions that will reduce runoff from agricultural and livestock operations, and also fulfill the landowner's objectives.

There are 31 permitted Confined Animal Feedlot Operations, or CAFOs, within the

Dairy-McKay HUA. In addition, there are over 250 nonpermitted CAFOs in the HUA, which may have negative impacts on water quality.

Much of the runoff from these operations results from water draining off non-guttered barn roofs and from animal confinement areas. Additionally, some facilities currently do not provide a long enough wastewater storage period during the winter. The technical

assistance and cost-share available will assist operators with any of the following practices:

- Installing roof gutters and downspouts to prevent water from contacting animal waste.
- Building waste storage ponds or tanks to store manure, milking parlor waste and contaminated runoff.
- Analyzing the nutrient content of manure so applications to land can be managed more efficiently to meet crop needs and reduce chemical fertilizer use.

Spring 1993 Seminar Series

The public is invited to attend "**Watershed Management—Policy Alternatives**" the Spring 1993 seminar series sponsored by the Oregon Water Resources Research Institute. Seminars will be held on Thursdays from 3:30 to 5:00 p.m. in room 216, Covell Hall, on the Oregon State University campus. Video tapes and a publication will be available. For more information, call (503) 737-4022.

April 1
How Watersheds Work
Judith Li, Fisheries and Wildlife, OSU

April 8
Management of Urban Watersheds
Wayne Huber, Civil Engineering, OSU

April 15
Watershed Management on Grazing Lands
Hugh Barrett, U.S. Bureau of Land Management, Portland

April 22
Forested Watershed Concerns in Oregon
Bruce McCammon, U.S. Forest Service, Portland

April 29
Assessment of Watershed Health
Robert Hughes, Aquatic Ecologist, Mantech Environmental, Corvallis

May 6
Solutions to Watershed Restoration
Speakers from the Pacific Rivers Council

May 13
Watersheds and Endangered Salmon
Stanley Gregory, Fisheries and Wildlife, OSU

May 20
The McKenzie River Integrated Watershed Project
Kathi Wiederhold, Project Manager, Lane Council of Governments

May 27
Watershed Management for Oregon Coastal Lakes
Andy Schaedel, Oregon DEQ, Portland

June 3
Roles and Conflict Resolution in Watershed Management
Becky Kreag, Oregon Water Resources Department, Salem



Research Support

The Oregon Water Resources Research Institute has a small budget (about \$40,000 this year) to encourage research studies at Oregon's Universities on questions of importance to water management in Oregon. A call for proposals was sent in November, 1992, and 3 projects were chosen February, 1993 for support from July 1, 1993 to June 30, 1994.

These projects are:

Joe B. Stevens
Dept. of Ag. & Resource Economics
Oregon State University

A sample of forty irrigators will be interviewed to explore by Oregon's seemingly-attractive 1987 water conservation law has been sparingly used. Special attention will be paid to the role of economic, informational and attitudinal factors in influencing the adoption of more irrigation practices. The results should help the Water Resources Department to administer more acceptable water conservation regulations.

Mark V. Wilson
Dept. of Botany & Plant Pathology
Oregon State University

This study will compare the vegetation and soil physical characteristics of two natural sedge meadows and an experimental revegetation site to determine possible limitations to and promotion of establishment and spread of hydrophytic plants. Results will apply to managing both natural and constructed wetlands.

Paul C. Tratnyek
Dept. of Environ. Science & Engineering
Oregon Graduate Institute

Shallow surface waters, including constructed wetlands, provide a unique situation where phototransformation of organic pollutants may occur at the sediment-water interface. The proposed project will determine if this process significantly affects the fate of several types of important organic pollutants, including chlorinated phenols from paper mill wastewaters and pesticides found in runoff from Oregon agricultural operations.

The DEQ-Tualatin River Basin Project

A formal public hearing was conducted on March 15, 1993 by the Department of Environmental Quality to receive public comment on the report issued by The Oregon Water Resources Research Institute on a 14 month study of the Basin. The Institute coordinated the effort of an interdisciplinary team of scientists and engineers from Oregon State University and Portland State University to examine the available data on water quality in the Tualatin River Basin, to analyze that information, and to present the results of that analysis to decision makers. Two models, the HSPF loading model and the CE-QUAL-W2 river model, are used to evaluate proposed alternative restoration measures. A copy of the final report and working papers can be obtained from the Oregon Water Resources Research Institute, Oregon State University, Strand Agriculture 210, Corvallis, OR 97331 or by calling 503-737-4022.

Research Report

The Oregon Water Resources Research Institute has prepared a report "Watershed Condition Assessment Methods" for the Oregon Governor's Watershed Enhancement Board. The report reviews the background of watershed condition assessment, and describes ten methods that illustrate the range of methods being used. Available for \$5.00 from the Institute. 47 pages. Call 737-4022

Research Grant Showcase

On February 24, 1993, the Institute sponsored a "Research Grant Showcase" to provide a forum for reports from 1992-93 research projects. The event was well

attended by representatives from federal/state agencies, OSU research faculty and students who participated in the discussion and reception that followed. The Showcase will become an annual event.

Monitoring Workshops

The Institute has begun a series of workshops that discuss components of successful monitoring programs, including: setting objectives, measurements required to answer the questions, use of statistics in analysis of data, details of some specific sampling and measurements methods. Monitoring programs are a necessary part of nonpoint source control programs, to establish problems and to evaluate effects of management practices. The Institute can also provide help in evaluating usefulness of measurements and data already collected. Call 737-4022.

Water Course

A summer term course, "Water and Water Management" 2 credits, CSS 478/578, will be offered at Oregon State University in the second four week summer session, July 19 to August 13, 1993.

The course will cover the water cycle and basic hydrology concepts, and water supply, water use, water quality in the Oregon institutional and regulatory framework.

Contact the Summer Session office at OSU, 737-2676.

OWRRI Library

The Oregon Water Resources Research Institute library maintains video tapes and published proceedings of Institute sponsored seminars such as Oregon Water Policy and Drinking Water -How Safe and at What Cost? The library resource has been useful to individuals and groups to who are unable to attend the Corvallis seminars but want the information. The material is available for loan or purchase by contacting the Institute at 737-4022.

Oregon Rivers Museum

The ORM is a proposed education and interpretive center of the natural waterways of Oregon to be located in Springfield. The center will focus on the historic, cultural, biological and recreational values provided by Pacific Northwest rivers, streams and lakes. A streamarium and other fresh water aquariums are being designed to provide a close replication of a natural stream/lake environment. Educators are working with the center to develop unique educational and research programs that will be enhance the understanding of students and citizens. For further information, contact Oregon Rivers Museum, David Rodriquez, 503-741-3275 or write to ORM at 740 Main Street, Springfield, OR 97477.

The Oregon Community Foundation

A call for proposals for the Tualatin Valley Water Quality Endowment Fund has been issued by The Oregon Community Foundation. Proposals for programs to carry out and support research, monitoring, education, and other activities leading to the restoration, enhancement, and maintenance of the physical, chemical, and biological integrity of the waters of the Tualatin River Basin are being requested. Grants range from \$1,000 to \$50,000.

Proposal deadline is 5:00 p.m. April 30, 1993. For more information, The Oregon Community Foundation, 621 SW Morrison Street, Suite 725, Portland, OR 97205 or call 503-227-6846

FUTURE CONFERENCES

The 6th Annual Water Quality Workshop with the theme "Nonpoint Source Pollution - The Tualatin River as Case Study" will be held November 3 and 4, at Oregon State University, Corvallis. Contact Ron Miner at 737-6295 for more information.

Annual meeting, Oregon Section, American Institute of Hydrology. Tentative dates are October 18 and 19 at Oregon State University, Corvallis. Contact Tony Laenen, US Geological Survey, 251-3250.



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