U.S. Geological Survey

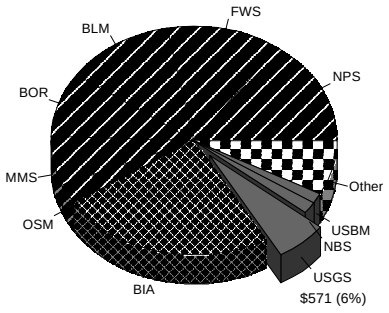
As a Nation we face serious questions concerning our global environment. How can we ensure an adequate supply of critical water, energy, and mineral resources in the future? In what ways are we irreversibly altering our natural environment when we use these resources? How has the global environment changed over geologic time, and what can the past tell us about the future? How can we predict, prevent, and mitigate the effects of natural hazards?

Collecting, analyzing, and disseminating the scientific information needed to answer these questions is the primary mission of the U.S. Geological Survey. This information is provided to the public in many forms, such as reports, maps, and data bases, that provide descriptions and analyses of the water, energy, and mineral resources, the land surface, the underlying geologic structure, and the dynamic processes of the Earth.

Figure 22

1995 U.S. Geological Survey Budget Authority

($ in millions)



Total DOI Budget Authority - $9,744 million

Damage from the Kobe earthquake. Photo credit - USGS.

HAZARDS

Understanding natural hazards such as earthquakes, volcanic eruptions, landslides, floods, hurricanes, subsidence, and naturally occurring toxic materials is a critical public issue facing the Nation and the world. Through its various natural hazards programs, the Geological Survey works hard to reduce the huge indirect tax that every citizen must pay to repair and rebuild after a natural disaster. This "disaster tax" burden imposed by volcanoes, earthquakes, floods, landslides, and other hazards now costs the Nation more than $50 billion dollars each year. Geological Survey efforts are directed toward reducing that tax burden even as it threatens to climb higher as more and more people move into disaster-prone areas.

During 1995, the Geological Survey accomplished the following:

- Established five new seismic stations within the U.S. National Seismic Network, bringing the total number

of high-quality digital stations in the network to 41.

- Conducted follow-up studies to the 1994 Northridge earthquake.

- Provided emergency maps for these disasters: Kobe, Japan earthquake; Hurricane Sean (Hawaiian Islands); Hurricane Marilyn (Virgin Islands and Puerto Rico); and Hurricane Opal (Florida, Alabama, and Georgia).

RESOURCES

Population growth and expansion place ever-increasing demands on the Nation's renewable and nonrenewable resources, including energy, minerals, water, and land. As growth continues, competing needs for land and water are heightened. The need for resources competes with other important needs, such as conservation and environmental protection. In addition, the quality of available resources is an ever-increasing concern, whether the resource is energy, minerals, or water. The Geological Survey provides fundamental scientific knowledge on the abundance of natural resources and the environmental consequences of their extraction and use.

In February 1995, the Geological Survey completed a new national assessment of United States oil and gas resources, including both conventional and unconventional resources. The results of the assessment were released as an interactive CD-ROM with an accompanying full-color publication describing the methodology, data, and results. These products are being used by State and Federal land-management agencies, economic and utility analysts, natural gas and oil producers, and earth-science and economics educators to make decisions regarding competing land-use scenarios, to perform economic projections of national and international trade, to develop strategies for discovering new oil and gas reserves, and to educate the Nation's future scientists and economists. This

USGS research vessel on the Upper Mississippi River. Photo credit - U.S. Geological Survey.

assessment was completed with collaborative input from the Bureau of Land Management, Bureau of Indian Affairs, National Park Service, U.S. Forest Service, State geological surveys, and the petroleum industry.

During 1995, the U.S. Geological Survey participated in the completion of a 4-year study to determine the source(s) of salinity in the Navajo aquifer in southeastern Utah. The Navajo aquifer is an important drinking-water supply for rural areas of the Navajo Nation and has experienced increases in salinity over the past 40 years. Because of the large amount of oil-field activity in southeastern Utah, highly saline water produced with the oil was thought to be a likely candidate for contaminating the freshwater Navajo aquifer. By analyzing 50 water samples, Geological Survey hydrologists were able to eliminate oil-field brine as the source of saline water. The studies indicated that saline water from the upper Paleozoic aquifer is the most probable source of saline water to the Navajo aquifer.

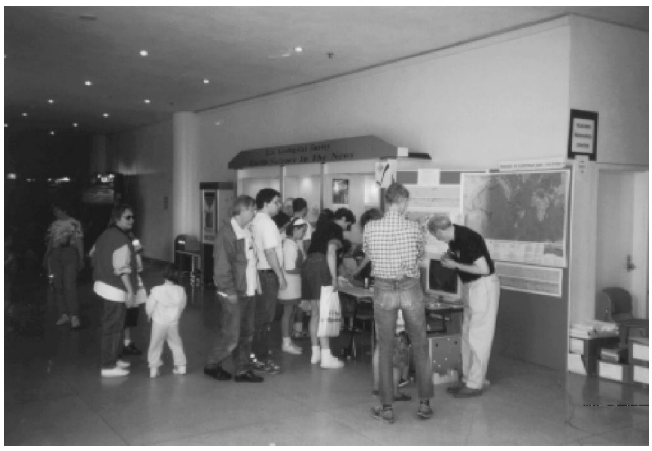
Other agencies and companies participating on the Aneth Technical Committee include the Bureau of Reclamation, Bureau of Land Management; U.S. Environmental Protection Agency; Bureau of Indian Affairs; Texaco Exploration and Production, Inc; Mobil Exploration and

Producing U.S., Inc.; Phillips Petroleum, Inc.; Utah Division of Oil, Gas, and Mining; Navajo Environmental Protection Agency; and Navajo Water Resources Management.

ENVIRONMENT

Issues such as hazardous wastes, environmental degradation, population growth, soil contamination and erosion, water quality and adequate water supplies, and atmospheric changes are of paramount importance today as the Nation and the world wrestle with the impacts of human activity on the natural environment. Understanding the conditions and functions of environmental systems and the factors that are changing them is an important function of the Geological Survey scientific mission. Improving the technical basis for understanding and maintaining the environmental systems that sustain and improve the quality of human life, thereby ensuring that decisions regarding the environment are made with science at the foundation, is part of the ongoing work of the U.S. Geological Survey.

The Geological Survey's National Water-Quality Assessment (NAWQA) Program seeks to describe the quality of the Nation's ground-water and surface-water resources, determine if there are any statistically significant trends in that quality, and to describe, whenever possible, the human and natural factors that have caused those trends. The linkage of water quality to environmental processes is of fundamental importance to water-resource managers, planners, and policy makers. The NAWQA program's unique design provides consistent and comparable information on water resources in 60 important river basins and aquifers across the Nation. Together, these areas account for 60 to 70 percent of the Nation's water use and population served by public water supplies and cover about one-half of the land area of the Nation. Investigations of these 60 areas, referred to as



Science Day at USGS National Center (April 29, 1995). Photo credit - U.S. Geological Survey.

"study units," are the principal building blocks of the NAWQA program.

> *"We in Government have begun to recognize the critical work which must be done at all levels--local, State and Federal--in ending the pollution of our waters."*
> Robert F. Kennedy

In 1995, Geological Survey water resources investigations were conducted in close cooperation with about 20 other Federal agencies and through partnerships with more than 1,100 State and local agencies. More than half of the funds used in 1995 to conduct water resources investigations were received in the form of State matching funds or reimbursable funds from other Federal agencies.

INFORMATION AND DATA MANAGEMENT

Providing the public with timely, objective, high-quality technical information that is relevant to public issues and useful to policy makers is at the foundation of the Geological Survey mission. In addition to conducting scientific investigations to gather vital data on the Earth, its processes, and its resources, the Geological Survey is

Science Day at USGS Rolla, Missouri Office (April 29, 1995). Photo credit - U.S. Geological Survey.

charged with promoting information sharing and providingconsistent information management. Through increased partnering with Federal and State agencies, Geological Survey is expanding the availability of fundamental map information needed in geographic information system applications throughout government and industry.

The Geological Survey is an active participant and supporter of the Federal Geographic Data Committee. The purpose of the Committee is to foster the development of compatible geospatial data and the access of that data through a distributed clearinghouse system, a primary goal of the National Spatial Data Infrastructure (NSDI).

The Vice President's National Performance Review has identified the establishment of the National Spatial Data Infrastructure, in partnership with State and local governments and private companies, as a key initiative in reinventing government. In 1995, 22 awards totaling $625,000 were issued to non-Federal organizations as part of the NSDI cooperative agreement process.

During 1995, the Geological Survey and the Intelligence Community worked in partnership to design a mechanism to release over 800,000 satellite photographs collected during the Cold War era (1960-1972) and to make them available for a host of users. The Geological Survey also developed a World Wide Web site that provided background information, example photographs, and opportunities to order hardcopy samples of the photographic collection.

CUSTOMER SERVICE

As part of its Customer Service Plan, the Geological Survey established a number of pilot customer projects in organizations that deal directly with customers or partners. These include: (1) the Reston Earth Science Information Center, (2) the National Earthquake Information Center, (3) the Minerals Information Offices, (4) the Water Resources Investigations, Federal Cooperative Program, (5) the Technology Information Center and Microcomputer Center, and (6) the Washington Administrative Service Center.

1995 Geological Survey customer service highlights include the following:

- Instituted a follow-up system on customer service within the information distribution activity by utilizing a card system on customer complaints and recommendations.

- Established toll-free 800 numbers for easy access to Geological Survey products.

- Conducted a user evaluation of selected current products of the National Mapping Program. The Geological Survey sent questionnaires to approximately 18,500 professional users. The respondents evaluated the accuracy, contents, and use of a variety of Geological Survey products including printed maps and digital data.