

to advise the U.S. Geological Survey on the overall pilot program.

The objectives of the Yakima River NAWQA study are consistent with the national goals: that is, to describe current water-quality conditions; to define seasonal variability and long-term trends; and to identify and explain, as possible, the major factors that affect observed conditions and trends in water quality.

Conducting the Yakima Study

In most general terms, the approach of the study is to (1) make maximum use of existing data to describe surface-water-quality conditions and trends and (2) collect new data as needed to meet the objectives of the study.

New data will be collected in a 9-year cycle. The first 3 years of the cycle will be a period of intensive data collection. For the next 6 years, sample collection will be done on a lesser intensity (to document the occurrence

SURFACE-WATER-QUALITY ASSESSMENT OF THE YAKIMA RIVER BASIN, WASHINGTON: A PILOT STUDY

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The Cle Elum River above Cle Elum Lake.

of any large change in water quality). The 9-year cycle then will be repeated in a steady, continuing effort to monitor changes in the water environment.

The 3-year intensive sampling for the Yakima River NAWQA began in April 1987 and will continue until March 1990. Scientists will visit selected sites at several locations along rivers, streams, canals, and drains in the Yakima River basin, where they will measure the quantity of water flow, water temperature, dissolved-oxygen concentration, and bacteria content. Water samples will be collected and analyzed in laboratories for dissolved minerals, nitrogen and phosphorus compounds, pesticides, turbidity, and trace elements (such as lead and copper).

Two methods of data collection are being used in this study. At seven sites in the basin, called fixed-location stations, data will be collected monthly over the 3-year period to help define seasonal changes in water quality. The other data-collection scheme, called synoptic sampling, involves collecting samples at many locations over a short period to show geographic variability or obtain a "snapshot" of water-quality conditions over a broad area at one time.

All collected data will be published by the U.S. Geological Survey. One report describing the Yakima River NAWQA project already has been released (McKenzie and Rinella, 1987), and several interpretive reports are planned for future publication. Information on reports and hydrologic data related to the Yakima River NAWQA project can be obtained from

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Any comments, suggestions, or questions are welcomed.

REFERENCES

Hirsch, Robert M., Alley, William M., and Wilber, W.G., 1988, Concepts for a national water-quality assessment program. U.S. Geological Survey Circular 1021, 42 p.

McKenzie, S.W., and Rinella, J.F., 1987, Surface-water-quality assessment of the Yakima River basin, Washington: Project description. U.S. Geological Survey Open-File Report 87-238, 35 p.



Scientists collecting samples for pesticide analysis from Wide Hollow Creek near Yakima.

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By S.W. McKenzie and D.A. Curtiss

The Yakima Study: A Beginning

In August 1986, a team of scientists from the U.S. Geological Survey visited sites in the Yakima River basin to collect water samples and make water-quality measurements. Their efforts marked the beginning of a comprehensive study of surface-water-quality conditions in the Yakima area. This project is part of a major new program to assess the Nation's water resources in the final decades of the 20th Century.



National Water-Quality Assessment Program:
National Overview

In 1986, Congress appropriated funds for the U.S. Geological Survey to test and refine concepts for a National Water-Quality Assessment (NAWQA) Program that would:

- provide a nationally consistent description of current water-quality conditions for a large part of the Nation's water resources;
 - define seasonal variability and long-term trends in water quality; and
 - identify, describe, and explain, as possible, the major factors that affect observed conditions and trends in water quality.
- At present, the program is in an initial phase that is to last about 4 years, with pilot projects for data collecting and interpretation. Seven pilot projects, representing a diversity of hydrologic environments and water-quality conditions, were selected to test and refine assessment methods and to evaluate the potential use and costs of

a fully-implemented NAWQA program. The surface-water pilot project areas are the Kentucky River basin, Upper Illinois River basin, lower Kansas River basin, and the Yakima River basin. The three ground-water systems chosen for study are the Delmarva (Delaware-Maryland-Virginia) Peninsula, the Central Oklahoma Aquifer of Oklahoma, and the Carson Basin in Nevada and California.

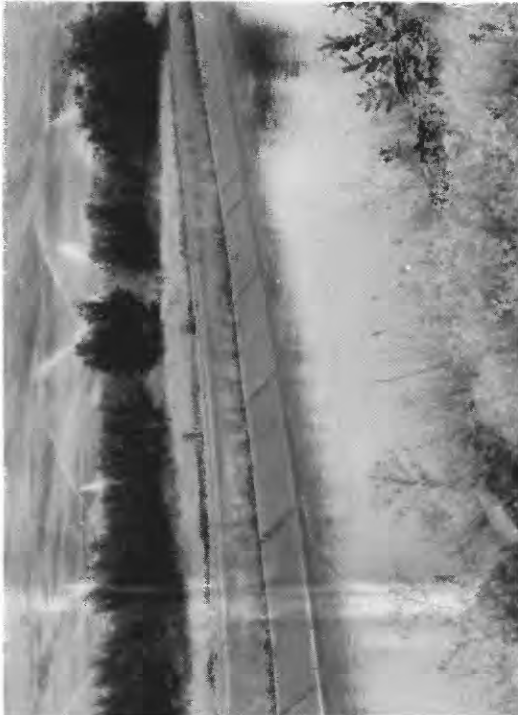
A fully implemented national program would be accomplished by investigating about 120 river basins and aquifer systems--each treated as a separate study unit. Conducting the national program as an aggregation of many individual study units would provide an assessment that could be used to answer national-scale questions about current conditions, trends, and factors that affect water quality, and would provide results that could be used by Federal, State, and local agencies to understand and manage resources in each study unit area.

The Yakima River Basin Study

The Yakima River basin, located in central Washington, was selected for the pilot phase of the NAWQA program because of

- the diversity of hydrologic and water-quality conditions in the basin,
- the availability of long-term and current data on quantity and quality of water,
- the extensive water use and competing demands for the limited water supply in the basin, and
- the extent to which the basin demonstrates a water-quality environment that is affected measurably by human activity.

Concerns, or issues, arise when water-quality conditions affect intended water uses, and the number of concerns generally is proportional to the number of water uses and the quantity of water being used. In the Yakima River basin, major water uses include public drinking water, irrigation, fish propagation, recreation, and waste disposal. With such a variety of uses, it is vital for water managers and planners to have scientific information available to make sound decisions. Without this information, decisions may be made on the basis of supposition and information from a few localized problems. A lack of information may lead to a false sense that some problems do not exist. For example, little information is available on the occurrence and distribution of many pesticides and industrial organic compounds in the Nation's surface- and ground-water resources.



Overhead-sprinkler irrigation of an apple orchard near Prosser. In foreground is Chandler Canal.

Coordination among U.S. Geological Survey personnel, other interested scientists, and water-management personnel is an important component of the NAWQA program. Each NAWQA project has a liaison committee that consists of representatives from other Federal, State, and local agencies who help ensure that the scientific information sought and produced by the project will be relevant to local and regional interests. The Yakima River NAWQA Liaison Committee was formed in the summer of 1986, with representatives from the following agencies:

- U.S. Bureau of Reclamation
 - U.S. Environmental Protection Agency
 - U.S. Forest Service
 - U.S. Bureau of Indian Affairs
 - U.S. Fish and Wildlife Service
 - U.S. Soil Conservation Service
 - Yakima Indian Nation
 - State of Washington Department of Ecology
 - State of Washington Department of Fisheries
 - State of Washington Department of Wildlife
 - State of Washington Water Research Center (Central Washington University)
 - Yakima River Basin Association of Irrigation Districts
 - Yakima Valley Association of Governments
- In addition to the individual project liaison committees, a National Coordinating Work Group has been established