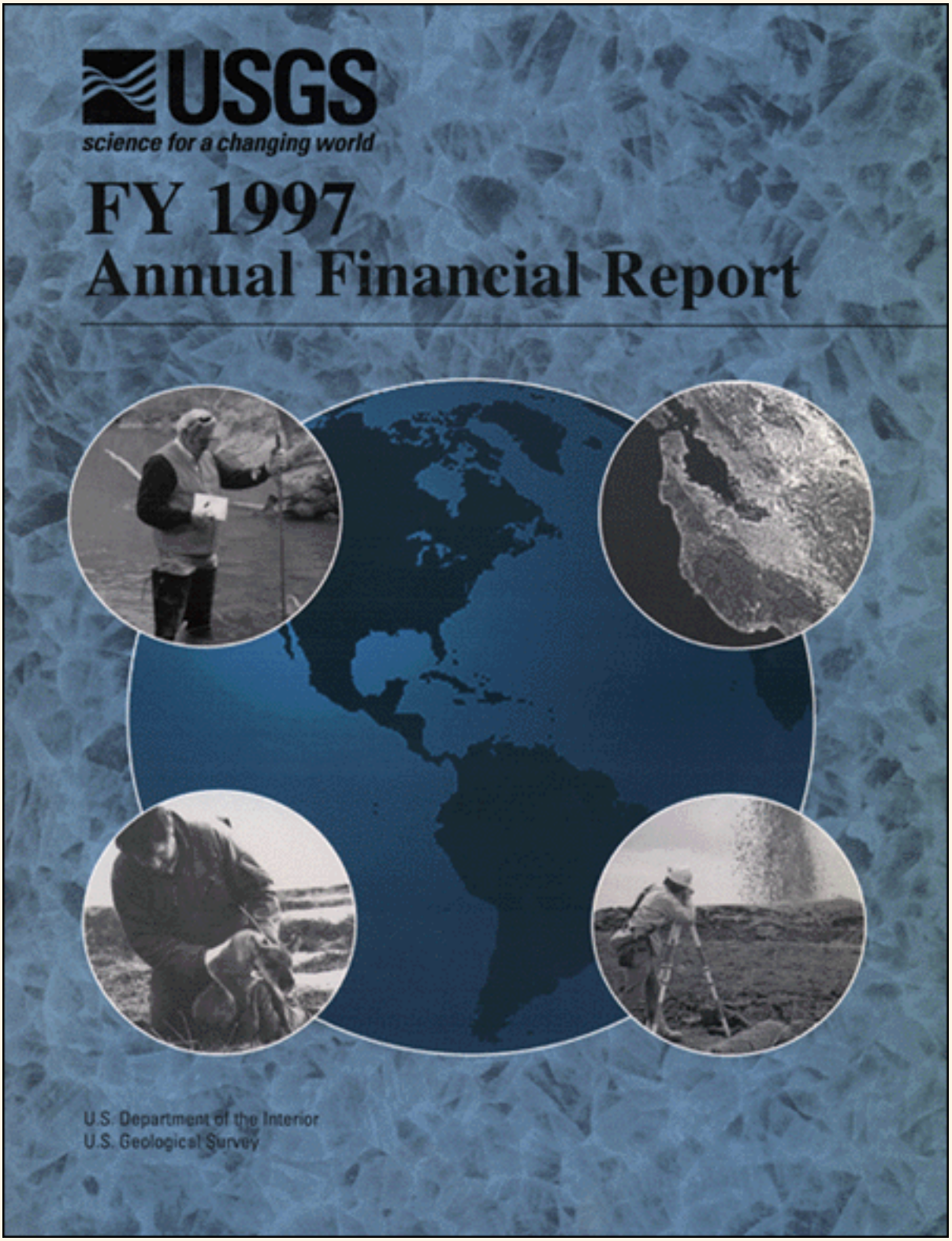

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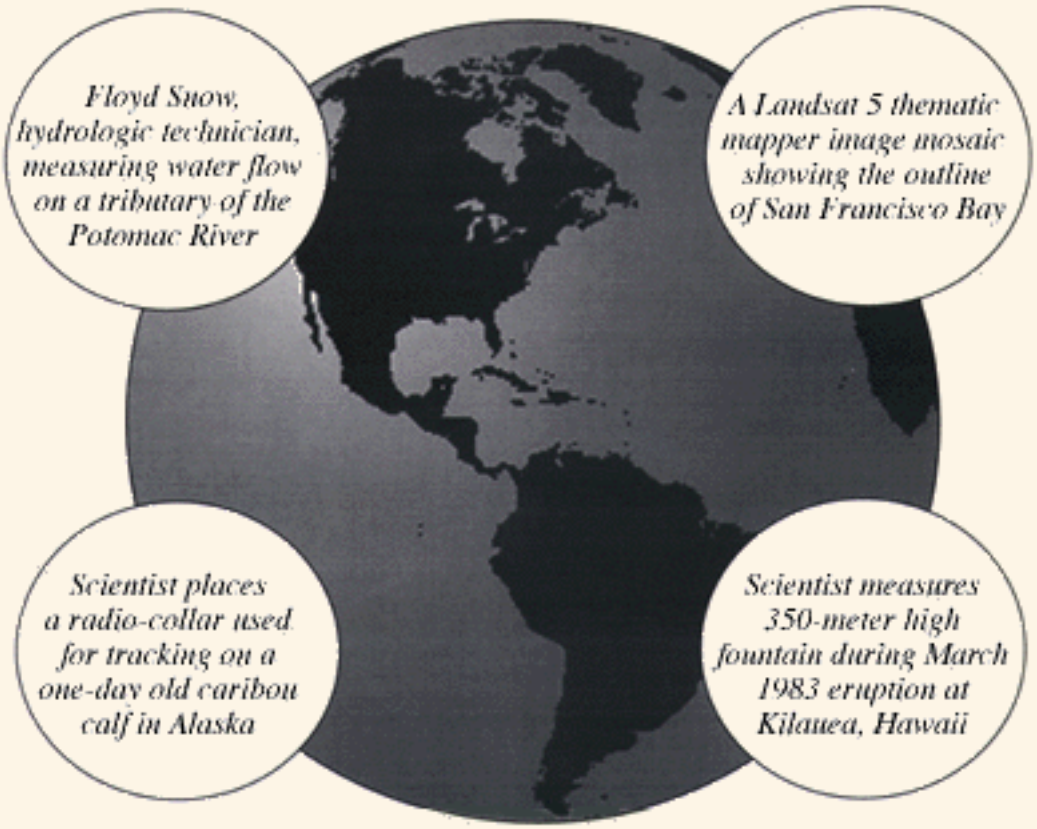
FY 1997 was another year of change and challenges for the USGS. As part of our overall efforts to streamline operations and put into place cost-saving programs, a comprehensive visual identity, including a logo, was developed for bureauwide use in more than 30 media, including 18 print formats alone. The new logo consists of an abstract graphic, the acronym. "USGS," and a motto, "science for a changing world." The logo was approved by the Department of the Interior in August 1997. It is graphically striking, and it reproduces well in many media. Its consistent use within a new USGS design style is raising the USGS's visibility.



Explanation of cover illustration

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Message from the Chief Financial Officer

Barbara J. Ryan

The United States Geological Survey (USGS) received its first unqualified audit opinion on its fiscal year 1996 financial statements. We are very proud of that accomplishment, and I am pleased to report that we have again received an unqualified audit opinion on our financial statements for FY 1997. This is a reflection of the importance and priority we place on sound financial management and contributes to our effort to build "a new USGS."

We have made great strides in the financial management arena in fiscal year 1997. The former National Biological Service (NBS) was fully integrated into USGS during FY 1997; this integration provided the Department of the Interior (DOI) with a single earth and biological science bureau. All financial activities of the former NBS are now conducted within the USGS financial system, including all accounting processes, transactions, and reports. The financial statements in this report are consolidated to reflect that integration.

The USGS is continuing to improve its financial management systems. We have made adjustments in our budget allocation process to more fully comply with appropriation law and Congressional intent. Direct entry of financial transactions has been expanded throughout the USGS and has resulted in more timely and accurate posting of transactions. We have improved the operation of our working capital fund by clarifying policies and increasing accountability. Other financial management improvements include streamlining object classes, implementing an automated interface for credit cards, and improving management reporting on interest payments.

The USGS continues to provide financial management leadership within the DOI. We were the first Interior bureau to convert to the current financial management system, we were the first to adopt the complex fixed asset subsystem, and we are the pilot bureau for the Departmentwide automated procurement system. We are one of two Interior bureaus operating an administrative service center. We also serve as the focal point for the DOI for financial system changes and enhancements.

Our commitment to improved financial management in FY 1997 will continue. We are in the middle of a study to develop a common financial planning, budgeting, and execution tool for use throughout the USGS. Several accounting standards will be implemented in FY 1998, along with some new general ledger concepts. We are committed to continuing our efforts to conduct as much business as possible electronically, including making all payments via electronic funds transfer. We will implement a new personnel and payroll system in FY 1998 and are agressively addressing the year 2000 computer problems that also are plaguing all of government and industry.

We are proud of our accomplishments and wholeheartedly accept these new challenges. Our continuing

commitment to sound financial management is an integral part of the renewed USGS.

Barbara J. Ryan
Chief Financial Officer and
Associate Director for Operations

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FOREWORD

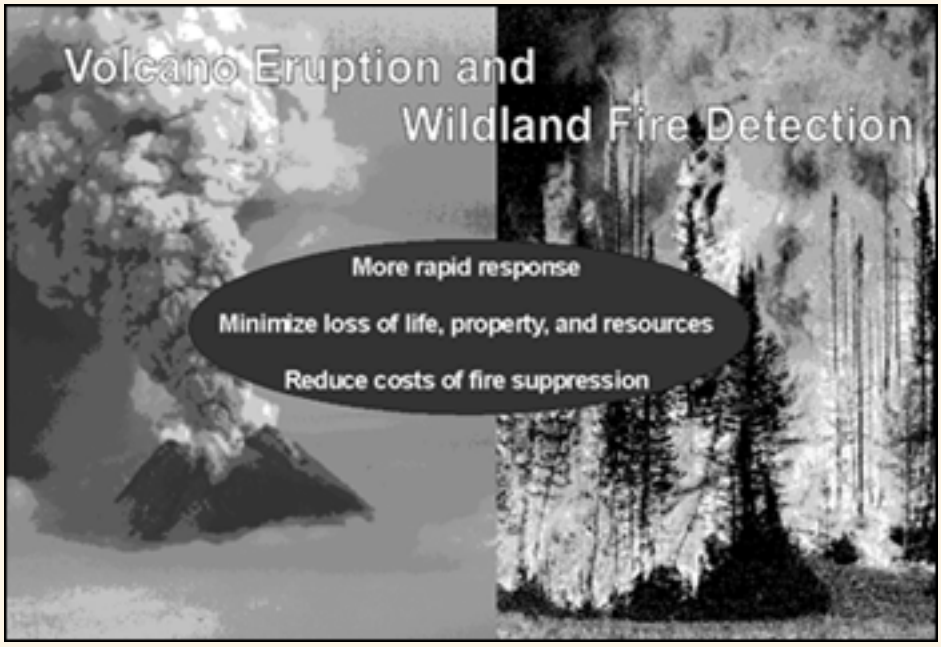
Patricia J. Beneke at the Biological Resources Division's first anniversary tree planting ceremony.

USGS is facing a bright scientific future. In his book, *The Wisdom of the Sands*, Antoine de Saint- Exupery said, "As for the future, your task is not to foresee, but to enable it." With the one-year anniversary of the addition of the Biological Resources Division, USGS is focusing the ability to "enable" on the "new" USGS and where the bureau is headed in the years to come. The addition of the biological sciences to the existing strong set of physical science disciplines has added an important new dimension and set of capabilities to the USGS, and the timing of the addition is fortuitous. Over the last decade there has been considerable discussion within the scientific community about the need to examine natural resource issues from a multidisciplinary perspective. In nature, as the saying goes, "everything is connected to everything else," and so our science should reflect these interconnections.

The efforts to encourage multidisciplinary research have allowed us to present a strong case to the Department, the Office of Management and Budget, and Congress for support of continuing and new science programs. Focusing on the resources, hazards, environment, and information themes has provided an opportunity to present the USGS in terms of integrated science capabilities directed to challenges facing the Nation, as opposed to isolated research activities artificially divided by disciplines.

The USGS is well positioned to make major scientific contributions in each of these thematic areas. Land and water resources are increasingly constrained, and the use and conservation of these national assets will become an increasingly important issue in the future. Several decades of major research accomplishments related to earthquakes, volcanoes, floods, and other natural hazards place the USGS in an excellent position to make further contributions in reducing the loss of human life and property resulting from these events.

The capability to provide information about hazards on a real-time basis is transforming the way Government officials and the public prepare for and respond to natural disasters. The Bureau's extensive mapping, geographic information, and data storage and transfer expertise will allow USGS to play a leadership role in ensuring a solid scientific foundation for future natural resource decision making. The USGS will certainly continue to be called on to use its multidisciplinary expertise to address the many environmental challenges facing the Nation and the world. All of these activities benefit from appropriately balanced fundamental and applied research and other activities.



USGS and Federal partners integrate classified and civilian remotely sensed data to permit earlier and more accurate detection and response.

One of the keys to success in the past has been the forging of partnerships between USGS and State and local governments, universities, other Federal agencies, nonprofit organizations, and industry. The viability of the new USGS will continue to depend on the effectiveness of these partnerships and the ability to work cooperatively while ensuring the quality, impartiality, and relevance of the USGS's scientific programs.

USGS will have just as important and essential a role in building and rebuilding the Nation in the 21st century as we did in the 19th and 20th centuries, but the role will be different and it will change with time. We have become the Nation's chief natural science agency for a reason and a purpose -- to provide the kind of science that will serve the citizen and help the Nation adapt to a rapidly changing world; to be the agency that can help this Nation find, protect, develop, and enjoy the natural resources that are essential for building and living in the next century; and to be an agency that can help significantly reduce the risk of natural hazards. The new USGS motto, "science for a changing world," appropriately reflects the importance of looking forward and being sensitive to the changing needs of society.

The scene of competing uses of our Nation's natural resources is set with increasing population, diminishing resources in an increasingly technological and materialistic world that is beset with degrading urban infrastructure, waste disposal, water and land use conflicts, increasing stresses on lands and coasts, and increasing costs of natural disasters in growing urban areas. Who better to help with solving these pressing problems, both now and in the future, than the U.S. Geological Survey? USGS provides the basic knowledge and underlying data that define what is happening within and on the surface of the Earth. USGS describes how and why Earth phenomena affect the lives of both humans and other living resources on a variety of scales. This vital knowledge clearly "enables" the national leaders in making significant societal decisions.

A significant number of chronic health issues are known to be tied to the environment and, specifically, to Earth phenomena themselves. USGS has worked around the edges of this area in the past in a limited, but nonetheless important, way. This past work focused on specific earth materials such as selenium, asbestos, uranium, and radon and their impacts on our environment and health. Today USGS is involved in important research on bacterial and viral transport, both in ground water and wildlife; on the transport of pesticides and their metabolites; and the absorption of a number of toxic substances on sediment particles in rivers and lakes. The exposure of humans to toxic chemicals through uptake and storage by plants and animals in our food chain represents another deep societal concern to which the USGS contributes useful and meaningful understanding.

Clean up of the riparian area by student volunteers.

Stan Church (USGS-GD) collecting core through contaminated sediments, Animas River, Colo.

The USGS ability to "enable," limited only by imagination, for the USGS already has in its ranks the wide array of scientific skills and talents required -- bio/geochemists, surface- and ground-water hydrologists, mineralogists, bacteriologists, animal disease specialists, botanists, experts in image interpretation and geographic information systems, earthquake seismologists, volcanologists, and landslide experts. All have something to contribute to the well-being of the Nation.

This is the challenge for USGS -- to foster the ability to "enable" a future that will continue to excel in natural earth science even in an environment of projected flat-lined appropriation and inflation-adjusted funds, at least for the next half-decade, and brightened by the prospects of the growing support with nearly 2,000 separate partners around the world and at every level in every State. This is a future that asks the USGS to play a key role in building and rebuilding the economy, the environment, the level of health and safety, and a fundamental understanding of our natural resources, natural processes, and natural hazards.

This is the "new" USGS, one of the Nation's recognized and highly valued sources of "science for a changing world."

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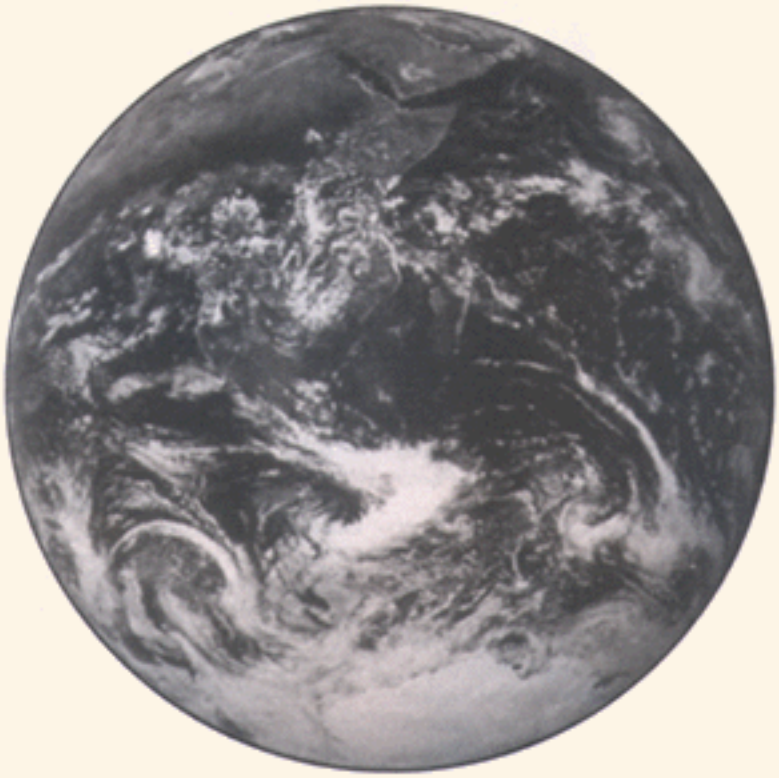
Vision

The U.S. Geological Survey is a natural science organization that is recognized worldwide as scientifically credible, objective, and demonstrably relevant to society's needs.



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Mission

The U.S. Geological Survey provides the Nation with reliable information to describe and understand the Earth. This information is used to--

Minimize loss of life and property from natural disasters;

manage water, biological, energy, and mineral resources;

enhance and protect the quality of life; and

contribute to wise economic and physical development.

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BUSINESS ACTIVITIES

The present and future scientific and technical efforts of the USGS are characterized as business activities. These activities were derived from the strategic planning process. The business activities were not developed as a guide for organizational or budgetary structures but to convey the breadth, integration, and flexibility in the description of programs in which the USGS must excel over the next decade.

The USGS must be able to mobilize its full strengths to address high-priority concerns within and across the array of business activities. The organization also must develop innovative paradigms for prompt USGS-wide response to emerging issues. Ensuring relevance to society's needs depends on the ability to develop and communicate program priorities that are recognized, understood, and supported across organizational boundaries.

Following are the eight USGS business activities:

- Water Availability and Quality
- Natural Hazards
- Geographic and Cartographic Information
- Contaminated Environments
- Land and Water Use
- Nonrenewable Resources
- Environmental Effects on Human Health
- Biological Resources

USGS scientist taking pH in an algal mat at an acid mine drainage site in southern Virginia.

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Water Availability and Quality

Goal: Manage the Nation's water resources wisely for present and future generations.

The USGS provides reliable, impartial, timely data on and an understanding of the quantity and quality of the Nation's water resources. This enables decisionmakers to plan, operate, and regulate the water resources infrastructure of the Nation and to undertake cost-effective programs to preserve and enhance water quality.

FY 1997 Accomplishments

Middle Rio Grande Basin, New Mexico

FY 1997 was the second year of the 5-year Middle Rio Grande Basin study undertaken by the Ground-Water Resources Program. The study's primary goal is to better define water availability in the Middle Rio Grande Basin through improvement of the USGS ground-water model for the area that is used by a number of water-management and scientific agencies in the Albuquerque area (including the City of Albuquerque, the New Mexico State Engineer Office, Sandia National Labs, and the City of Rio Rancho). Results from this study are being used by water-management agencies in the region as it becomes available. For example, ground-water age-dating undertaken by the project to define the movement of water through the aquifer is being used by the City of Albuquerque. This information is used for early detection of ground-water contaminants for municipal-supply wells. The data on mountain-front recharge to the aquifer is being used by the City of Santa Fe in their plans to reduce flow in the Santa Fe River.

Water-Quality Monitoring

USGS data and new scientific methods resulting from the National Water-Quality Assessment Program (NAWQA) are being used by a number of State agencies to design new and more cost-effective water protection strategies, or to improve water-quality monitoring and assessment techniques. For example:

- USGS biological and habitat protocols have recently been integrated into Idaho's state-wide surface water-quality monitoring network. The prior network design had focused primarily on water chemistry constituents.
- The Texas Natural Resource Conservation Commission is initiating a new Source Water Assessment Program, mandated by U.S. Environmental Protection Agency (USEPA), with significant technical support from the USGS. The approach, designed with input from USGS,

borrows heavily from the NAWQA programs retrospective approach and relies on USGS pesticide data sets for the State of Texas.

- The States of Minnesota and North Dakota used USGS fish data to establish an Index of Biotic Integrity scoring system for use in the Red River of the North Basin.
- The New York State Department of Environmental Conservation began a statewide pesticide monitoring project with the USGS based on NAWQA program data collection protocols. This information is being used by the State to make decisions on registering pesticides.
- The Pennsylvania Department of Agriculture has decided to begin using the concepts of the NAWQA program to prioritize ground-water areas for assessments. This constitutes a major component of the State's strategy for ground-water protection. As part of this effort, the USGS will provide pesticide analysis and quality assurance support for the Pesticides and Ground Water Strategy. Also, based on USGS findings of bacterial contamination in rural household wells, the State is analyzing additional samples from rural areas to determine the extent of bacterial contamination.

Water-Quality Monitoring in Washington

The NAWQA fact sheet, "Nitrate concentrations in ground water of the Central Columbia Plateau" has received considerable attention from State and Federal agencies. This fact sheet is the basis for the Washington State Department of Ecology creating a ground-water management area covering three counties in the study area, to address nitrate in ground water. The counties (Grant, Franklin, and Adams) are in an intensely agricultural region. The USGS is providing analysis in three dimensions to identify likely areas for lower nitrate concentrations (potential sites for future drinking water), and the USGS is designing a long-term nitrate monitoring plan.

Deformities in Frogs and Toads

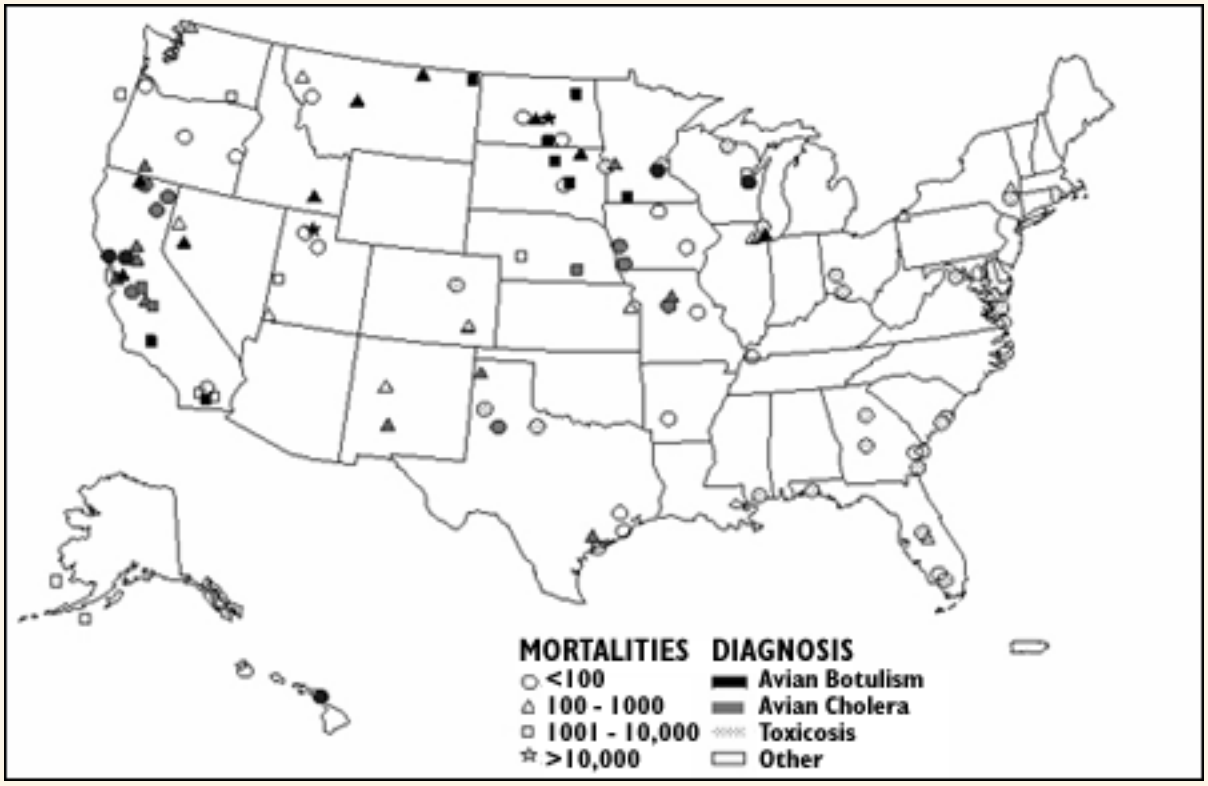
USGS scientists are the first to characterize the types of deformities occurring in metamorphosed frogs and toads collected from at least 12 States. The deformities consist primarily of missing and extra limbs with some eye, jaw, internal and external deformities. This characterization is a critical step in determining probable causes.

Avian Botulism in Wetland Ecosystems

Avian botulism, caused by a highly potent toxin produced by bacteria commonly found in wetland soils, kills large numbers of birds annually throughout North America and the world. Tens of thousands of birds can die in a single outbreak, and annual losses in the hundreds of thousands are common. USGS scientists have developed models for the occurrence of this disease based on specific environmental conditions in wetland ecosystems that cause the bacteria that produce the toxin. These models will allow wildlife managers to predict outbreaks and develop wetland management techniques to reduce the risk of avian botulism.

Disease Diagnosis in Migratory Birds

More than 115 disease outbreaks in migratory birds in the United States were reported to the USGS during FY 1997. These outbreaks range in magnitude up to 85,000 birds in a single outbreak at Bear River Migratory Bird Refuge in Utah. The USGS provided diagnostic support and technical assistance in the control of wildlife disease outbreaks (see map).



FY 1997 migratory bird dieoff

Water Availability and Quality || Natural Hazards || Geographic and Cartographic Information || Contaminated Environments || Land and Water Use || Nonrenewable Resources || Environmental Effects on Human Health || Biological Resources

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Natural Hazards

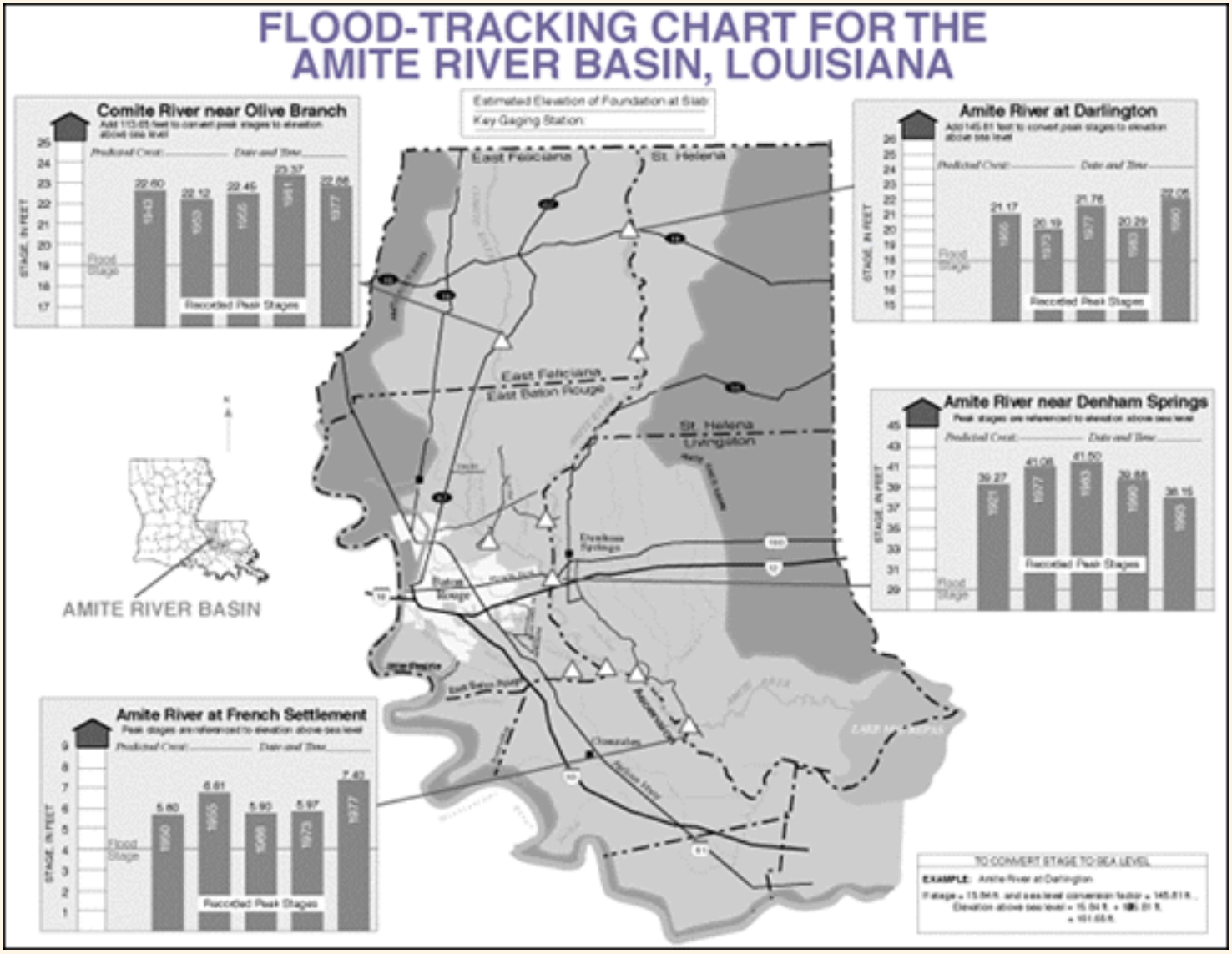
Goal: Reduce the loss of life and property from natural hazards.

The USGS roles are to advance our understanding of the fundamental processes that control or trigger hazardous events or situations; lead in developing real-time monitoring and warning systems; and enhance the use of hazards assessments by decisionmakers, in order to improve disaster response and mitigation planning.

FY 1997 Accomplishments

Flooding in Louisiana

Flooding in Louisiana is a serious and recurring problem. Seven major floods have occurred in the basin since 1977, primarily the result of backwater flooding along the Amite and Comite Rivers and their tributaries. In cooperation with the Amite River Basin Drainage and Water Conservation District, the USGS Louisiana District has established a flood monitoring network in the Amite River Basin to provide real-time stage and discharge data to emergency response agencies and the general public.



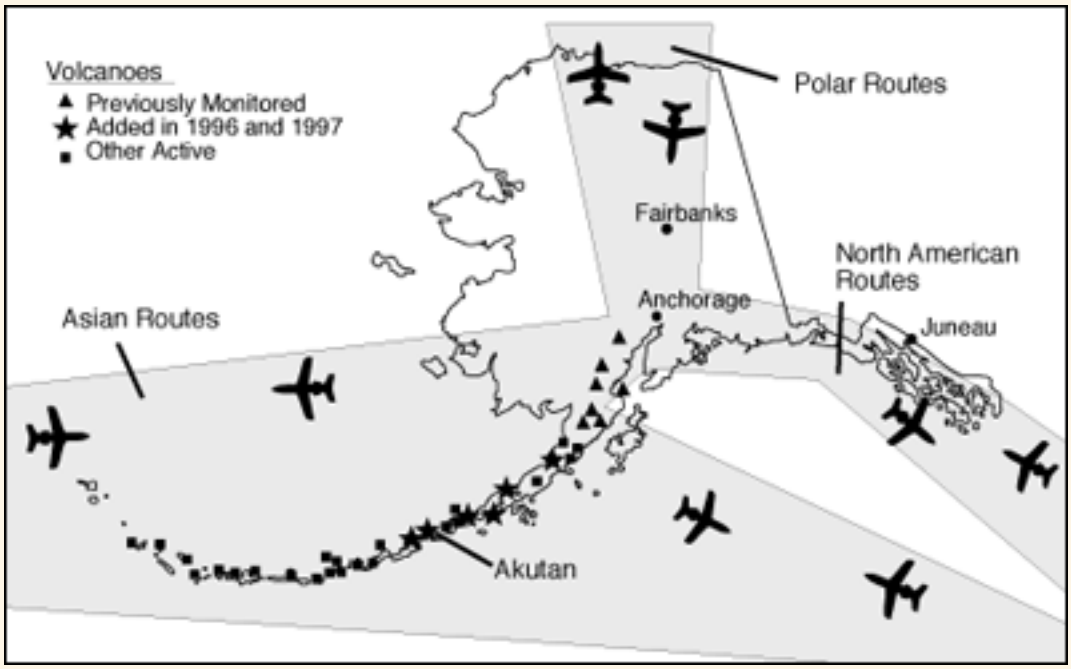
For real-time data, access the USGS "Home Page" at http://wwwdlabrg.er.usgs.gov/public/dist000.html

During a flood event, real-time data are available through the USGS Louisiana District home page on the Internet and also by a telephone information line provided by a local newspaper and updated frequently by USGS staff. In addition to these resources, the USGS published a "Flood Tracking Chart" for the Amite River Basin, Louisiana (USGS Open-File Report 96-649). Modeled after a hurricane tracking chart common along the Gulf and Atlantic Coast States, the chart includes a map showing the location of gages from which real-time data are available during floods and bar charts showing the relative peaks of historical floods at each station. By providing this geographical and historical context, the chart aids users in understanding and responding to a flood.

A local Congressman from Baton Rouge combined the tracking chart with public safety information from a local USGS cooperator and published it in a mail-out to 290,000 Baton Rouge area residents, with appropriate credit to the USGS. He further pointed out that communities in his district could claim public education credit from Federal Emergency Management Agency for his mail out and help lower their flood insurance rates.

Improved Aviation Safety

With funding from the Federal Aviation Administration (FAA), the USGS expanded its monitoring activities at the Alaska Volcanic Observatory (AVO) in 1996 and 1997. Volcanic ash erupted high into the atmosphere is very hazardous to modern high-performance aircraft because it erodes compressor blades, melts onto critical engine parts, and causes loss of engine power. Hazardous concentrations of volcanic ash can drift at air-traffic altitudes for hundreds to thousands of miles downwind following a volcanic eruption. Worldwide, about 80 jet aircraft in the past 5 years have accidentally entered volcanic-ash clouds and put thousands of passengers at risk. Within U.S.-controlled airspace, the ash-aviation issue is especially important in the North Pacific region where many active and potentially active volcanoes are overflown daily by commercial and military aircraft in heavily traveled international and domestic air routes. By using data from its monitoring networks, the USGS provides eruption reports and prognoses of future activity to the National Weather Service (NWS), the FAA, and the aviation industry. The NWS uses USGS information to help track eruption clouds, and the FAA uses the USGS and NWS information to route air traffic away from dangerous ash clouds. In 1996, USGS monitored seismic unrest at three Alaskan volcanoes and tracked eruptions at an additional three, as well as one in the Kamchatka Peninsula of Russia.

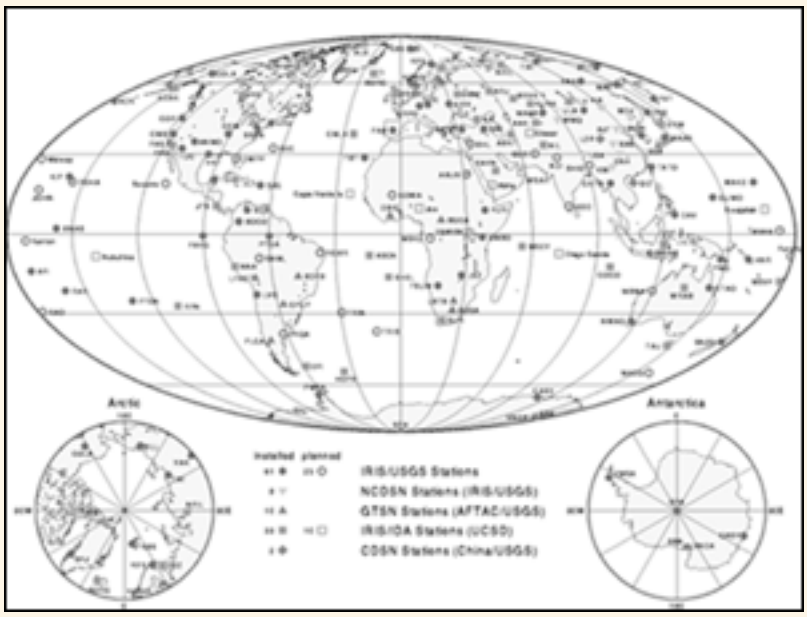


Volcanic-ash hazard warnings for air traffic in Alaska

National Seismic Hazard Maps

The USGS recently completed and released new national maps showing the potential hazard from earthquakes and earth tremors. These maps show variations in the hazard related to different rates of earthquake occurrence across the country. The California portion was produced jointly by the USGS and the California Division of Mines and Geology, setting a precedent for Federal-State cooperation in seismic hazard mapping. The maps were reviewed in detail by two panels of experts and are available in

print and via the Internet. The maps present data in the formats most requested by engineers and land-use planners and are being used for the National Earthquake Hazards Reduction Program Recommended Provisions for Seismic Regulations for New Buildings, as well as for designing bridges, planning retrofitting strategies, setting insurance premiums, and estimating earthquake losses.



Global Seismograph Network

Water Availability and Quality || Natural Hazards || Geographic and Cartographic Information || Contaminated Environments || Land and Water Use || Nonrenewable Resources || Environmental Effects on Human Health || Biological Resources

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Geographic and Cartographic Information

Goal: Provide maps and map data for the Nation.

The USGS role is to acquire, produce, manage, and disseminate geospatial data; cultivate partnerships with other governmental organizations, academia, and the private sector for geospatial-data activities; provide leadership in establishing National geospatial data policies and standards; and conduct a geographic research and development program focused on interpretation and application of geospatial data.

FY 1997 Accomplishments

Digital Ortho-Imagery

A total of 60,850 digital ortho-imagery quadrangles (DOQ's) were completed during FY 1997 and are now available in the archive. This represents 28% of national coverage, 3 percent greater than the goal attainment level for FY 1997. Additional progress made in the DOQ program during FY 1997 included the following activities:

- The new DOQ Architecture & Engineering contract was awarded to nine contractors; five were continued from the first DOQ contract, and there are four new contractors.
- A second Innovative Partnership agreement with Texas was signed, for statewide DOQ coverage.
- Planning was initiated for second time DOQ coverage ("revised" DOQ's or DOQ maintenance).
- Joint funding agreements were signed for full State DOQ coverage or to complete DOQ's in the State with North Carolina, Pennsylvania, Kentucky, Missouri, Oklahoma, and Ohio.
- High-visibility project work in FY 1997 include the U.S./Mexico border project, DOI high-priority projects, the Chesapeake Bay Ecosystem project, and the Yellowstone National Park and Environs project.
- Research has begun on the viability of using satellite data for mapping purposes. Work will intensify once the new higher resolution satellites are up and data become available.

Geospatial and Remotely Sensed Data

In FY 1997 the cumulative amount of geospatial and remotely sensed data archived and managed by the USGS was over 144,000 gigabytes, 22,000 gigabytes more than previously projected goal attainment level. The data archive contains 120,000 gigabytes of Landsat satellite data, 12,000 gigabytes of Advanced Very High Resolution Radiometer (AVHRR) satellite data, and 12,000 gigabytes of geospatial data (digital orthophoto quads, digital elevation models, and digital features data). Archiving and managing ensure the long-term preservation of these data, in conjunction with a mandated responsibility to distribute the data on demand to a global community of scientific users. The USGS will synthesize thematic spatial data from various scientific and cultural fields to promote creative solutions to resource and development issues.

Geospatial data integration techniques and applications in multidisciplinary science activities.

Eight innovative geospatial data integration applications were developed in FY 1997 to synthesize thematic spatial data from various scientific and cultural fields to promote creative solutions to resource and development issues. Detailed below are the eight applications.

- Mississippi River Basin data set. This data set models the role of land use, erosion, sedimentation, and soil development on carbon storage and nutrient cycles. The aim of the application is to better understand and balance the carbon cycles. (See fig. 1.)

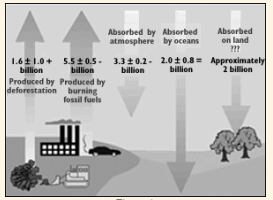


Figure 1

Figure 2

- Yazoo River Basin data set. The Yazoo River Basin is located in the northwestern portion of the State of Mississippi. Data on soil, land cover, and climate are used as input to models of soil erosion, sedimentation, and carbon stoage and flux. The project includes application methods for compiling, integrating, and analyzing spatial data. (See fig. 2.)

- Rio Puerco River Basin project. This project is located west of Albuquerque, New Mexico. It is a global change research study to develop information and gain knowledge about the inter- action of climate and land use change on the environmental, economic, and social systems of the region. (See fig. 3.)

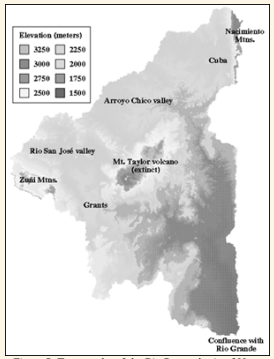


Figure 3. Topography of the Rio Puerco basin of New Mexico

- Completion of the Global 30 Arc-Second Elevation Data Set. The USGS created this global digital elevation model with horizontal grid spacing of 1 km -- also called "GTOPO30." In developing this application, the USGS worked with the National Oceanic and Atmospheric Administration (NOAA), the National Aeronautics and Space Administration (NASA), and many international partners to compile extended coverage of global 10-day, 1-km AVHRR composite land data sets to cover the period from April 1992 to July 1995. This is the first ever global geospatial data set with a spatial resolution of about 1 kilometer. It is accessible on the Internet and allows modelers to more accurately portray the Earth's global- and regional-scale terrain than ever before. (See fig. 4.)

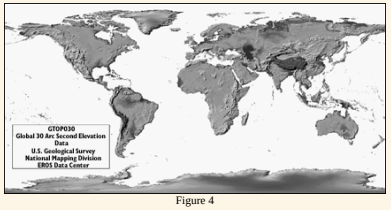


Figure 4

- Completion of the Global Land Cover Characterization Database. This database, also accessible over the Internet, provides modelers with a flexible data source for use in describing the land surface in whatever way they require.
- Merged thematic layers of quadrangles in the National Hydrographic Dataset for a composite readout.
- Submerged aquatic vegetation application for monitoring riparian habitat.
- Global Positioning System data applied in a new way for digital elevation models in south Florida.

Maps Aid Restoration of Great Lakes Fishery

USGS scientists mapped spawning habitat for lake trout in Lake Huron and yellow perch in Lake Michigan by using sidescan sonar, a remotely operated, underwater vehicle equipped with a closed-circuit television system, geographic positioning systems, and a computer-based geographic information system. The maps are needed to implement fishery management actions for these species as part of the Great Lakes fishery restoration effort.

Distribution of Submerged Aquatic Vegetation

USGS scientists have completed high resolution (1:24,000 scale) maps of submerged aquatic vegetation (SAV) from Chandeleur Islands, Louisiana, to Anclote Key, Florida. This information will be used by the Minerals Management Service and the U.S. Fish and Wildlife Service for coastal zone planning and management. These agencies identified the mapping of SAV as their number one habitat-information need in this geographic area.


Storm overwash fan deposited on a seagrass bed in the Chandeleur Islands, Louisiana.

National Parks Vegetation Maps

The USGS continues to implement a multiyear program to map vegetation in 234 high-priority National Parks. This program's purpose is to provide vegetation maps and associated field data to be used in association with other geographic information system (GIS)-based maps for resource management, research, planning and compliance, interpretation and operations. In FY 1997 the first prototype park project was completed, which tested program standards and protocols for implementation at other parks in desert ecosystems. Work also began in 5 new National Parks and brought the total number of parks with work underway to 33. In FY 1997 the USGS conducted a peer review of this program in FY 1997; the review involved 21 invited scientists from 6 Federal agencies and included a training session on the "Application of the Federal Geographic Data Committee National Classification Standard" for 25 scientists from 5 Federal agencies.

Gap Analysis Program

The Gap Analysis Program (GAP) identified and classifies the elements of biological diversity at State and regional levels, providing a standardized means to inventory and map the distribution of vegetation communities, terrestrial vertebrate species, and land management status. USGS scientists use satellite images, aerial video, existing maps, and field reconnaissance to develop land cover, species distribution, and habitat maps. These data are used to identify species and habitats that are underrepresented in the network of conservation lands and related activities and which are at risk of becoming conservation crises. The information is used by local, State, Federal, and private land managers. GAP uses a cooperative State-based business model. In FY 1997 the program was active in 44 States, in

A gap analysis example

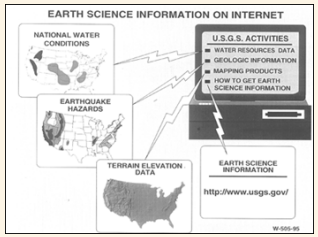
The analysis of potential gaps in biological conservation can take many forms. For example the Grace's Warbler (Dendroica graciae) analysis in New Mexico would predict the warbler's distribution and status of highest management for biodiversity and other management status. The analysis would show the percent of the warbler's habitat occuring in areas that are managed for biodiversity.

This type of analysis helps to identify any potential "gap" in the warbler's management status and it may be vulnerable to future endangerment.

collaboration with 470 cooperating universities, businesses, State, local and other Federal agencies. GAP substantially improved the ability of these entities to access and use ecological information.

USGS Water Resources Data on the Internet

Historical streamflow data is available on the Internet for all 50 States. Having this information available is a valuable tool for Federal and State agencies when they are designing water resource projects or making water resource decisions.



Real-time streamflow information is available for all States except Hawaii. The real-time streamflow sites are the most popular and useful sites on the USGS water resources Internet pages, with an estimated 1.2 million real-time hydrographs being downloaded from January to September 1997. Not only is this information critical to resource managers and emergency management coordinators during times of flooding, but citizens also use the information for making decisions about when and where to repair the dikes and levees on their farms, when to move their property to higher ground, and when to evacuate.

USGS water resources Websites are building a loyal clientele. For example, 18,000 users of USGS water resources Websites, 16 percent of the total, come back more than once per month.

Almost 96 percent of users are from outside the USGS, the majority, 78 percent, are from commercial sites, about 12 percent are from educational domains, 6 percent are foreign, and 4 percent are from government sites other than the USGS.

"Webmaster Magazine" named the USGS one of its "50/50" awardees as one of the 50 Internet sites contributing most to its organization's business purpose. The USGS was chosen by a panel of judges from over 700 entrants, who included many major corporations and government sites.

Public Education on Pesticides

A NAWQA fact sheet titled "Pesticides in selected small streams in the Puget Sound Basin, 1987-1995" is being used by King County, Washington, as part of an educational effort to encourage homeowners to use less pesticides on lawns and gardens.

New Report on Method for Rapid Estimation of Bridge Scour

Scour at highway bridges involves sediment transport and erosion processes that cause streambed material to be removed from the bridge vicinity. This process weakens bridge foundations and, if not corrected, can eventually result in bridge collapse.

Because almost 485,000 bridges in the U.S. are over waterways and may be susceptible to scour to some degree, a detailed scour analysis at all sites may not be feasible. As part of a National program to determine which bridges in the U.S. are susceptible to scour, tens of thousands of bridges nationwide are being inventoried. By using the methods described in a new USGS report, estimates of scour depths at highway bridges can be obtained for a site in a matter of hours, based on limited site data, whereas traditional methods required days to calculate scour estimates.


Example of bridge scour. (USGS)

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Contaminated Environments

Goal: Reduce both environmental contamination and the cost of cleaning up existing contamination.

The USGS role is to identify and define the occurrence and effects of contamination, broaden our basic understanding of contaminant hazards, and provide pertinent information to those concerned with mitigation and prevention.

FY 1997 Accomplishments

Methyl-tert-butyl ether (MTBE) Contamination

USGS scientists from the Toxic Substances Hydrology Program have developed a methodology to assess the potential for natural attenuation of MTBE at gasoline spill sites. (Natural attenuation is a remedial process for contaminated sites in which the contaminant is allowed to degrade by natural processes into compounds that pose little or no threat to the environment.) MTBE has been used as an octane booster in gasoline since the mid-1970's and as a fuel oxygenate to achieve reductions in carbon dioxide and ozone in the atmosphere as mandated by the 1990 Clean Air Act Amendments. MTBE is much more soluble in water than other components of gasoline and is believed to be persistent in the subsurface. These facts, together with field evidence that MTBE solute migrates ahead of other gasoline components at spill sites, challenge the paradigm of the natural attenuation alternative.

The Toxic Substances Hydrology Program has developed field methods for assessing releases from leaking underground storage tanks of MTBE in ground water and for assessing the efficiency of natural attenuation processes (biodegradation, sorption, dilution). This methodology is being adopted by the South Carolina Department of Health and Environmental Control to integrate consideration of fuel oxgenates (such as MTBE) into the State Underground Petroleum Emergnecy Response Bank program. By adopting USGS methods, South Carolina is saving the costs (estimated at $400,000) and the time (estimated at 2 years) associated with developing their own protocol.

Abandoned Mine Lands

Upper Animas River, Colorado

In FY 1997, the USGS successfully implemented the Abandoned Mine Lands (AML) Initiative. The goal of this 5-year initiative is to develop a watershed approach to gathering the scientific information needed by Federal land management agencies to effectively and cost-efficiently remediate contamination associated with abandoned mine lands. A significant early accomplishment of the AML Initiative is the completion of four tracer injection studies in mountain streams affected by acid mine drainage. A tracer injection study identifies and prioritizes the many individual sources of metals and acid in a mountain watershed, thus enabling targeting of resources on contaminant sources that will have the greatest improvement in watershed quality. The tests were conducted in the Initiative's pilot watersheds, the Upper Animas River, Colorado, and the Boulder River, Montana. As a result of their success, two additional tests were requested by USGS to support their decisions related to remediation at Fisher Creek, Montana (New World Mine), and Wightman Fork, Colorado (Summitville Mine).

Additional information about the AML Initiative can be found at:

http://amli.usgs.gov/amli/

Additional information on tracer-injection studies can be found at:

http://wwwdutslc.wr.usgs.gov/usgsabout/fs245/245.html

Louisiana Wetlands Restoration.

Results from the USGS barrier island and wetland studies in Louisiana are being widely used by the Federal-State Coastal Wetlands Restoration Task Force as part of a $200 million effort to conserve and restore coastal wetlands in Louisiana. This is a long-term activity, and much of the baseline scientific information and guidance is provided by the USGS. A follow-on study in Louisiana addresses loss of biologically important wetlands and contamination in Lake Pontchartrain; these issues concern Federal agencies, State and city governments, and the public. Results of these USGS studies are providing information in the form of workshops, computer data bases, and detailed maps of the sea floor and shoreline used to restore the estuary and manage the urban coastal region.

USGS baseline data aid mitigation efforts and reservoir planning

The Southwest Water Quality Conservation District, the Bureau of Reclamation, the Southern Ute Indian Tribe, and the City of Durango requested a USGS baseline study of metals in the Animas River in Colorado to understand the source, transport, and fate of metals and impact on water quality. More than 90 percent of the metals present in stream sediments were derived from the intensely mined watershed above Silverton, Colorado. USGS measured current levels of metals contents of the Animas and these data provided a baseline to evaluate the effect of planned remediation work above Silverton. The goals are to improve the quality of drinking water for the City of Durango and the quality of irrigation water within the watershed. The Bureau of Reclamation is using these data to evaluate metal loads, especially selenium, resulting from pumping Animas River water into the proposed Animas-La Plata Reservoir.

John Besser (USGS-BRD) collecting invertebrate sample, Mineral Creek, Animas River Watershed above Silverton, Colo.

This study directly benefits public and environmental health and allows policymakers and land planners to better manage their water resources.

Paul Von Guerard (USGS-WRD) and Bill Simon (Animas River Stakeholders Group) making a presentation on remediation plans in Animas Basin, Colo.

Mining Wastes Impact Aquatic Life in Greater Yellowstone Area

USGS scientists determined that heavy metals, specifically copper, are impacting aquatic life in Soda Butte Creek, a tributary of the Lamar River in Yellowstone National Park. Soda Butte Creek has been affected by gold, copper, and lead mining and milling wastes for over a century. This information has

been incorporated into the Environmental Impact Analysis to be used for remediation of the mined lands. Partners that are involved in the effort including the National Park Service, U.S. Forest Service, and Greater Yellowstone Coalition will use this information in implementation of remediation actions.

Biomonitoring of Environmental Status and Trends

USGS scientists sampled fish throughout the Mississippi River Basin in late 1985 as part of the Biomonitoring of Environmental Status and Trends (BEST) program. Results from chemical analysis of whole fish indicated that organochlorine insecticides and polychlorinated biphenyls (PCBs) have declined substantially since 1986. Although dichloro-diphenyl-trichloro-ethane and its metabolites were found at only 3 of 34 sites, chlordane, dieldrin, and PCBs continued to be found throughout the basin but at lower levels than previously recorded. This information will be used to guide future research and regulatory activities on specific contaminants and assess consequences of remediation and regulatory actions.

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Land and Water Use

Goal: Improve the land and water use decisions made by the public and private sector.

The USGS role is to provide integrated earth science information about land and water use in support of management and other policy decisions, develop analytical tools for improved decisionmaking, and enhance the understanding of how natural processes at the Earth's surface are affected by changes in climate or land and water use.

FY 1997 Accomplishments

Watershed Modeling in the San Juan Basin

Public land management agencies within the Department of the Interior need water resources information as an integral part of their total resource planning and management activities. The USGS Hydrologic Networks and Analysis Program provides much of this information. One example of work in this area is a watershed modeling pilot study in the San Juan River basin in Colorado, New Mexico, Arizona, and Utah; the program was completed in 1997.

The USGS and the Bureau of Reclamation developed a joint work plan for the San Juan River basin; the plan identified the technical issues to be incorporated in the computer models of the watershed. The major issues addressed are competition for water, Indian water rights, and flow regulation and habitat change. Products include a Modular Modeling System -- a framework for organizing models of the natural environment and models for managing natural resources -- which is completed and will be implemented within the operating systems of the Bureau of Reclamation and other agencies responsible for aspects of management of these river basins.

Great Plains Desertification

Windblown sand deposits with sparse vegetation surround primary croplands in the central United States. These deposits are vulnerable to extensive movement during periods of prolonged drought. USGS research is designed to find out when these sands were active in the past and to anticipate the conditions under which they could reactivate in the future, encroaching on lands that are now in productive agriculture. USGS research on desertification in the Great Plains has attracted the attention of the "New York Times," ABC News, the Public Broadcasting System, and the Smithsonian Institution for news articles and stories. Thereby informing a larger audience of potential impacts of climate change. (See fig. 5.)

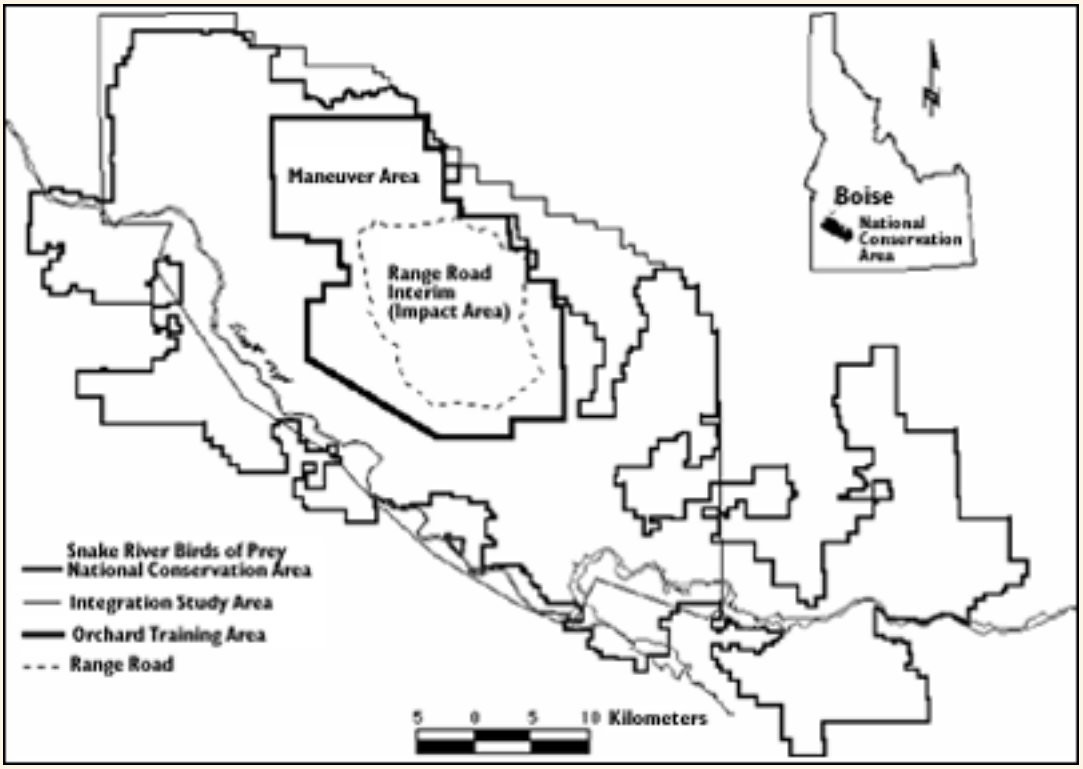
Great Plains Desertification

Figure 5. Location and potential movement of dune sand onto agricultural lands. This map shows the distribution of presently inactive sand dunes in the Great Plains region.

Missouri River Basin

The USGS sponsored the First Annual Conference on the Natural Resources of the Missouri River Basin. The conference brought together navigation, recreation, municipal water supply, fish and wildlife, and agriculture interest groups. A comprehensive bibliography on the Missouri River Basin was published as an outcome of the conference. This bibliography will serve the information needs of these diverse interest groups that are involved in the management of the Missouri River Basin.

Snake River Birds of Prey National Conservation Area



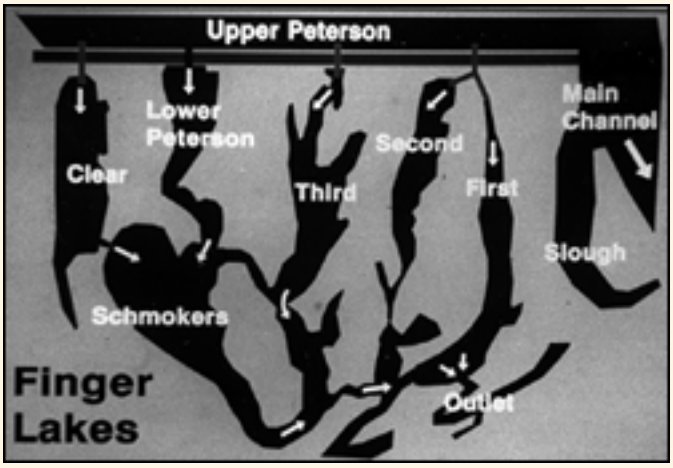
A spatially explicit computer simulation of ecosystem dynamics for habitat, raptors, and prey in the Snake River Birds of Prey National Conservation Area and the Naursum Reserve in northern Kazakstan was developed by USGS scientists. The incorporation of baseline vegetation maps into the simulation allows projection of future conditions in relation to land use and climate change. Information on long-term responses to disturbance allows land managers to anticipate changes in prey and raptors and initiate management practices that sustain the productivity and biodiversity of ecosystems.

Evaluation of Water Management in South Florida

USGS scientists in South Florida accelerated development of the Across Tropic Level System Simulation (ATLSS), a linked series of ecological models that integrate landscape and hydrological factors and predict the effects of changes in important groups of organisms, such as wading birds and endangered species. ATLSS was used for the first time to aid in evaluation of water-management alternatives for the South Florida Ecosystem Restoration.

Sport Fish Habitat in the Upper Mississippi River

USGS scientists worked cooperatively with other Federal and State agencies to increase the amount of suitable habitat for sport fishes in the Upper Mississippi River during winter. Scientists determined that introducing low flows into backwater lakes increased oxygen levels and maintained tolerable temperatures for sport fishes during this critical period. During summer, flow rates can be increased to reduce sedimentation in backwaters and to oxygenate deep areas, thus providing more habitat for fish and for their invertebrate food sources. These study results will be used to develop cost-effective designs for flow-introduction projects in other backwater areas.



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Nonrenewable Resources

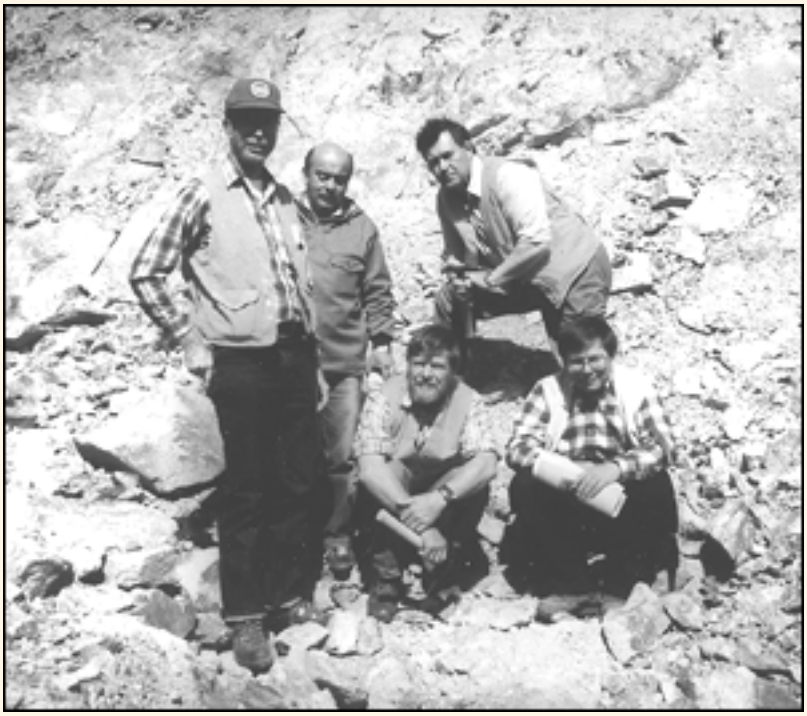
Goal: Enhance economic development and growth.

The USGS role is to determine the location, quantity, and quality of nonrenewable resources both internationally and domestically; determine the environmental effects of resource extraction and use; and improve assessments of resource potential, making possible the formulation of the best strategies for development of future resource supplies.

FY 1997 Accomplishments

Mineral Deposits in Alaska, Canada, and Russian Far East

In an unprecedented cooperative effort with Alaskan, Canadian, and Russian organizations, the USGS has just completed a series of maps providing locations and narrative summaries of geologic features and settings for mineral deposits in mainland Alaska, Canada, and the Russian Far East. These maps correlate the occurrence of known deposits and mineralized belts across the northern Pacific and provide information critical to the exploration for new deposits. The first of these maps has been published by the USGS (Open-File Report 96-727) in collaboration with the Geological Survey of Canada; joint publication of other maps is expected. This unique data set promotes trade, joint exploration ventures, and international scientific cooperation.



USGS, Russian, and Alaskan State field party at Democrat Iode gold mine, East-Central Alaska. From left to right: Warren Nokleberg (USGS, Menlo Park), Ilya Rozenblum (ROSKOMNEDRA, Magadan), Stanislav Byalobzhesky (Russian Academy of Sciences, Manadan), Roman Eremin (Russian Academy of Sciences, Magadan). amd Thomas Bundtzen (Alaska Division of Geological and Geophysical Surveys, Fairbanks).

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Environmental Effects on Human Health

Goal: Reduce risks to human health from hazardous chemicals and disease-causing organisms.

The USGS role is to provide information on the occurrence of environmental toxins and pathogens and the factors affecting fate and transport of these agents from their sources to humans.

FY 1997 Accomplishments

Volatile Organic Compounds

The California Air Board has been concerned about environmental impacts from the fuel oxygenate methyl-tert-butyl ether (MTBE). The NAWQA nonpoint source sampling results in eight urban areas and point source sampling done by others on MTBE occurrence in California have provided key information. Some concerns have also been expressed by California State legislators writing bills that have been sent to Governor Wilson. The Mountjoy bill, SB521, entitled "MTBE Public Health and Environmental Protection Act of 1997," calls for a University of California study and report to be submitted to the governor on or before January 1, 1999. Thereafter the Centers for Disease Control and Prevention and the USGS are requested to comment on the report, within 6 weeks. California is deciding whether to mandate MTBE use across the State.

Postings and Closures

The National Park Service (NPS) used data collected by a USGS study in Nevada to support their rationale for posting notices that the Las Vegas Wash inlet to Lake Mead was affected by urban runoff and treated sewage effluent. USGS scientists cooperated with several other agencies, including NPS and USEPA, to investigate the occurrence of human made organic chemicals in Las Vegas Wash and Lake Mead and to glandular irregularities in common carp. Results of the study indicated that these constituents were present; resulting in the posting of the Las Vegas Wash inlet. Study results also led the NPS and Nevada Division of Wildlife to sample edible tissues of striped bass and catfish for exceeding pesticide consumption guidelines. Finally, all these results led to the formation of the Lake Mead Water Quality Forum by the Nevada Division of Environmental Protection. This forum of local, State, and Federal agencies was formed to enhance communication and cooperation on Lake Mead water-quality issues.

Mercury: in Fish Tissue and Fishing in Alaska

USGS participated in a multiagency study on Lake Roosevelt, a popular fishing area. USGS scientists collected several species of fish from the lake and analyzed the tissue for mercury. As a result of this work, the Washington State Department of Health published a site-specific health advisory for mercury; this advisory cautioned that people who regularly consume large amounts of Lake Roosevelt walleye may be at risk of adverse health effects from mercury and should limit their consumption of these fish.

USGS studies of mercury in southwestern Alaska showed that mercury levels in the environment do not pose a significant risk to fish, which supply both food and income to residents. USGS investigations, in this historical mercury mining district that covers thousands of square kilometers, demonstrated that mercury concentrations in stream sediment, stream water, plant, soil, and fish samples collected near the old mines are elevated over local backgrounds. However, mercury concentrations in stream water, freshwater fish, and salmon are below regulatory guidelines, and mercury concentrations in fish are still below the Food and Drug Administration (FDA) standards. These conclusions are the result of cooperative studies with the U.S. Fish and Wildlife Service and the Calista Corporation (an Alaska Native Corporation).

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Biological Resources

Goal: Conserve and manage the Nation's biological resources for present and future generations.

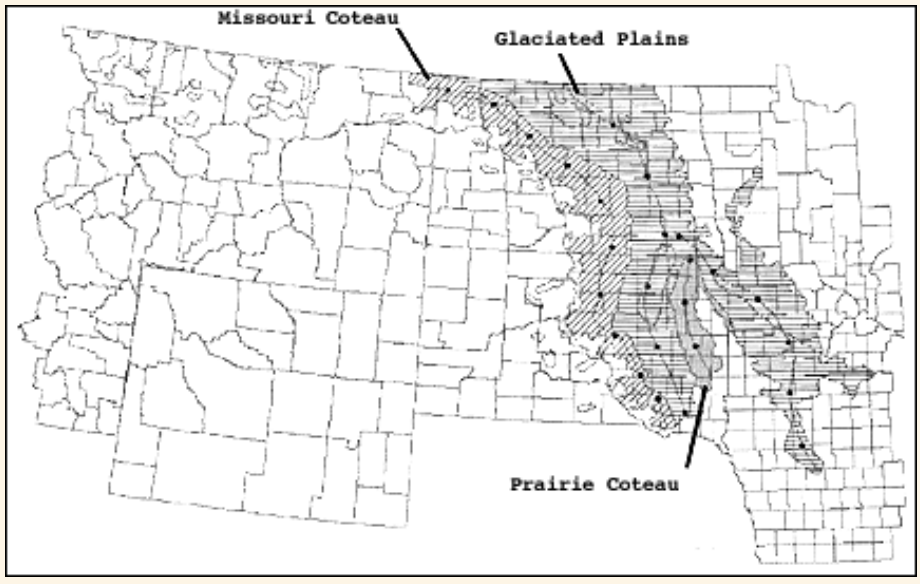
The USGS role is to provide reliable, impartial and timely data on the status and trends of the Nation's biological resources, to provide an understanding of biological systems, and to assess natural and human induced changes to those systems.

FY 1997 Accomplishments

Wetlands Restoration

USGS scientists are coordinating a multiagency evaluation of restored wetlands in the U.S. portion of the prairie pothole region. This region includes portions of Montana, North Dakota, South Dakota, Minnesota, and Iowa. In 1997, the USGS completed an extensive survey of 204 restored and reference wetlands to assess the ecological outcome of wetlands restoration. Data will be made available to agencies conducting studies on a subset of these wetlands and will allow them to extrapolate their results to the prairie pothole region.

Studies at the Delta National Wildlife Refuge, located at the mouth of the Mississippi River, have demonstrated that vegetated wetlands that have degraded to shallow open-water habitats can be restored to vegetated marsh by use of artificial, uncontrolled, sediment diversions. Sediment deposition through artificial crevasses constructed along tributaries of the Bird's Foot delta have been successful at restoring elevations to the height needed to sustain vegetated marsh.



Location of wetland sample area (dark circles) in the Missouri Coteau, Prairie Glaciated Plains.

Genetic Used to Identify Goose Populations

The USGS, along with the U.S. Fish and Wildlife Service and the Pacific Flyway Council, employed genetic markers to characterize breeding populations of the dusky Canada goose subspecies in Alaska and throughout the Pacific Flyway. Numbers of breeding birds have declined precipitously on the only known nesting area, the Copper River delta in south-central Alaska. Comparison of genetic samples shows that these populations are distinct and should be managed accordingly and that genetic markers can estimate mixed

flock composition accurately and precisely.

Grassland Bird Use of Conservation Reserve Program Lands

In cooperation with the U.S. Department of Agriculture's Farm Service Agency, the USGS has evaluated the importance to breeding birds of Northern Great Plains grassland fields enrolled in the Conservation Reserve Program (CRP). For 8 consecutive years beginning in 1990, researchers have surveyed breeding birds in about 400 CRP fields in Montana, North Dakota, South Dakota, and Minnesota. Results from this ongoing study showed that CRP grasslands provide critical breeding habitat for many grassland birds and upland nesting waterfowl, including several species that have shown precipitous population declines during the last quarter century. These findings were instrumental in demonstrating the wildlife benefits of the program, which led to its renewal in the 1995 Farm Bill and in designating most of the prairie pothole region as a priority conservation area for the CRP.

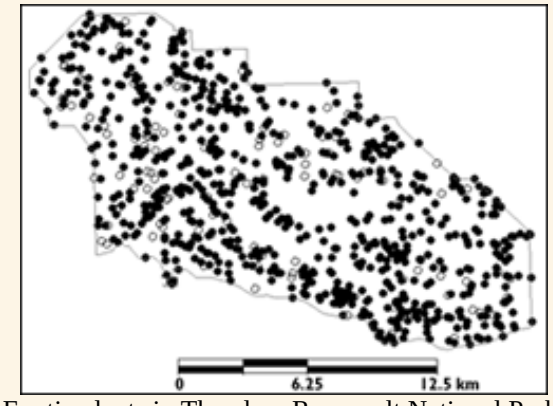

Breeding birds grasslands.


USGS scientist surveying breeding birds in grasslands.

Barrier for Sea Lamprey Control

USGS scientists estimated the efficiency of a modified electrical barrier and found that it completely blocked the sea lamprey spawning migration on the Jordan River, a tributary to Lake Michigan. Study methods allowed rapid verification of escapement and timely modification of barrier operations. This technology will allow the Great Lakes Fishery Commission to extend the sea lamprey barrier program to other streams where even low-head barriers would create unacceptably large impoundments. Expansion of the barrier program will help maintain sea lamprey control while significantly reducing chemical lampricide treatments. Sea lamprey control is an essential component of Great Lakes lake trout restoration.

Exotic Plants in National Park



Exotic plants in Theodore Roosevelt National Park.

USGS scientists found that of 847 transects surveyed in the South Unit of the Theodore Roosevelt National Park , only 108 (13%) were free of exotic plants. Many exotic species have become dominant members of formerly native communities. A collaborative effort with National Park Service managers is underway to incorporate information from these studies into a computerized ranking system that will assist resource managers trying to prioritize their weed management efforts and make the best use of limited funds.

Banded Bird Reporting System

The USGS has implemented a toll-free telephone system at its Bird Banding Laboratory in Patuxent, Maryland, for reporting recoveries of banded waterfowl. The new system greatly reduces processing time and speeds up reporting results to State and Federal wildlife agencies who need this information to set frameworks for hunting regulations. The laboratory processed a record 76,000 band reports in the 1996-97 season.

Decision Support for the Upper Mississippi River Corridor

Leading a multiagency initiative, USGS scientists developed a computerized management information system containing physical attributes, land cover, biological, and social themes for the Upper Mississippi River corridor. This system provides information to meet many of the needs of resource managers, including computer-generation of maps of land and biological resources, a common digital database for information, and spatial analysis tools. This information allows integrated ecological analysis of Mississippi River habitats used by migratory birds and will enable resource management of these habitats in the context of other biological and sociological components.

Cooperative Forest Ecosystem Research Program

In support of the President's Northwest Forest Plan, USGS scientists have implemented the Cooperative Forest Ecosystem Research Program, a long-term cooperative research program involving the Bureau of Land Management (BLM) and Oregon State University. In FY 1997, a detailed research problem analysis was developed that will guide the development and implementation of this program. Initial focus is on meeting BLM's needs for ecosystem-based management of young forest stands, riparian buffer widths, and the biological diversity found in these habitats.

Forest ecosystem endangered species

Florida Manatee Studies Aid Recovery

Florida female manatee and pup.

USGS scientists measured the effects on the Florida manatee of shutdown or conversion of powerplants that provide warm water discharges that were winter refuges for manatees. Research was also conducted on how the South Florida restoration project, which will ultimately redistribute freshwater in many coastal wetlands, will affect manatees. This information is important in the recovery of manatees, which are listed under the Endangered Species Act.

Pacific Salmon Immune Function

Working in collaboration with scientists from the National Marine Fisheries Service and the University of Washington in a multiagency study partially funded by the Bonneville Power Administration, the USGS developed assays for immune function in Pacific salmon during captive rearing. This information is critically important because some stocks of Pacific salmon species are now listed under the Endangered Species Act, and captive broodstock programs are being used as a means to accelerate recovery of these populations.

National Biological Information Infrastructure

In FY 1997 the USGS continued to work cooperatively with many other government agencies and non-government organizations to provide increased access (over the Internet) to many existing sources of biological data and information as part of the expansion of

the National Biological Information Infrastructure (NBII). The NBII Metadata Clearinghouse now provides online, searchable access to biological data and information produced by USGS scientists, as well as databases from State agencies, natural history museums, university scientists, and others. The USGS also worked with its Federal agency partners and other cooperators in expanding and enhancing the Integrated Taxonomic Information System (ITIS), which was highlighted in Vice President Gore's report entitled "Access America‹Reengineering Through Information Technology," as the first comprehensive reference on standardized scientific names of all U.S. plants and animals. The ITIS system was also enhanced by linking it to a new online source of expertise-related information about North American taxonomic scientists; this link allows interested users to identify experts on various taxonomic groups or areas of the country.

Cooperative Fish and Wildlife Research Units

Largemouth bass,
photo by F. Eugene Hester

In FY 1997, USGS continued its partnership with States and universities to operate 40 Cooperative Fish and Wildlife Research Units in 38 States. These units performed research on over 1,200 topics, addressing a diversity of issues in response to management information needs expressed by State and university cooperators and collaboratively conducted with funding from Department of Interior agencies as well as the U.S. Department of Agriculture, USEPA, Department of Defense, NOAA, and other Federal and State agencies. Research products delivered to management agencies included detailed scientific reports that are being used to establish management policy and actions for resource management on issues related to biodiversity, environmental toxicology, animal population assessment and management, habitat management and restoration ecology, fishery resource management, and numerous others as identified by Unit cooperators. Results from these studies were made available to the scientific and management community at large via more than 600 published papers, books, and presentations made before scientific conferences. As university faculty members at host universities, USGS scientists participated in the training of graduate students in several fields of natural resource science and management.

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CUSTOMER SERVICE

The USGS is committed to improving customer service as a key component of "good government," and considers customer satisfaction to be a reflection of our effectiveness as an organization. So important is this concept to the USGS that the need to strengthen customer relationships and partnerships was included as a goal in our strategic plan. In FY 1997, USGS chartered a Customer Service Team to develop ways to obtain customer satisfaction feedback from its customers, to identify success stories and opportunities for improvement, and to integrate customer feedback into its programs. The team's efforts during the year have yielded a USGS Customer Service Policy and a refined set of customer service goals that more accurately reflect the importance USGS places on serving its customers with excellence.

USGS customer service goal is: To gratify our customers by delivering science and technology that satisfies their requirements and adds value to their work products.

This will be achieved in FY 1997 by:

A. Consulting with our customers to clearly determine and understand their requirements.

B. Measuring our customers' level of satisfaction with our products and services in meeting their requirements. (Measurement will focus on helpfulness and courtesy of our employees; and timeliness, relevance, ease of use, and overall effectiveness of our products.)

C. Monitoring customer feedback to define how our products and services may be corrected or improved. (Monitoring will focus on means of delivery, reliability and accuracy of our products, and our effectiveness in helping our customers use these products.)

D. Making the needed changes to correct weaknesses and improve quality at all levels.

During FY 1997, USGS collected qualitative and quantitative data to evaluate its progress in meeting these goals. Highlights for the year follow:

- The Biological Resources Division (formerly National Biological Service) of the USGS asked 759 of its customers (wildlife managers, state agencies, non-government organizations) how satisfied they were with biological products and services of the USGS. Of the 281 respondents to the survey, more than 90% indicated they were satisfied or very satisfied with these products and services. Many indicated that they used USGS information to make important management decisions. The USGS is using these comments to make improvements to its products and customer relations.

- Customer service from the USGS Information Services Branch in Denver, which fills orders for USGS publications and maps, continues to improve. Response cards are mailed with every order shipped (about 300 per day), and about 5% of these cards are returned with customer comments. Based on these comments, the Information Services Branch identified several areas needing improvement for 1997. The group has changed some of its business practices as a result. For example, telephone calls are answered within 25 seconds. Customers can now order maps over the Internet using a credit card -- a new service from 1996. An inventory management project has helped assure that USGS maps do not go out-of-stock so customers do not need to

wait for reprints. Quality control of customer orders has also improved. Before June 1997, the Information Services Branch had a fairly high error rate in orders. By implementing a product retrieval contract with 100% quality/accuracy requirements, the remainder of 1997 has seen a significant reduction in the number of re-sent orders.

- The USGS Minerals Information Team reaches out to its customers by offering mineral commodity production, consumption, and trends data through a Web page that gets over 12,000 hits per month. It also makes this information available to customers through a FaxBack system that averages 1000 requests per month, and a mailing list with over 20,000 subscribers. In addition, the Minerals Information Team receives about 2000 telephone calls per month, giving team members an ideal opportunity to talk to customers directly to identify problems or customer needs. Some customer ideas have led changes in the way we conduct our business. For example, in response to feedback from one of its customers, the Portland Cement Association, the USGS revised both a monthly and annual minerals statistics survey form. These revisions significantly improved the quality of minerals production data collected by USGS, and enable USGS to provide customers with the type of information they need.

- The Water Resources program of the USGS provides its customers with hydrologic informa- tion through its Web pages in a variety of forms, including real-time flood data. These Web pages have links to customer feedback mechanisms so that USGS hydrologists can stay in touch with their customers and ensure customer needs are being met. USGS responds to customer

feedback within two business days. Analysis of feedback shows that USGS Water Resources Web information is used for education and to make personal, business, emergency and policy decisions. Feedback is used to make modifications to improve service.

The following is some feedback we received from one customer about our Water Resources Web information:

"Just a note of great appreciation for your site. Your site has been the best source of river information we have ever been able to obtain to make rescue and evacuation decisions. We are currently using the...river data to plan the search for two (missing persons)...Your work and site is much appreciated and invaluable to us. Thanks from the citizens of our county."

- A 1997 Survey of over 1600 topographic map users and buyers have helped USGS understand how maps are being used and levels of customer satisfaction. Respondent data are being considered as a basis for improving our maps and for identifying new types of products, such as digital maps. Some interesting findings of the surveys included:

  USGS is the eighth most known publisher of maps, atlases, and travel guides (out of a list of 47 publishers.)

  Recreation is the most frequent use of topographic maps -- Topographic maps buyers and users have a high interest in using a computer to view a map.

  Customers are concerned that digital products are not yet "user friendly" enough to meet the needs of non-specialists.

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FINANCIAL STATEMENTS

LIMITS OF THE FINANCIAL STATEMENTS

U.S. Geological Survey
Consolidating Balance Sheet

As of September 30, 1997 and 1996
(dollars in thousands)

	1997	1996
Assets		
Fund Balance with Treasury (Note 2)	$192,009	$158,028
Cash and Foreign Currency	306	374
Accounts Receivable Billed: (Note 3)		
Due from Federal Agencies	20,163	33,475
Due from the Public	14,528	22,940
Accounts Receivable Unbilled: (Note 4)		
Due from Federal Agencies	58,450	59,286
Due from the Public	54,635	42,719
Inventory Held for Sale (Note 5)	15,478	14,421
Raw Materials	2,068	1,584
Operating Materials & Supplies	284	277
Property & Equipment, Net of Depreciation (Note 6)	184,497	134,220
Travel Advances	374	810
Prepayments	508	421
Total Assets	$543,300	$468,555
Liabilities		
Liabilities Covered by Budgetary Resources:		

Accounts Payable:		
Due to Federal Agencies	5,789	8,545
Due to the Public	54,727	52,862
Deferred Revenue:		
Due to Federal Agencies	14,978	22,032
Due to the Public	22,362	15,706
Accrued Payroll & Benefits	4,330	2,031
Liabilities Not Covered by Budgetary Resources:		
Accrued Unfunded Annual Leave	44,405	44,519
Contingent Liabilities (Note 7)		
Total Liabilities	146,591	145,695
Net Position (Note 8)		
Unexpended Appropriations	201,650	193,328
Cumulative Results of Operations	195,059	129,532
Total Net Position	396,709	322,860
Total Liabilities & Net Position	$543,300	$468,555

The accompanying notes are an integral part of these statements.

U.S. Geological Survey
Consolidating Statement of Net Costs

For the years ended September 30, 1997 and 1996
(dollars in thousands)

	1997	1996
Operational Costs		
Operating Expenses: (Note 9)		

Personnel Services	$ 587,242	$ 575,568
Contractual Services	168,876	164,072
Communications Rental	89,510	95,696
Equipment not Capitalized	46,275	35,875
Grants & Subsidies	70,099	38,237
Supplies & Materials	39,442	63,739
Travel & Transportation	37,239	33,551
Printing & Reproduction	4,552	5,385
Other Expenses	(5)	485
Total Operating Expenses	1,043,230	1,012,608
Cost of Goods Sold	905	894
Depreciation	26,657	31,179
Unfunded Expenses	(125)	
Loss on Disposition of Assets	4,214	3,083
Employee Benefit Expense (Note 13)	47,778	
Bad Debt and Write-offs	(993)	6,974
Discounts Lost	7	18
Interest Expense	168	182
Imputed Cost of PP & E (Note 6)	0	5,874
Total Costs	1,121,841	1,060,812
Revenues Collected (Note 10)		
Sales of Maps to the Public	7,951	8,480
Sales of Maps to Federal Agencies	293	308
Reimbursement for Services Provided to the Public	122,321	110,815
Reimbursement for Services Provided to Federal Agencies	206,266	214,671
Donated Revenue	216	0
Other Revenue	0	6,235
Interest & Penalties (Note 11)	473	576
Gain on Disposition of Assets	111	24
Total Revenue	337,631	341,109

Net Cost of Operations	$ 784,210	$ 719,703

The accompanying notes are an integral part of these statements.

U.S. Geological Survey
Consolidating Statement of Changes in Net Position

For the years ended September 30, 1997 and 1996
(dollars in thousands)

	1997	**1996**
Net Cost of Operations	$ (784,210)	$ (719,703)
Financing Sources:		
Appropriations Used	682,389	705,364
Employee Benefits (Note 13)	47,778	
Collections Returned to Treasury	(447)	(745)
Net Results of Operations	(54,490)	(15,084)
Changes in Net Position:		
Increase in Appropriated Capital	46,113	16,171
Increase in Invested Capital	25,974	21,385
Assets Transferred In (Note 6)	59,361	0
Prior Period Adjustment (Note 12)	(3,109)	(82,084)
Total Changes in Net Position	128,339	(44,528)
Net Change in Net Position	73,849	(59,612)
Net Position, Beginning of Period	322,860	382,472
Net Position, End of Period	$ 396,709	$ 322,860

The accompanying notes are an integral part of these statements.

U.S. Geological Survey
Consolidating Statement of Cash Flow

For the years ended September 30, 1997 and 1996
(dollars in thousands)

	1997	1996
Cash Flows From Operating Activities		
Excess (Shortage) of Revenue and Financing Sources Over Total Expenses	$(54,490)	$(15,084)
Adjustments Affecting Cash Flow:		
Appropriations Expensed	(682,390)	(705,364)
Increase in Accounts Payable	(1,553)	27,936
(Decrease) Increase in Other Liabilities	(3,146)	(3,643)
Increase in Accounts Receivable	23,595	(10,998)
(Decrease) Increase in Other Assets	(5,667)	(5,710)
Depreciation & Amortization	26,656	31,178
Disposition of Assets	4,103	3,059
Accrued Leave & Other Unfunded Expenses	(1,333)	7,425
Prior Period Adjustment for ELIMINATIONS	0	7,348
Other Adjustments	905	774
Total Adjustments	(638,830)	(647,995)
Cash Used by Operating Activities	(693,320)	(663,079)
Cash Flows From Investing Activities		
Purchase of Property & Equipment	(22,905)	(24,084)
Cash Flows From Financing Activities		
Appropriations	751,090	731,463
Transfers of Cash From Others	925	1,913
Withdrawals	(1,877)	(2,968)
Cash Provided by Financing Activities	750,138	730,408
Cash Used by Operating, Investing, & Financing Activities	33,913	43,245
Fund Balance with Treasury, Cash, & Foreign Currency, Beginning Balance	158,402	115,157

Fund Balance with Treasury, Cash, & Foreign Currency, Ending Balance	$192,315	$158,402

The accompanying notes are an integral part of these statements.

U.S. Geological Survey
Statement of Budgetary Resources

For the year ended September 30, 1997
(dollars in thousands)

	1997
Budgetary Resources:	
Budget Authority	$747,875
Unobligated Balances, Beginning of Period	52,784
Spending Authority From Offsetting Collections	370,867
Adjustments	18,333
Total Budgetary Resources	$1,189,859
Status of Budgetary Resources:	
Obligations Incurred	$1,143,267
Unobligated Balances Available	35,346
Unobligated Balances Not Available	12,246
Total Status of Budgetary Resources	$1,190,859
Outlays:	
Obligations Incurred	$1,143,267
Less: Spending Authority from offsetting Collections & Adjustments	(389,200)
Obligated Balance, Net, Beginning of Period	104,188

Obligated Balance Transferred, Net	0
Less: Obligated Balance, Net, End of Period	(142,506)
Total Outlays	$715,749

The accompanying notes are an integral part of these statements.

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SUPPLEMENTAL INFORMATION

U.S. Geological Survey
Consolidating Statement of Net Costs

For the year ended September 30, 1997
(dollars in thousands)

	Geologic Division	National Mapping Division	Water Resources Division	General Administration	Biological Resources Division	Intra-Bureau Eliminations	Bureau Total
Operational Costs							
Operating Expenses: (Note 9)							
Personnel Services	$ 131,997	$ 78,481	$ 239,352	$ 47,273	$ 90,139	$ 0	$ 587,242
Contractual Services	41,026	61,584	79,499	(1,317)	40,115	(52,031)	168,876
Communications Rental	21,312	7,351	29,683	26,269	4,895	0	89,510
Equipment not Capitalized	10,178	4,379	17,119	7,920	6,679	0	46,275
Grants/Subsidies	25,592	5,719	7,684	25	31,079	0	70,099
Supplies/Materials	7,114	6,226	16,560	1,852	7,690	0	39,442
Travel/Transportation	9,037	3,041	17,043	1,576	6,542	0	37,239
Printing/Reproduction	997	761	2,102	429	263	0	4,552
Other Expenses	(39)	(4)	34	0	4	0	(5)
Total Operating Expenses	247,214	167,538	409,076	84,027	187,406	(52,031)	1,043,230
Cost of Goods Sold	0	905	0	0	0	0	905
Depreciation	5,282	6,425	8,802	1,056	5,092	0	26,657
Loss on Disposition of Assets	927	399	1,559	721	608	0	4,214
Unfunded Expenses	(4)	0	(5)	(116)	0	0	(125)
Employee Benefit Expense (Note 13)	10,739	6,385	19,474	3,846	7,334	0	47,778
Bad Debt and Write-offs	(80)	(127)	(551)	(110)	(125)	0	(993)
Discounts Lost	2	1	3	0	1	0	7
Interest Expense	38	26	63	13	28	0	168
Total Costs	264,118	181,552	438,421	89,437	200,344	(52,031)	1,121,841
Revenues Collected (Note 10)							
Sales of Maps to the Public	0	7,951	0	0	0	0	7,951
Sales of Maps to Federal Agencies	0	293	0	0	0	0	293
Reimbursement for Services Provided to the Public	7,819	11,183	97,998	1,385	3,936	0	122,321
Reimbursement for Services Provided to Federal Agencies	22,513	29,308	112,882	40,284	43,617	(42,338)	206,266
Donated Revenue	183	0	0	0	33	0	216
Interest & Penalties (Note 11)	0	0	0	473	0	0	473

Gain on Disposition of Assets	0	0	0	111	0	0	111
Total Revenue	30,515	48,735	210,880	42,253	47,586	(42,338)	337,631
Net Cost of Operations	$233,603	$132,817	$227,541	$47,184	$152,758	$(9,693)	$784,210

U.S. Geological Survey Working Capital Fund

The Working Capital Fund (WCF) was established by Public Law 101-512, November 5, 1990. As codified in 43 U.S.C. 50a, Public Law 103-332, dated September 30, 1994 modified the original language; the law states:

> *"There is hereby established in the Treasury of the United States a working capital fund to assist in the management of certain support activities of the United States Geological Survey (hereafter referred to as the "Survey"), Department of the Interior. The fund shall be available on or after November 5, 1990, without fiscal year limitation for expenses necessary for furnishing materials, supplies, equipment, work, facilities, and services in support of Survey programs, and, as authorized by law, to agencies of the Federal Government and others. Such expenses may include laboratory modernization and equipment replacement, computer operations, maintenance, and telecommunications development of software; systems support services such as implementation assistance, training, and maintenance; acquisition and replacement of computer, publications, and scientific instrumentation, telecommunications, and related automatic data processing equipment; and, such other activities as may be approved by the Secretary of the Interior."*

The WCF is divided into two entities, Capital Investments and Fee-for-Service Operations. The Capital Investments key purpose is to plan for long-term capital investments and accumulate the required funds over several fiscal years. The USGS is authorized to use the WCF to invest funds from appropriations and/or reimbursable agreements, without fiscal year limitations, for materials, supplies, telecommunications and other equipment and facilities' renovations in support of USGS programs and other agencies of the Federal Government. Normal operating expenses may not be funded through the WCF. Investments must occur, at a minimum, in two fiscal years before acquisition can occur, and are expected to be evenly balanced over the time period defined in the Investment Plan. The Capital Investment entity is divided into four investment components;

- Mainframe Computer Investment Component whose major customer is Office of Program Support of USGS.
- Telecommunications Investment Component whose major customer is the Office of Program Support of USGS.
- Equipment Investment Component whose major customers are the Water Resources Division and Geologic Division of USGS.
- Facilities Investment Component whose major customers are Office of Program Support and the Water Resources Division of USGS.

The Fee-for-Service Operations operates in a business like manner, by recovering fees for services performed based on an established fee schedule. Fees are established though a rate-setting process. The Fee-for-Service components operate in compliance with Office of Management and Budget (OMB) Circular A-25, User Charges, and recover the full cost of goods, services, and resources provided to their customers. For each Fee-for-Service component, an annual budget and pricing schedule is required. User charges are reviewed no less than biennially. Presently, there are five Fee-for-Services components:

- Water Resources Division National Water Quality Laboratory whose major customer is the Water Resources Division of USGS.
- Office of Program Support Washington Administrative Service Center whose major customers are the Department of the Interior, House of Representatives, and Drug Enforcement Administration.
- Water Resources Division Hydrologic Instrumentation Facility whose major customer is the Water Resources Division of USGS.
- Geologic Division Publications whose major customer is the Geologic Division of USGS.
- Water Resources Division Eastern Research Laboratories whose major customer is the Water Resources Division OF USGS.

(Major customers are organizations that accounts for more than 15 percent of the fund's revenues.)

U.S. Geological Survey
Working Capital Fund Balance Sheet

As of September 30, 1997
(dollars in thousands)

	1997
Assets	
Fund Balance with Treasury	$ 35,065
Cash and Foreign Currency	
Accounts Receivable Billed:	
Due from Federal Agencies	732
Due from the Public	4
Accounts Receivable Unbilled:	
Due from Federal Agencies	9,560
Due from the Public	
Inventory Held for Sale	
Raw Materials	
Operating Materials & Supplies	
Property & Equipment, Net of Depreciation	1,047
Travel Advances	
Prepayments	
Total Assets	$ 46,408
Liabilities	
Liabilities Covered by Budgetary Resources:	
Accounts Payable:	
Due to Federal Agencies	193
Due to the Public	1,726
Deferred Revenue:	
Due to Federal Agencies	29,361
Due to the Public	
Accrued Payroll & Benefits	130
Liabilities Not Covered by Budgetary Resources:	
Accrued Unfunded Annual Leave	
Contingent Liabilities	
Total Liabilities	31,410
Net Position	
Unexpended Appropriations	396
Cumulative Results of Operations	14,602
Total Net Position	14,998

Total Liabilities & Net Position	$ 46,408

U.S. Geological Survey
Working Capital Fund Statement of Net Costs

For the year ended September 30, 1997
(dollars in thousands)

	Water Quality Lab	Hydrologic Instrumentation Facility	Mainframe Component	Telecom-munications Equipment	Equipment	Facilities	Publications	Eastern Region Research Laboratories	Washington Administrative Service Center	Bureau Total
Operational Costs										
Operating Expenses	$16,462	$7,903	$4	$672	$646	$320	$1,125	$170	$21,180	$48,482
Cost of Goods Sold	0	0	0	0	0	0	0	0	0	0
Depreciation	33	14	75	2	7	0	0	0	25	156
Loss on Disposition of Assets	0	0	0	0	0	0	0	0	0	0
Unfunded Expenses	0	0	0	0	0	0	0	0	0	0
Employee Benefit Expense	0	0	0	0	0	0	0	0	0	0
Bad Debt and Write-offs	0	0	0	0	0	0	0	0	0	0
Discounts Lost	0	0	0	0	0	0	0	0	0	0
Interest Expense	2	2	0	0	0	0	0	0	6	10
Total Costs	16,497	7,919	79	674	653	320	1,125	170	21,211	48,648
Revenues Collected										
Sales of Maps to the Public	0	0	0	0	0	0	0	0	0	0
Sales of Maps to Federal Agencies	0	0	0	0	0	0	0	0	0	0
Reimbursement for Services Provided to the Public	0	0	0	0	0	0	0	0	0	0

Reimbursement for Services Provided to Federal Agencies	16,769	8,199	79	674	653	320	1,125	170	21,100	49,089
Donated Revenue	0	0	0	0	0	0	0	0	0	0
Interest and Penalties	0	0	0	0	0	0	0	0	0	0
Gain on Disposition of Assets	0	0	0	0	0	0	0	0	0	0
Total Revenue	16,769	8,199	79	674	653	320	1,125	170	21,100	49,089
Net Cost of Operations	$(272)	$(280)	$0	$0	$0	$0	$0	$0	$111	$(441)

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Notes to FINANCIAL STATEMENTS

Note 1. SIGNIFICANT ACCOUNTING POLICIES

A. Basis of Presentation

These financial statements report the combined financial position and results of operations for the US Geological Survey (USGS). They have been prepared as required by the Chief Financial Officers Act of 1990, using the form and content provided by the Office of Management and Budget (OMB) Bulletin 97-01, and Entity and Display, OMB's Statement of Federal Financial Accounting Concepts, Number 2. These statements represent the proprietary accounts of USGS and differ from those used by OMB to monitor and control budgetary resources available to the bureau.

B. Reporting Entity

USGS was established by the Congress in 1879 in response to an important National need for earth science information. In the 1996 Interior and Related Agencies Appropriation Act, National Biological Service (NBS) was merged into USGS. During fiscal year (FY) 1997, the Biological Resources Division's, formerly NBS, accounting system was converted to the Federal Financial System (FFS) of USGS. The accompanying financial statements have been prepared from the bureau's consolidated general ledgers. Included are all funds and accounts under USGS control and allocations from other Federal agency appropriations transferred under specific legislative authority.

C. Basis of Accounting

Transactions are recorded in accordance with the Statement of Federal Financial Accounting Standards except for Managerial Cost Accounting, Accounting for Revenue and Other Financing Sources, and Stewardship Reporting. In addition, transactions are recorded in accordance with accounting standards contained in agency accounting policy and procedure manuals, and accounting principles published by authoritative sources in the public sector. USGS uses the accrual method for recording accounting transactions. Under this method, revenues are recognized when earned and expenses are recognized when goods and services are received, without regard to receipt or disbursement of cash. Transactions affecting budgetary resources are recorded concurrently, facilitating compliance with legal constraints and controls over the use of Federal appropriations.

The Statement of Budgetary Resources contains intra-bureau financial transactions for the USGS which have not been eliminated.

D. Revenues and Other Financing Sources

USGS receives annual, multi-year, and no-year appropriations for mission programs. The majority of the budget authority is received through the annual appropriation, "Surveys, Investigations, and Research." Additional budgetary resources are available for goods and services furnished on a reimbursable basis. USGS has specific legislative authority to record accounts receivable from non-Federal reimbursable customers as budgetary resources. USGS
also has authority to receive contributions from outside organizations to perform work desired mutually by both parties. In addition, USGS receives rental receipts for providing quarters at remote locations for geomagnetic or seismic observations. Revenues are recognized when earned (i.e., goods have been delivered or services rendered). Revenues received in advance of performance are recorded as liabilities until actually earned.

E. Funds with the U.S. Treasury and Cash

All cash disbursements are processed through the Department of Treasury. Cash collections from product sales are received at various sites nationwide and deposited locally in commercial banks designated as Treasury General Account Depositories. Receipts from joint funding agreements with State and local governments are processed through the Treasury's Lock-Box bank in Atlanta, Georgia. Bureau cash balances are reconciled monthly with the Department of Treasury report 6653, Undisbursed Appropriation Account Ledger.

F. Foreign Currency

USGS maintains small balances of foreign currencies to be used to make payments in foreign countries. Those balances are reported at the U.S. Dollar equivalent using the exchange rate in effect on the last day of the reporting period.

G. Inventories

USGS has inventories of supplies and materials used for normal agency operations and inventories of maps, map products, and hydrologic equipment held for sale. Costing methods that approximate historical cost are used to value inventories. General ledger balances are adjusted at year-end. (See Note 5)

H. Property and Equipment

USGS equipment is capitalized at cost if the original acquisition amount is $5,000 or more and the asset has an estimated service life of two years or greater. Equipment with an acquisition cost of less than $5,000 is expensed when purchased. Depreciation is recorded for the entity's equipment using the straight line method. (See Note 6)

In FY 1997, USGS implemented a capitalization criteria and threshold for buildings and structures. Depending on the availability of records, Facilities, specifically buildings and structures are capitalized at cost if the original acquisition amount is $50,000 or more and depreciation is recorded using the straight line method over the estimated useful live of 30 years. (See Note 6) The implementation of calculating depreciation for building and structures resulted in a prior period adjustment of $12.4 million. (See Note 12)

I. Prepaid and Deferred Charges

Payments in advance of the receipt of goods and services are recorded as prepaid charges at the time of prepayment and recognized as expenditures/operating expenses when the related goods and services are received and accepted.

J. Liabilities

Liabilities represent amounts to be disbursed as the result of a transaction or event that has already occurred. However, no liability can be paid by USGS absent of an appropriation. Liabilities for which an appropriation has not been enacted are classified as unfunded liabilities, and there is no certainty that the appropriation will be enacted. Also, liabilities arising from other than contracts can be abrogated by the Government, acting in its sovereign capacity.

K. Annual, Sick, and Other Leave

USGS recorded an unfunded liability for accrued annual leave. This balance is adjusted at year end to reflect current leave earned but not taken. Sick leave and other types of nonvested leave are expensed when used.

L. Retirement Plan

USGS employees participate in the Civil Service Retirement System (CSRS) or the Federal Employee Retirement System (FERS), to which USGS makes matching contributions. The consolidated financial statements do not report CSRS or FERS assets, accumulated plan benefits, or unfunded liabilities applicable to its employees. Managing and reporting such amounts are the responsibility of the Office of Personnel Management (OPM).

In fiscal year 1997, USGS recognizes its share of the expenses of employee benefit programs and future pension outlays incurred by OPM and the imputed financing source application to the expense. Refer to Note 13 for additional information on imputed financing.

Note 2. FUND BALANCES WITH TREASURY, CASH, AND FOREIGN CURRENCY

(In Thousands)		
	1997	**1996**
Fund Balances:		
Appropriated Funds	$193,507	$128,664
Working Capital Funds	(9751)	26,927
Trust Fund	2,288	1,197
All Other	5,965	1,240
Total	192,009	158,028
Cash	261	329
Foreign Currency	45	45
Total Fund Balances, Cash and Foreign Currency	$192,315	$158,402

The Fund Balances with the Department of Treasury represent the total of USGS unexpended account balances. The unexpended funds consist of obligated funds that are designated for goods and services ordered but not received, or received but not yet paid. In addition, depending on budget authority, unobligated funds either have restrictions placed on their availability for obligation or are available for continued obligation. Fund balances are maintained by the Department of Treasury in specific USGS accounts and in the parent accounts of Federal agencies that have allocated funds to USGS.

The Cash amount includes imprest, petty cash, and change-making funds. Cash in imprest funds is used for various types of small purchases and travel advances. Imprest Fund activity continues to decrease as the use of the Third Party Draft and the IMPAC Bank Card Programs increase. Petty cash and change-making funds are maintained in offices where maps are sold over the counter.

The Foreign Currency amount consists of two Treasury Foreign Transaction Accounts maintained in the Paris and New Delhi overseas disbursing offices.

Note 3. ACCOUNTS RECEIVABLE BILLED

(In Thousands)		
	1997	**1996**
Due From Federal Agencies:		
Current	$10,678	$18,869
Delinquent	11,384	16,685
Subtotal	22,062	35,554
Less: Allowance for Doubtful Accounts	1,899	2,079
Net Receivables Due From Federal Agencies:	$20,163	$33,475
Due From the Public:		
Current	$9,646	$13,292
Delinquent	14,683	20,863
Subtotal	24,329	34,155
Less: Allowance for Doubtful Accounts	9,801	11,215
Net Receivables Due From the Public	$14,528	$22,940
Total Net Receivables Billed	$34,691	$56,415

The accounts receivables are categorized as receivables due from other federal agencies, and receivables due from the public. The majority of USGS accounts receivable result from reimbursable services performed for other Federal agencies and joint funding agreements with State, local, or regional agencies for cooperative work in support of the "Surveys, Investigations and Research" appropriation. Also included in USGS accounts receivable balances are billings for foreign participant training, National Mapping Division (NMD) map and product sales, payment refunds, interest, administrative costs, and penalties. Receivables on the financial statements are reported net of Allowance for Doubtful Accounts.

All receivable administrations (billing, debt management, and reporting), with the exception of NMD map and product sales, are administered at headquarters. Receivables as a result of NMD map and product sales are administered at local NMD sites throughout the country.

Note 4. ACCOUNTS RECEIVABLE UNBILLED

USGS has specific legislative authority to enter into reimbursable agreements to perform cooperative work in advance of payment. Accounts Receivable Unbilled includes amounts that have been earned but not yet billed and collected from the reimbursable customer. Billings are prepared in accordance with terms of the reimbursable agreement, which can be quarterly, semi annually, or annually. Many agreements have performance periods ending in September, with bills for collection prepared in the first month of the new fiscal year. As directed by the Department of Treasury, these general ledger balances are not included in the Report on Receivables Due from the Public.

Note 5. INVENTORY HELD FOR SALE

Inventory includes maps, map products, and hydrologic equipment. Maps and map products are located at USGS Rocky Mountain Mapping Center in Denver, Colorado, and at nine Earth Science Information Centers across the United States. USGS hydrologic equipment inventory is located at the Hydrologic Instrumentation Facility (HIF) at the Stennis Space Center in Mississippi. Products located at the HIF can only be sold to Federal agencies. A physical inventory for FY 1997 was taken at the HIF and an adjusting entry was made based on results of the inventory**.**

Map and map product values are based on either targeted stock levels or actual counts. Targeted stock level is a calculation based on the average monthly demand for a product multiplied by 60 months or the amount needed for a 5-year supply. Out of 85,000 products, actual counts were conducted on more than 75,000 products and inventory balances maintained on a transactional basis. Targeted stock levels were applied to the remaining inventory with a 99 percent confidence level verified through random sampling procedures.

(In Thousands)

Inventory Categories	1997 Inventory Amount	1996 Inventory Amount
Published Maps	$9,498	$9,241
Hydrologic Equipment	5,980	5,180
Total	$15,478	$14,421

Note 6. PROPERTY AND EQUIPMENT, NET OF DEPRECIATION

(In Thousands)

Classes of Fixed Assets	Acquisition Value	Accumulated Depreciation	Net Book Value
Land	$66	$	$66
Structures and Facilities	111,841	46,470	65,371
Equipment	336,230	217,170	119,060
Total	$448,137	$263,640	$184,497

USGS Land; Structures and Facilities; and equipment are valued at acquisition cost and depreciated using the straight line method. Of the $264 million in accumulated depreciation, $26.7 million was expensed in FY 1997.

In FY 1997, the Fish and Wildlife Service (FWS) transferred to the USGS Land; Structures and Facilities and equipment in accordance with the 1996 Interior and Related Agencies Appropriation Act merging the National Biological Service (NBS) with the USGS. They were transferred at net book value as of FY 1996. On the FY 1996 financial statements, an imputed cost was included to recognize the use of property, plant, and equipment carried on the FWS financial statements, but used by NBS. Imputed

cost for property, plant and equipment are no longer applicable due to the transfer from FWS.

Note 7. CONTINGENT LIABILITIES

The USGS has certain contingent liabilities that may eventually result in the payment of substantial monetary claims to third parties. In addition, the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 requires Federal agencies to report sites where hazardous wastes are or have been stored, treated, or disposed of, and also requires responsible parties, including Federal agencies, to clean up releases of hazardous substances. The USGS management, in consultation with the Department of the Interior (DOI) Solicitor, believes such claims will not materially affect USGS's future financial condition.

According to the Office of the Solicitor, DOI, there are no other contingent liabilities that materially affect the financial position or results of USGS operations.

Note 8. NET POSITION

(In Thousands)

	Appropriated Funds	**Working Capital**	**All Other Funds**	**Total All Funds**
Unexpended Appropriation				
Unobligated				
Available	$14,280	$396	$5,293	$19,969
Unavailable	6,556	0	162	6,718
Undelivered Orders	174,096	0	867	174,963
Total Unexpended	$194,932	$396	$6,322	$201,650
Invested Capital	312,415	0	77	312492
Cumulative Results of Operations	(82,841)	1,329	615	(80,897)
Net Results of Operations	6,109	0	(21)	6,088

Future Funding Requirements	(42,624)	0	0	(42,624)
Total Net Position	$387,991	$1,725	6993	$ 396,709

Unexpended Balances consist of funds for the amount of goods and services ordered but not received, or received and not paid, expired authority, and unobligated funds in no-year appropriations that are available for an indefinite period of time.

Note 9. OPERATING EXPENSES

USGS has been issued appropriated funds that are used to pay for one half the cost of any water resource projects carried on in cooperation with any state or municipality. As a means of managing resources in the cooperative effort, total operating expenses include expenditures made directly by the state or municipality.

Note 10. REVENUE COLLECTED

Revenues earned from public sources are derived from States and municipalities for making cooperative topographic and geologic surveys and water resource investigations; proceeds from the sale of photographs, maps, and records; proceeds from the sale of personal property; and reimbursements from permits and licensees of the Federal Energy Regulatory Commission. Revenue earned from other Federal agencies is derived from special-purpose mapping, investigations, and computer services performed at the request of the financing agency, much of which contributes to the basic objectives of USGS. Revenue is also received through the State Department from foreign countries and international organizations for scientific and technical assistance.

Note 11. INTEREST and PENALTIES

This item represents interest and penalties that were assessed in the prior year but waived during the current fiscal year. In accordance with Title 4, Part 102, Section 13(g) of the Code of Federal Regulations (4CFR 102.13(g)), an agency has the right to waive the collection of interest on the debt or any portion of the debt that is paid within 30 days after the date on which interest began to accrue.

Note 12. PRIOR PERIOD ADJUSTMENT

(In Thousands)	
In FY 1997, USGS developed procedures to determine the accumulated depreciation for Buildings, Structures and Facilities in accordance with the SFFAS No. 6 for Property, Plant and Equipment.	$(12,384)
In FY 1997, USGS re-valuated Land, Buildings, Structures and Facilities.	9275
Total Prior Period Adjustments	$(3,109)

Note 13. IMPUTED PENSION AND OTHER RETIREMENT COST

Accounting for Liabilities of the Federal Government, SFFAS No. 5, requires agencies to recognize the cost of pensions and other retirement benefits during their employees active years of service. The Office of Personnel and Management (OPM) is responsible for paying the cost of these benefits. The OPM actuaries have provided the employing agencies with rates for calculating the estimated cost of pension and other retirement benefits as of September 30, 1997. Using the rates provided by OPM and labor cost data provided by the Department of the Interior, USGS computed the imputed pension expense of $47,777,772 for fiscal year 1997:

	1997 Basic Pay	(In Thousands) Net Rate	Employer's Pension Expense
CSRS	$ 264,467	0.1020	$ 26,976
CSRS + FICA	10,730	0.0080	86
FERS + FICA	192,754	0.0000	0
FERS	21,854	0.0000	0
NONE	1,786	0.0000	0

$491,591	$27,061

	Average No. of Employees	Rate per Employee	Estimated Imputed Retirement Health Costs
Health Benefit Cost	8,280	$ 2,493	$ 20,642

	Amount	Rate	Estimated Imputed Retirement Life Insurance Cost
Life Insurance Cost	$ 371,299	0.0002	$74

Total Imputed Pension Cost	**$ 47,778**

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INSPECTOR GENERAL AUDITOR'S OPINION

United States Department of the Interior

OFFICE OF INSPECTOR GENERAL
Washington, D.C.20240

Memorandum APR - 7 1998

To: Director, U.S. Geological Survey

From: Robert J. Williams
Acting Inspector General

Subject: Report on U.S. Geological Survey Financial Statements for Fiscal Years 1996 and 1997

In accordance with the Chief Financial Officers Act of 1990, we audited the U.S. Geological Survey's financial statements for the fiscal years ended September 30, 1996, and 1997, as contained in the Geological Survey's accompanying "FY [Fiscal Year] 1997 Annual Financial Report. " The Geological Survey is responsible for these financial statements, and we are responsible for expressing an opinion, based on our audit, on these financial statements.

Our audit was conducted in accordance with the "Government Auditing Standards," issued by the Comptroller General of the United States, and with Office of Management and Budget Bulletin 93-06, "Audit Requirements for Federal Financial Statements," as amended, and was completed on March 13, 1998. These audit standards require that we plan and perform the audit to obtain reasonable assurance that the accompanying financial statements are free of material misstatement An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the financial statements and accompanying notes. An audit also includes assessing the accounting principles used and significant estimates made by management. We believe that our audit provides a reasonable basis for our opinion.

>We found that the financial statements and accompanying notes present fairly the Geological Survey's assets, liabilities, and net position; operational costs; revenues; changes in net position; cash flows; and budgetary resources. We also found that these financial statements are presented in conformity with the accounting standards and policies described in the notes to the financial statements. As discussed in Note

1.C, the Statement of Budgetary Resources contains intrabureau transactions for the Geological Survey that have not been eliminated. Further, the supplemental financial statement for fiscal year 1997, which follows the notes to the financial statements, was subjected to the auditing procedures applied in the audit of the financial statements and is fairly stated in relation to the financial statements taken as a whole.

Management of the U.S. Geological Survey is responsible for establishing and maintaining an internal control structure, which we evaluated as part of our audit. In performing the evaluation, we obtained an understanding of the relevant control policies and procedures, assessed the importance of their proper functioning, and tested whether they have been operating as designed. We also reviewed the Geological Survey's most recent report operating as designed. We also reviewed the Geological Survey's most recent report required by the Federal Managers' Financial Integrity Act of 1982 and compared it with the results of our evaluation of the Geological Survey's internal control structure.

Except as discussed in the Summary of Prior Reports With Significant Unresolved or Unimplemented Recommendations section of this report, we found that the Geological Survey's internal control structure in effect at September 30, 1997, was sufficient to safeguard assets against loss from unauthorized use or disposition; ensure that transactions were executed in accordance with laws and regulations; ensure that transactions were properly recorded, processed, and summarized; and provide reasonable assurance that any losses, noncompliance, or misstatements that are material to the financial statements would be detected. However, losses, noncompliance, or misstatements may occur and not be detected because of inherent limitations in any system of internal controls. We also caution that projecting our evaluations of internal controls to fixture is subject to the risk that controls or the degree of compliance with the controls may diminish.

We performed tests of the U.S. Geological Survey's compliance with certain provisions of laws and regulations specified in Bulletin 93-06, noncompliance with which could have a direct and material effect on the determination of amounts in the financial statements. In planning and performing our tests of compliance, we considered the implementation guidance issued by the Office of Management and Budget on September 9, 1997, relating to the Federal Financial Management Improvement Act of 1996. Under the Act, we are required to report whether the Geological Survey's financial management systems are in compliance with the Federal financial management system requirements, applicable accounting standards, and-the U.S. Government Standard General Ledger at the transaction level. However, providing an opinion on compliance with certain provisions of laws and regulations was not an objective of our audit, and accordingly, we do not express such an opinion. The results of our tests of compliance with the laws and regulations described above disclosed no instances of noncompliance that are required to be reported under the "Government Auditing Standards."

The conditions identified in the Summary of Prior Reports With Significant Unresolved or Unimplemented Recommendations section of this report are considered to be reportable weaknesses in the Geological Survey's internal control structure that need to be corrected.

We reviewed the financial information presented in the Geological Survey's overview in order to

determine whether the information was consistent with the financial statements. Based on our review, we determined that the information in the overview was consistent with the information in the financial statements.

Except as mentioned above, our review of prior Office of Inspector General and General Accounting Office audit reports found that there were no other significant unresolved or unimplemented recommendations that affected the Geological Survey's financial statements.

SUMMARY OF PRIOR REPORTS WITH SIGNIFICANT UNRESOLVED OR UNIMPLEMENTED RECOMMENDATIONS

We reviewed prior Office of Inspector General and General Accounting Of lice reports related to the U. S. Geological Survey's financial statements to determine whether these reports contained any unresolved or unimplemented recommendations that were significant to the financial statements at September 30, 1997. Our review disclosed that there were no General Accounting Office reports related to the financial statements that contained significant unresolved or unimplemented recommendations. However, we identified four Office of Inspector General reports that contained significant unresolved or unimplemented recommendations as follows:

- The report "U.S. Geological Survey Financial Statements for Fiscal Year 1996" (No. 97I-927), issued in June 1997, stated that as a result of the fiscal year 1996 Continuing Resolution, which consolidated the National Biological Service with the U.S. Geological Survey, the Biological Service's financial statements were included in the Geological Survey's financial statements for fiscal year 1996. We concluded that the Geological Survey's and the Biological Service's financial statements for fiscal year 1996 were presented fairly. The report also stated that, except as discussed below, we found that the Geological Survey's and the Biological Service's internal accounting control structure met the established internal control objectives and that the Geological Survey and the Biological Service had complied in all material respects with applicable laws and regulations. However, the report stated:

  > The Geological Survey's internal controls in place at September 30, 1996, were not sufficient to provide reasonable assurance that: (1) the amounts reported in the general ledger accounts Advances From Others (incorporated into the Deferred Revenue account in the financial statements), Accounts Receivable Unbilled, and Accounts Payable were properly supported by subsidiary ledgers; (2) costs related to the Federal-State Cooperative Projects were reported accurately and in accordance with applicable agreements; (3) delinquent accounts receivable were collected in a timely manner; (4) monies were disbursed from the investment plan, a component unit of the working capital fund, in accordance with established policies; and (5) Biological Resources Division property was accounted for and

reported correctly.

The report contained 10 recommendations: 5 related to amounts reported in the general ledger for accounts receivable-unbilled, advances from others, and accounts payable; 3 related to accounts receivable collections; 1 related to investment plan controls; and 1 related to Biological Resources Division property. On September 30, 1997, we referred nine of the recommendations to the Assistant Secretary for Policy, Management and Budget for tracking of implementation (one recommendation was previously considered resolved and implemented). The Geological Survey's report of corrective actions for the reporting period for the first quarter of fiscal year 1998 stated that corrective actions for four had been completed, corrective actions for three recommendations related to accounts receivable collections were planned to be completed by August 1998, and corrective actions for the remaining two recommendations related to controls over the subsidiary ledgers and investment plan were planned to be completed by September 1998. Based on our current review, we concur with the Geological Survey's status report.

- The report "General Control Environment of the Federal Financial System at the Reston General Purpose Computer Center, U.S. Geological Survey" (No. 97-I-98), issued in October 1996, presented a summary of a draft audit report issued in July 1996 by the Office of Inspector General, U.S. House of Representatives, entitled "Stronger Controls Needed Over the Data Processing Environment at the U.S. Geological Survey, Reston General Purpose Computer Center." The draft audit report, which was finalized on December 12, 1996, identified 42 information system integrity weaknesses that, as a whole, according to the House Office of Inspector General, constituted a material internal control weakness under the Federal Managers' Financial Integrity Act of 1982. The report contained 70 recommendations to the Geological Survey and 1 recommendation to both the Geological Survey and the House's Chief Administrative Officer. Specifically, the report stated that weaknesses existed in data center management and operations; mainframe computer system physical and logical security; telecommunications security; protection of the local area network from unauthorized access and use; and contingency planning, including backup procedures for preventing data loss and for the recovery of data in case of a disaster. The Geological Survey concurred with the findings and recommendations contained in the House report and took immediate corrective actions to resolve the deficiencies that could have adversely impacted the integrity and security of financial data processed on the Federal Financial System. In its report, the House's Of lice of Inspector General stated that it believed that the "actions taken and the continuing commitment demonstrated" by Geological Survey management "to resolve the deficiencies identified has greatly reduced the risk" to the Computer Center's "processing environment."

We believe that the actions planned by the Geological Survey should be sufficient to correct the deficiencies identified; therefore, we are not making any further recommendations. Further, based on the immediate actions taken by the Geological Survey to correct the deficiencies reported, we do not consider these conditions, taken as a whole, to be a material weakness under the Federal Managers' Financial Integrity Act. Instead, we consider these weaknesses to be a reportable condition. The Geological Survey's report of corrective actions for the reporting period for the first quarter of fiscal year

1998 stated that corrective actions had been completed for 68 recommendations, with corrective action on 2 recommendations planned to be completed by April 1998.

- The report "Federal-State Cooperative Program, Water Resources Division, U.S. Geological Survey" (No 95-I-725), issued in March 1995, stated that the Water Resources Division did not properly and accurately account for the costs of projects conducted under the Federal-State Cooperative Program. This occurred, according to the report, because the Division established accounting practices that inappropriately (1) shifted costs to projects with unspent funds and (2) used Program funds to pay for bureau-level administrative costs. We identified overcharges of $3 million and undercharges of $1.2 million to Program project accounts and estimated that Program funding of $660,000 had been used to pay for nonProgram expenses, which was contrary to the legislation establishing exclusive funding for the Program. Also, despite the Program's exemption from bureau-level general and administrative expenses, the Division charged about $6.2 million of these expenses to the Program in fiscal year 1993. The Geological Survey concurred with the report's four recommendations.

The Office of the Assistant Secretary for Policy, Management and Budget closed the recommendations based on an October 28, 1997, memorandum from the Geological Survey which stated that it had completed actions required to implement the recommendations, and the memorandum included supporting documentation. We believe that the actions taken by the Geological Survey are sufficient to consider the recommendation resolved and implemented.

- The report "Use of the Governmentwide Purchase Card, U.S. Geological Survey" (No. 98-I-3 16), issued in March 1998, stated that the Geological Survey "did not have reasonable assurance that improper uses ofthe purchase cards would be prevented or detected in a timely manner." The report also stated:

> The deficiencies occurred because (1) approving officials did not perform all of the required review procedures; (2) the Office of Acquisition and Federal Assistance did not perform periodic reviews of the Purchase Card Program; and (3) the Geological Survey did not provide adequate training to cardholders and approving officials in the areas of acquiring, documenting, and reviewing purchases.

We recommended that the Geological Survey ensure that (1) approving officials follow established review procedures; (2) cardholders comply with policies and procedures concerning unauthorized purchases, split purchases, and telephone orders; (3) purchase cards are adequately safeguarded; (4) written procedures are developed for documenting the review of purchase card transactions; and (5) cardholders and approving officials receive adequate training in the proper use of the purchase card. In a January 8, 1998, memorandum, the Geological Survey concurred with the recommendations and identified the corrective actions taken to address the recommendations. Based on the Geological Survey's response to the draft report, we considered four recommendations resolved and implemented and requested that the Geological Survey reconsider its response to the remaining recommendation, which related to the safeguarding of purchase cards. A response to the final audit report is due by April 15,

1998.

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