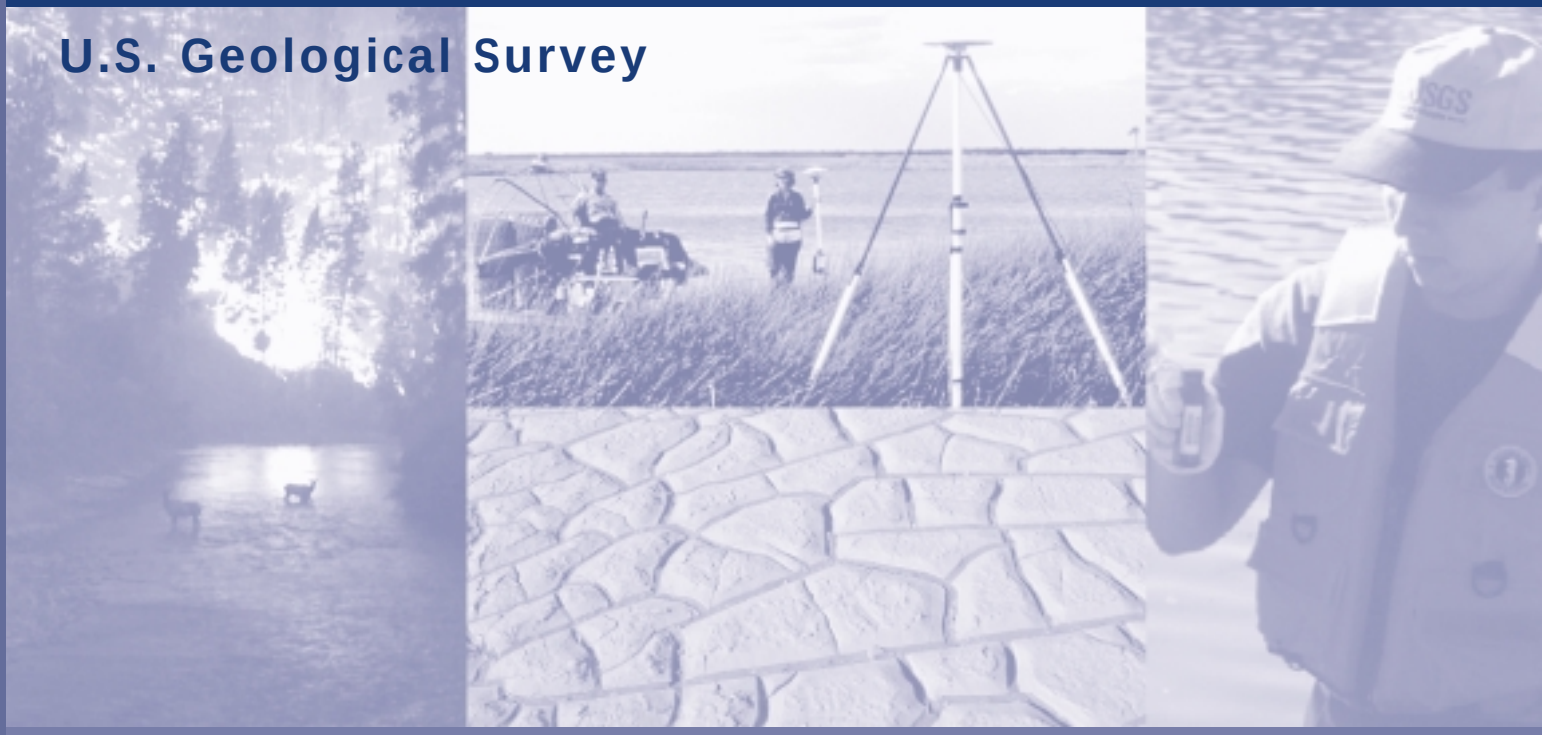
# FY 2002 Annual Performance Plan

# FY 2000 Annual Performance Report

## U.S. Geological Survey



DEPARTMENT OF THE INTERIOR

USGS
science for a changing world

# U.S. Geological Survey

## Annual Performance Plan FY 2002

## Annual Performance Report FY 2000

## A COMMENT ON THE PERFORMANCE GOALS CONTAINED IN THIS DOCUMENT

The goals that appear in the Fiscal Year 2002 Annual Performance Plan are based on the Department's most recent revision of its Government Performance and Results Act strategic plan. This strategic plan, which covers the period from Fiscal Year 2000 to Fiscal Year 2005, was completed under the guidance and direction of the previous Administration and, therefore, does not necessarily reflect the policies and management priorities of the current Administration.

During 2001, the Department will review and, where appropriate, revise the current strategic plan. This review process will incorporate the views and concerns of the Department's partners and constituencies and will, in some cases, be the basis for new or restated annual performance goals and measures to provide overall direction to Interior's programs and deliver program results.

DEPARTMENT OF THE INTERIOR
U.S. GEOLOGICAL SURVEY

I am pleased to present our consolidated performance report and plans for the U.S. Geological Survey (USGS) for FY 2000-2002. Capitalizing on our experience and accomplishments in FY 2000, we have developed annual performance plans that will advance us toward achieving our revised strategic plan for FY 2000 – 2005.

Our plans build on our proud 122-year history of impartial scientific excellence. They reflect a renewed commitment to meeting the needs of our partners and customers, and to delivering relevant and usable science at the right time to make a difference. The February 28, 2001, earthquake near Seattle, energy shortages in the West and Northeast, drought in the Southeast -- all these issues remind us of the central role that natural science information plays in understanding today's world.

With these concerns in mind, and with recommendations of a recently concluded evaluation by the National Research Council (NRC) on the future roles and opportunities for the USGS, I am convinced that there will be an even greater demand in the coming years for integrated natural science information. That information must also be easily accessible to the many agencies at all levels of government, as well as the academic community and the private sector, who rely on the USGS for water, biologic, energy, mineral, geologic, and geographic information to get their jobs done. The skyrocketing costs of natural disasters can only be reduced when people have sound science-based information to make appropriate decisions about life, safety, and economic stability.

Another instructive point that we take from the NRC study is that the USGS needs to do even more in reaching out and being responsive to our partners and customers. While we feel that we have taken very positive steps with listening sessions and other venues to monitor those external voices, the strength of the USGS in large measure depends on the value that our customers and partners place on our science and the many ways in which our science impacts their work. We need to, and will, do more. We look forward to finding more avenues and approaches to ensure that our partners are at the planning table with us.

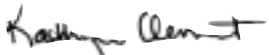
Streamlined business practices, enhanced regional leadership, insightful collaboration among disciplines, and an evolving culture of accountability are the foundation of our efforts to ensure that we can provide the science solutions that our society needs to thrive and prosper.

Charles Groat, Director

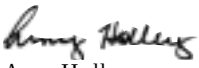
## USGS Commitment

The employees of the USGS support the goals and objectives of the Government Performance and Results Act (GPRA), and are committed to transforming USGS into a responsive and performance oriented agency. In accordance with GPRA, this Annual Plan has been prepared to advance the long-term goals of our revised Strategic Plan. We, the undersigned members of the USGS Executive Leadership Team, are responsible for successful implementation of our Strategic and Annual Plans:

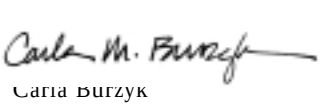
Charles Groat
Director



Kathryn Clement
Deputy Director



Amy Holley
Senior Advisor to the Director

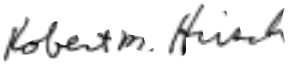


Carla Burzyk
Acting Chief
Budget and Organization Analysis

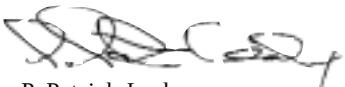
Anne Kinsinger
Chief
Strategic Planning and Analysis

Barbara W. Wainman
Chief
Office of Communications

Dennis Fenn
Associate Director for Biology

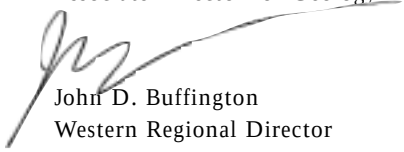


Robert M. Hirsch
Associate Director for Water



P. Patrick Leahy
Associate Director for Geology

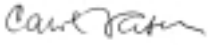
Barbara J. Ryan
Associate Director for Geography



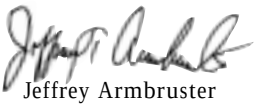
John D. Buffington
Western Regional Director

Bonnie McGregor
Eastern Regional Director

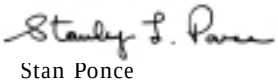
Thomas Casadevall
Central Regional Director



Carol Aten
Chief
Administrative Policy and Services



Jeffrey Armbruster
Senior Policy Analyst
for Workforce Planning



Stan Ponce
Senior Advisor for Interagency Programs

Karen Siderelis
Geographic Information Officer

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# Executive Summary

Since joining the USGS in November 1998, Director Charles Groat has emphasized that integrating science is the key to its relevance. As we seek to more completely integrate the research of our various disciplines, we will strive to respect the expertise from each discipline and present a balanced view of the issues involved. High quality, objective, credible research and information are our most important products. Honesty and integrity in all aspects of our scientific enterprise, maintaining our impartiality, and ensuring that our information and products are used to benefit the public as a whole will continue to be hallmarks of USGS science.

A Strategic Change team, co-chaired by the Director, defined the actions needed to make USGS sleeker, stronger and more flexible, providing the framework for us to reach the long-term goals we have outlined in our revised Strategic Plan for FY 2000 through 2005. Since January 2000, the Director has been implementing those actions, restructuring the bureau, and redefining business practices. He has emplaced a new regional management structure to improve customer service and facilitate an integrated science approach to national earth and biological science problems. Thus far, 2001 has been a successful transition year, consolidating administrative functions, implementing common business practices, and training people for full implementation of a single, comprehensive science planning, performance measurement, and financial system in 2003. These changes ensure that the USGS continues to be a world leader in the natural sciences by providing both the discipline-based and integrated science on which people have come to depend. Further, they enhance our tradition of excellence by increasing our ability to work on large regional natural resource problems and more effectively draw on the full breadth of scientific capability available within the USGS.

Critical to monitoring our progress in achieving our strategic direction are the annual performance targets and measures presented in this annual plan. In their new roles, Regional and Associate Directors are ensuring that performance metrics are collected, evaluated, and achieved at appropriate levels in the bureau and that performance data are verified and measures validated.

Among the Director's highest priorities is developing a real-time hazards warning system. For FY 2000, USGS met or exceeded all performance targets but one (baselining customer satisfaction) for achieving the **Hazards** goal. Baseline data were collected with the Customer Satisfaction Survey beginning in FY 2000 and continuing through the first quarter of FY 2001. More than 1,000 customers, mostly scientists, described their satisfaction with various aspects of USGS science products. Product attrition and lower than anticipated response rates for the survey of hazard products led us to a combined baseline index of satisfaction with USGS products of 95 percent in FY 2001. For FY 2002, we will attempt to expand the hazards survey to derive an independent metric. Increased funding appropriated in FY 2001 accelerated achievement of the real-time components of the Hazards long-term goal. In FY 2002 we will endeavor to maintain performance for the Hazards goal as funds permit.

Acting on the Director's priority to more effectively communicate science and draw upon the full breadth of our scientific capability, we substantially exceeded our FY 2000 **Environment and Natural Resources** performance targets for analyses, decision support systems, and stakeholder meetings. The information gathered and relationships fostered with stakeholders positioned us to better identify the science needs and form the plans to address the large regional natural resource problems that we are analyzing in FY 2001, to share current

| USGS Mission Goal | Annual Performance Goal | Annual Performance Measures | FY2000 Performance Targets and Results | | |
|---|---|---|---|---|---|
| | | | Exceeded | Met | Not Met |
| Hazards | 1 | 6 | 4 | 1 | 1 |
| Environment and Natural Resources | 1 | 6 | 3 | 1 | 2 |

knowledge, and to identify opportunities for partnerships. The performance targets not met in FY 2000 relate to customer satisfaction baselining, as previously described, and our university-based partnerships. The latter shortfall resulted from the nature of the work that was conducted and from effectively streamlining how we issued the research work orders by whole project rather than by individual phase of research. FY 2001 targets reflect the new process. The FY 2002 target reflects funding reductions in grants and partnerships.

For FY 2002 no funding increases were requested and proposed decreases were largely limited to global change, water quality, international mineral resource information, grants and partnerships in water research and geologic mapping, and information infrastructure, management, and delivery. Despite the proposed decrease in FY 2002 funding relative to FY 2001, the percentage of total USGS funding has increased for the hazards goal relative to the environment and natural resources goal, further evidence of the priority placed on the hazards goal and an attempt to preserve hazards goal performance. For all USGS science, we will work to maintain customer satisfaction at 90 percent, 5 percent less than the 95 percent combined baseline index of satisfaction with USGS products.

Quality science that is both relevant and effectively communicated is our most important product. We will continue to measure its quality and relevance through peer reviews and program evaluations such as the recently completed review of USGS' *Future Roles and Opportunities* conducted by the National Research Council (NRC). We believe that our leadership and our plan are helping us meet the challenges of the new century and that the NRC review validates our purpose and mission. Our systematic survey of customer satisfaction with our products and services renews our commitment to accountability.

# About This Document

The Government Performance and Results Act (GPRA) requires agencies to submit annual performance plans to Congress with their fiscal year budget request and to prepare an annual performance report at the end of each fiscal year on how well they met their goals.

Interior has combined in a single document the FY 2000 Annual Performance Report (Report) with the FY 2002 Annual Performance Plan (Plan) rather than preparing a separate FY 2000 Report. We believe this consolidated Plan and Report will be more useful to Congress and the appropriations process than submitting separate documents at separate times. In addition to consolidated bureau documents, the Department provides an Overview of what the agency as a whole has accomplished in FY 2000, what we plan to accomplish in the current fiscal year (FY 2001), and what we propose to accomplish in FY 2002 with the budget resources we are requesting. In a single presentation, the reader can see the trends in our performance targets along with the trends in our results.

# Section I

## *Introduction and Overview*

### 1.1 INTRODUCTION

**What we do**

The USGS delivers reliable and impartial information that describes the Earth, its natural processes, and its natural species. Emergency response organizations, resource managers, planners, and other customers use this information to: minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; and enhance and protect our quality of life. The USGS is at work in every State in the Nation, cooperating with more than 2,000 organizations to provide information for resource managers in the public and private sectors. Our strengths, which rely on our reputation for objectivity and scientific excellence, as well as a strong heritage of collegial relationships and partnerships with the customers we serve, include a multidisciplinary workforce; the ability to develop, design, and maintain long-term national and global databases; and the capability to conduct long-term, broad-scale, multidisciplinary, and interpretive natural science studies.

### SCIENCE, PERFORMANCE MEASUREMENT, AND GPRA

USGS primary science disciplines include the following:

- Biological resources (information critical to biological species management, animal health, ecosystems, and invasive species);
- Geology (information relating to energy and mineral resources; natural hazards such as landslides, volcanoes, coastal erosion, and earthquakes; and geologic processes that affect our Nation's land and coasts);
- Geography (geospatial data, topographic maps, and satellite images); and
- Water resources (real-time flood data and information on the quality and quantity of surface- and ground-water resources).

The USGS' primary product is scientific information. Quantitative measures of our productivity are tangible and directly related to inputs, but they are primarily outputs (e.g., number of scientific papers published, data collected,...) that convey little sense of the true benefits gained by the American people from the information we produce. The outcome related to our providing scientific information is that a stakeholder has the information (land manager's inputs) with which to make an informed decision. Quantitative impact measures (e.g., the acreage of ecosystems restored by a land manager) are only indirectly linked to USGS outcomes.

The results of research are not predetermined — by definition science is objective, impartial, and credible. But science is often not the only factor that is germane to the decision on management strategy. The scientific information we produce provides alternatives and predicts their outcome, but no matter how "good" the science may be, it in itself cannot achieve the desired outcome. It remains for the user of the scientific information who does or does not make a science-based decision to determine how useful the information was in making the decision, to measure the outcome achieved by the decision, and ultimately acknowledge the utility of the science in achieving the desired outcome.

If the science we provide is not used because it was not useful or timely, we can and should be held accountable. That is why our research will continue to be internally and externally peer reviewed and our programs cyclically evaluated to ensure the quality and timeliness of our science. That is also why our strategic and annual performance targets focus on **provision** of that science to customers for solving the Nation's complex land and resource management problems and to minimize the loss of life and property from natural disasters.

This approach is validated in the recommendations of the National Academy of Science report on *Research and the Government Performance and Results Act* that was released February 17, 1999. The Academy report endorses a three-pronged "expert review" of Federal science, to **validate quality, relevance, and leadership**. USGS engages in reviews and evaluations that meet these accountability criteria for the research we produce.

### GREATER EVERGLADES ECOSYSTEM RESTORATION (GEER) CONFERENCE

Held in December 2000, the GEER conference provided a forum for physical, biological, and social scientists to share their knowledge and research results concerning Everglades restoration. The objectives of the conference were to define specific restoration goals, determine the best approaches to meet these goals, and provide benchmarks that could be used to measure the success of restoration efforts over time. To these ends, the conference recognized the need to synthesize information gathered since the first Everglades conference, the interdisciplinary nature of Everglades restoration, and the need to adapt scientific understanding to management action. The published proceedings are nearly 500 pages in length. It is a snapshot of the activities going on in South Florida and includes information by scientists from multiple agencies, including USGS.

- Internal and external peer review has been the **quality** standard for USGS scientific publications and a documented component of USGS policy throughout our history.

- To assess the **relevance** of our products to customers' needs, USGS is collecting information from customers by survey, as described in the Customer Service section 3.1, and by periodic review of our programs with stakeholders, including user forums to which the public is invited. Further, a Department-wide process is being implemented to ensure that the highest priority science needs of the Department are being met by USGS programs — again ensuring the relevance of USGS science to support the Department's land and resource management policy and decisionmaking.

- **Leadership** issues are addressed in formal, external, independent program evaluations such as

  — the National Research Council's review of the Volcano Hazards Program released in 2000,
  — the National Research Council's review of the Ground Water Resources Program released in 2000,
  — the National Research Council's review of "Future Roles and Opportunities for the U.S. Geological Survey" released in 2001.

At the request of Congress and the White House Office of Science and Technology Policy (OSTP), the Academy's Committee on Science, Engineering, and Public Policy (COSEPUP) initiated in December 1999 a follow-up study on Accountability of Federally Funded Research. During 2000, COSEPUP used a case study approach to characterize how agencies are responding to GPRA requirements and to attempt to bridge the congressional expectations and the agencies' research program objectives. In the end, a total of five agencies were analyzed in depth, and the report that is expected to be

released in June 2001 should provide an opportunity for agencies to learn from one another what does and does not work with respect to implementation of GPRA for research programs.

Our approach to GPRA is also consistent with the September 1998 report by the House Science Committee Toward a New Science Policy that states "*...in general, R&D in Federal agencies should be highly relevant to, and tightly focused on, agency or department missions.*" This relevance and focus is demonstrated in section 1.3 Linkage to DOI Goals and further discussed in section 3.2 Crosscutting Issues.

## STRATEGIC CHANGE

We have implemented a number of strategic changes in 2000 and the first quarter of 2001 that focus on instituting matrix management and better enabling integrated science. This new management structure that incorporates regional line management and national science direction has enabled us to better understand our customers and their needs, and has allowed us to better invest in and reward our people. Important science planning changes that we have accomplished to date include creating bureau-wide Future Science Directions and implementing bureau-wide science and initiative planning processes. The Future Science Directions encompass eight major topical areas and issues that provide a framework for our science to better meet society's needs, and within which the USGS can build the science that will move us forward. These topical areas are:

- Coastal Environments
- Earthquake Hazards
- Ecosystem Health, Sustainability, and Land Surface Change
- Energy
- Environmental Information Science
- Ground-Water Resources
- Invasive Species
- Rivers

The Future Science Directions are being used to integrate and focus 2002 and 2003 science planning. Regional workshops on fire science, the Missouri River, and the desert Southwest have helped us frame issues with our customers and partners, and have provided a forum to discuss the latest scientific advances. All these activities are enhancing our ability to integrate the work we do and allowing us to anticipate the changing needs of society, our partners, and our customers.

**Common Business Practices:** From 2000 through 2002 our highest priority in streamlining USGS functions is to adopt and implement a bureau-wide infrastructure that will facilitate uniform administrative, program development, performance measurement, and information systems across disciplines, regions, and programs. Significant progress has been made in planning a single, web-based, bureau-wide, science planning, performance measurement, and financial system and integrating our other support systems for travel and time management. Full implementation to facilitate bureau-wide planning, documentation, and budgeting is scheduled for FY 2003.

We have reorganized and consolidated headquarters and regional administrative staffs to provide seamless, efficient science support. During 2001, we are reorganizing and consolidating our information technology and key information management staff and functions. This will enhance our ability to provide integrated desktop support services, take advantage of enterprise technology solutions and conduct bureau-wide capital asset planning. USGS has implemented procedures to achieve the Administration's target to contract 5 percent of commercial activities and to ensure the accuracy of the annual FAIR Act inventory. Finally, we are revamping policy, delegations, and financial practices for full implementation of new common business practices for 2002.

**Leadership:** In FY 2000, we implemented a matrix management approach that balances our need for national oversight and science directions with regional responsiveness to customers and local line management of USGS staff. The science leaders of the bureau are the Associate Directors for Biology, Geography, Geology, and Water. Regional Directors in the Eastern, Central, and Western Regions of the country have line management authority for our discipline-based Regional Executives and authority over regional science programs. Regional Directors and Associate Directors are working collaboratively to ensure a balanced and focused perspective on the science we produce.

**Program Planning:** Associate Directors have the lead role in science program development and formulation of future science directions. During 2000 they participated in a joint planning process at the bureau level in collaboration with the Regional Directors. Together, the Regional and Associate Directors formulated eight Future Science Directions, which have been incorporated into the Vision, Mission, and Strategic Direction section of our revised Strategic Plan for FY 2000–2005. These future science directions are guiding the creation of our FY 2003 initiatives focused on an integrated scientific approach to addressing high priority societal needs. The Geographic Information Officer and Administrative Policy and Services Chief will also be engaged in the planning process to ensure development of supporting strategies for information infrastructure and administrative support for the science programs.

Having both Regional and Associate Directors involved in the process is essential to meeting the science and customer goals in our Strategic Plan. This new process has already contributed to the formulation of the FY 2001 budget proposals and will more fully influence the development of the FY 2003 programs. Ultimately, a new bureau-wide system will facilitate the integration and coordination of all of our science activities by providing the needed tools to have instant access to all science activities in the Bureau and providing information for meeting performance goals of our strategic plan.

**Customers:** Our Strategic Plan places high priority on meeting our customers' needs. Therefore, each Associate Director is actively engaging customers and partners at the national level. Regional Directors are meeting with local and regional customers and ensuring that their needs are being met and integrated into the Federal effort as a whole. During 2000 and the first quarter of 2001, customer listening sessions, cyber seminars, science workshops, budget briefings, and other customer feedback forums were successfully conducted as part of implementing our internal and external communications strategies. We established a network of communication and outreach staff across the Bureau during 2001.

**Customer Satisfaction Surveys:** The USGS is analyzing feedback collected during FY 2000 and the beginning of FY 2001 from users of a wide variety of its science products. Customer satisfaction/outcome surveys have been completed for over 30 distinct USGS science products. More than 1,000 customers, mostly scientists, are describing their satisfaction with various aspects of USGS science products. These customer surveys are a groundbreaking effort. For the first time the USGS has a consistent user assessment of science products across the majority of its programs. The survey results are helping us design enhancements of specific products, improving our understanding of the USGS customer base by allowing cross-program comparisons. These surveys are also a baseline measurement of the overall success of USGS science in meeting the needs of scientific users and are helping establish a metric target for the future.

## 1.2 MISSION STATEMENT

**Strategic Direction**
The USGS will combine and enhance our diverse programs, capabilities, and talents and increase customer involvement to strengthen our science leadership and contribution to the resolution of complex issues.

**Vision**
The USGS is a world leader in the natural sciences through our scientific excellence and responsiveness to society's needs.

**Mission**
The USGS serves the Nation by providing reliable scientific information to:

- describe and understand the Earth;
- minimize loss of life and property from natural disasters;
- manage water, biological, energy, and mineral resources; and
- enhance and protect our quality of life.

## 1.3 LINKAGE TO BUREAU STRATEGIC PLAN AND DEPARTMENTAL GOALS

The U.S. Geological Survey Strategic Plan has two mission goals —

- Hazards, and
- Environment and Natural Resources.

Each mission goal or GPRA Program Activity has one associated long-term goal that has one associated annual goal. The annual performance increment necessary to achieve the long-term goal, as well as any proposed changes resulting from program and budget initiatives, are summarized in the annual goal. Each annual goal has five numeric performance measures (10 total) and a milestone to index customer satisfaction with key USGS science product categories: establishing baseline in FY 2001 and defining improvement targets in the revised final FY 2002 plan.

The Departmental policy on the use of science to meet goals is stated in 305 Departmental Manual 2: "...science shall be fully integrated and effectively used in the land and resource regulatory and management policies, practices and decisions of the Department and its bureaus." As the science bureau of the Department of the Interior, USGS provides information and technologies that are critical to the mission achievement of Department land and resource management bureaus. USGS mission and long-term goals directly support the Department of the Interior **Goal # 4, "Provide Science for a Changing World,"** but contribute to all of the DOI goals by focusing on the provision of scientific information to support these efforts.

### DOI HIGH PRIORITY DATA

The USGS holds responsibility for satisfying the highest priority topographic map revision and digital geospatial data needs of Department of the Interior bureaus. Annually, DOI bureaus work together to assess the map and data needs that satisfy the highest priority program activities of the Department. Cost sharing with other Federal agencies has allowed an additional $3.4 million of DOI map and data needs to be addressed in 10 of the 27 priority areas on the FY 2000 DOI Program plan. More specifically, an additional 23 map revision, 24 digital elevation model, 1,348 digital line graph, and 2,193 digital orthophotoquad requirements were addressed in FY 2000 as a result of these cooperatively funded projects. All products funded by the DOI Program are incorporated into the map inventory and long-term, national, geospatial databases available to all users; thus, Federal data collection redundancies are greatly reduced. Acquisitions provide data that support management of threatened and endangered species (Goal #1, Protect the Environment and Preserve Our Nation's Natural and Cultural Resources), recreation and tourism management (Goal #2, Provide Recreation for America), grazing and timber resources (Goal #3, Manage Natural Resources for a Strong Economy), and management and protection of natural and cultural resources on Indian reservations (Goal #5, Meet Our Trust Responsibilities to Indian Tribes).

For example, USGS conducts research at a variety of scales from site-specific studies to watershed or regional ecosystem scales to identify biological status and trends, including invasive and threatened/endangered species, determine water quality and quantity, and assess other physical and geochemical parameters of environmental health that directly support DOI **Goal #1, "Protect the Environment and Preserve our Nation's Natural and Cultural Resources."** Some representative current studies include:

- cooperative work with Bureau of Reclamation on water quality and (or) quality of irrigation drainage into Elephant Butte Dam, NM; Angostura Unit, SD; and San Pedro River, AZ; to provide data for use in restoration of these western reservoirs and downstream waters

- integrated hydrologic, geologic, and biological studies in the Animas River, CO, and Boulder Basin, MT, watersheds as part of the USGS Abandoned Mine Lands Initiative to guide Bureau of Land Management and others in reclaiming watersheds affected by past mining practices

- support of a multi-year effort to define land use, aquifer characteristics, recharge to the shallow aquifer system, surface water distribution system, and water use in Albuquerque Basin, in conjunction with Tribes, Bureau of Land Management, Bureau of Reclamation, Fish and Wildlife Service, and National Park Service

- ecosystem studies of Chesapeake Bay, Everglades/South Florida, Platte River, Greater Yellowstone Area, Mojave Desert, and San Francisco Bay/Delta to provide scientific information to Federal and state land managers charged with ecosystem restoration

- regional Gap Analysis of five southwestern states to create seamless GIS maps of land cover, terrestrial vertebrate species, etc., for Bureau of Land Management and other DOI bureaus

USGS science also aids DOI's **Goal #2, "Providing Recreation for America"** by providing science and technical assistance to DOI Bureaus in studies such as:

- a recently published survey of opinion leaders and members of the public in the Southwest to assess how they perceive recreation fees on public lands, including information from the Bureau of Land Management, National Park Service, U.S. Fish and Wildlife Service, and USDA Forest Service.

- cartographic data compiled at the request of several DOI bureaus for use in recreation management

USGS is directed by its Organic Act, to "classify the public lands and examine the geological structure, mineral resources, and products within and outside the national domain." Since 1879, the USGS has collected data on resources, and expanded understanding of geologic structures that determine location and abundance of these natural resources that contribute to **Goal #3, "Managing Natural Resources for a Healthy Environment and Strong Economy."** Examples of current activities include:

- Outer Continental Shelf environmental studies to determine long-term effects of oil and gas exploration (MMS)

- mineral resource assessment of the Humboldt River Basin (BLM)

- coal-bed methane resource evaluation (BLM)

- investigation of impact of oil and gas operations on the Osage Reservation (also supports Goal #5)

USGS supports **Goal #5, "Meet Our Trust Responsibilities to Indian Tribes and our Commitments to Island Communities,"** through research and partnerships. For example:

| USGS Mission Goal | Funding Percentage by Goal | | | | |
|---|---|---|---|---|---|
| | FY 1999 Actual | FY 2000 Actual | FY 2001 Request | FY 2001 Enacted less rescission | FY 2002 Request |
| Hazards | 14 | 13 | 16 | 16 | 17 |
| Environment and Natural Resources | 86 | 87 | 84 | 84 | 83 |

- The USGS maintains 170 streamgages in cooperation with BIA and (or) Indian Tribes and also conducts training of Native Americans in streamgage monitoring and water quality measurements.

- The USGS continues to work with the BIA by providing the technical wide-area network (WAN) expertise to link BIA-supported Indian schools to the Internet. More that 70 elementary and secondary schools as well as Tribal colleges have been connected. The USGS is also assisting the BIA to train teachers and other educators to use this system.

- Research on containment of invasive species is of enormous importance to island communities such as Guam where the USGS is studying the biology of the brown tree snake, control alternatives for this species for use on Guam, the ecology of Guam and other Pacific Islands, and ecosystem changes due to introduced species and habitat alterations occurring in the region.

## 1.4 LINKAGE TO BUDGET

The GPRA Program Activity concept captures the contribution of all program activities to a common mission requirement by applying a single set of annual goals and performance measures across four budget activities—National Mapping Program; Geologic Hazards, Resources and Processes; Water Resources Investigations; and Biological Research. The USGS remaining two budget activities—Science Support and Facilities—support all programmatic activities, and their funding has been distributed on a prorata basis to the two GPRA Program Activities (Hazards; Environment and Natural Resources). These two bureau-wide accounts were created in FY 2000 to improve accountability for all aspects of the organization and promote common business practices while providing a much clearer view of the funding available for science.

Budget activities and subactivities linked to these GPRA Program Activities are identified in **Section II. GPRA PROGRAM ACTIVITIES AND GOALS**. Performance targets are aggregated as a total for the Bureau for each GPRA Program Activity. Performance targets are disaggregated by budget activity in the budget documents.

Long-term goal performance targets assume continued funding at the FY 2000 level. Annual performance for FY 2000 reflects actual achievements with the enacted funding level. Targets set for FY 2001 reflect congressional action. The targets also include "completions" funded by prior-year monies because research often requires more than 1 year to deliver a product. Similarly, funding increases in a given year support some long-term efforts, the completion of which will not be achieved until outyears. Therefore, departures of FY 2000, FY 2001, and FY 2002 targets from the baseline represent not only the aggregate impact of funding increases and decreases in the given year, but also the completion of long-term efforts from prior-year funding increases or decreases, and/or cyclic studies mandated by Congress.

The funding percentages document anticipated balance between goals. Funding targets that accompany budget requests are based on planned obligations of appropriations. For FY 1999, the hazards target was approximately 15% and for FY 2000 was 16%. Actuals are based on expenditures of total funding that includes reimbursements as well as spend out of prior year obligations so an exact target match is not expected.

## 1.5 ADJUSTMENTS TO STRATEGIC PLAN

A revised Strategic Plan for FY 2000-2005 was published in September 2000 and provides the basis for the current FY 2001 and 2002 Annual Plans. Adjustments that were made in response to comments and program evaluations include a new customer satisfaction measure and revised performance measurement for real-time hazards.

# *FY 2002 Goals At-a-Glance Table*

| USGS GPRA Program Activity | Long-Term Goal | Annual Goal |
|---|---|---|
| **Hazards** Provide science in response to present and anticipated needs to predict and monitor hazardous events in near-real and real-time and to conduct risk assessments to mitigate loss. | Ensure the continued transfer of hazards-related data, risk assessments, and disaster scenarios needed by our customers before, during, and after natural disasters, and by 2005, increase the delivery of real-time hazards information by increasing the quarterly average number of gages reporting real-time data on the Internet to 5,500 (thus reducing the time it takes to provide flood information at that site from 6 to 8 weeks to 4 hours) and installing 500 improved earthquake sensors (thus reducing delivery time of information on potentially damaging earthquakes from 40 to 20 minutes) to minimize the loss of life and property. | Develop, maintain and improve monitoring networks and techniques of risk assessment by: maintaining the baseline of data and risk assessments transferred to customers; maintaining the quarterly average number of streamgages delivering real-time data on the Internet, and increasing by 100 improved earthquake sensors to deliver real-time information on potentially damaging earthquakes to minimize loss of life and property. |
| **Environment and Natural Resources** Provide science in response to present and anticipated needs to expand our understanding of environment and natural resource issues on regional, national, and global scales and enhance predictive/forecast modeling capabilities. | Ensure the continued availability of long-term environmental and natural resource information and systematic analysis and investigations needed by customers, and by 2005, develop 20 new decision support systems and predictive tools for informed decisionmaking about natural systems. | Provide and improve long-term environmental and natural resource information, systematic analysis and investigations, and predictive options for decisionmaking about natural systems by: providing essential information to address environmental and natural resources issues by maintaining 43 long-term data collection/data management efforts and supporting 1 large data infrastructure managed in partnership with others; delivering 1,058 new systematic analyses and investigations to our customers; improving and developing 4 new decision support systems and predictive tools for decisionmaking; and collaborating with university partners to understand natural systems and facilitate sound management practices through 153 external grants and contracts. |

* For Discussion of Customer Satisfaction Measures, see Section 3.1

| Performance Measure | 2001 | 2002 | 2005 |
|---|---|---|---|
| Hazards monitoring networks maintained | 6 | 6 | 6 |
| Risk assessments delivered | 8 | 8 | 9 |
| Real-time streamgages on the Internet (quarterly avg) | 5,374 | 5,374 | 5,500 |
| Real-time earthquake sensors (cumulative) | 329 | 429 | 700 |
| Stakeholder meetings | 32 | 28 | 32 |
| Customer satisfaction* | Baseline single index | Baseline goal index | N/A |
| Long-term data collection and data management efforts maintained and improved, and large data infrastructures supported | 46 | 44 | 46 |
| New systematic analyses and investigations delivered to customers | 1,146 | 1,058 | N/A |
| Decision support systems or predictive models developed or improved and delivered to customers | 7 | 4 | 20 |
| University-based partnerships for natural systems analysis | 209 | 153 | N/A |
| Stakeholder meetings | 458 | 434 | N/A |
| Customer satisfaction* | Baseline single index | Baseline goal index | N/A |

# Section II

## *GPRA Program Activities and Goals*

### 2.1 GPRA PROGRAM ACTIVITY: HAZARDS

**Description**

Provide science in response to present and anticipated needs, focusing efforts to predict and monitor hazardous events in near-real and real time and to conduct risk assessments to mitigate loss.

Hazards are unpreventable natural events that, by their nature, may expose our Nation's population to the risk of death or injury, and may damage or destroy private property, infrastructure, and agricultural or other developed land. USGS hazards mission activities deal with describing, documenting, and understanding natural hazards and their risks. These activities include long-term monitoring and forecasting, short-term prediction, real-time monitoring, and communication with civil authorities and others during a crisis. Other significant activities are post-crisis analysis to develop strategies to mitigate the impact of future events, and coordinated risk assessments for regions vulnerable to natural hazards.

The USGS has the primary Federal responsibility for monitoring and issuing warnings for earthquakes, volcanoes, landslides, and geomagnetic (solar) storms. We work closely with the National Weather Service in providing the hydrologic information used to forecast floods; the National Oceanic and Atmospheric Administration in monitoring coastal erosion and tsunamis; and the Interagency Fire Center to support wildland fire management activities. The USGS has unique capabilities for integrating hazards information with a wealth of other geospatial data and imagery to rapidly assess the impact of natural hazards events.

#### EARTHQUAKE IN WASHINGTON

A magnitude 6.8 earthquake occurred 10 miles northeast of Olympia, Washington, on February 28, 2001. The earthquake was felt in the Puget Sound area and caused over $2 billion of damage in Olympia, Tacoma, and Seattle. One death and about 200 injuries were reported. In contrast, an earthquake of similar magnitude, 6.7, occurred near Los Angeles in 1994 killing more than 60 and causing $40 billion in losses. The USGS recognized the importance of measuring the severity and variation of strong ground shaking in urban areas during an earthquake. These data are essential for effective earthquake resistant design, construction, and retrofitting of buildings. In FY 2000, under an initiative called the Advanced National Seismic System, 20 modern seismometers were installed in the Seattle region capable of accurately recording the shaking from earthquakes above magnitude 8. All 20 of these new instruments worked during the earthquake and provided immediate information on the severity and regional distribution of strong ground shaking.

**FY 2001 Goal**

Develop, maintain and improve monitoring networks and techniques of risk assessment by: maintaining the baseline of data and risk assessments transferred to customers; increasing by 500 (to 5,374) the average number of streamgages delivering real-time data on the Internet and increasing by 128 improved earthquake sensors to deliver real-time information on potentially damaging earthquakes to minimize loss of life and property.

**Goal Description**

**Programs:** USGS will enhance our ability to characterize and monitor hazardous events in near-real and real time by adding telemetered streamgages and earthquake sensors that are capable of delivering information almost instantaneously. In addition, long-term data vital both to emergency response and to analysis of flood, earth-

quake, and other hazard risks will continue to be collected and maintained through current monitoring networks.

We will upgrade our monitoring infrastructure; measure the reliability, delivery times, and accuracy of our real-time hazards information to evaluate improvements; and improve the utility of our information by identifying areas vulnerable to damage by particular hazards. Scientific datasets integral to the delivery of hazards information — key maps and geospatial information, for example — will be made easier to interpret and integrate. This will assist in risk assessment, rescue, recovery, and reconstruction efforts. Stakeholder meetings will be held with customers, cooperators, and the public who have a major role or interest in hazard warning or response to help us define needs and set program priorities. We will also continue to develop better ways to measure outcomes linked to those of our key partners such as the Federal Emergency Management Agency, National Weather Service, and State groups.

**Operations:** USGS will maximize the efficiency of administrative, science support, and programmatic activities by streamlining and enhancing the reliability of our systems for hazards data delivery. We will continue to upgrade our information infrastructure as funding allows to improve our ability to integrate hazards-related data and assessments.

**People**: Our employees are at the core of achieving the Hazards goal over the long term. They are in the field before, during, and after events, installing instruments and making measurements. They use a wide range of analysis and modeling methods to turn these measurements into improved hazard assessment products.

We will evaluate our current capabilities and skills, and actively invest in training employees in the skills needed to keep pace with technology to understand and model natural systems. We are aligning our rewards systems to encourage the integration of capabilities and to support increased responsiveness to customers' needs, such as better prediction of and response to hazards, and development of tools tailored to the needs of emergency managers. Finally, we will respond more quickly and effectively to natural disasters by developing response plans, using new contractual mechanisms for obtaining new skills, removing barriers to resource sharing, and increasing use of cooperative agreements with other emergency response entities.

**Customers:** USGS will focus on understanding the needs of key users of hazards information, such as emergency managers, industry, community planners, and citizens. We will increase development and delivery of products and services tailored to the current and future needs of these customers.

### INTERAGENCY TSUNAMI WARNING NETWORK

In support of the joint USGS, NOAA, University of Alaska, and University of Washington Consolidated Reporting of Earthquakes and Tsunamis (CREST) project, the USGS designed and implemented a special interagency network. This new network was designed to provide a continuous feed of seismic waveform and parametric data from several USGS locations into NOAA's Pacific and Alaska Tsunami Warning Centers (TWC), University of Alaska, and the University of Washington.

These earthquake data and NOAA's ocean bottom tsunami detection data are continuously analyzed enabling the TWCs to quickly determine if an earthquake is tsunamigenic in nature and issue an early coastal evacuation warning, if appropriate. During the December 2000 Papua-New Guinea 8.0 earthquake, this system was put to a test, and the results were enthusiastically reported. The Pacific Tsunami Warning Center (PTWC) personnel advised USGS that they were now able to make their tsunami potential determinations in less than 15 minutes, a process that previously took 55 minutes or more. All partners believe the CREST system will serve to save countless lives (because of early evacuations) and millions of dollars (because of fewer false alerts) in the future. This project is an excellent example of information technology expertise partnering with other science disciplines to provide a value-added product—specifically delivery of real time information to coastal inhabitants of the greater Pacific Basin.

| Budget Activity/Subactivity ($000) | FY 2000 Enacted Approp less rescission | | FY 2001 Enacted Approp less rescission | | FY 2002 Pres Budget | |
|---|---|---|---|---|---|---|
| | Total | Hazards | Total | Hazards | Total | Hazards |
| National Mapping Program* | 126,717 | 7,853 | 130,426 | 1,577 | 123,668 | 1,399 |
| Mapping Data Collection and Integration | 56,330 | 5,250 | 56,434 | 200 | 54,172 | 0 |
| Earth Science Info Management and Delivery | 34,270 | 1,250 | 37,329 | 0 | 33,382 | 0 |
| Geog Research and Applications | 36,117 | 1,353 | 36,663 | 1,377 | 36,114 | 1,399 |
| Geologic Hazards, Resources, and Processes* | 211,222 | 84,108 | 225,321 | 90,302 | 213,803 | 90,655 |
| Geologic Hazard Assessments | 69,111 | 69,111 | 72,726 | 72,726 | 73,704 | 73,704 |
| Geologic Landscape and Coastal Assessments | 65,435 | 14,997 | 74,375 | 17,576 | 64,240 | 16,951 |
| Geologic Resource Assessments | 76,676 | 0 | 78,220 | 0 | 75,859 | 0 |
| Water Resources Investigations* | 185,819 | 14,764 | 201,716 | 23,702 | 159,483 | 18,713 |
| Water Resources Assessment and Research | 91,037 | 0 | 94,840 | 0 | 65,123 | 0 |
| Water Data Collection and Management | 29,167 | 4,190 | 38,680 | 12,818 | 30,042 | 7,829 |
| Fed-State Coop Water Program | 60,553 | 10,574 | 62,741 | 10,884 | 64,318 | 10,884 |
| Water Resources Research Act Program | 5,062 | 0 | 5,455 | 0 | 0 | 0 |
| Biological Research* | 136,896 | 0 | 160,569 | 0 | 149,262 | 0 |
| Biological Research and Monitoring | 113,232 | 0 | 128,788 | 0 | 126,860 | 0 |
| Bio Info Management and Delivery | 10,484 | 0 | 17,704 | 0 | 8,432 | 0 |
| Cooperative Research Units | 13,180 | 0 | 14,077 | 0 | 13,970 | 0 |
| **Programmatic Total** | **660,654** | **106,725** | **718,032** | **115,581** | **646,216** | **110,767** |
| General Administration/Science Support* (prorated) | 67,104 | 10,737 | 73,733 | 11,797 | 81,266 | 13,815 |
| Facilities* (prorated) | 85,618 | 13,699 | 88,341 | 14,135 | 85,894 | 14,602 |
| **Appropriations Total (not including supplementals)** | **813,376** | **131,161** | **880,106** | **141,513** | **813,376** | **139,184** |

*Budget Activity

## GPRA PROGRAM ACTIVITY: HAZARDS

**Long-Term Goal —** Ensure the continued transfer of hazards-related data, risk assessments, and disaster scenarios needed by our customers before, during, and after natural disasters, and by 2005, increase the delivery of real-time hazards information by increasing the average number of streamgages reporting real-time data on the Internet during each quarter to 5,500 (thus reducing the time it takes to provide flood information at that site from 6 to 8 weeks to 4 hours) and installing 500 improved earthquake sensors (thus reducing delivery time of information on potentially damaging earthquakes from 40 to 20 minutes) to minimize the loss of life and property.

**2002 Annual Performance Goal —** Develop, maintain and improve monitoring networks and techniques of risk assessment by: maintaining the baseline of data and risk assessments transferred to customers; maintaining the average number of streamgages delivering real-time data on the Internet and increasing by 100 improved earthquake sensors to deliver real-time information on potentially damaging earthquakes to minimize loss of life and property.

| Performance Measure | 1998 Actual | 1999 Actual | 2000 Plan | 2000 Actual | 2001 Plan** | 2002 Proposed |
|---|---|---|---|---|---|---|
| Hazards monitoring networks maintained | 6 | 6 | 6 | 6 | 6 | 6 |
| Risk assessments delivered | 16 | 16 | 10 | 17 | 8 | 8 |
| Real-time streamgages (cumulative) | 4,571 | 5,132 | Discontinued | | | |
| Real-time streamgages on the Internet (quarterly average) | Replace-ment | 4,500 | 4,700 | 4,872 | 5,374 | 5,374 |
| Real-time earthquake sensors (cumulative) | 100 | 120 | 200 | 201 | 329 | 429 |
| Stakeholder meetings | 16 | 16 | 13 | 40 | 32 | 28 |
| Customer satisfaction** ** | Pilot | Pilot | Baseline | In progress | Baseline single index | Baseline goal index |

** Target increases/decrease from the plan that accompanied the FY 2001 budget request reflect funding increases and decreases above or below the requested increase for streamgages and earthquake sensors respectively. A table comparing the funding request with the enacted appropriation is provided in Appendix II. Revised targets also reflect a change in the FY 2000 performance base from planned to actual — for example, fewer risk assessments are targeted for FY 2001 because we completed almost twice as many as planned in FY 2000.

** ** For a description of Customer Satisfaction Measurement and Index Development, see Section 3.1.

## FY 2000 ANNUAL PERFORMANCE REPORT

**Goal:** Develop, maintain, and improve monitoring networks and techniques of risk assessment by: maintaining the baseline of data and risk assessments transferred to customers; increasing by 200 (to 4,700) the quarterly average number of streamgages delivering real-time data on the internet, and increasing by 80 improved earthquake sensors to deliver real-time information on potentially damaging earthquakes to minimize loss of life and property.

**Report**: USGS exceeded all performance indicators for the Hazards goal except for definition of baseline for customer satisfaction, which is described in more detail in the Customer Service section 3.1.

During FY 2000, USGS significantly improved its delivery of real-time streamflow data on the Internet. This increase is mostly due to the addition of some new real-time streamgages, but it is also due to improvements that USGS has begun to make in the reliability of its data delivery systems, including back-up computers that keep these vital data flowing to emergency management officials even when floods and hurricanes disrupt electrical service.

Also noteworthy is the significant increase in the number of stakeholder meetings held. In our interest in better serving customers and engaging them in our planning processes, we have improved the format, content, and diversity of opportunities to exchange ideas. For example, in FY 2000, the Earthquake Hazards Program conducted regional workshops in the Pacific Northwest, Central and Eastern United States, and California to gather customer feedback to be used in the update and revision of national seismic hazard maps. Each of these workshops involved approximately 75-100 individuals from a broad cross-section of the community. Government agencies (FEMA, COE, NSF), State and local governments, universities, and the private sector all participated. Input provided during these sessions is being incorporated into revised hazard maps planned for 2001. The workshops to date have been overwhelmingly successful. An additional workshop for the Inter-Mountain West is planned for early in FY 2001 and will be conducted in a similar manner.

## FY 2002 PERFORMANCE LINKAGE TO BUDGET

USGS has requested no funding increases in FY 2002 to accelerate achievement of the hazards strategic goal. Decreased funding to the streamgage network will maintain FY 2001 levels of performance with no additions to the network. Despite the decrease in funding requested relative to FY 2001, the percentage of total USGS funding dedicated to the hazards goal has increased from FY 2001, further evidence of the priority placed on the hazards goal and an attempt to preserve performance.

## DATA VERIFICATION AND VALIDATION

Each performance measure has its own performance data collection strategy and validation hierarchy of review and will be modified as regional leadership oversight evolves to ensure regional aspects of programs are being met. In addition to the processes cited, USGS conducts cyclical program evaluations that contribute to the validation of performance measurement.

| Performance Measure and Definition | Performance Data Sources and Limitations | Verification and Validation |
|---|---|---|
| **Hazards monitoring networks maintained**<br>A monitoring network consists of an array of sensing devices, IT infrastructure, and personnel that together detect, record, interpret, integrate and deliver data for a given hazard. | **Data Sources:** Managers monitor and supervise functioning of networks at observatories, research centers, and Water Districts, and report status by exception. Performance data are tangible entities that were counted and verified by in-house sources.<br>**Data Limitations:** No significant performance data limitations identified. | **Verification:** Program Coordinators/ Program Officers verify performance data.<br>**Validation:** The recently published National Research Council (NRC) evaluation validated this performance measure in their finding that USGS is a "vitally important provider and coordinator of information related to critical issues in the natural sciences" and often refers to the USGS' future role as a "natural science and information agency." Monitoring availability of digital databases and infrastructure is fundamental to ensuring that this future role is attained. |
| **Risk assessments delivered**<br>Regional or national assessment of risk for one or more hazards. | **Data Sources:** Hazards assessments are tracked as published USGS reports; Hazards notifications based on monitoring data are recorded at and reported by USGS observatories, centers, etc. Performance data are tangible entities that were counted and verified by in-house sources.<br>**Data Limitations:** No significant performance data limitations identified. | **Verification:** Official USGS Annual Publications listing verifies publication. Accuracy of reports listing can be confirmed by each internal organization's reports tracking system.<br>**Validation:** The recently published NRC evaluation validated this performance measure in their finding that USGS is a "vitally important provider and coordinator of information related to critical issues in the natural sciences" and often refers to the USGS' future role as a "natural science and information agency." Monitoring availability of research products is fundamental to ensuring that this future role is attained. Quality of research is captured in peer review and evaluations. |

| Performance Measure and Definition | Performance Data Sources and Limitations | Verification and Validation |
|---|---|---|
| **Real-time streamgages**<br>Telemetry is added to existing streamgages to provide real-time flow info for NWS forecasters and emergency management and response officials. The metric reflects not only the number of real-time streamgages that USGS puts in place each year but also captures our ability to deliver hazards data to those who need it | **Data Sources:** USGS developed a "robot" program that queries each District Office Web site every day, asking: "how many sites are delivering real-time data on the Web right now?" This query results in a total number of gaging stations across the Nation that are delivering real-time data over the Internet at that particular moment. At the end of the quarter, all the daily values collected by the robot program will be averaged together, resulting in one number that represents the "quarterly average number of gages reporting real-time data on the Internet"<br>**Data Limitations:** No significant performance data limitations identified. | **Verification:** The Water Resources Headquarters Webmaster certifies the performance data.<br>**Validation:** Performance measure must support specific decisions about future improvements to the streamgaging network, otherwise performance data will not be collected, compiled or analyzed. Customers and stakeholders are engaged in the strategic planning of performance goals. |
| **Real-time earthquake sensors**<br>Ground motion detectors are the initial instrument installed to capture and transmit real-time information. | **Data Sources:** USGS seismic network operators report installation status to the Seismic Network Manager who reports to the Earthquake Program Manager. Performance data were captured by a physical count by in-house sources.<br>**Data Limitations:** No significant performance data limitations identified. | **Verification:** The Seismic Network Manager certifies the status of installation efforts reported by the regional network operators. The coordinator of the Earthquake Hazards Program certifies the performance data and transmits to the Director's Office.<br>**Validation:** Performance measure must support specific decisions about future improvements to the earthquake monitoring network, otherwise performance data will not be collected, compiled or analyzed. Customers and stakeholders are engaged in the strategic planning of performance goals. |

| Performance Measure and Definition | Performance Data Sources and Limitations | Verification and Validation |
|---|---|---|
| **Stakeholder meetings** Major meetings with other Feds, customers, cooperators, Administration and congressional oversight groups and/or the public who have a major role/interest in hazard warning or response | **Data Sources:** Program coordinator schedules, organizes/attends annual stakeholder meetings and maintains records that the meetings have taken place. Performance data were captured by a physical count by in-house sources. **Data Limitations:** No significant performance data limitations identified. | **Verification:** Regional or Associate Director verifies that stakeholder meetings have taken place. **Validation:** The NRC program evaluation recommended that USGS do even more in reaching out and being responsive to our partners and customers. While we feel that we have taken very positive steps with listening sessions and other venues to monitor those external voices, the strength of the USGS in large measure depends on the value that our customers and partners place on our science and the many ways in which our science impacts their work. We need to, and will, do more and believe that this performance measure is an indicator of outreach. |

**Planned Improvements:**
The USGS will continue to build upon current measures for each of the long-term goals. The USGS will move forward in improving current measures and in developing next generation measures. The responsible Executive Leadership Team official for the long-term goal will work with the Deputy Director to finalize action plans for improving current measures and developing next generation measures. The plans will outline specific directions that will be taken in measurement development and identify levels of accountability within USGS.

## 2.2 GPRA PROGRAM ACTIVITY: ENVIRONMENT AND NATURAL RESOURCES

**Description**

Provide science in response to present and anticipated needs to expand our understanding of environmental and natural resource issues on regional, national, and global scales, and enhance predictive/forecast modeling capabilities.

Our environment — the air, water, soil, and plant and animal life — is constantly changing as natural processes and human actions affect it. Changes in demographics also affect the competition for and use of the renewable and nonrenewable natural resources — land, water, minerals, and energy — needed to sustain life, and to maintain and enhance our Nation's economic strength. As land and resource management issues become increasingly complex, both environmental and natural resources sciences are needed to guide decisions, predict outcomes, and monitor results. The need for cross-discipline, integrated science has never been more apparent. USGS environment and natural resources mission activities focus on studies of natural, physical, chemical, and biological processes, and on the results of human actions. These studies encompass collecting data, making long-term assessments, conducting ecosystem analyses, monitoring change, and forecasting the changes that may be expected in the future. USGS also works closely with the Fish and Wildlife Service and others in monitoring and reporting on wildlife disease outbreaks.

The USGS cannot and does not seek to use only our own resources to collect all of the environmental and natural resources data required for managers, regulators, and the general public to make informed decisions. We are increasingly **building partnerships** among Federal, State, local, private, and industrial entities to leverage resources and expertise.

**Established protocols for data collection** are critical to ensuring the comparability, validity of interpretation, integration, and usefulness of data for land and resource decisionmaking. The USGS is establishing data standards and protocols and working with customers to: identify their long-term environmental and natural resource issues, current trends, and available information to improve our data collection and data management efforts; deliver systematic analyses needed by our customers; and develop and improve decision support systems. We are also seeking new applications and increased use of our classified assets.

**FY 2001 Goal**

Provide and improve long-term environmental and natural resource information, systematic analysis and investigations, and predictive options for decisionmaking about natural systems by: providing essential information to address environmental and natural resources issues by maintaining 44 long-term data collection/data management efforts and supporting 2 large data infrastructures managed in partnership with others; delivering 1,146 new systematic analyses and investigations to our customers; improving and developing 7 new decision support systems and predictive tools for decisionmaking; and collaborating with university partners to understand natural systems and facilitate sound management practices through 209 external grants and contracts.

**Goal Description**

**Programs**: Environment and Natural Resource programs will focus on understanding, modeling, and predicting how multiple forces affect natural systems. This knowledge will enable land managers, decisionmakers and citizens to make sound decisions about how to live on and

### USGS SCIENCE FOR A NATIONAL ENERGY STRATEGY

Ongoing national assessments of coal, oil and natural gas, and other energy and mineral commodities, which have long been part of the mission of the USGS, are providing a critical foundation in the formulation of an energy strategy for the Nation. For example, USGS recently released a new assessment of the Nation's coal resources showing abundant high quality, low-sulfur coal on Federal and private lands in the Colorado Plateau region of Arizona. USGS will continue to provide this reliable, unbiased information that is vital to the President's national strategy for a sound energy policy and to the Nation as it continues to grow.

### THE USGS NATIONAL FIELD MANUAL FOR THE COLLECTION OF WATER-QUALITY DATA (NFM)

(http://water.usgs.gov/owq/FieldManual/) meets a universal need for collection of accurate information on the quality of national and multinational ground-water and surface-water resources. Accomplishing this goal requires standardized procedures that emphasize critical thinking in the field. Worldwide recognition of the utility of the NFM to help meet the need for comparability, reliability, and scientific validity of the data used to assess water resources is reflected in the following statistics for the period January 1 – December 30, 2000: Over 97 different countries accessed the NFM web site, representing virtually every continent. The NFM was accessed through our web site 509,303 times.

manage the land. The USGS will provide these customers with a better understanding of natural systems at all scales, with more and better predictive tools and decision support systems, and with easier access to natural science data. As funding permits, the USGS will continue to improve the quality and usability of our long-term datasets and accompanying interpretive products, including water quantity and quality assessments, mineral and energy information, biological data and information, water use information, and high-quality digital maps depicting the character of the earth's surface. In particular, we will develop predictive models and decision support systems that allow managers and decision-makers to evaluate the resource and environmental consequences of management choices under various scenarios. This information can be used to improve management decisions. Stakeholder meetings will be held with customers, cooperators, and the public who have a major role or interest in environment and natural resource issues to help us define needs and program priorities.

**Operations**: USGS will improve the efficiency of administrative, science support, and programmatic activities to streamline systems for delivery of environment and natural resources data and information. USGS will implement our Information Infrastructure Plan to ensure that data comply with common standards and protocols.

**People**: As with Hazards, USGS employees are at the core of achieving the Environment and Natural Resources goal. USGS will assess our current capabilities and skills and actively invest in training our employees in the skills needed to improve our ability to understand natural systems, develop improved predictive models, and better communicate with customers. USGS is aligning our rewards systems to reinforce the need for better integration of capabilities and more responsiveness to customer needs. Finally, we will take steps to increase our flexibility to respond quickly and effectively to the needs of our customers by putting in place new contractual vehicles for obtaining new skills, removing barriers to resource sharing, and increasing use of cooperative agreements with others who use our data and information on natural resources and the environment.

**Customers**: We will focus on key users of environment and natural resources information, such as Interior and other Federal, State, and local managers, to ensure their needs are understood and are being met.

### REAL-TIME GROUND-WATER NETWORK

The USGS has developed a new automated, web-based report that provides timely and detailed analytical information on the current state of ground water using data from a USGS real-time ground-water network. The new web-based system provides regional water managers in-depth, analytical information on the current state of ground-water conditions in south Florida, on a basis timely enough to observe trends as they begin and to make decisions in advance of droughts and water shortages. The focus of the project was the primary water-use aquifers in southern Florida, including the Biscayne, Sandstone, Tamiami, Hawthorn, and surficial aquifers. The web site showing real time ground-water conditions can be accessed at http://www.sflorida.er.usgs.gov/ddn_data/index.html.

| Budget Activity/Subactivity ($000) | FY 2000 Enacted Approp less rescission | | FY 2001 Enacted Approp less rescission | | FY 2002 Pres Budget | |
|---|---|---|---|---|---|---|
| | Total | ENR | Total | ENR | Total | ENR |
| National Mapping Program* | 126,717 | 118,864 | 130,426 | 128,849 | 123,668 | 122,269 |
| Mapping Data Collection and Integration | 56,330 | 51,080 | 56,434 | 56,234 | 54,172 | 54,172 |
| Earth Science Info Management and Delivery | 34,270 | 33,020 | 37,329 | 37,329 | 33,382 | 33,382 |
| Geog Research and Applications | 36,117 | 34,764 | 36,663 | 35,286 | 36,114 | 34,715 |
| Geologic Hazards, Resources, and Processes* | 211,222 | 127,114 | 225,321 | 135,019 | 213,803 | 123,148 |
| Geologic Hazard Assessments | 69,111 | 0 | 72,726 | 0 | 73,704 | 0 |
| Geologic Landscape and Coastal Assessments | 65,435 | 50,438 | 74,375 | 56,799 | 64,240 | 47,289 |
| Geologic Resource Assessments | 76,676 | 76,676 | 78,220 | 78,220 | 75,859 | 75,859 |
| Water Resources Investigations* | 185,819 | 171,055 | 201,716 | 178,014 | 159,483 | 140,770 |
| Water Resources Assessment and Research | 91,037 | 91,037 | 94,840 | 94,840 | 65,123 | 65,123 |
| Water Data Collection and Management | 29,167 | 24,977 | 38,680 | 25,862 | 30,042 | 22,213 |
| Fed-State Coop Water Program | 60,553 | 49,979 | 62,741 | 51,857 | 64,318 | 53,434 |
| Water Resources Research Act Program | 5,062 | 5,062 | 5,455 | 5,455 | 0 | 0 |
| Biological Research* | 136,896 | 136,896 | 160,569 | 160,569 | 149,262 | 149,262 |
| Biological Research and Monitoring | 113,232 | 113,232 | 128,788 | 128,788 | 126,860 | 126,860 |
| Bio Info Management and Delivery | 10,484 | 10,484 | 17,704 | 17,704 | 8,432 | 8,432 |
| Cooperative Research Units | 13,180 | 13,180 | 14,077 | 14,077 | 13,970 | 13,970 |
| **Programmatic Total** | **660,654** | **553,929** | **718,032** | **602,451** | **646,216** | **535,449** |
| General Administration/Science Support* (prorated) | 67,104 | 56,367 | 73,733 | 61,936 | 81,266 | 67,451 |
| Facilities* (prorated) | 85,618 | 71,919 | 88,341 | 74,206 | 85,894 | 71,292 |
| **Appropriations Total (not including supplementals)** | **813,376** | **682,215** | **880,106** | **738,593** | **813,376** | **674,192** |

ENR = Environment and Natural Resources

*Budget Activity

## GPRA PROGRAM ACTIVITY: ENVIRONMENT AND NATURAL RESOURCES

**Long-Term Goal —** Ensure the continued availability of long-term environmental and natural resource information and systematic analysis and investigations needed by customers, and by 2005, develop 20 new decision support systems and predictive tools for informed decisionmaking about natural systems.

**FY 2002 Annual Performance Goal —** Provide and improve long-term environmental and natural resource information, systematic analysis and investigations, and predictive options for decisionmaking about natural systems by: providing essential information to address environmental and natural resources issues by maintaining 43 long-term data collection/data management efforts and supporting 1 large data infrastructure managed in partnership with others; delivering 1,058 new systematic analyses and investigations to our customers; improving and developing 4 new decision support systems and predictive tools for decisionmaking; and collaborating with university partners to understand natural systems and facilitate sound management practices through 153 external grants and contracts.

| Performance Measure | 1998 Actual | 1999 Actual | 2000 Plan | 2000 Actual | 2001 Plan** | 2002 Proposed |
|---|---|---|---|---|---|---|
| Long-term data collection and data management efforts maintained and improved, and large data infrastructures supported | 40 | 40 | 46 | 46 | 46 | 44 |
| New products from systematic analyses and investigations delivered to customers | 865 | 959 | 995 | 1,113 | 1,146 | 1,058 |
| Decision support systems or predictive models developed or improved, and delivered to customers | 5 | 7 | 6 | 7 | 7 | 4 |
| University-based partnerships for natural systems analysis | 270 | 238 | 248 | 209 | 209 | 153 |
| Stakeholder meetings | 212 | 473 | 438 | 468 | 458 | 434 |
| Customer satisfaction** ** | Pilot | Pilot | Baseline | In progress | Baseline single index | Baseline goal index |

** FY 2001 target increases from the plan that accompanied the FY 2001 budget request reflect funding increases above the requested level. A funding table comparing the request with the enacted appropriation is provided in Appendix II. Revised targets also reflect reassessment of planned vs actual achievement in prior years -- for example, the university-based partnerships target for FY 2001 was reduced to match actual performance of the prior year because the reduction was caused by streamlining process. The target reduction for the same measure FY 2002 however reflects decreased funding as actuals for FY 2001 are not available.

** ** For a description of Customer Satisfaction Measurement and Index Development, see Section 3.1.

## FY 2002 PERFORMANCE LINKAGE TO BUDGET

USGS has requested no funding increases in FY 2002 to accelerate achievement of the environment and natural resources strategic goal. Proposed decreases in funding have been limited largely to water quality, international mineral resource information, grants and partnerships in water research and geologic mapping, global change, and information infrastructure, management, and delivery. Delivery of analyses will be adversely affected not only in FY 2002 but in out years as projects are terminated. While existing data will continue to be maintained for most databases, many databases will not be accumulating new data and the asset value will be diminished by data gaps. Development of decision support systems and models will be substantially diminished.

## DATA VERIFICATION AND VALIDATION

Each performance measure has its own performance data collection strategy and validation hierarchy of review and will be modified as regional leadership oversight evolves to ensure regional aspects of programs are being met. In addition to the processes cited, USGS conducts cyclical program evaluations that contribute to the validation of performance measurement.

## FY 2000 ANNUAL PERFORMANCE REPORT

**Goal:** Provide and improve long-term environmental and natural resource information, systematic analysis and investigations, and predictive options for decision-making about natural systems by: providing essential information to address environmental and natural resources issues by maintaining 44 long-term data collection/data management efforts and supporting 2 large data infrastructures managed in partnership with others; delivering 995 new systematic analyses and investigations to our customers; improving and developing 6 new decision support systems and predictive tools for decisionmaking; and collaborating with university partners to understand natural systems and facilitate sound management practices through 248 external grants and contracts.

**Report:** USGS met or exceeded four performance indicators for the Environment and Natural Resources goal. Our shortfall in university research work orders for the Cooperative Research Units again resulted from fewer than anticipated large/long-term studies with severable research components. This shortfall actually represents improved time and cost efficiency rather than lost or decreased productivity. Partner and cooperator satisfaction remain high, and for FY 2001 we lowered the goal to the actual performance level while we investigate alternative measures that can more capably capture performance and outcome for this external component of our program. Definition of baseline for customer satisfaction is described in more detail in the Customer Service section 3.1.

| Performance Measure and Definition | Performance Data Sources and Limitations | Verification and Validation |
|---|---|---|
| **Long-term data collection and data management efforts maintained and improved, and large data infrastructures supported**<br>Long-term, large-scale database efforts to ensure the collection, preservation, and dissemination of natural science data, including development of national infrastructures for the management and sharing of these data produced at all levels of government. | **Data Sources:** Performance data are collected by project scientists at research/field centers and are reported through an automated, electronic system.<br>**Data Limitations:** No significant performance data limitations identified. | **Verification:** Reports provided by the FFS and the Sales Data Base verify the amount of maps, data, aerial photographs and satellite images available in the various geospatial databases and inventories. Program coordinators certify geologic databases. Each District Chief and the Office of Surface Water certify water resources data collection.<br>**Validation:** National program element reviews and reviews of individual research centers validate biological databases. The recently published National Research Council (NRC) evaluation validated this performance measure in their finding that USGS is a "vitally important provider and coordinator of information related to critical issues in the natural sciences" and often refers to the USGS' future role as a "natural science and information agency." Monitoring availability of digital databases and infrastructure is fundamental to ensuring that this future role is attained. |
| **New systematic analyses and investigations delivered to customers**<br>Reports or other products delivered to managers or the scientific community that result from long-term assessments or from investigations to determine causes and/or effects of environmental change. Reports and other products are delivered as paper copies or Internet products. | **Data Sources:** USGS compiles a list of new publications monthly and makes it available on the Internet at: http://pubs.usgs.gov/publications/index.html Performance data were captured by a physical count by in-house sources.<br>**Data Limitations:** No significant performance data limitations identified. | **Verification:** Accuracy of "new reports" listing can be confirmed by each internal organization's reports tracking system.<br>**Validation:** The recently published NRC evaluation validated this performance measure in their finding that USGS is a "vitally important provider and coordinator of information related to critical issues in the natural sciences" and often refers to the USGS' future role as a "natural science and information agency." Monitoring availability of research products is fundamental to ensuring that this future role is attained. Quality of research is captured in peer review and evaluations. |

| Performance Measure and Definition | Performance Data Sources and Limitations | Verification and Validation |
|---|---|---|
| **Decision support systems or predictive models developed or improved and delivered to customers** Decision support tools and predictive models are broad in scope, are robust, yield either quantitative predictions about natural resources or the environment or quantitative options for land and resource management, and are used regularly by managers for informed decisionmaking. | **Data Sources:** Data on development delivery and use of decision support systems and predictive models are monitored and reported by project scientists at research/field centers and are reported through automated, electronic systems such as http://water.usgs.gov/ software/ for new water investigation models and Science Information System (SIS) http://biology.usgs.gov/ science/currproj.html for biological models. Performance data were captured by a physical count by in-house sources. **Data Limitations:** No significant performance data limitations identified. | **Verification:** For mapping models, the Senior Program Advisor for Geographic Research and Applications verify delivery and use by customers. For geologic models, verification is conducted by program coordinators and stakeholder reps. For water resources models, a technical memorandum is issued for each model. For biological models, verification occurs through national program element reviews and reviews of individual research centers. **Validation:** Ultimately customers validate that the systems and models are acceptable and useful. The recently published NRC evaluation validated this performance measure in their recommendation that multi-scale, multidisciplinary, integrated projects that use system modeling are the best way to address the Nation's complex natural resource problems. |
| **University-based partnerships for natural system analysis.** | **Data Sources:** For water resources research partnerships, source of data is the Chief, Office of Research. For biological partnerships, source of data is the Cooperative Research Unit Coordinator. Performance data were captured by a physical count by in-house sources. **Data Limitations:** No significant performance data limitations identified. | **Verification:** Certification from USGS Contracts Office that the partnerships have been awarded. **Validation:** The NRC program evaluation recommended that USGS do even more in reaching out and being responsive to our partners and customers, USGS continues to explore alternatives to the university-based partnership measure to better capture cooperative activities. |

| Performance Measure and Definition | Performance Data Sources and Limitations | Verification and Validation |
|---|---|---|
| **Stakeholder meetings** Major meetings with other Feds, customers, cooperators, Administration and congressional oversight groups and/or the public who have a major role/interest in environmental and natural resource issues. | **Data Sources:** Program coordinator schedules, organizes/ attends annual stakeholder meetings and maintains records that the meetings have taken place. Performance data were captured by a physical count by in-house sources. **Data Limitations:** No significant performance data limitations identified. | **Verification:** Regional or Associate Director verifies that stakeholder meetings have taken place. **Validation:** The NRC program evaluation recommended that USGS do even more in reaching out and being responsive to our partners and customers. While we feel that we have taken very positive steps with listening sessions and other venues to monitor those external voices, the strength of the USGS in large measure depends on the value that our customers and partners place on our science and the many ways in which our science impacts their work. We need to, and will, do more and believe that this performance measure is an indicator of outreach. |

**Planned Improvements:**
The USGS will continue to build upon current measures for each of the long-term goals. The USGS will move forward in improving current measures and in developing next generation measures. The responsible Executive Leadership Team official for the long-term goal will work with the Deputy Director to finalize action plans for improving current measures and developing next generation measures. The plans will outline specific directions that will be taken in measurement development and identify levels of accountability within USGS.

# Section III

## *Additional GPRA Information*

### 3.1 CUSTOMER SERVICE

Customers are a key component of the USGS Strategic Plan. Not only are we actively obtaining customer feedback regarding our information, services, products and programs, but we are talking with our customers, listening to them, and proactively creating the opportunities to engage our customers into our program planning and refinement processes.

**Report to Customers:** Since 1996 we have published annual reports that are packed with examples of the ways customers are using our products to make a difference and with data that examine what we are hearing from our customers. Also included is a review of the USGS customer service goals and standards. A copy of our latest report, the 2000 Report to Customers, may be found in May 2001 on-line at http://www.usgs.gov/customer.

**Customer Measurement Framework Pilots:** As a complement to tracking customer comments and feedback, USGS has been piloting an approach to measuring and communicating customer information within our science programs. What we learn from these activities will be used tactically and strategically to ensure that our research continues to be relevant and timely to meet customer needs. The results of these pilot efforts are published as part of the 2000 Report to Customers. The goals of these pilots were to develop and test a "customer measurement framework" (1) to assist in handling and organizing in a consistent manner the diverse range of customer information found throughout the bureau and (2) to be easy enough to use so that it could be adapted at all levels of the bureau. The pilots helped us see ourselves from the customer's point-of-view; highlighted what the customers valued; reflected the reality of why we have the customers we have; and narrowed our focus and helped us to identify value-adding changes.

**Customer Satisfaction Index:** The Customer Satisfaction Survey (CSS) provides a satisfaction sampling of science products from across the bureau. While there have been many satisfaction evaluations of science products over time, they have been done on a program-by-program basis without a standard format. Now, some 18 science programs have begun participating in mini-surveys (about 10 questions or so) via email to samples of specific science product users. While the surveys all follow the same format, each one can be somewhat modified to meet a specific program's customer information needs. The final result of each survey is immediately useful to the program manager as well as formatted for combined bureau analysis of satisfaction ratings and usage by product type and discipline area. USGS Executive Leadership Team members will also use these data as part of their planning efforts.

In addition to the mini-surveys, results from three other sources are being included in this satisfaction assessment: (1) the External Task Force Review of the U.S. Geological Survey Federal-State Cooperative Water

#### USGS LISTENING SESSIONS

The USGS executive leadership sponsored a series of "Listening Sessions" in March and April 2000. These listening sessions met the USGS customer service goals and standards by offering a forum through which customers were encouraged to present their views on future directions for USGS science in 2002 and beyond. They provided an excellent opportunity for a general check-up on the health of the organization in the eyes of its customers and partners and have been a valuable means for incorporating customer feedback into program planning.

Program (August 1999; Circular 1192); (2) a user needs survey on the "The Quality of Our Nation's Waters—Nutrients and Pesticides (1999; Circular 1225); and (3) the most recent results from the Partner and Customer Survey Report on Biological Programs. An index of satisfaction will be developed as a bureau-level form of measurement.

Efforts began in FY 2000 to define the baseline satisfaction measurement for USGS products. Baseline data were collected with the Customer Satisfaction Survey beginning in FY 2000 and continuing through the first quarter of FY 2001. More than 1,000 customers, mostly scientists, described their satisfaction with various aspects of USGS science products. We attempted to define a metric for each mission goal. Product attrition and lower than anticipated response rates for the survey of hazard products led us to conclude that this expectation was premature. As a result, for FY 2001 we have derived a combined baseline index of satisfaction with USGS products of 95 percent. For FY 2002, we will attempt to expand the hazards survey to derive an independent metric. Because we will be sampling a different set of products each year, one year's measurement is not directly linked to the following, that is, these should not be considered strictly comparable time series measurements. Regardless of the set of products being sampled, however, the intent of the satisfaction measurement is to maintain at least a 90 percent satisfaction level.

## FY 2000 USGS CUSTOMER SERVICE PLAN ACCOMPLISHMENTS

**Team Activities:** The USGS Customer Service and Research Team served as a resource to the USGS and to our customers until mid-2000 when the Team concluded its development work relating to the pilots of measuring customer interaction and feedback and was officially retired.

**Collect Customer Satisfaction Information:** The USGS continued under a 3-year information collection program, approved by the Office of Management and Budget (OMB) in 1999, to work directly with customers to research service performance. The survey, initiated in 1999 to obtain input from visitors to and customers of our Earth Science Information Centers, was expanded to include web sites in 2000. The customer survey of biological programs continued for its fifth year.

**Benchmark Customer Complaint Processes:** USGS participated in a DOI-sponsored benchmarking team to identify best practices in customer complaint systems. The Benchmarking Study recommendations were approved for implementation by DOI and led to (1) development and approval of a DOI Customer Service Policy based primarily upon the USGS Customer Service Policy and (2) implementation of a DOI Customer Service Excellence Award Program based on the USGS Customer Service Award Program used by the bureau since 1998.

**Continue Leadership of Interior's Customer Forum:** USGS continued to provide leadership of the DOI Customer Forum, an intradepartmental working group consisting of representatives from each Interior bureau and office. Members of the DOI Customer Forum received the first of the Secretary's Awards for Customer Service Excellence. The Forum cosponsored with the U.S. Environmental Protection Agency the Third Annual National Customer Service Conference held in Atlanta, GA, in November 2000. The conference brought together over 400 representatives of Federal, State, and local government agencies to share best practices and lessons learned in customer service. Planning is underway for the next conference in November 2001 to be located in Washington, D.C.

## FY 2001 USGS CUSTOMER SERVICE PLANS

**Customer Action Team:** To assist programs in gathering, measuring, and analyzing customer information, a Customer Action Team (CAT) is being established in FY 2001. One of its first functions will be to establish the use of the customer information framework developed by the pilots described above. While all programs have a wide range of customer data, they are not in easily-accessible or easy-to-combine forms and require significant effort via data calls and aggregation to get information that can be used at a bureau level. A key goal for the CAT is to help programs gather and manage customer data in a common way while ensuring there is immediate value to the programs as well as the bureaus.

**Customer Engagement:** The bureau is continually interested in establishing long-term mutual relationships with cooperators and partners. To encourage both integrated science and efficient use of resources, linking additional science disciplines into existing as well as newly developed partnerships is considered whenever possible. The bureau has and will continue to track these relationships as a form of customer measurement.

## 3.2 CROSSCUTTING ISSUES

The USGS is the science bureau for the Department of the Interior and the only integrated natural resources research bureau in the Federal Government. We support the Department's research needs as well as provide the water, biological, energy, and mineral resources information and capabilities needed by other Federal agencies and State and local governments to guide planning, management, and regulatory programs. Our research priorities are established in concert with our stakeholders to ensure their highest priority science needs are addressed, and to avoid duplication of effort among stakeholders. The USGS maintains consistency of its priorities with program evaluations and the National Science and Technology Council's (NSTC's) underlying principles for Federal science and technology investments.

USGS and the resource management bureaus of DOI have formalized a process agreement on USGS Research Support to DOI Resource Management Bureau Needs (305 DM2, Appendix 2) to provide USGS science support to the DOI bureaus that will also eventually provide feedback to USGS for defining GPRA metrics and outcomes. In July of 2000, we held a meeting in Denver, Colorado, called a "Dialogue on Future Science Directions" that included the heads of DOI Bureaus and their staff as well as senior DOI management. Needs and priorities of DOI Bureaus were discussed and recommendations made to improve collaboration, such as improved communications at field, regional, and national levels; inclusion in planning, implementation, and reporting of projects; and increased emphasis on tactical science including ready access to scientists and interpretation of results. The USGS works cooperatively with the National Park Service through the Natural Resources Preservation Program and with the U.S. Fish and Wildlife Service through the Quick Response program to provide tactical science to meet short-term, time-sensitive science information needs. Examples of unanticipated management issues that require tactical science include: potential new listings for threatened and endangered species, discovery of environmental contamination that requires immediate attention, or on-site expertise to provide specific information for a particular refuge, park, or resource area.

The depth of USGS coordination may be demonstrated by looking at stakeholders working collaboratively on complex issues. For example, bureaus of the Departments of the Interior and Agriculture are coordinating their efforts at fire management, not only among themselves, but also in concert with State and local government organizations, private industry, and non-profit groups.

- The Bureau of Land Management (BLM), the National Park Service (NPS), the Fish and Wildlife Service (FWS), the Bureau of Indian Affairs (BIA), and the USGS of the Department of the Interior and the U.S. Forest Service (USFS) of the Department of Agriculture all participate in the Joint Fire Science Program (JFSP). The JFSP received specific direction from Congress to scientifically address four areas: fuels inventorying and mapping, evaluation of fuels treatments, scheduling of fuels treatments, and monitoring and evaluating fuels treatments.

- The same six agencies also participate in the National Fire Plan, which provides a coordinated approach to fire management, including developing significant new partnerships to better manage public land; integrating fire and resource management; restoring forest and rangeland health; completing land management planning and deferred maintenance and construction; increasing the ability to protect communities at risk from wildfire; enhancing the capabilities of rural fire district partners; and increasing the ability to protect natural resources (rangeland, forest, and wildlife).

- FWS and USGS scientists are conducting collaborative studies to determine the effects of fire on threatened and endangered plant and animal

species, including the Mississippi Sandhill Crane, the western prairie fringed orchid, and the Karner Blue butterfly.

- BLM, NPS, FWS and USGS scientists and State governments in several regions are working to understand the use of fire to control invasive species and the effect of invasive species on fire behavior and the alteration of normal fire cycles.

- USGS mapping and GIS specialists working with the National Interagency Fire Center, Geospatial Multi-Agency Coordination Group, have developed and operate a real-time GIS that provides fire managers the status of fires at a regional scale, which enables fire managers to assess and determine priorities for the use of wildfire suppression resources.

- The Western Governors Association is working with the National Fire Plan to develop a 10-year strategy for restoring health to fire-adapted ecosystems.

The breadth of USGS coordination may be demonstrated in the following representative listing of USGS crosscutting relationships with Federal, State, local, non-government, and international organizations.

### WILDFIRES IN THE WEST

During the summer of 2000 with numerous large fires occurring simultaneously across a broad geographic area, fire coordination centers had difficulty meeting requests for critical firefighting resources. Priorities were established for allocation of these limited resources based first upon the safety of firefighters and the local population, followed by protection of property and natural resource values. The need for information on the status, location, and proximity of wildfires to values at risk prompted the formation of the Geospatial Multi-Agency Coordination (GeoMAC) team consisting of technical experts in the application and use of computer and satellite mapping capabilities from Federal agencies, including the USGS, the National Interagency Fire Center, the USDA Forest Service, FWS, BLM, BIA, NPS, and NOAA. The GeoMAC team produced an Internet-based mapping application, which enables firefighting coordination centers and incident command teams to access online maps of current fire locations and perimeters using standard web browsers. Fire perimeter data are updated daily from incident intelligence sources, global positioning system (GPS) data, and infrared imagery from fixed wing and satellite platforms. The GeoMAC web site enables users in remote locations to manipulate and display fire information on maps at various scales and detail, including downloading desired information and printing hard copy for use on the fireline. The fire maps also have relational databases from which the user can display information on individual fires. Additional data layers, including fuel types, aircraft hazard maps, links to remote weather station data, and other critical fire analysis information, are currently being added to the GeoMAC application.

| Federal |
| --- |
| **National/Government-wide:** Federal Geographic Data Coordination, National Spatial Data Infrastructure, National Biological Information Infrastructure, U.S. Global Change Research Program, National Atlas, Geographic Names, Image and elevation data collection programs |
| **Agriculture/Forest Service:** Endangered Species, Conservation genetics, Habitat management, Forest plan, Wildlife, Invasive species, Fire science, National Forest maps, Drought/Fire fuel monitoring, Energy and mineral resources, Natural hazards, Mine lands, Land cover characteristics, Hydrologic data collection/studies |
| **Commerce:** Web-based interactive mapping system, Hydrologic data collection/studies |
| **Commerce/NOAA:** Endangered Species, Salmonid restoration, Coral reefs, Hazards monitoring and research, Geomagnetism, Vegetation change, Coastal erosion, Fish habitat, Marine sanctuaries, GIS |
| **Defense:** Endangered Species, Salmonid restoration, Coral reefs, Coastal erosion, Backup mapping during conflict, Natural hazards, Test ban monitoring, Strategic minerals and energy resources, Geomagnetism, Terrain visualization, Hydrologic data collection/studies |
| **Defense/Army Corp of Engineers:** Endangered Species, Habitat assessment, Fish behavior, Fish physiology, Dam impacts, Wetlands restoration, Seafloor mapping, Shoreline stability, Floodplain morphology, Mine lands, Energy resources, Natural Hazards, Hydrologic data collection/studies |
| **Energy:** Endangered Species, Bio-resource monitoring, Contaminant cause and effects, Gas Hydrates, Mining technology, Energy resources, Geologic hazards, Groundwater framework, Coal bed methane, Hydrologic data collection/studies |
| **EPA:** Endangered Species, Endocrine disruption, Contaminant effects, Status/Trends, Mine lands and drainage, Emissions modeling/clean air, Water quality, Seafloor mapping, Geochemical analyses, Coal resources and mining, Urban dynamics/land characterization, Hydrologic data collection/studies Remote sensing, Mineral baselines, GAP Analysis |
| **Federal Emergency Management Administration:** Hazards monitoring and mitigation, Hydrologic data collection/studies |
| **FEMA/Federal Insurance Administration:** Hazards assessment |
| **Health and Human Services:** Chemical Analyses |
| **Intelligence Community:** Information coordination, Environmental/ resource studies, Hazards Support |
| **Interior/BIA:** Integrated Resources (water, geology, vegetation inventory, remote sensing) |
| **Interior/BLM:** Rangeland Health, Wild Horse Management, Invasive Species, Abandoned Mine Lands, Air Quality, Threatened and Endangered species, Water Quality, Mineral Resource Assessments, Prescribed Fire |
| **Interior/BOR:** Water quality, Ecological models, Decision Support Systems |
| **Interior/FWS:** Inventory and Monitoring, Aquatics and Contaminants, Biological resources, Threatened and Endangered species, Water Quantity/Quality, GAP Analysis |
| **Interior/MMS:** Gas hydrates |
| **Interior/NPS:** Water quantity/quality, Geologic mapping, Biological resources |
| **Interior/OSM:** Acid mine drainage |
| **Justice:** GIS |
| **Labor:** Energy resources |
| **National Academy of Science:** Hazards studies |
| **National Aeronautics and Space Administration (NASA):** Planetary research, Landsat 7 operations, Natural hazards, Earth Science research, Data management, Land Processes Distributed Active Archive, GIS, United Nations Environment Programme clearinghouse, Remote sensing |
| **NASA/Jet Propulsion Lab:** Spaceflight support |
| **National Institutes of Health:** Human health and environment |
| **National Science Foundation:** Hazards studies, Antarctic research and mapping, Global seismology |
| **Smithsonian Institution:** North American vertebrate collections |
| **State:** Natural hazards, Energy resources, Global seismology, Hydrologic data collection/studies |
| **Tennessee Valley Authority:** Hydrologic data collection/studies |
| **Transportation/Federal Highway Administration:** Hazards studies, Hydrologic data collection/studies |
| **Transportation/Federal Aviation Administration:** Volcanic hazards |
| **U.S. Agency for International Development:** Geologic hazards, Hydrologic data collection/studies, Energy resources, Atmospheric moisture index |

## State and Local Government

**Airports:** Volcanic hazards

**American Indians/Alaska Natives:** K-12 educational resources, Streamgaging, Water quality/ quantity, Technical training and capability upgrade, Environmental hazards, Fisheries research, Invasive species

**Civil Defense:** Hazards mitigation

**Departments of Natural Resources/Geographic Information Councils:** Volcanic hazards, Map data production, Hydrologic data collection/studies

**Departments of Environmental Protection/Quality/Health:** Hydrologic data collection/studies

**Departments of Fish and Game/Conservation Commission/Wildlife and Parks:** Endangered species, Population dynamics, Habitat requirements, Fire management, Fisheries, Wildlife disease, Invasive species, Waterfowl surveys, Bird banding, Aquaculture, GAP Analysis

**Offices of Emergency Management/Services:** Hazards monitoring and mitigation

**Planning Commissions/Transportation/Engineering/Municipalities:** Conservation plans, Hydrologic data collection/studies, Topographic mapping, Hazards monitoring/assessment

**State Geological Surveys/Depts of Mines and Geology:** Geologic and topographic mapping, Hazards assessment

**Water Resources Authorities/Public Works/Sanitation:** Contaminant Transport, Hydrologic data collection/studies

## Nongovernment Organizations

**American Farm Bureau/American Society of Civil Engineers/Chemical Manufacturers Association/etc.:** Coordination of hydrologic programs

**American Red Cross:** Hazards monitoring and mitigation

**Electric Power Research Institute:** Coal quality

**FERC permitees/licensees:** Hydrologic data collection/studies, Restoration of Threatened and Endangered migratory fish

**Industry:** Spatial data modeling, Spatial data browsing and retrieval, Product development, registration, and production, Environmental monitoring, Acid rain deposition program

**The Nature Conservancy:** Endangered species, Species at Risk, Ecological research, Biological Status/Trends, Coordination of hydrologic programs, GAP Analysis

**National Park and Conservation Association:** Ecosystems assessments, Biological information

**Universities/Cooperative Fish and Wildlife Research Units/State Water Resources Research Institutes:** Planetary research, Space-based instrumentation, Natural science information delivery, Natural science research and applications, Hazards research, Training/education, Geologic mapping, Hydrologic data collection/studies, GAP Analysis

**Utilities**: Seismic studies, Hydrologic data collection/studies

**Woods Hole Oceanographic Institute:** Marine research

**The General Public:** Breeding bird survey, Bird banding, Water resources education/outreach

## International

**Global:** The USGS has conducted earth science studies and provided natural hazards support in foreign countries for over 50 years. Authorization is provided under the Organic Act, as revised, and the Foreign Assistance Act and related legislation when such studies are deemed by the U.S.Department of the Interior and Department of State to be in the interest of the U.S. Government.

**Africa:** Ecological monitoring, Famine Early Warning System

**Canada:** Hydrologic data collection/studies, Scientific/technical cooperation

**Central America:** Hazards mitigation, Database development, GIS

**China:** Scientific/technical cooperation

**International Civil Aviation Administration:** Volcanic Hazards

**International Organization for Standardization**: Standards activities

**Mexico:** Border mapping, Habitat Restoration, Environmental Education, Water quantity/quality, Landscape health, Fish species

**United Arab Emirates:** Hydrologic data collection/studies

**United Nations:** United Nations Environment Programme/Global Resources Information Database, Geographic names activities

## 3.3 MANAGEMENT ISSUES

The USGS has no problems that have been identified on the Department of the Interior's Inspector General's list of top ten management issues for FY 2001 or on the Major Management Challenges and Material Weaknesses list. The USGS also has no significant management problems of a mission-critical nature that threaten the achievement of major performance goals.

## 3.4 DATA VERIFICATION AND VALIDATION

Source and procedures for collecting and verifying performance data were highlighted in Section II for each performance measure for each GPRA program activity. In general, lead analysts for each discipline collected and verified performance data from program/project managers for the budget line items within their purview. Data received a final verification at the bureau level to ensure that reported components were discrete entities and that double counting did not occur, particularly in the more vulnerable areas such as integrated science investigations, for which several different line items supporting a single investigation could have resulted in counting by more than one program manager. USGS has not identified any serious data limitations—performance data for most of FY 2000 measures were captured by a physical count by in-house sources. Sampling and surveys of customer satisfaction are described in Section 3.1. Data limitations described there were the reason that a consolidated measure for the Bureau was used rather than one for each goal. The new streamgage measure requires automated sampling as described under the Hazards Data Verification and Validation section.

The USGS will continue to build upon current measures for each of the long-term goals. The USGS will move forward in improving current measures and in developing next generation measures. The responsible Executive Leadership Team (ELT) official for each long-term goal will work with the Deputy Director to finalize action plans for improving current measures and developing next generation measures. The plans will outline specific directions that will be taken in measurement development and identify levels of accountability within USGS. The USGS will use performance measures to guide and support strategic decisions. Before measures are developed and approved, consideration will be given to the type of decisions that they will support. If measures do not support specific decisions, and are not useful, data will not be collected, compiled, or analyzed.

An ELT official is accountable for each of the long-term goals. In some cases, more than one ELT official will be accountable for achievement of a long-term goal particularly when it is appropriate to separate regional or disciplinary components. The current matrix of accountable ELT officials will be reviewed and revised as appropriate to be consistent with the reorganization.

Accountability will flow from these ELT officials to various levels within the organization. Thus, accountability for achievement of each long-term goal will begin at the ELT level, but will become institutionalized throughout the organization. Accountability will flow to lowest level within the organization that can control outcomes associated with a long-term goal.

Using performance measures in a strategic decision framework requires dialog within the USGS community. The Office of Strategic Planning and Analysis will provide focus to this dialog. The USGS will measure achievement of key science outcomes by convening panels of external scientists and customers to evaluate our performance. To support these panels, the USGS needs to define the key outcomes and to develop criteria to be used in evaluating different levels of success.

## 3.5 PROGRAM EVALUATIONS

Evaluations are critical to maintaining the USGS' reputation for scientific excellence and credibility as well as providing guidance for future research needs. We conduct both internal and external peer and management reviews to improve the accountability and quality of programs; identify and address gaps in programs; redirect or reaffirm program directions; identify and provide guidance for development of new programs; and reward and/or motivate managers and scientists. Reviews are both internal and external—conducted by USGS and non-USGS scientists, technicians, or specialists who are not involved in the specific proposal, project, program, or product under review. Our goal is to conduct an independent external peer review of ongoing programs about every 5 years, combined with more frequent independent internal management reviews. At the beginning of 2001, a special review by the National Research Council of the entire USGS was released. This review was conducted by a diverse committee under the direction of the Commission on Geosciences, Environment, and Resources and included natural scientists and specialists from academia, industry, non-profit organizations, and government. It recognized that the USGS "has evolved and built a solid foundation on which to plan its future." The report also recognized that USGS is a "vitally important provider and coordinator of information related to critical issues in the natural sciences" and often refers to the USGS' future role as a "natural science and information agency." The committee recommended that multi-scale, multidisciplinary, integrated projects that use system modeling are the best way to address the Nation's complex natural resource problems. A strong emphasis in the report was the need for improvement in USGS ability to assess and prioritize customer needs, to forge partnerships with government, industry, and academia, and to devote substantial efforts to recruiting and retaining excellent staff. In conclusion the report warns that "future demands placed on the USGS can be expected to exceed the capacity of its financial and human resources." The USGS Strategic Plan addresses many of the NRC's recommendations and will be used to improve the Strategic Plan for FY 2002 and beyond.

The following evaluations completed in FY 2000 will also influence the contents of our Strategic Plan performance measures, the projects we conduct, and budget requests for FY 2003. Program evaluations scheduled for FY 2001 and FY 2002 will influence the content of the revised final FY 2002 Plan and FY 2003 Plans.

### NATIONAL RESEARCH COUNCIL REVIEW OF THE FUTURE ROLES AND OPPORTUNITIES OF THE USGS

At the beginning of FY 2001, a special review of the entire USGS was released by the National Research Council. It concluded that the USGS was well positioned "to provide well-coordinated, comprehensive responses to priorities of society and science." The report lauded our reorganization efforts to bring a multidisciplinary and integrated science approach to regional and national problems. The report emphasized the importance of USGS' considerable national and international leadership roles in the natural sciences and in hazards research and risk communication. It also focused on the USGS responsibility of serving as the science arm of the Department of the Interior and in providing national leadership in the provision of natural resource information. The report encouraged the Director to seek increased funding to maintain and expand these efforts and strengths.

| FY 2000 Program Evaluation Completed | Scope and Methodology | Bureau Goal |
|---|---|---|
| National Mapping Program Private Sector Relationships | Internal/External by senior management and private sector partners | ENR |
| Volcano Hazards Program | External Review by the National Research Council, report available | Hazards |
| National Cooperative Geologic Mapping Program | Internal/External Panel Federal Advisory Committee | Hazards, ENR |
| Strategic Directions for USGS Geography Programs | Internal Review | Hazards, ENR |
| USGS Coastal and Marine Activities | Internal Review | Hazards, ENR |
| Ground Water Resources | External Review by NRC, report available | ENR |
| Fisheries and Aquatic Resources Program | Internal/External Review | ENR |
| Global Change and Wetlands | Internal/External Review | ENR |
| South Florida Ecosystems Restoration | GAO Audit and Programmatic Evaluation | ENR |
| **FY 2001 Program Evaluation Planned** | **Scope and Methodology** | **Bureau Goal** |
| Future Roles and Opportunities for the USGS | External Review by the National Research Council | Hazards, ENR |
| Invasive Species Program | External Review (completed in Jan 2001) | ENR |
| National Water Use Program | Internal/External Review by USGS Water Resources Research Committee | Hazards, ENR |
| Earthquake Hazards | Internal Report to Congress (completed in Oct 2000) | Hazards |
| National Water Quality Assessment Program (NAWQA) | External Review by NRC | ENR |
| Data Preservation and Standards | External Review by NRC | ENR |
| National Digital Elevation Program | Internal/External Review | Hazards, ENR |
| National Cooperative Geologic Mapping Program | Internal/External Panel Federal Advisory Committee (met in Nov 2000) | Hazards, ENR |
| Biological Resources Status and Trends | Internal/External Review | ENR |
| Upper Mississippi River System Environmental Management Program | Activities of the USGS Environmental Management Technical Center by DOI Inspector General | ENR |
| **FY 2002 Program Evaluation Scheduled** | **Scope and Methodology** | **Bureau Goal** |
| Geologic Record of Biosphere Dynamics | External Review by NRC | ENR |
| Minerals Program | External Review by NRC | ENR |
| Future of Geography in the USGS | External Review by NRC | Hazards, ENR |
| Biology Contaminants Program | External Peer Review | ENR |
| River Science | External Review by NRC | Hazards, ENR |

ENR = Environment and Natural Resources

## 3.6 CAPITAL ASSETS/CAPITAL PROGRAMMING

**New System:** USGS has prepared a capital asset plan for **a maintenance management system**. The Department selected this software package as the core facilities management enterprise software system for Interior. Even though the system falls below the threshold for capital asset plans, the Department has requested that each Bureau submit a plan documenting participation in this Department-wide implementation of the National Park Service facilities maintenance management system. Department-wide standardization was suggested in the FY 2001 Conference Report (106-914). Both bureau strategic and annual goals will be affected in a positive way by a maintenance management system.

**Ongoing Systems:** In order to fund higher priorities within the Department and Administration, substantial decreases in funding have been proposed across the spectrum of USGS information infrastructure, management, and delivery activities. As a result, **information technology maintenance** for these efforts cannot be described as "ongoing" for the purposes of a capital asset plan, but would require substantial rescoping over the next year to enable implementation in FY 2002.

## 3.7 USE OF NON-FEDERAL PARTIES IN PREPARING THIS PLAN

The Annual Plan was prepared in conformance with *OMB Circular A-11*. The USGS did not engage non-Federal parties in preparing the Annual Performance Plan.

## 3.8 WAIVERS FOR MANAGERIAL ACCOUNTABILITY AND FLEXIBILITY

The USGS is requesting no waivers of administrative procedural requirements and controls.

# Appendices

# Appendix I

## *FY 2000 Annual Performance Report At-a-Glance*

**Departmental Goal 4. Provide Science for a Changing World**

| USGS GPRA Program Activities | Long-Term Goal | Annual Goal |
|---|---|---|
| **Hazards** Provide science in response to present and anticipated needs to predict and monitor hazardous events in near-real and real-time and to conduct risk assessments to mitigate loss. | Ensure the continued transfer of hazards-related data, risk assessments, and disaster scenarios needed by our customers before, during, and after natural disasters, and by 2005, increase the delivery of real-time hazards information by increasing the quarterly average number of gages reporting real-time data on the Internet to 5,500 (thus reducing the time it takes to provide flood information at that site from 6 to 8 weeks to 4 hours) and installing 500 improved earthquake sensors (thus reducing delivery time of information on potentially damaging earthquakes from 40 to 20 minutes) to minimize the loss of life and property. | Develop, maintain and improve monitoring networks and techniques of risk assessment by: maintaining the baseline of data and risk assessments transferred to customers; increasing by 200 the quarterly average number of streamgages delivering real-time data on the Internet, and increasing by 80 improved earthquake sensors to deliver real-time information on potentially damaging earthquakes to minimize loss of life and property. |
| **Environment and Natural Resources** Provide science in response to present and anticipated needs to expand our understanding of environment and natural resource issues on regional, national, and global scales and enhance predictive/forecast modeling capabilities. | Ensure the continued availability of long-term environmental and natural resource information and systematic analysis and investigations needed by customers, and by 2005, develop 20 new decision support systems and predictive tools for informed decisionmaking about natural systems. | Provide and improve long-term environmental and natural resource information, systematic analysis and investigations, and predictive options for decisionmaking about natural systems by: providing essential information to address environmental and natural resources issues by maintaining 44 long-term data collection/data management efforts and supporting 2 large data infrastructures managed in partnership with others; delivering 995 new products from systematic analyses and investigations to our customers; improving and developing 6 new decision support systems and predictive tools for decisionmaking; and collaborating with university partners to understand natural systems and facilitate sound management practices through 248 external grants and contracts. |

* For Discussion of Customer Satisfaction Measures, see Section 3.1

| Performance Measure | 2000 Target | 2000 Actual | Comments |
|---|---|---|---|
| Hazards monitoring networks maintained | 6 | 6 | |
| Risk assessments delivered | 10 | 17 | |
| Real-time streamgages on the Internet (quarterly avg) | 4,700 | 4,872 | |
| Real-time earthquake sensors (cumulative) | 200 | 201 | |
| Stakeholder meetings | 13 | 40 | |
| Customer Satisfaction* | Baseline | In Progress | |
| Long-term data collection and data management efforts maintained and improved, and large data infrastructures supported | 46 | 46 | |
| New systematic analyses and investigations delivered to customers | 995 | 1,113 | |
| Decision support systems or predictive models developed or improved and delivered to customers | 6 | 7 | |
| University-based partnerships for natural systems analysis | 248 | 209 | Subdivided fewer projects. |
| Stakeholder meetings | 438 | 468 | |
| Customer Satisfaction* | Baseline | In Progress | |

# Appendix II

## *FY 2001 Annual Performance Plan At-a-Glance*

| Departmental Goal 4. Provide Science for a Changing World | | |
|---|---|---|
| **USGS GPRA Program Activities** | **Long-Term Goal** | **Annual Goal** |
| **Hazards**<br>Provide science in response to present and anticipated needs to predict and monitor hazardous events in near-real and real-time and to conduct risk assessments to mitigate loss. | Ensure the continued transfer of hazards-related data, risk assessments, and disaster scenarios needed by our customers before, during, and after natural disasters, and by 2005, increase the delivery of real-time hazards information by increasing the quarterly average number of gages reporting real-time data on the Internet to 5,500 (thus reducing the time it takes to provide flood information at that site from 6 to 8 weeks to 4 hours) and installing 500 improved earthquake sensors (thus reducing delivery time of information on potentially damaging earthquakes from 40 to 20 minutes) to minimize the loss of life and property. | Develop, maintain and improve monitoring networks and techniques of risk assessment by: maintaining the baseline of data and risk assessments transferred to customers; increasing by 500 to 5,374 the quarterly average number of streamgages delivering real-time data on the Internet, and increasing by 128 improved earthquake sensors to deliver real-time information on potentially damaging earthquakes to minimize loss of life and property. |
| **Environment and Natural Resources**<br>Provide science in response to present and anticipated needs to expand our understanding of environmental and natural resource issues on regional, national and global scales and enhance predictive/fore-cast modeling capabilities. | Ensure the continued availability of long-term environmental and natural resource information and systematic analysis and investigations needed by customers, and by 2005, develop 20 new decision support systems and predictive tools for informed decisionmaking about natural systems. | Provide and improve long-term environmental and natural resource information, systematic analysis and investigations, and predictive options for decision-making about natural systems by: providing essential information to address environmental and natural resources issues by maintaining 44 long-term data collection/data management efforts and supporting 2 large data infrastructures managed in partnership with others; delivering 1,146 new systematic analyses and investigations to our customers; improving and developing 7 new decision support systems and predictive tools for decisionmaking; and collaborating with university partners to understand natural systems and facilitate sound management practices through 209 external grants and contracts. |

* For Discussion of Customer Satisfaction Measures, see Section 3.1

| Performance Measure | 2001 Target | 2001 Actual | Comments |
|---|---|---|---|
| Hazards monitoring networks maintained | 6 | | |
| Risk assessments delivered | 8 | | |
| Real-time streamgages on the internet (quarterly avg) | 5,374 | | |
| Real-time earthquake sensors (cumulative) | 329 | | |
| Stakeholder Meetings | 32 | | |
| Customer Satisfaction* | Baseline single index | | index for all USGS products |
| Long-term data collection and data management efforts maintained and improved, and large data infrastructures supported | 46 | | |
| New products from systematic analyses and investigations delivered to customers | 1,146 | | |
| Decision support systems or predictive models developed or improved and delivered to customers | 7 | | |
| University-based partnerships for natural systems analysis | 209 | | |
| Stakeholder meetings | 458 | | |
| Customer Satisfaction* | Baseline single index | | index for all USGS products |

## FY 2001 Revised Final Budget Table

| Budget Activity/ Subactivity ($000) | FY 2000 Enacted Approp less rescission | | | FY 2001 Request | | | FY 2001 Enacted Approp less rescission | | |
|---|---|---|---|---|---|---|---|---|---|
| | Total | Hazards | Env & Nat Res | Total | Hazards | Env & Nat Res | Total | Hazards | Env & Nat Res |
| National Mapping Program* | 126,717 | 7,853 | 118,864 | 155,282 | 7,950 | 147,332 | 130,426 | 1,577 | 128,849 |
| Mapping Data Collection and Integration | 56,330 | 5,250 | 51,080 | 67,327 | 5,250 | 62,077 | 56,434 | 200 | 56,234 |
| Earth Science Info Management and Delivery | 34,270 | 1,250 | 33,020 | 36,911 | 1,250 | 35,661 | 37,329 | 0 | 37,329 |
| Geog Research and Applications | 36,117 | 1,353 | 34,764 | 51,044 | 1,450 | 49,594 | 36,663 | 1,377 | 35,286 |
| Geologic Hazards, Resources, and Processes* | 211,222 | 84,108 | 127,114 | 224,809 | 90,200 | 134,609 | 225,321 | 90,302 | 135,019 |
| Geologic Hazard Assessments | 69,111 | 69,111 | 0 | 73,236 | 73,236 | 0 | 72,726 | 72,726 | 0 |
| Geologic Landscape and Coastal Assessments | 65,435 | 14,997 | 50,438 | 77,189 | 16,964 | 60,225 | 74,375 | 17,576 | 56,799 |
| Geologic Resource Assessments | 76,676 | 0 | 76,676 | 74,384 | 0 | 74,384 | 78,220 | 0 | 78,220 |
| Water Resources Investigations* | 185,819 | 14,764 | 171,055 | 197,576 | 18,764 | 178,812 | 201,716 | 23,702 | 178,014 |
| Water Resources Assessment and Research | 91,037 | 0 | 91,037 | 90,355 | 0 | 90,355 | 94,840 | 0 | 94,840 |
| Water Data Collection and Management | 29,167 | 4,190 | 24,977 | 39,275 | 8,190 | 31,085 | 38,680 | 12,818 | 25,862 |
| Fed-State Coop Water Program | 60,553 | 10,574 | 49,979 | 62,879 | 10,574 | 52,305 | 62,741 | 10,884 | 51,857 |
| Water Resources Research Act Program | 5,062 | 0 | 5,062 | 5,067 | 0 | 5,067 | 5,455 | 0 | 5,455 |
| Biological Research* | 136,896 | 0 | 136,896 | 158,781 | 0 | 158,781 | 160,569 | 0 | 160,569 |
| Biological Research and Monitoring | 113,232 | 0 | 113,232 | 123,430 | 0 | 123,430 | 128,788 | 0 | 128,788 |
| Bio Info Management and Delivery | 10,484 | 0 | 10,484 | 21,243 | 0 | 21,243 | 17,704 | 0 | 17,704 |
| Cooperative Research Units | 13,180 | 0 | 13,180 | 14,108 | 0 | 14,108 | 14,077 | 0 | 14,077 |
| **Programmatic Total** | **660,654** | **106,725** | **553,929** | **736,448** | **116,914** | **619,534** | **718,032** | **115,581** | **602,451** |
| General Administration/ Science Support* (prorated) | 67,104 | 10,737 | 56,367 | 70,895 | 11,343 | 59,552 | 73,733 | 11,797 | 61,936 |
| Facilities* (prorated) | 85,618 | 13,699 | 71,919 | 88,036 | 14,086 | 73,950 | 88,341 | 14,135 | 74,206 |
| **Appropriations Total (not including supplementals)** | **813,376** | **131,161** | **682,215** | **895,379** | **142,343** | **753,036** | **880,106** | **141,513** | **738,593** |

*Budget Activity

**FOR FURTHER INFORMATION, CONTACT:**
Office of Strategic Planning and Analysis
U.S. Geological Survey
National Center
12201 Sunrise Valley Drive
Reston, VA 20192

Email: gpra@doi.gov
Website: http://www.usgs.gov/budget/

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