

**United States
Department of the Interior**

U.S. Geological Survey

**Annual Performance Plan
for Fiscal Year 2000**



February 1999

Annual Performance Plan for Fiscal Year 2000



**U. S. Geological Survey
Fiscal Year 2000 Annual Performance Plan**

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Organization of the Annual Plan

The organization of the U.S. Geological Survey's (USGS) FY 2000 Annual Plan reflects the Department of the Interior's approach to improve and streamline the Annual Performance Plan and better link the plan with the Budget. The revised Annual Performance Plan presents the bureau's goals and measures, and identifies the FY 2000 strategies and resources needed to achieve them, consistent with the Strategic Plan and requested funding.

By following this presentation framework, Interior will be able to not only meet the requirements of the Government Performance & Results Act but also promote managerial accountability through a direct connection of the Strategic Plan, resources, and outcomes. The Annual Plan links coherently with goals contained in the Strategic Plan. The Annual Plan sets forth in measurable and quantifiable form, the levels of performance for each goal in the budget year. The Annual Plan also links to the President's budget request for FY 2000. This presentation provides a context by which to measure the Bureau's performance in accomplishing its mission.

The Annual Performance Plan for FY 2000 is divided into four sections:

Section I — *Introduction and Overview* states the bureau mission and addresses additional GPRA requirements.

Section II — *Mission-Related Goals* includes Annual Performance Plan summary and descriptive goal narrative covering FY 1999 and FY 2000 including operational processes, skills, technology, and the human capital, information and other resources necessary to achieve the goal.

Section III — *Means Goals* discusses bureau-specific corrective goals identified on the Office of the Inspector General's Ten Key Management Issues Report.

Section IV — *Performance Measures and Verification* provides a simple presentation of the bureau's methods to verify and validate the measured values of actual performance.

An Appendix is also included to provide

- an index of common terms,
- a GPRA Program Activity summary and crosswalk for funding and performance targets for the FY 1999 budget and the FY 2000 restructured budget, and
- documentation of the FY 1998 baseline data.

I. Introduction and Overview

I.1 Introduction

Synopsis of Bureau Activities

The United States Geological Survey (USGS) provides science for a changing world by delivering reliable and impartial information that describes the Earth, its natural processes, and its natural species. This information is used by emergency response organizations, resource managers, planners, and other customers to minimize loss of life and property from natural disasters; manage water, biological, energy, and mineral resources; enhance and protect our quality of life; and contribute to wise economic and physical development. The USGS is at work in every State of the Nation and in dozens of foreign countries, cooperating with more than 2,000 organizations to provide information for resource managers in the public and private sectors. Our strengths include a multidisciplinary workforce capable of working anywhere in the world; the ability to develop, design, and maintain long-term national and international databases; and the capability to conduct long-term, broad-scale, multidisciplinary, and interpretive studies. Our strengths 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.

USGS science programs include the following:

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

Refocused Strategic and Annual Plans

The Department of the Interior, Office of Inspector General, Office of Management and Budget, General Accounting Office, and Congressional Institute "Report Cards" and discussions on the Department's first GPRA Strategic Plans, FY 1999 Annual Plans, and linkage to the FY 1999 budget have all emphasized the need to

- reduce the complexity and number of goals and measures;
- improve the clarity of performance information; and
- improve the linkage of funding to performance and strategy implementation.

John Berry, the Department's Assistant Secretary for Policy, Management and Budget, at a GPRA hearing before the House Resources Committee on April 22, 1998, expressed the Department's commitment to accountability and to measuring and reporting the successes achieved by the Department. The Department initiated analyses of performance data baseline and management systems across all Bureaus; piloted tracking of performance against the Bureaus' FY 1999 annual plans; and established a Performance Management Council with representatives from all Departmental Bureaus, as well as their Planning and Policy, Budget, Human Resources, and Information Technology Offices to guide the process of revising, reformatting, and refocusing the Department's strategic and annual plans.

The USGS independently concluded that our September 1997 strategic plan needed to be reexamined in a scientific management context rather than a solely scientific context and needed a streamlined organizational approach to better communicate interrelationships and corporate responsibilities.

The USGS has gained considerable experience in the inherent advantages and disadvantages in communicating, budgeting, and implementing our September 1997 strategic plan through the various phases of analyses and implementation over the past year. This GPRA Strategic Plan and the more detailed discipline-centric plans developed over the past year were used as the basis for refocusing the Strategic Plan described in this document, Section I.5.5. The effort was designed to

- clarify our strategic direction;
- improve communication of who we are, what we do, and our value to the Nation;
- simplify communication and linkage of the strategic and annual plans with the budget to improve accountability; and
- improve alignment of the strategic plan with the Department's overview.

A refocused Strategic Plan and preliminary FY 2000 plan were submitted to OMB in September 1998 and were subsequently used during OMB's review of the FY 2000 budget request. The positive reception of the new plans by the Department of the Interior and OMB encouraged the USGS to use the new FY 2000 format and goals in the final revision of the FY 1999 annual plan to adjust for enacted funding. Having systematically defined baselines during FY 1998 to establish the FY 2000 performance targets, this approach provided USGS the opportunity to immediately begin establishing performance trends in FY 1999, rather than tracking a suite of performance measures in FY 1999 that would be substantially changed in FY 2000. These performance measures now track from FY 1998 through FY 1999 and the restructured FY 2000 budget.

Balanced Scorecard Approach

The USGS investigated tools to facilitate the process of refocusing the strategic and annual plans and pursued a modified Balanced Scorecard approach (*The Balanced Scorecard*, Robert S. Kaplan and David P. Norton, 1996, Harvard Business School Press) which

- establishes common goals that must be implemented across the organizational structure;
- establishes opportunity for integration, synergy, and shared measures among scientific disciplines; and
- ensures that every measure is part of a chain of cause and effect linkages that measure movement of the organization in its strategic direction



After reconfirming our basic vision and mission, we developed a customer-focused strategic direction. Using the Balanced Scorecard approach, we simultaneously developed goals and performance measures for customers, programs, people, and operations. The customer goals both drive and provide feedback for the program goals. The operations and people goals (means-type goals) provide for the infrastructure underpinning our programs and the human resource skills needed to accomplish the program goals. The Program goals are the focus of the GPRA Strategic and Annual Plans, with customer goals referenced in the customer service standards section I.5.1, and people and operations goals discussed in the strategy sections II.1.2 and II.2 for each GPRA Program Activity.

The Balanced Scorecard’s approach to strategy implementation captures cooperation and synergy among organizational units, staff, and support functions by the direct alignment of strategy throughout the organization. The unifying management principles ensure that

- the strategic plan is the unifying concept for the entire program and performance management process;
- shared vision is the foundation for strategic learning;
- goals are aligned with the strategic direction throughout the organization;
- problem-solving is shared;

- initiatives are aligned with the strategic plan; therefore, allocation of resources and use of infrastructure are justified within the context of the strategic plan;
- the annual budget is linked to the long-range strategic plan; and
- strategy development continues.

GPRA and Science

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 peer reviewed and our programs cyclically evaluated to ensure the quality and timeliness of our science. That is also why we have refocused the strategic and annual plans on **provision** of that science to customers for solving the

Scientific Framework for Decision Support Systems

In cooperation with ESRI Inc., USGS recently completed a new decision support system designed to operate on the World Wide Web, and produced demonstrations of the product for examining resources in Alaska and for evaluating abandoned mine lands in Montana. The Alaska product has been released via CD-ROM and the Montana products are about to be released. These products were derived from an ongoing 5-year project to disseminate electronically the national and regional databases of geochemistry, geophysics, mineral and mine localities, and ethology, as well as extensive science applications developed using the data. These applications support policy and regulatory decisions and provide scientific background for land management, environmental assessment, and resource inventories.

For example, data layers describing existing wetlands, weathering properties of ore-bearing rocks, and location of mine tailings can be combined to help plan for relocation of tailings (mining residue) away from water sources. Rapid access to data meets the needs of our partners and customers, including BLM, USFS, NPS, and States, for real-time access to data in formats they can use for interactive analysis in support of planning, remediation, and the full spectrum of land use and management decisions.

Nation’s complex land and resource management problems and to minimize the loss of life and property from natural disasters.

This approach is further 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, and is 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.*

The Academy report endorses a three-pronged “expert review” of Federal science addressing quality, relevance, and leadership. USGS engages in reviews and evaluations that address these accountability issues.

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

- USGS is collecting **relevance** information from customers by a formal process described in the customer service standards section 1.5.1., and programs are periodically reviewed with our stakeholders by various means including user forums to which the public is also invited. For example, the USGS, the Desert Research Institute, the University of California Natural Reserve System, and the U.S. Department of Energy, in cooperation with the Desert Managers Group are sponsoring the Mojave Desert Science Symposium, a 3-day forum in

Relevance

USGS held two geologic map user forums in the Mid-Atlantic Region and the Central Great Lakes Region to solicit customer input on improving geologic maps produced by the USGS. The Mid-Atlantic forum produced *USGS Circular 1148* which documents how customer input was used in program planning. In response to customer needs expressed in the Great Lakes Forum, a new coalition between the USGS and the geologic surveys of Ohio, Indiana, Illinois, and Michigan was formed to map glacial sediments which contain critical ground water aquifers

February 1999 that brings together researchers and managers to examine the status of scientific knowledge about the Mojave Desert. Studies by the USGS and cooperators/ collaborators in the Mojave Desert Ecosystem will be highlighted and feedback sought from client agencies on the relevance of USGS research and future research needs. Further, a DOI-wide process is also being implemented to ensure that the highest priority science needs of the DOI are being met by USGS programs — again ensuring the relevance of USGS science to support DOI land and resource management policy and decision making.

- **Leadership** issues are addressed in formal, external, independent program evaluations such as
 - the National Academy of Public Administration's 12-month study which resulted in a 1998 report *Geographic Information for the 21st Century: Building a Strategy for the Nation*,
 - the National Research Council's 6-month review of the Energy Resource Program released in February 1999, and
 - the current 18-month review by the National Research Council of USGS strategic direction that will inform revision of our strategic plan due to the Congress and OMB by September 2000.

I.2 Mission Statement

As a customer-focused scientific organization using the Balanced Scorecard approach to management of the totality of our programs, our vision, mission, and strategic direction

- focus on responsiveness and service provided to our **customers**, underscoring the relevance and flexibility of science to meet customer needs, and
- are designed to convey a **corporate identity** that capitalizes on the combined expertise of our multiple scientific disciplines and that makes a commitment to pursuing a more integrated approach to both our monitoring and research functions for any hazards and natural resource related issues.

Strategic Direction

The USGS will combine and enhance our diverse programs, capabilities, and talents with increased 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:

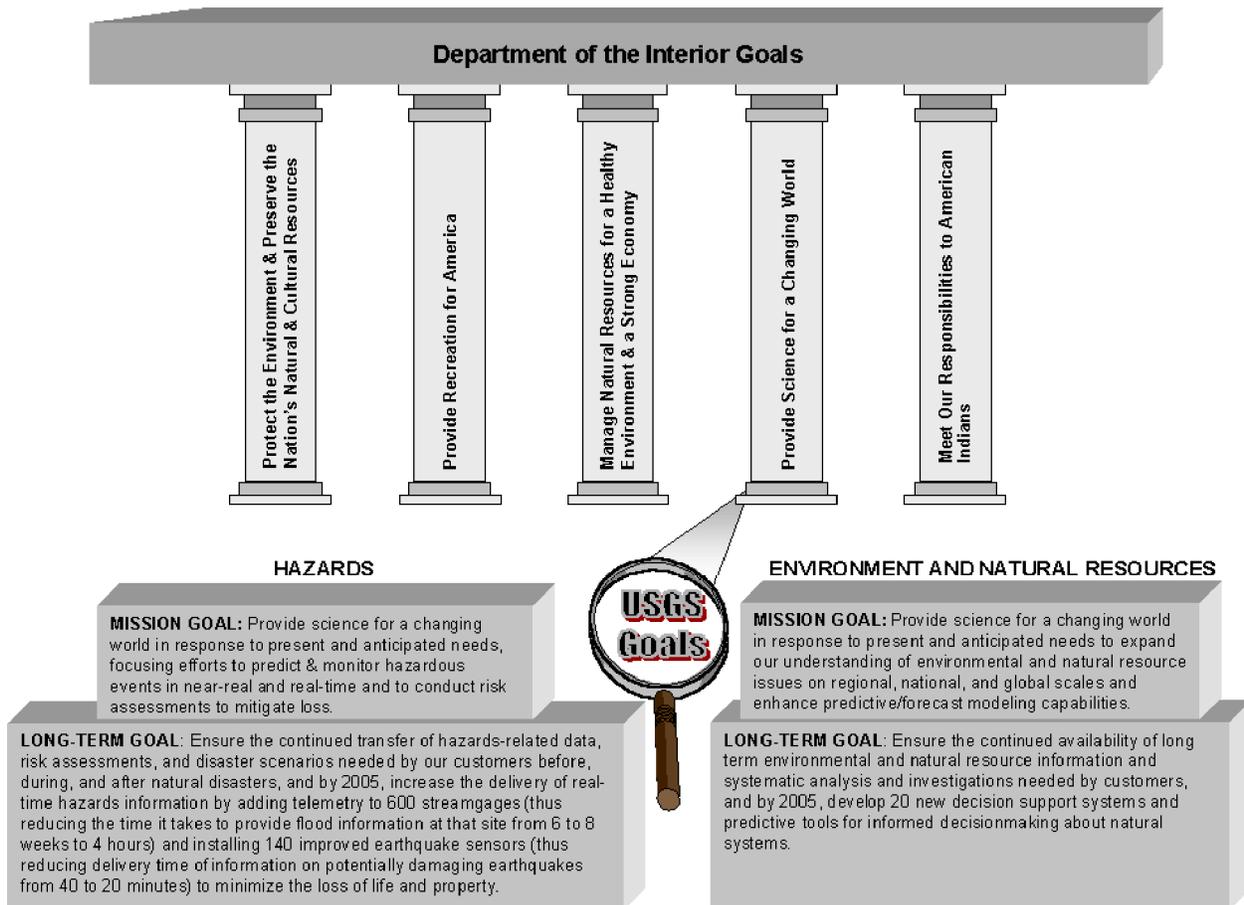
- describe and understand the Earth;
- minimize loss of life and property from natural disasters;
- manage water, biological, energy, and mineral resources; and
- enhance and protect our quality of life.

I.3 Relationship to Departmental Goals

The U.S. Geological Survey has two GPRA Program Activities —

- Hazards, and
- Environment & Natural Resources.

Each Program Activity has a Mission Goal and an associated Long-term Goal. The Mission and Long-term Goals directly support the Department of the Interior Goal # 4, “Provide Science for a Changing World.” As such, USGS science contributes to all of the Department of the Interior goals by focusing on the provision of scientific information to support these efforts.



In *providing science for a changing world*, the Department has a planned outcome that *resource managers will make decisions based on accurate, reliable, and impartial scientific information*. One of the strategies to achieve this outcome is to ensure that the scientific research program focuses on understanding, assessing, and monitoring ecosystems to provide scientific understanding and technologies needed to support sound land and resource management.

In FY 2000, a DOI-wide process is being piloted with the National Park Service, Fish and Wildlife Service, and Bureau of Land Management to assess the status of current science support, identify gaps and cross-bureau applications, formulate priorities for USGS research in support of land and resource management needs and obtain land management bureau input for defining GPRA metrics and science outcomes. Current cooperative activities with the Department provide a \$15 million base program for DOI Science Priorities within a new Integrated Science budget activity. An augmentation of \$15 million is also being requested in the FY 2000 budget to increase support for the science needs that the land management bureaus prioritize through this process. This request provides the first step in establishing a broad partnership with these Federal managers to enhance scientifically sound management of the lands and resources under their stewardship.

Also supportive of this outcome, particularly with regard to DOI crosscutting issues, is the place-based studies component of the Integrated Science budget activity. These studies support such broad area based restoration efforts as the Everglades, Greater Yellowstone, Mojave Desert, and San Francisco Bay Delta. Research and monitoring of amphibians as an indicator species of ecosystem health also provides information critical to understanding the causes of decline and proposing actions to correct them. Both of these efforts are seeking increased funding in the FY 2000 budget.

Another of the Department's planned outcomes — *The loss of life and property from natural disasters is minimized through access and availability of timely scientific information* — is supported through our vast infrastructure of sensors and monitors and hazard support system that forms the backbone for monitoring earthquake, landslide, and volcanic activity, floods, and wildland fires. This outcome is the focus of two coordinated efforts seeking increased funding in the FY 2000 budget. The Real-Time Hazards request is seeking to accelerate instrument modernization and expand the use of real-time telemetry that allows rapid notification of emergency response agencies that deal with natural disasters. The Disaster Information Network request is seeking to establish an advanced, integrated and coordinated communications link among the sources and users of disaster information. Taken together, these two efforts represent a comprehensive strategy for improved disaster mitigation and recovery.

The USGS fully supports achievement of the Department’s planned outcomes of

- *Federal, State, and local governments and the private sector have access to shared national databases of natural resources information, and*
- *The public has easy access to Earth science information.*

Through our two large data infrastructures, National Spatial Data Infrastructure (NSDI) and National Biological Information Infrastructure (NBII), and our long-term data collection/data management efforts such as the Land Remote Sensing Data Archive, USGS continues to increase

- the capacity of databases,
- the number of participants contributing to these databases, and
- the accessibility of these data through mechanisms such as Internet-based clearinghouse nodes and real-time hazards data delivery.

In the FY 2000 budget, USGS is requesting increased funding to support these DOI outcomes through:

- Community/Federal Information Partnerships to work with communities to expand the repository of spatial data and enhance local government’s ability to use it for improved land use planning;
- National Biological Information Infrastructure to increase the accessibility of existing biological data; and
- the National Satellite Land Remote Sensing Data Archive to expand our capability to handle the explosive growth in land remote sensing data and ensure their availability to scientists, policymakers, and the public worldwide.

Data Quantity and Accessibility Grow
— Digital Imagery —

National coverage of digital ortho-imagery quadrangles (DOQs) grew to 48% in FY1998, up from 28% in FY1997. DOQs are digital images that combine the image characteristics of an aerial photograph with the geometric qualities of a map. Images are detailed enough to distinguish buildings and cars, but not people. During the 1998 forest fire emergency in Florida, DOQs provided up-to-date map information for firefighters. DOQs are also used in Florida and elsewhere to update geospatial data relating to land use, hydrography, and transportation.

Now with a few computer mouse clicks, scientists, planners, consumers, and school children around the world can view and download these high resolution USGS aerial images over the Internet at the Microsoft TerraServer website (<http://www.terraserver.microsoft.com>). The initial response to the TerraServer has been spectacular. Early statistics show the average number of hits at 12 million per day with a peak of almost 29 million hits on July 1. TerraServer is a mutually beneficial research effort in which the Federal government and private industry have come together to provide general public access to USGS geospatial data while allowing Microsoft and other project partners to promote their technological contributions. The USGS looks forward to future opportunities in which to partner with private sector entities to expand access to valuable data and information resources.

I.4 Linkage to Strategic Plans and Budget

USGS Goal Hierarchy and Linkage of Annual and Strategic Plans

The GPRA Program Activity concept is used to better relate goals to the existing budget structure, to present both budget and performance information in a more thematic way, and to enhance the plan's informative value. The two mission goals from the USGS refocused Strategic Plan are used as the GPRA Program Activities in the Annual Performance Plan. Each mission goal or GPRA Program Activity has one associated long-term goal which identifies target levels and the time frame of performance for the Strategic Plan. Each of the Strategic Plan's long-term goals has one associated annual goal which identifies the annual performance increment necessary to achieve the long-term goal as well as any change proposed to result from program and budget initiatives. Each annual goal has five performance measures — a total of ten for the entire Annual Plan. "Stakeholder meetings" are identified as performance measures for each of the annual goals (01.01.01.05.00 and 02.01.01.05.00) to capture follow-through on the strategic direction's focus on "increased customer involvement to strengthen our science leadership and contribution to the resolution of complex issues."

Linkage of Annual Plan and Budget

Although performance measures are focused on "completions," each long-term and annual goal begins by acknowledging the ongoing need to ensure continued maintenance and improvement of long term data collection networks and efforts required by our stakeholders; and both annual goals document associated infrastructure requirements in performance measure #1. These measures are included to ensure that each program activity in the Program & Financing (P&F) Schedule as well as every major program, function, or operation is reflected in the Annual Plan (*OMB Circular A-11, Part 2, § 220.8 [b]*).

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 current P&F schedules — National Mapping Program (08040001), Geologic Hazards, Resources and Processes (08040002), Water Resources Investigations (08040003), and Biological Research (08040004). The Survey's currently remaining two P&F schedules — General Administration (08040005) and Facilities (08040006) — support all programmatic activities and their funding has been distributed on a *prorata* basis to the two GPRA Program Activities (Hazards and Environment & Natural Resources).

The FY 2000 budget submission proposes key changes to the USGS budget activity structure. None of these structure changes have been proposed for the specific purpose of improving the presentation of GPRA performance information. The new structure includes:

- consolidation of all facilities costs associated with appropriated work into an overall "Facilities" budget activity;

- consolidation of all bureau level general administration costs into a new “Science Support” budget activity; and
- creation of a new “Integrated Science” budget activity.

Consolidation of the appropriated facilities and general administration costs into bureau-wide accounts improves accountability for all aspects of the organization, and promotes common business practices throughout the bureau. A much clearer view of the funding available for science is the result. Facilities and Science Support, like their predecessors, continue to support all programmatic activities, and their funding continues to be distributed on a *prorata* basis to the two GPRA Program Activities. Technical funding adjustments in FY 2000 were crosswalked to FY 1999 to establish base performance targets for the new Integrated Science budget activity and to normalize performance changes for the Environment and Natural Resources GPRA Program Activity. Crosswalks of funding and performance between the current and proposed new structure as distributed to the GPRA Program Activities is provided in the Appendix.

Aggregate funding at the GPRA Program Activity level is shown in Section II, Mission-Related Goals, Part II.2 **Exhibit A** of this Annual Plan. Budget activities and subactivities linked to these GPRA Program Activities are identified in Section II, Mission-Related Goals, Part II.1.3. Performance targets are aggregated as a total for the Bureau in **Exhibit A** for each GPRA Program Activity. Performance targets are disaggregated to show the contribution of each budget activity to each GPRA Program Activity in tables in the Appendix. Baseline performance targets for FY 1998 are documented by program in the appendix.

Long-term goals assume continued funding at the FY 1998 level. Annual performance targets for FY 1999 reflect the enacted funding level. Annual performance targets for FY 2000 reflect the impact of programmatic increases and decreases from the FY 1999 level. However, because

- our “numeric” performance tracking is based on “completions” of science such as risk assessments and decision support tools that are accessible to and used by our customers through our increasing dialog and technical support for their applications, and
- research often requires more than 1 year to deliver a product,

performance targets in any given year also include “completions” funded by prior year monies. 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 1999 and FY 2000 targets from the FY 1998 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.

I.5 Additional Annual Performance Plan Requirements (OMB Circular A-11, Part 2 §220.6)

I.5.1 Customer Service Standards

This section describes our plan to improve implementation of our mission by more efficiently and effectively serving the public, industry, State and local agencies, and other customers. Our 1997 customer service “Report to our Customers” is available online at <http://pubs.usgs.gov/customer/1997/>

Consistent with a Balanced Scorecard approach, our “FY 1999 Customer Service Plan” directly supports our revised GPRA Strategic Plan and its continued refinement. The customer service plan is available online at http://www.usgs.gov/customer/1999_customer_service/1999service.html

The U.S. Geological Survey recognizes that excellent customer service is a key component of good government and that our interface with customers reflects the effectiveness of our organization. Customer service and customer satisfaction measures have become a very important part of our business. As responsible stewards of taxpayer dollars, it makes good business sense to involve our customers in what we do and ensure that we are meeting their expectations with excellence.

Relevance

We ask “Did you or others in your organization actually use the information in this product to make a decision about future use or management of lands or resources.” A sample response follows:

“All our management related to brucellosis-infected mammals is based on the information provided. We could not manage effectively without this information.” U.S. Fish and Wildlife Service

We are also required by Executive Order 12862 and the recent Presidential Memorandum, “Conducting Conversations with America,” to identify our customers and to survey them to determine the kind and quality of services they want and their level of satisfaction with existing services. The USGS is committed to engaging customers in a dialog to identify their needs and satisfaction levels, and to deliver our products, information and services to customers in a timely and accurate manner.

Customer Satisfaction

Customers continue to express satisfaction with USGS scientific data such as stream-flow information. Even recreationists find these data helpful.

“Your web version of stream flow data is nothing short of superb. By printing out a station’s data daily in the week before a trip, an excellent picture of what is happening on the river is revealed to me...In short, thank you for providing a fantastic resource to the “river rats” of Virginia. True, we may look a little grizzled after a day or two on the water, but we appreciate good science with practical applications.”

Because of our emphasis on engaging our customers, measuring satisfaction levels, and

ensuring that we are meeting customer needs, the USGS has

- adopted a Bureau-level Customer Service Policy <http://www.usgs.gov/usgs-manual/500/500-15.html> to clearly and officially state our position on and support of customer service excellence, and

- initiated a 3-year information collection program involving voluntary customer surveys to ascertain customer satisfaction with the products, information, and services of the USGS. The surveys will involve individuals who interact directly

Water Science for Schools

USGS's "Water Science For Schools" is a topic-based Outreach World Wide Web site aimed at students aged 9 to 90, who want to find out more about the many aspects of water. Topics include Water Basics, Earth's Water; and Special Topics such as Water Quality, Acid Rain, Water Use, and Water Data and Maps. The Web site also includes a Water Question-and-Answer section, a Picture Gallery; and an Interactive Activity Center where students can answer Challenge Questions, Opinion Surveys, and Questionnaires. Visit us at <http://wwwga.usgs.gov/edu/>

with the USGS to use or to request our products, information, and/or services. Over the 3-year period, we will focus on encouraging and obtaining satisfaction feedback from customers involved in three areas of effort: partnerships and cooperative agreements, technical assistance, and public inquiries and requests for publications, information, services, maps, and/or other products.

Consistent with our strategic direction, program performance targets are customer-driven. As such, stakeholder meetings are identified as a crucial performance measure for both annual goals (01.01.01.05.00 and 02.01.01.05.00). Although we are constantly meeting with partners and stakeholders, the Program Managers have identified several significant meetings

**Customer Input/Stakeholder Meetings
National Cooperative Geologic Mapping Program**

Over 40 customers representing other Federal agencies, State agencies, libraries, universities, museums, business and industry, and professional societies participated in a USGS workshop in May 1998 on the National Geologic Map Database. These data users were given an opportunity to interact with the Internet-delivered prototype database <http://ncgmp.usgs.gov/ngmdbproject/> Participants suggested numerous improvements to the interface, content, and project schedule, and offered ideas for future cooperation with their own sectors. A summary of plans for and progress toward implementing customer suggestions was provided to all participants in September 1998.

and program evaluations that are and will be crucial to the planning process, yielding tangible assessments that will improve direction and management of the programs as well as identifying USGS output/outcome needed by stakeholders. Program managers refine target estimates for program performance on the basis of these meetings.

I.5.2 Use of Non-Federal Parties in Preparing this Annual Plan

The Annual Plan was prepared in conformance with *OMB Circular A-11 § 220.7*. The USGS did not engage non-Federal parties in preparing the Annual Performance Plan.

I.5.3 Crosscut Issues

Everglades Restoration — The Department is leading an effort to protect and restore the South Florida ecosystem. Resource managers are planning \$2 to 3 billion restoration efforts in the Everglades and Florida Bay. Restoration and protection require scientific information on the history of changes to the environment, scientific understanding of how the ecosystem operates, and an ability to forecast what will happen under different management scenarios. USGS has worked closely with its scientific and management partners through the South Florida Ecosystem Restoration Task Force and associated groups to identify scientific needs, coordinate activities, and deliver relevant science for decisionmaking. Ecological and hydrologic models form the basis for decisions concerning the consequences of management modifications.

USGS will continue development of these models in FY 1999, and the Florida ecosystem website will be improved as a part of the decision support system target (goal code 02.01.01.03.99). In FY 2000 the USGS will continue the shift from primary data collection and research activities to synthesis, integration, and enhancement of the electronic availability of the scientific information that has been collected.

**Determining Factor in
Everglades Restoration Recommendations
Across Trophic Level System Simulation**

Using a series of landscape models to predict the effect that changes in water level will have on the wildlife inhabiting the Everglades, the ATLSS program was developed to support the decision-making process by agencies responsible for restoration of the Everglades. Recently ATLSS was used to thoroughly evaluate all the proposed water level changes in the Everglades, and the potential impact of these changes to Everglades wildlife. This analysis provided the necessary information that allowed managers to determine the optimal changes in water levels for the Everglades.

Forest Plan for the Pacific Northwest — Management of Federal forests in the Pacific Northwest has received significant attention through the development and implementation of the President's Forest Plan. USGS continues to play an important role in the development of research and monitoring programs associated with the Northwest Forest Plan. For example, the status and trends of northern spotted owls and Pacific salmon are being monitored through several demographic studies on Bureau of Land Management, US Forest Service, and National Park Service lands in Washington, Oregon, and northern California (part of the Biomonitoring of Environmental Status and Trends and fish population monitoring in Pacific coasts long-term biological data collection and data management efforts counted under goal code 02.01.01.01.00). Information from forestry research is helping Bureau of Land Management and other managers understand how to restore and maintain these complex forest ecosystems.

San Francisco Bay-Delta — As part of the Department of the Interior's focus on San Francisco Bay/Delta and the CALFED process, the USGS has improved scientific understanding and communicated scientific knowledge to our partners within the CALFED community and to the general public. CALFED is a consortium of Federal and State agencies with management and regulatory responsibilities in the Bay-Delta. A World Wide Web presentation which synthesizes decades of water quality data is now readily available for Bay modeling and forecast development. In FY 1999, a model based on river flow and simulating changes in the salt content of water in ecologically sensitive regions of the estuary (the X2 salinity standard) will be improved as a part of the decision support system target (goal code 02.01.01.03.99). The X2 standard was developed as part of a 1994 agreement between the EPA and California water agencies, water contractors, and environmental groups. The model can be used by CALFED partners to develop management strategies to meet this standard.

Wildland Fire — The challenge of managing wildland fire in the United States is increasing in complexity and magnitude. Catastrophic wildfire now threatens millions of wildland acres, after a century of suppression. The need to reintroduce wildland fire on an ecologically significant scale is the focus of the new Federal Wildland Fire Policy, established in 1995. At the direction of Congress, DOI and the U.S. Forest Service have prepared a joint Fire Sciences Plan to address: (1) comprehensive fire fuels mapping and inventory, (2) evaluation of treatment techniques (including ecological consequences), (3) long-term schedules that describe sequencing of pre- and post-burn treatments, and (4) establishing protocols to monitor and evaluate fuel treatment techniques. USGS fire research, pursued in collaboration with the U.S. Forest Service and DOI fire management bureaus, contributes strongly to the areas identified by Congress as needing further research. Areas of emphasis are:

- Fire Behavior Modeling carried out in collaboration with the U.S. Forest Service, has improved existing fire behavior and fuel models to determine most appropriate application of fire treatments and provide better predictive capability at larger spatial scales.

- Fire Effect/Fire Rehabilitation studies, carried out in collaboration with DOI land management agencies, have led to improved understanding of direct fire effects on ecosystems, as well as how post-fire treatments can influence ecosystem response, particularly with regard to increased vulnerability to invasive exotic species and species at risk.
- Remote Sensing studies, carried out in collaboration with the U.S. Forest Service, are being used to assess vegetative conditions over large areas and may be used to assess fuel loading or to detect wildland fires and provide early warning of fire danger.

Other areas in which USGS has projects and capabilities include data management skills needed to set up comprehensive databases including fuels inventory, climate patterns, fire histories, species at risk, fire effects on resident wildlife species, habitat fragmentation and topographic features at a landscape scale. USGS conducts post-burn monitoring studies to evaluate the effectiveness of fire fuel/vegetation treatment techniques for habitat restoration and erosion control. Partners in these research activities include the U.S. Forest Service, and the academic community, in addition to the Bureau of Land Management, Fish and Wildlife Service, and the National Park Service.

Both GPRA Program Activities contribute to the wildland fire crosscut. Under Hazards, one of the 6 hazards monitoring networks maintained (goal code 01.01.01.00) is the integrated hazards monitoring network which comprises a Hazards Support System, a Center for Integration of Natural Disaster Information, and in FY 2000, is proposed to include the Disaster Information Network to monitor natural events such as wildland fires that place citizens and property at risk.

I.5.4 Management Issues

The U.S. Geological Survey has no management problems that have been identified on the Inspector General's list of top ten management issues released in FY 1998. The USGS also has no significant management problems of a mission-critical nature that threaten the achievement of major performance goals.

I.5.5 Adjustments to the Strategic Plan

The rationale for refocusing of the Strategic Plan has been described in Section I.1. Being based on the original strategic plan and the more detailed discipline-specific plans that followed, the USGS Vision and Mission statements remain similar. Minor wording changes and the addition of a strategic direction highlight the shift in the new plans' focus toward more customer involvement. Further, a substantial reduction in the number of goals and performance measures has been achieved through aggregation in the new strategic and annual plans. At the end of this section are crosswalks of mission language

and goal structure/statistics between the September 1997 and refocused Strategic and Annual Plans.

This interim adjustment to the 1997 Strategic Plan was also guided by ongoing stakeholder meetings and workshops as well as intervening program evaluations such as the National Academy of Public Administration's review and report titled *Geographic Information for the 21st Century — Building a Strategy for the Nation* published January 1998. USGS review policy has the goal of conducting an independent peer review of ongoing programs every 5 years, combined with more frequent independent internal program management reviews. The review schedule has been updated in the refocused Strategic Plan. These evaluations will continue to provide the USGS learning and growth opportunities to continue to refine strategy, implementation, and the quality and relevance of our scientific programs, an approach validated by the National Academy of Science report on *Research and the Government Performance and Results Act* that was released February 17, 1999.

A review of USGS' strategic direction currently being conducted by the National Research Council and planned for completion by early calendar year 2000 will provide a basis for the updated and revised strategic plan due to Congress and OMB by September 2000 by helping us identify and interpret changing society and political environments; major societal needs that we should address; emerging scientific and technical issues relevant to our mission; and opportunities for partnership.

The USGS is refocusing our Strategic Plan through this Annual Performance Plan. The refocused Annual Plan is designed as a management tool. It documents FY 1998 baseline metrics, FY 1999 planned performance targets and FY 2000 proposed performance targets. It also documents the FY 1999 enacted and FY 2000 requested funding distribution to the two GPRA Program Activities. The FY 98 baseline metrics will be used for tracking FY 1999 and FY 2000 goal attainment. Advantages from the original annual plan are

- the quantitative nature of the performance plan targets for “completions” rather than “ongoing” projects;
- the substantial reduction in the number of performance goals and indicators; and
- the opportunity to begin establishing trend data.

Old Strategic Plan	Refocused Strategic Plan
<p>Vision The U.S. Geological Survey is an earth science organization that is recognized worldwide as scientifically credible, objective, and demonstrably relevant to society's needs.</p>	<p>Vision The USGS is a world leader in the natural sciences through our scientific excellence and responsiveness to society's needs.</p>
<p>Mission The U.S. Geological Survey provides the Nation with reliable, impartial information to describe and understand the Earth. This information is used to:</p> <ul style="list-style-type: none"> • minimize loss of life and property from natural disasters; • manage water, biological, energy, and mineral resources; • enhance and protect the quality of life; and • contribute to wise economic and physical development. 	<p>Mission The USGS serves the Nation by providing reliable scientific information to:</p> <ul style="list-style-type: none"> • 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.
	<p>Strategic Direction The USGS will combine and enhance our diverse programs, capabilities, and talents with increased customer involvement to strengthen our science leadership and contribution to the resolution of complex issues.</p>

GPRA Strategic Plan					
GPRA Annual Plan					
Old Strategic Plan	Refocused Strategic Plan	Old Strategic Plan	Refocused Strategic Plan	Old Annual Plan	Refocused Annual Plan
8 Strategic Business Activity Goals	2 Mission Goals	67 Strategic Performance Goals	2 Long-term Goals	112 Annual Performance Goals	10 Annual Performance Goals
BA-2 Hazards	Hazards	14	Hazards	17	5
BA-1 Water Availability & Quality	Environment & Natural Resources	11	Environment & Natural Resources	20	5
BA-3 Geographic & Cartographic Information		7		19	
BA-4 Contaminated Environments		6		12	
BA-5 Land and Water Use		9		12	
BA-6 Nonrenewable Resources		5		7	
BA-7 Environmental Effects on Human Health		3		4	
BA-8 Biological Resources		12		21	

I.5.6 Capital Assets/Capital Programming

The FY 2000 President’s Budget requests no major acquisitions that require a capital asset plan under the provisions of *OMB Circular A-11, Part 3*.

I.5.7 Waivers for Managerial Accountability and Flexibility

The U.S. Geological Survey is requesting no waivers of administrative procedural requirements and controls.

II. Mission-Related Goals

This section provides the USGS refocused Annual Performance Plan for the budget year FY 2000, and provides prior year FY 1999 planned and FY 1998 baseline data. The format for the goal section consists of narrative and **Exhibit A** for each of the two GPR Program Activities. Annual performance goals present a complete picture of the performance related to the resources available for FY 2000. Goals and measures reflect performance expected from total resources available for implementing the annual plan; however, only appropriated dollars are shown in the table. The appropriated dollars contained in the tables for the GPR Program Activities are rough estimates and are rounded to the nearest \$100,000 to avoid the indication of more significance and reliability.

II.1 GPR Program Activity — Hazards

II.1.1 Description

Under the Hazards GPR Program Activity or mission goal, USGS provides science for a changing world in response to present and anticipated needs, focusing efforts to predict & monitor hazardous events in near-real and real-time and to conduct risk assessments to mitigate loss.

Within this mission context, our long-term goal is to 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 adding telemetry to 600 streamgages (thus reducing the time it takes to provide flood information at these sites from 6 to 8 weeks to 4 hours) and installing 140 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. In keeping with this focus, the FY 2000 annual plan identifies performance measures for the annual increment needed to achieve this long-term goal within available funds.

II.1.2 Strategic Issues

In the long term, USGS will enhance our ability to characterize and monitor hazardous events in near-real and real-time by adding streamgages and earthquake sensors capable of delivering information nearly instantaneously. In addition, long-term data vital to both emergency response and to analysis of flood, earthquake and other hazard risk will continue to be collected and maintained through current monitoring networks. To better target key customers, a hazards network profile will be developed that will allow us to evaluate whether decisionmakers are receiving timely hazards information. USGS will measure the reliability, delivery times, and accuracy of our real-time hazards information in order to evaluate improvements. We will improve the utility of our information by conducting risk assessments to mitigate losses by identifying for decisionmakers which areas are most vulnerable to damage by particular hazards. Key scientific datasets integral to the delivery of hazards

information — accurate maps and geographic information, for example — will be made easier to interpret and integrate in order to assist in rescue, recovery and reconstruction efforts. The quality of data will be continually improved by development of standards and protocols and improvements to the precision and accuracy of data collected.

USGS will focus on key users of hazards information, such as emergency managers, community planners and citizens to ensure that their needs are understood and are being met. We will increase development and delivery of products and services tailored to the needs of these customers, and work with customers in developing long-term strategies for anticipating their future needs.

USGS will maximize the efficiency of our administrative, science support and programmatic activities by streamlining hazards data delivery systems and eliminating any duplication or overlap. We will optimize our facilities infrastructure, use, and quality to ensure the proper balance between the need to locate near our customers and the need to minimize costs.

USGS employees are the core of our long-term strategy for achieving the Hazards Goal. We will evaluate our current capabilities and skills and actively invest in training employees in the skills needed to deliver real-time hazards information, including the scientific skills to understand and model natural systems and information technology skills such as geographic information systems and web delivery of data. USGS is aligning our rewards systems to reinforce employee 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 increase our flexibility to respond quickly and effectively to natural disasters by using new contractual vehicles for obtaining new skills, removing barriers for cross-organizational resource sharing, and increasing use of cooperative agreements with other entities responsible for emergency response.

II.1.3 Related Budget Accounts, Budget Activities, Subactivities:

Budget Activity/Subactivity (\$000)	FY 1999 Enacted		FY 1999 Redistributed to FY 2000 Structure		FY 2000 Request		Total Net Program Change 99/00
	Total	Hazards	Total	Hazards	Total	Hazards	
National Mapping Program	138,315	6,015	118,853	5,212	135,434	13,793	+16,581
Mapping Data Collection & Integration	63,858	0	55,978	0	58,125	0	
Earth Science Info Mngmnt & Delivery	36,388	4,555	31,191	3,904	43,700	11,999	
Geog Res & Applications	38,069	1,460	31,684	1,308	33,609	1,794	
Geologic Hazards , Resources, & Processes	239,150	93,465	198,883	80,058	198,617	82,083	-266
Geologic Hazard Assessments	76,369	76,369	65,479	65,479	68,810	68,810	
Geologic Landscape & Coastal Assessments	74,091	17,096	60,485	14,579	60,701	13,273	
Geologic Resource Assess.	88,690	0	72,919	0	69,106	0	
Water Resources Investigations	209,153	13,921	168,194	13,921	172,506	16,985	+4,312
Water Resources Assess. & Res	104,433	0	84,980	0	88,298	0	
Water Data Collect.& Management	29,528	2,104	19,480	2,104	20,790	5,116	
Fed-State Coop	70,137	11,817	58,679	11,817	58,356	11,869	
Water Resources Res. Act Prog	5,055	0	5,055	0	5,062	0	
Biological Research	162,461	0	125,517	0	124,964	0	-553
Bio Res & Monitoring	138,521	0	102,852	0	97,734	0	
Bio Info Mngmnt & Delivery	11,443	0	10,248	0	14,550	0	
Cooperative Research Units	12,497	0	12,417	0	12,680	0	
Integrated Science	N/A	N/A	30,286	0	47,686	0	+17,400
Programmatic Total	749,079	113,401	641,733	99,191	679,207	112,861	+37,474
General Administration/ Science Support (prorated)	27,308	4,096	72,449	9,905	73,996	12,283	
Facilities (prorated)	21,509	3,226	83,714	11,627	85,282	14,157	
SIR Appropriations Total (not including supplementals)	797,896	120,723	797,896	120,723	838,485	139,301	+40,589

II.1.4 Proposed Legislation

The Earthquake Hazards Reduction Act currently authorizes appropriations through FY 1999 for the earthquake program. The Basic Research subcommittee of the House Science Committee held a hearing on reauthorization on February 23, 1999. Senate oversight is exercised by the Science, Technology, and Space subcommittee of the Commerce, Science, and Transportation committee.

II.1.5 Impact of FY 2000 Budget Changes

Nearly 17% of total requested funding for FY 2000 supports the Hazards Goal — almost 2% more than in FY 1999. The growth rate for the Hazards goal itself is 15% (see the Funding Crosswalk table in the Appendix).

USGS maintains a vast infrastructure of sensors, monitors, and hazard support systems that form the back-bone for monitoring earthquake, landslide, geomagnetic, and volcanic activity, floods, and wildland fires. In the FY 2000 budget, increased funding has been requested for two coordinated hazards efforts. Taken together, these two efforts represent a comprehensive strategy for improved disaster mitigation and recovery.

The **Real-Time Hazards** request will accelerate instrument modernization and expand the use of real-time telemetry that allows rapid notification of emergency response agencies that deal with natural disasters. Baseline rate of improvement of the flood and earthquake networks given a constant FY 1998 funding level plus uncontrolables is 100 streamgages telemetered per year and 20 improved earthquake sensors installed per year. The requested \$5.45 million increase will add telemetry to an additional 150 streamgages and install an additional 80 earthquake sensors, bringing the respective cumulative totals to 4,921 telemetered streamgages and 220 improved earthquake sensors capable of delivering real-time information to minimize loss of life and property.

USGS Mobilizes Coastal Storm Response Team Feds coordinate data collection, safety, & science

In August 1998, the USGS, armed with a new coastal storm response plan, whirled into action to perform the critical task of gathering data about **Hurricane Bonnie**'s assault on the East Coast. The action plan, developed at the USGS during the previous 6 months, is specifically designed to create, in a very short period of time, an interdisciplinary team of USGS managers, scientists, and communications experts to ensure swift and effective internal and external coordination of activities and communications during a specific storm event.

USGS field personnel assist the NOAA and FEMA in measuring the amount (discharge) and height (stage) of rivers during an actual storm event. This "real-time" information, in addition to USGS topographic maps, is crucial for local officials having to make timely decisions about evacuating people in flood-prone areas. The USGS also assists the U.S. Army Corps of Engineers, when needed, in gathering storm surge data along the coast. Another hurricane damage assessment activity involves the NASA, NOAA, and USGS in making coastal surveys of beach contours using a laser beam emitted from the bottom of an aircraft.

Hurricane Mitch, the most destructive hurricane in the history of the western hemisphere, battered the Caribbean coast and Central America from October 27 through November 1, 1998. USGS joined the humanitarian effort organized by the U.S. government to provide assistance and within days of the event had created a digital atlas communicating more than 60 different types of geospatial information in a form that can be manipulated for analysis. The new maps showed the locations of landslides and floods, damage to roads, bridges, and other infrastructure, precipitation information, and impacts on agricultural lands. The information was extracted from satellite images, existing geologic maps, aerial photographs, and dozens of other digital and paper sources. This integrated information will continue to be critical for allocating resources in the short-term relief effort, for understanding the disaster's long-term impact on ecosystems, and for planning the region's economic recovery and reconstruction.

The **Disaster Information Network** request for \$8.0 million is seeking to establish an advanced, integrated, and coordinated communications link among the sources and users of disaster information. An additional 12 stakeholder meetings for data producers and users will be needed to coordinate and begin implementation of the network.

A \$3.5 million decrease in the coastal and marine program will be marked in the Hazards goal by one fewer stakeholder meeting.

II.2 Performance Plan Detail and Narrative

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, societal 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 with scenario formulation to develop strategies to mitigate the impact of future events and coordinated risk assessments for regions vulnerable to natural hazards.

Because **hazards strike locally**, reducing loss of life and property means having comprehensive networks and other observing systems that cover any area where a particular kind of hazard event can strike, because we cannot know the location of a disaster very far in advance. It also means being able to communicate needed information to the people actually affected, and with the local first responders. This requires a comprehensive, and targetable, communications system.

Because **all hazard mitigation is local**, to successfully reduce loss of life and property, we need to be able to target individual urban areas, counties, etc. with hazards information and scenarios, and to engage individuals and their communities in both mitigation and preparedness plans. This means enhancing our ability to work with organizations such as National Emergency Managers Association and National Association of Counties that represent States and localities.

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

Goal Achievement

USGS will maintain our current extensive monitoring networks and continue to conduct risk assessments. Each year, within base funding, we will add 100 streamgages with real-time

capability and 20 earthquake sensors to enhance our capability to provide hazard information in real time. In FY 2000, USGS has requested increased funding to add telemetry to an additional 150 streamgages (total 250) and install an additional 80 improved earthquake sensors (total 100). We will continue to maintain six hazards monitoring networks and will deliver 12 risk assessments. To ensure that we are meeting customer needs, we will conduct 27 stakeholder meetings. We will improve our measurement of delivery time and continue to evaluate new technologies to reduce analysis and delivery time to our customers.

USGS will invest at least one percent of our budget in training to stay abreast of technological developments and scientific advances, including training for skills related to hazards, such as automatic data processing and real-time data dissemination and quality assurance. On the basis of the Organization Assessment Survey conducted in FY 1999, USGS will conduct an assessment of needed skills and put in place a skills development plan to support the Hazards goal to close any gaps in required skills through training, outsourcing, and other methods.

Similarly, one percent of the bureau's budget will be devoted to leadership skills such as leading change, business acumen, and communications. In FY 2000, USGS will develop consistent reward system guidelines to align with strategic goals and mission. We will undertake actions to remove any existing barriers to inter-divisional, inter-program resource sharing, particularly in cross-cutting program areas such as hazards. We will develop and conduct leadership training, focusing on leadership skills identified through FY 1999's Leadership Effectiveness Inventory.

On the basis of an FY 1999 analysis of potential improvements in operational efficiencies, USGS will develop and implement a prioritized plan of action to evaluate and improve effectiveness, efficiency, and customer service. Based on an FY 1999 analysis of our facilities, USGS will develop and implement a long range plan to optimize their location, use, and condition. Provisions will also be made to develop criteria for ongoing review of facilities. The FY 2000 budget requests funding for the first year increment of our 5-year plan for deferred maintenance and capital improvement.

USGS will systematically identify, program by program, our full customer base and characterize their issues, concerns and requirements for our products. We will analyze the products and services we provide to customers and will target a two percent increase per year in products and services tailored to customer needs in the years FY 1999 - 2004. USGS will conduct customer satisfaction surveys in each of the programs that have fully identified and targeted key customers.

Benefits

The hazards information gathered in every State is relevant to the Nation's well being and future ability to minimize the loss of life and property from natural disasters including volcanoes, earthquakes, geomagnetic storms, floods, hurricanes, landslides, wildfires and wildlife disease. USGS science programs help to avert the human and economic costs of natural disasters that kill hundreds of people and cost over \$50 billion annually in the United States.

Exhibit A - Performance Plan

	FY 1999 Enacted BA (\$000)	FY 2000 Requested BA (\$000)		
GPRA Program Activity	120,723	139,301		
<p>01 Hazards: Provide science for a changing world in response to present and anticipated needs, focusing efforts to predict & monitor hazardous events in near-real and real-time and to conduct risk assessments to mitigate loss.</p>				
<p>01.01 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 adding telemetry to 600 streamgages (thus reducing the time it takes to provide flood information at that site from 6 to 8 weeks to 4 hours) and installing 140 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.</p>				
<p>01.01.01 FY 2000 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; increasing by 250 sites streamgages with real-time capability, and increasing by 100 improved earthquake sensors.</p>				
Performance Measures	FY 1997 Actual	FY 1998 Actual	FY 1999 Plan	FY 2000 Proposed
01.01.01.01.00 Hazards monitoring networks maintained	6	6	6	6
01.01.01.02.00 Risk assessments delivered	n/a	16	14	12 ¹
01.01.01.03.00 Real-time streamgages (cumulative)	4,467	4,571	4,671	4,921 ²
01.01.01.04.00 Real-time earthquake sensors (cumulative)	70	100	120	220 ³
01.01.01.05.00 Stakeholder meetings	n/a	16	16	27 ⁴
Workload and Other Performance Statistics				
1. Maintain streamgages (cumulative)	6,959	6,900	6,900	6,900

¹ The number of risk assessments completed is cyclic in nature. The decrease does not result from decreased funding.

² Cumulative targets show the overall size of the network. Each year includes the prior year level plus an average addition of telemetry to about 100 streamgages. In FY 2000 the 100 additions would be augmented by an additional 150 as a result of the proposed funding request for Real-Time Hazards.

³ Cumulative targets show the overall size of the network. Each year includes the prior year level plus an average addition of 20 earthquake sensors. In FY 2000 the 20 additions would be augmented by an additional 80 as a result of the proposed funding request for Real-Time Hazards.

⁴ Major stakeholder meetings will increase by 12 in FY 2000 as a result of coordination efforts needed to implement the Disaster Information Network for which funding was requested. One fewer coastal hazard stakeholder meeting will be held.

II.1 GPRA Program Activity — Environment & Natural Resources

II.1.1 Description

Under the Environment and Natural Resources GPRA Program Activity or mission goal, USGS provides science for a changing world 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.

Within this mission context, our long-term goal is to ensure the continued availability of long-term environmental and natural resource information and systematic analyses and investigations needed by customers, and by 2005, develop 20 new decision support systems and predictive tools for informed decisionmaking about natural systems. In keeping with this focus, the FY 2000 annual plan identifies performance measures for the annual increment needed to achieve this long-term goal within available funds.

II.1.2 Strategic Issues

In the long term, USGS will provide our customers with better understanding of natural systems at all scales, with more and better predictive tools and decision support systems, and with increased access to and usability of our data. In particular, USGS will implement our Information Infrastructure Plan to ensure that data comply with common standards and protocols. USGS will continue to improve the quality and usability of our long term datasets: water availability and quality, mineral and energy information, biological data and information, water use information, and high-quality digital maps. We will also develop specialized products to better serve customers' needs. We will focus on key users of environment and natural resources information, such as Federal, State, and local managers, to ensure that their needs are understood and are being met. USGS will increase development and delivery of products and services tailored to the needs of these customers, and work with customers in developing long-term strategies for anticipating their future needs. In particular, we will emphasize developing predictive capabilities for decisionmakers by developing forecasting and predictive models and sophisticated decision support systems that allow managers and decision makers to ask "what if" questions and develop alternative scenarios.

USGS will improve the efficiency of our administrative, science support, and programmatic activities to streamline systems for delivery of environment and natural resources data and information and eliminate any duplication or overlap. We will optimize the infrastructure, use, and quality of our facilities to balance the need to locate near customers who use our information and the need to minimize costs.

As with the Hazards Strategic Goal, USGS employees are the core of our long-term strategy for achieving the Environment and Natural Resources Goal. We 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 forecasting and predictive models and better communicate with customers. USGS is aligning our rewards systems so that contributions by employees to meeting key customers needs are fully rewarded. Finally, USGS 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 for cross-organizational resource sharing, and increasing our use of cooperative agreements with other entities who use our data and information on natural resources and the environment.

II.1.3 Related Budget Accounts, Budget Activities, Subactivities:

Budget Activity/Subactivity (\$000)	FY 1999 Enacted		FY 1999 Redistributed to FY 2000 Structure		FY 2000 Request		Total Net Program Change 99/00
	Total	Env & Nat Resources	Total	Env & Nat Resources	Total	Env & Nat Resources	
National Mapping Program	138,315	132,300	118,853	113,641	135,434	121,641	+16,581
Mapping Data Collection & Integration	63,858	63,858	55,978	55,978	58,125	58,125	
Earth Science Info Management & Delivery	36,388	31,833	31,191	27,287	43,700	31,701	
Geog Res & Applications	38,069	36,609	31,684	30,376	33,609	31,815	
Geologic Hazards , Resources, & Processes	239,150	145,685	198,883	118,825	198,617	116,534	-266
Geologic Hazard Assessments	76,369	0	65,479	0	68,810	0	
Geologic Landscape & Coastal Assessments	74,091	56,995	60,485	45,906	60,701	47,428	
Geologic Resource Assess.	88,690	88,690	72,919	72,919	69,106	69,106	
Water Resources Investigations	209,153	195,232	168,194	154,273	172,506	155,521	+4,312
Water Resources Assess. & Res	104,433	104,433	84,980	84,980	88,298	88,298	
Water Data Collect.& Management	29,528	27,424	19,480	17,376	20,790	15,674	
Fed-State Coop	70,137	58,320	58,679	46,862	58,356	46,487	
Water Resources Res. Act Prog	5,055	5,055	5,055	5,055	5,062	5,062	
Biological Research	162,461	162,461	125,517	125,517	124,964	124,964	-553
Bio Res & Monitoring	138,521	138,521	102,852	102,852	97,734	97,734	
Bio Info Management & Delivery	11,443	11,443	10,248	10,248	14,550	14,550	
Cooperative Research Units	12,497	12,497	12,417	12,417	12,680	12,680	
Integrated Science	N/A	N/A	30,286	30,286	47,686	47,686	+17,400
Programmatic Total	749,079	635,678	641,733	542,542	679,207	566,346	+37,474
General Administration/Science Support (prorated)	27,308	23,212	72,449	61,930	73,996	61,713	
Facilities (prorated)	21,509	18,283	83,714	72,701	85,282	71,125	
SIR Appropriations Total (not including supplementals)	797,896	677,173	797,896	677,173	838,485	699,184	+40,589

II.1.4 Proposed Legislation

Performance goals are not contingent on enactment of legislation during the fiscal year covered by the annual plan.

II.1.5 Impact of FY 2000 Budget Changes

Approximately 83% of total requested funding for FY 2000 supports the Environment and Natural Resources Goal. Growth rate for this goal is 3% (See the Funding Crosswalk table in the Appendix).

For FY 2000, the USGS is proposing an "Integrated Science" budget activity that will result in more efficient planning and operations for projects that benefit from the multidisciplinary science talents of the bureau. This new budget activity has two program components. "DOI Science Priorities" will focus on the high priority science needs of the Department's land management bureaus. "Place-based Studies" will focus on improving scientific understanding of complex, long-standing problems and providing scientific information in new, more comprehensive ways. This new budget activity will both facilitate the integration of activities, and provide the flexibility to shift emphasis and geographic location as customers' needs change. The base for this program was created from ongoing place-based studies and activities that directly support Departmental science needs. The \$15.0 million increase requested for DOI science priorities and \$2.4 million increase requested for Place-based studies are estimated to result in 7 additional systematic investigations, 8 additional stakeholder meetings, and an additional decision support system in FY 2000. Additional integrated science investigations and support systems will be completed in outyears. Similarly, 10 of the increased target for systematic investigations in FY 2000 result from an FY 1998 funding increase for activities that now

Integrating Science, Monitoring, and Management

USGS scientists and Upper Mississippi River National Wildlife and Fish Refuge (USFWS) have developed a prototype decision support system, a rapid-access, user-friendly and scientifically-based tool to aid Mississippi River managers. Rapid and succinct communication of complex and voluminous scientific information is central to successful science-based conflict resolution in a partnership framework. Built upon a joint effort, "The Management Strategy for Migratory Birds on the Upper Mississippi River Corridor," this prototype is an integrated, ecological, and pro-active approach to management of migratory bird habitats in the context of other landscape, biological, and sociological components. Data from the Long-term Resource Monitoring Program, a cooperative State-DOI-Army Corps of Engineers effort authorized under the Water Resources Development Act of 1986, underpin the project. This digital decision support system is an electronic ecosystem encyclopedia for planners, integrating physical, land cover, biological, and social themes. The system is PC-based with available commercial software, making the manager's interface accessible and cost-effective. The prototype system is used daily by the La Crosse District of the Upper Mississippi River National Wildlife & Fish Refuge to make management decisions.

provide the base for Integrated Science. Funding increases such as the \$5.6 million increase for research and monitoring of amphibians as an indicator species will result in increased completions of investigations in outyears and will also augment existing long-term data collection efforts.

Also with regard to long-term data collection and management efforts, the USGS will work with State, local, and Tribal governments, the private sector, academia, and others through the Community/Federal Information Partnership (C/FIP) effort to advance the abilities of communities to create and use spatially referenced data, and to improve the USGS's ability to provide spatially referenced earth science information through the National Spatial Data Infrastructure (NSDI). The FY 2000 budget includes an increase of \$10.0 million for C/FIP. Of this amount, \$6.7 million will be channeled through matching grants and other cooperative mechanisms to work with communities to develop spatially referenced earth and biological science data that benefit both communities and USGS programs, and to integrate these data into communities' decisionmaking processes. Such information is becoming an increasingly important tool in the effective resolution of growth debates in communities across the country. Five additional stakeholder meetings will result from this increased effort. In addition, C/FIP, as well as increases for the National Biological Information Infrastructure and the National Land Remote Sensing Data Archive, will accelerate growth of the volume of data, capacity of databases, number of participants engaged in collecting data, and the accessibility of data from these long term data collection/data management efforts. For example, the accessibility of all USGS geologic maps will grow from 45% to 60% and State geologic maps from 1% to 20% as a result of the C/FIP increase. The total number of long-term data collection efforts, however, is decreasing as a result of completions of several coastal and marine efforts.

A \$5.6 million proposed decrease to the \$6.6 million grant program to conduct basic marine research on the Bering Sea will not change the university-based partnerships performance target because these grants were counted collectively as a single grant.

II.2 Performance Plan Detail and Narrative

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. The traditional boundaries between environment and natural resources science are increasingly blurring as land and resource management decisions deal with increasingly complex issues affecting both. The need for cross-disciplinary integrated science has never been more apparent. USGS environment and natural resources mission activities deal with studies of natural, physical, chemical, and biological processes, and of 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.

The USGS cannot, and does not seek 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 success in ensuring the comparability of data, the validity of interpretations based on these data, the ability to integrate data, and ultimately the usefulness of these data and interpretations for land and resource decisionmaking. The USGS is 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, to deliver systematic analyses needed by our customers and to develop and improve decision support systems. We are also seeking new applications and increased use of our classified assets.

National Spatial Data Infrastructure (NSDI)

The USGS, as executive secretariat for the Federal Geographic Data Committee (FGDC), is supporting the development, implementation, and promotion of NSDI data standards. In FY 1998 the USGS led four national standards development efforts: (1) the National Standard for Spatial Data Accuracy, (2) the Content Standard for Digital Orthoimagery, (3) the Content Standard for Digital Gridded Land Elevation Data, and (4) the Content Standard for Digital Geospatial Metadata. Additionally, the USGS is the maintenance authority for the Spatial Data Transfer Standard (SDTS) and supporting data profiles. The American National Standards Institute formally adopted SDTS as a national standard in July 1998.

Such data standards provide the geospatial data community with an improved and consistent approach for using and sharing geospatial data. They constitute a critical component to vigorous implementation of the National Spatial Data Infrastructure.

Goal Achievement

USGS will maintain our current efforts to provide and improve long-term environmental and natural resource information, systematic analysis and investigations, and predictive tools for decision making about natural systems. We will maintain at least 34 long term data collection/data management efforts such as the national water data networks, biological monitoring of environmental status and trends, National Aerial Photography Program, and energy assessments. We will support two large data infrastructures — NBII and NSDI — each year, and will deliver 875 new systematic analyses and investigations to our customers. We will improve, develop, and deliver to customers seven decision support systems and continue our long-standing collaboration with university and other partners through the development of 272 external grants and contracts.

USGS will invest at least one percent of our budget in training to stay abreast of technological developments and scientific advances, including training to improve long term data collection and analysis, research and development and assessments and applications of new technologies. On the basis of the Organization Assessment Survey conducted in FY 1999, USGS will conduct an assessment of needed skills and put in place a skills development plan for the Environment and Natural Resources goal to close any gaps in required skills through training, outsourcing, and

other methods.

Similarly, one percent of the bureau's budget will be devoted to leadership skills such as leading change, business acumen and communications. In FY 2000, USGS will develop consistent rewards system guidelines to align with strategic goals and mission. We will undertake actions to remove any existing barriers to inter-divisional, inter-program resource sharing, particularly in cross-cutting program areas such as environment and natural resources. We will develop and conduct leadership training, focusing on leadership skills identified through FY 1999's Leadership Effectiveness Inventory.

On the basis of an FY 1999 analysis of potential improvements in operational efficiencies, USGS will develop and implement a prioritized plan of action to evaluate and improve effectiveness, efficiency, and customer service. Based on an FY 1999 analysis of our facilities, USGS will develop and implement a long range plan to optimize their location, use, and condition. Provisions will also be made to develop criteria for ongoing review of facilities. The FY 2000 budget requests funding for the first year increment of our 5-year plan for deferred maintenance and capital improvement.

USGS will identify our customer base for each program and characterize their issues, concerns and requirements for USGS products. We will analyze the products and services we provide our customers, targeting a two percent increase per year in products and services tailored to customer needs in FY 1999 - 2004, and will conduct customer satisfaction surveys.

Benefits

USGS biological, geological, hydrological, and mapping programs are essential to the effective stewardship of the Nation's cultural and natural resources, including the Department's management of about 450 million acres of Federal lands (about one-fifth of the total U.S. landmass) contained in national parks and preserves, national wildlife refuges, wilderness areas, wild and scenic rivers, and range lands, and about three billion acres of the Outer Continental Shelf.

Data collection and analytic capabilities of the USGS directly contribute to the conservation as well as economic and physical development of the Nation's natural resources. Other Federal agencies and State and local governments use USGS water, biological, energy and mineral resources information and capabilities to guide planning, management and regulatory programs.

Exhibit A - Performance Plan

	FY 1999 Enacted BA (\$000)	FY 2000 Requested BA (\$000)		
GPRA Program Activity	677,173	699,184		
02 Environment and Natural Resources: Provide science for a changing world 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.				
02.01 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.				
02.01.01 FY 2000 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 34 long-term data collection/data management efforts and supporting 2 large data infrastructures managed in partnership with others; delivering 875 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 272 external grants and contracts.				
Performance Measures	FY 1997 Actual	FY 1998 Actual	FY 1999 Plan	FY 2000 Proposed
02.01.01.01.00 Long-term data collection and data management efforts maintained & improved and large data infrastructures supported	34	40	40	36 ¹
02.01.01.02.00 New systematic analyses & investigations delivered to customers	n/a	865	843	875 ²
02.01.01.03.00 Decision support systems or predictive models developed or improved and delivered to customers	n/a	5	6	7 ³
02.01.01.04.00 University-based partnerships for natural systems analysis	235	270	272	272
02.01.01.05.00 Stakeholder meetings	207	212	228	241 ⁴

¹ Capacity of databases, number of participants engaged in collecting data, and the accessibility of data continue to increase and will accelerate in FY 2000 with requested funding increases for National Land Remote Sensing Data Archive, Community/Federal Information Partnerships, and NBII. Completion of coastal and marine data collection efforts in national marine sanctuaries and termination of work on coastal erosion in the SE U.S. reduces the number of data collection efforts from 38 to 34 which together with the 2 large data infrastructures brings the total to 36. This change accompanies a funding reduction under the Geologic Hazards, Resources and Processes Budget Activity. Existing data in these 4 coastal and marine databases will continue to be available, but new data will not be collected.

² The increase of 32 investigations derives 70% from FY 98 funding increases and 30% from the FY 00 requested funding increase for the new integrated science budget activity. Many long-term investigations initiated with funding increases requested for FY 00 will be completed in FY 02.

³ Completions average one per discipline (biology, geology, hydrology, and mapping) plus integrated systems.

⁴ The increased coordination meetings with stakeholders result from increased funding requested for the proposed Community/Federal Information Partnerships (+5) and for the proposed Integrated Science Budget Activity (+8)

III. Means Goals

Goals for internal bureau functions and operations, while a part of the balanced scorecard approach to strategy implementation, are not included in the GPRA Annual Plan. Rather, they are discussed within the context of operational processes, technology, financial and human resources necessary to achieve each annual performance goal within the GPRA Program Activity. The Department-wide management goals supported by the USGS are reported through the Department. There are no additional means goals that are uniquely critical or significant to the accomplishment of the USGS mission.

IV. Performance Measures and Verification

Exhibit B

Annual Performance Goal	Performance Measure and Definition	FY 1998 Baseline (See Appendix for details)	Data Collection Methodology And Sources	Validation
<p>01.01.01 Hazards: Develop, maintain & improve monitoring networks & techniques of risk assessment by: maintaining the baseline of data & risk assessments transferred to customers; increasing by 250 sites streamgages with real-time capability, & increasing by 100 improved earthquake sensors</p>	<p>01.01.01.01.00 Hazards monitoring networks maintained A monitoring network consists of an array of sensing devices, IT infrastructure, & personnel that together detect, record, interpret, integrate & deliver data for a given hazard</p>	<p>6 hazards networks (flood, earthquake, volcano, landslide, geomagnetic, and an integrated monitoring network) are maintained by USGS</p>	<p>Managers monitor & supervise functioning of networks at observatories, research centers, and Water Districts, & report status by exception</p>	<p>Program Coordinators/ Program Council validate</p>
	<p>01.01.01.02.00 Risk assessments delivered Regional or national assessment of risk for 1 or more hazards</p>	<p>16 risk assessments delivered</p>	<p>Hazards assessments are tracked as published USGS reports; Hazards notifications based on monitoring data are recorded at and reported by USGS observatories, centers, etc.</p>	<p>Official USGS Annual Publications listing verifies publication</p>
	<p>01.01.01.03.00 Real-time streamgages Telemetry is added to existing streamgages to provide real-time flow info for NWS forecasters & emergency management & response officials</p>	<p>4,571 of 6,900 gages were instrumented by the end of FY 1998. Telemetry will be added to 100 gages per year.</p>	<p>Annual inventory of streamgaging stations conducted by all USGS Water District Office data section chiefs and reported to HQ at the end of the fiscal year</p>	<p>Certification by each District Chief and the Chief of the Office of Surface Water</p>
	<p>01.01.01.04.00 Real-time earthquake sensors Ground motion detectors are the initial instrument installed to capture & transmit real-time info</p>	<p>100 strong ground motion detectors are installed and operating. 20 improved sensors will be installed per year</p>	<p>Annual inventory of earthquake sensors conducted by Seismic Network operators and reported to HQ at the end of the fiscal year</p>	<p>Certification by Coordinator of the Earthquake Hazards Program</p>
	<p>01.01.01.05.00 Stakeholder meetings Major meetings with other Feds, customers, cooperators, Administration & congressional oversight groups &/or the public who have a major role/interest in hazard warning or response</p>	<p>16 meetings average per year to enhance or improve the strategic direction & management of the program</p>	<p>Program coordinator schedules, organizes/attends annual stakeholder meetings & maintains records that the meetings have taken place</p>	<p>Regional Director or Division Chief verifies that stakeholder meetings have taken place.</p>

Annual Performance Goal	Performance Measure and Definition	FY 1998 Baseline (See Appendix for details)	Data Collection Methodology And Sources	Validation
<p>02.01.01 Environment and Natural Resources: Provide & improve long-term environmental & natural resource information, systematic analysis & investigations, & predictive options for decision making about natural systems by: providing essential information to address environmental & natural resources issues by maintaining 34 long term data collection/data management efforts & supporting 2 large data infrastructures managed in partnership with others; delivering 875 new systematic analyses & investigations to our customers; improving & developing 7 new decision support systems & predictive tools for decision-making; & collaborating with university partners to understand natural systems and facilitate sound management practices through 272 external grants and contracts.</p>	<p>02.01.01.01.00 Long-term data collection & data management efforts maintained & improved & large data infrastructures supported Long-term, large-scale data base efforts to ensure the collection, preservation, and dissemination of natural science data, including support for the development of national infrastructures for the management and sharing of these data produced at all levels of government.</p>	<p>38 databases 2 large-scale infrastructures</p>	<p>Data are collected by project scientists at research/field centers and are reported through an automated, electronic system</p>	<p>For geospatial databases, reports provided by the Federal Financial System and the Sales Data Base verify the amount of maps, data, aerial photographs, and satellite images available in the various databases and inventories. For geologic data bases, certification is made by Program Coordinator. For water resources data collection, certification is made by each District Chief & the Office of Surface Water. For biological databases, validation occurs through national program element reviews and reviews of individual research centers.</p>
	<p>02.01.01.02.00 New systematic analyses & investigations delivered to customers 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.</p>	<p>865 New systematic analyses & investigations delivered to customers</p>	<p>USGS compiles a list of new publications monthly and makes it available on the Internet at: http://pubs.usgs.gov/publications/index.html A paper version of this list is updated quarterly.</p>	<p>Accuracy of "new reports" listing can be confirmed by the internal organizations' reports tracking system.</p>

Annual Performance Goal	Performance Measure and Definition	FY 1998 Baseline (See Appendix for details)	Data Collection Methodology And Sources	Validation
	<p>02.01.01.03.00 Decision support systems or predictive models developed or improved & delivered to customers</p> <p>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.</p>	<p>5 Decision support systems or predictive models developed or improved & delivered to customers per year (average one per scientific discipline within USGS)</p>	<p>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://www.nbs.gov/science/currproj.html for biological models</p>	<p>For mapping models, the Senior Program Advisor for Geographic Research & Applications validates delivery & use by customers. For geologic models, validation is conducted by Program Councils & stakeholder reps. For water resources models, a technical memorandum is issued for each model. For biological models, validation occurs through national program element reviews and reviews of individual research centers. Ultimately customers validate that the systems & models are acceptable & useful.</p>
	<p>02.01.01.04.00 University-based partnerships for natural system analysis</p>	<p>55 Water Resources Research Institute grants 215 biological research work orders (coop units)</p>	<p>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.</p>	<p>Certification from USGS Contracts Office that the partnerships have been awarded.</p>
	<p>02.01.01.05.00 Stakeholder meetings</p> <p>Major meetings with other Feds, customers, cooperators, Administration & congressional oversight groups &/or the public who have a major role/interest in environmental & natural resource issues</p>	<p>212 meetings average per year to enhance or improve the strategic direction & management of the program</p>	<p>Program coordinator schedules, organizes/ attends annual stakeholder meetings & maintains records that the meetings have taken place</p>	<p>Regional Director or Division Chief verifies that stakeholder meetings have taken place.</p>

Appendix

Index of Common Terms

Goal Category, this optional classification exists only to provide a common way of grouping the major themes of an organization.

Mission Goal is a classification identifying outcome oriented goals that define how an organization will carry out its mission.

Long-Term Goals are the "general performance goals and objectives" identified in the Government Performance and Results Act. They define the intended result, effect, or consequence for what the organization does. They provide a measurable indication of future success by providing target levels of performance and a time frame for accomplishment. Long-term goals should focus on outcomes rather than outputs (products and services).

Annual Goal is a one-year increment of the long-term goal. It contains a targeted level of performance to be achieved for a particular year. It is to be expressed in an objective, quantifiable, and measurable form. OMB approval of an alternative form of evaluating the success of a program is required if the annual goal cannot be expressed in an objective or quantifiable manner.

GPRA Program Activity, is described as the consolidation, aggregation or disaggregation of program activities that are covered or described by a set of performance goals, provided that any aggregation or consolidation does not omit or minimize the significance of any program constituting a major agency function or operation.

Program Evaluation, an assessment, through objective measurement and systematic analysis of the manner and extent to which Federal programs achieve intended objectives.

Final Annual Performance Plan, reflects budget, policy and programmatic decisions and is consistent with the President's Budget. The Final Plan will be submitted to Congress with the President's Budget.

Operating Plan or Revised Final Annual Performance Plan, this plan primarily reflects Congressional action on the Agency's budget request. Bureaus may change target levels for performance goals where the targets are materially affected by Congressional action, introduce new goals in response to Congress, or modify goals because unanticipated exigencies occurred since submission of Final Plan to Congress.

**Crosswalk of Funding Distribution
from Budget Structure/Restructure to GPRA Program Activity**

Budget Activity/Subactivity (\$000)	FY 1999 Enacted			FY 1999 Redistributed to FY 2000 Structure			FY 2000 Request			Total Net Program Change 99/00
	Total	Hazards	Env & Nat Res	Total	Hazards	Env & Nat Res	Total	Hazards	Env & Nat Res	
National Mapping Program	138,315	6,015	132,300	118,853	5,212	113,641	135,434	13,793	121,641	+16,581
Mapping Data Collection & Integration	63,858	0	63,858	55,978	0	55,978	58,125	0	58,125	
Earth Science Info Mngmnt & Delivery	36,388	4,555	31,833	31,191	3,904	27,287	43,700	11,999	31,701	
Geog Res & Applications	38,069	1,460	36,609	31,684	1,308	30,376	33,609	1,794	31,815	
Geologic Hazards , Resources, & Processes	239,150	93,465	145,685	198,883	80,058	118,825	198,617	82,083	116,534	-266
Geologic Hazard Assessments	76,369	76,369	0	65,479	65,479	0	68,810	68,810	0	
Geologic Landscape & Coastal Assessments	74,091	17,096	56,995	60,485	14,579	45,906	60,701	13,273	47,428	
Geologic Resource Assess.	88,690	0	88,690	72,919	0	72,919	69,106	0	69,106	
Water Resources Investigations	209,153	13,921	195,232	168,194	13,921	154,273	172,506	16,985	155,521	+4,312
Water Resources Assess. & Res	104,433	0	104,433	84,980	0	84,980	88,298	0	88,298	
Water Data Collect.& Mngmnt	29,528	2,104	27,424	19,480	2,104	17,376	20,790	5,116	15,674	
Fed-State Coop	70,137	11,817	58,320	58,679	11,817	46,862	58,356	11,869	46,487	
Water Resources Res. Act Prog	5,055	0	5,055	5,055	0	5,055	5,062	0	5,062	
Biological Research	162,461	0	162,461	125,517	0	125,517	124,964	0	124,964	-553
Bio Res & Monitoring	138,521	0	138,521	102,852	0	102,852	97,734	0	97,734	
Bio Info Mngmnt & Delivery	11,443	0	11,443	10,248	0	10,248	14,550	0	14,550	
Cooperative Research Units	12,497	0	12,497	12,417	0	12,417	12,680	0	12,680	
Integrated Science	N/A	N/A	N/A	30,286	0	30,286	47,686	0	47,686	+17,400
Programmatic Total	749,079	113,401	635,678	641,733	99,191	542,542	679,207	112,861	566,346	+37,474
General Administration/ Science Support (prorated)	27,308	4,096	23,212	72,449	9,905	61,930	73,996	12,283	61,713	
Facilities (prorated)	21,509	3,226	18,283	83,714	11,627	72,701	85,282	14,157	71,125	
SIR Appropriations Total (not including supplementals)	797,896	120,723	677,173	797,896	120,723	677,173	838,485	139,301	699,184	+40,589

FY 99/00 Requested Change USGS Total Funding	+\$40,589,000	Growth Rate:	+ 5%
Hazards	+\$18,578,000	Growth Rate:	+15%
Environment & Natural Resources	+\$22,011,000	Growth Rate:	+ 3%

**GPRA Program Activity Performance Targets Disaggregated by Budget Activity
Crosswalk FY 1999 to FY 2000 Budget Structure**

GPRA Program Activity	Hazards				
	01.01.01. 01.00	01.01.01. 02.00	01.01.01. 03.00	01.01.01. 04.00	01.01.01. 05.00
Performance Measure	Monitoring Networks maintained	Risk Assessments delivered	Real-time Streamgages (cumulative) (rate 100/yr)	Real-time Earthquake Sensors (cumulative) (rate 20/yr)	Stakeholder Meetings
Bureau FY 98 Baseline	6	16	4,571	100	16
Bureau FY 99 Annual Target Current Budget Structure	6	14	4,671	120	16
National Mapping Program	1	0	0	0	2
Geologic Hazards, Resources, & Processes	4	9	0	120	8
Water Resources Investigations	1	5	4,671	0	6
Biological Research	0	0	0	0	0
Subset of line items focused on crosscut issues	0	0	0	0	0
Bureau FY 99 Annual Target in FY 00 Structure	6	14	4,671	120	16
National Mapping Program	1	0	0	0	2
Geologic Hazards, Resources, & Processes	4	9	0	120	8
Water Resources Investigations	1	5	4,671	0	6
Biological Research	0	0	0	0	0
Integrated Science	0	0	0	0	0
Bureau FY 00 Annual Target	6	12	4,921	200	27
National Mapping Program	1	0	0	0	14
Geologic Hazards, Resources, & Processes	4	7	0	200	7
Water Resources Investigations	1	5	4,921	0	6
Biological Research	0	0	0	0	0
Integrated Science	0	0	0	0	0

**GPRA Program Activity Performance Targets Disaggregated by Budget Activity
Crosswalk FY 1999 to FY 2000 Budget Structure**

GPRA Program Activity	Environment & Natural Resources				
Goal Code	02.01.01. 01.00	02.01.01. 02.00	02.01.01. 03.00	02.01.01. 04.00	02.01.01. 05.00
Performance Measure	Long-term data collection & mngmnt efforts maintained & improved & large data infrastructures supported	New systematic analyses & investigations delivered	Decision support systems or predictive models developed or improved & delivered to customers	University-based partner-ships for natural systems analysis	Stakeholder Meetings
Bureau FY 98 Baseline	40	865	5	270	212
Bureau FY 99 Annual Target Current Budget Structure	40	843	6	272	228
National Mapping Program	9	0	1	0	36
Geologic Hazards, Resources, & Processes	18	23	1	0	22
Water Resources Investigations	4	404	1	56	88
Biological Research	9	412	1	216	74
Subset of line items focused on crosscut issues	0	4	2	0	8
Bureau FY 99 Annual Target in FY 00 Structure	40	843	6	272	228
National Mapping Program	9	0	1	0	36
Geologic Hazards, Resources, & Processes	17	22	1	0	21
Water Resources Investigations	4	404	1	56	88
Biological Research	9	332	1	216	74
Integrated Science	1	85	2	0	9
Bureau FY 00 Annual Target	36	875	7	272	241
National Mapping Program	9	0	1	0	40
Geologic Hazards, Resources, & Processes	13	22	1	0	22
Water Resources Investigations	4	404	1	56	88
Biological Research	9	347	1	216	74
Integrated Science	1	102	3	0	17

FY 1998 Baseline Documentation

Hazards

Annual Performance Goal — Hazards: 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 100 sites streamgages with real-time capability, and increasing by 20 improved earthquake sensors.

Performance Measures

1. 6 Hazards monitoring networks maintained

- **1 flood hazards network** (the national streamgaging network) comprises about 6,900 stations in FY 1997. These stations are funded by the Hydrologic Networks & Analysis Program and the Fed-State Coop Water Program. Includes some data collection sites funded in part or in whole by State matching funds under the Federal-State Cooperative Water Program, and some sites funded in part or in whole by reimbursements from other Federal agencies. The total number of streamgaging stations referenced here also includes streamgaging stations which contribute to the Environment and Natural Resources annual goal. These stations are multi-purpose, so that any individual station cannot be classified as 100% Hazards or 100% Environment and Natural Resources.
- **1 volcano hazards network** monitors 42 U.S. volcanoes in 5 volcanic regions. Funded by the Volcano Hazards Program.
- **1 earthquake hazards network** comprises one Global Seismographic Network (81 stations located worldwide in FY 1998), a National Seismic Network, and seventeen regional networks — together these networks provide an integrated means of monitoring, analyzing, and reporting on seismic activity in the United States. Funded by the Earthquake Hazards Program and the Global Seismographic Network Program.
- **1 geomagnetic hazards network** comprises 13 geomagnetic observatories to monitor changes in the earth's magnetic field and to issue warnings regarding the onset and severity of geomagnetic storms. Funded by the Geomagnetism component of the Earthquake Hazards Program.
- **1 landslide hazards network** currently monitoring 3 landslides in Colorado, California, and Washington State. Funded by the Landslide Hazards Program.
- **1 integrated hazards monitoring network** comprises a Hazards Support System and a Center for Integration of Natural Disaster Information, using national classified assets in conjunction with other sources, to monitor natural events which place citizens and property at risk. Funded by the Earth Science Information Management and Delivery and

the Geographic Research and Applications Programs.

2. 16 Risk assessments delivered

- **5 studies related to the assessment of risks from flood hazards** were completed by USGS in FY 1998. Includes regional (State) flood frequency analyses nationwide to enhance the use of hazards assessments by decision-makers; there are 50 assessments total, one for each State. Also includes studies to analyze the effects of stream scour on highway bridges and stream banks. All these studies are funded by the Fed-State Coop Water Program.
 - **4 volcano risk assessments** per year regarding potential hazards at individual volcano centers. By FY 1998, hazard assessments have been prepared for 21 U.S. volcanoes. Funded by the Volcano Hazards Program.
 - **0 earthquake risk assessments**
 - **6 coastal risk assessments**, part of a series of regional assessments for the purpose of understanding the processes impacting coastal risk due to erosion, earthquakes, tsunamis and landslides. In 1997, the program had such assessments underway involving about 5% of the coast of the Conterminous U.S. and Great Lakes. 4 regional assessments are scheduled for completion and delivery to customers in each fiscal year. Funded by the Coastal and Marine Geology Program.
 - **1 landslide risk assessment** periodic update of a national landslide susceptibility database. Funded by the Landslide Hazards Program.
- 3. 4,571 Real-time streamgages — 104 streamgages were instrumented with telemetry** to provide real-time flow information for National Weather Service river forecasters and emergency management and response officials. Funded by the Hydrologic Networks & Analysis Program.
- 4. 100 Real-time earthquake sensors — 20 ground motion detectors per year are purchased and installed** to serve as the initial instrument for use in pursuing the “real-time” capture and transmission of information regarding earthquakes. Funded by the Earthquake Hazards Program.
- 5. 16 Stakeholder meetings**
- **6 flood hazard meetings** coordinated by the Office of Surface Water with other Federal agencies who play a major role in hazard warning and response. Meetings occur at least once per year; involve customers, cooperators, Administration and Congressional oversight groups, and/or the public, collectively or separately; and are used to enhance or improve the strategic direction and the management of the program. Three annual

meetings with National Weather Service , 1 with U.S. Army Corps of Engineers, and 2 with ACWI Streamgaging Task Force.

- **2 volcano hazard stakeholder meetings**
- **1 earthquake hazard stakeholder meeting**
- **0 global seismic network stakeholder meeting**
- **0 geomagnetic hazard stakeholder meeting**
- **5 coastal hazard stakeholder meetings**
- **0 landslide hazard stakeholder meetings**
- **2 integrated hazards monitoring stakeholder meeting**
USGS/NIMA Strategic Partnership Meetings - 2

FY 1998 Baseline Documentation

Environment and Natural Resources

Annual Performance Goal — Environment and Natural Resources: 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 38 long term data collection/data management efforts and supporting 2 large data infrastructures managed in partnership with others; delivering 840 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 272 external grants and contracts.

Performance Measures

1. **40 Long-term data collection and data management efforts maintained & improved and large data infrastructures supported**
 - **2 large-scale infrastructures:**
 - National Spatial Data Infrastructure - 65 FGDC-compliant clearinghouse server nodes
 - National Biological Information Infrastructure
 - **8 long-term geospatial databases:**
 - National Hydrographic Dataset - 2,149 cataloging units
 - National Elevation Dataset - >53,400 digital elevation models
 - National Digital Ortho-Imagery - >86,000 ortho-images
 - National Topographic Map Series - ~61,862 primary-series topographic maps
 - National Land Cover Characterization Dataset - 149 Landsat Thematic Mapper path/row scenes
 - National Aerial Photography Program - >1,400,000 aerial photographs
 - National Geographic Names Database - 50 States, District of Columbia, 3 territories, 2 commonwealths, 3 freely associated areas, 2 uninhabited insular areas, and Antarctica
 - National Satellite Land Remote Sensing Data Archive - 140,995 gigabytes and 2,162,442 scenes of satellite imagery
 - **4 long-term hydrologic data collection and data management efforts:**
 - national streamgaging network,
 - national network of ground-water monitoring wells,
 - water quality monitoring instrumentation at streamgages & wells (includes NASQAN, Benchmark, and NAWQA low-level sampling sites), and National Trends Network for precipitation monitoring.
 - Includes some data collection sites funded in part or in whole by State matching funds under the Federal-State Cooperative Water Program, and some sites funded in part or in

whole by reimbursements from other Federal agencies. The streamgaging stations (surface-water monitoring sites) referenced here also include streamgaging stations which contribute to the Hazards annual goal. These stations are multi-purpose, so that any individual station cannot be classified as 100% Hazards or 100% Environment and Natural Resources.

- **7 long-term biological data collection and data management efforts:**
Bird Banding Laboratory coordination of national bird banding
Breeding Bird Survey national population monitoring of birds
Fish population monitoring in Great Lakes and Atlantic and Pacific coasts
Non-indigenous aquatic species database
Biomonitoring of Environmental Status and Trends Program (BEST)
Amphibian monitoring program (includes calling surveys and atlases and web-based North American Reporting Center for Amphibian Malformations)
Wildlife Disease Epidemiology
- **3 long-term global change data collection and data management efforts**
- **10 long-term coastal and marine geology data collection and data management efforts**
- **1 long-term geologic map information data management effort:**
National Geologic Map Database FY 1998 baseline, metadata for 45% of all USGS geologic maps and 1% of State Survey geologic maps are accessible via the Internet.
- **5 mineral resources national databases:**
National Geophysical Database,
National Geochemical Database,
Mineral Resources Data System,
Minerals Availability System/Minerals Inventory Locator System, and
Automated Minerals Information System.
- 2. **865 New systematic analyses & investigations delivered to customers**
- **0 National Mapping Program systematic analyses and investigations**
- **426 Water Resources Investigations** 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.
112 National Water Quality Assessment (NAWQA) Program
70 Toxic Substance Hydrology (includes products resulting from collaboration with the National Research Program)
3 Ground-Water Resources

- 100 Hydrologic Research & Development (includes some products from the National Research Program, which receives funding from other water resources programs and collaborates on publications and projects with those programs)
- 141 Fed-State Coop Water Program
- **412 biological research investigations**
 - 28 Contaminants
 - 77 Fisheries and Aquatic Resources
 - 67 Wildlife
 - 107 Ecosystems
 - 34 Invasive Species
 - 65 Endangered and At Risk Species
 - 34 Biological Information Management and Delivery
 - **2 energy resource investigations** as part of a series of periodic assessments on the location, quantity, and quality of known and undiscovered resources from eight regions of the Nation and eight regions of the world
 - **3 global change investigations**
 - carbon sequestration in lake, reservoirs and peatlands,
 - glaciers of South America,
 - climate and vegetation change in Western U.S.
 - **7 National Cooperative Geologic Mapping investigations**
 - **6 regional assessments for coastal and marine natural resources and coastal and offshore environmental issues** (sediment hosted pollutants, coral reefs, benthic habitats, marine sanctuaries, as well as energy, mineral and coastal aquifer resources).
 - **5 mineral resources research investigations and assessments** on the occurrence, quality, quantity, uses, and environmental characteristics of mineral resources, fundamental processes that create them, and the life cycle of minerals and mineral materials. Prior to FY 1998, 20 resource or environmental studies were completed.
 - **4 integrated ecosystem analyses:**
 - Chesapeake groundwater reports and analysis,
 - Conowingo Reservoir,
 - San Francisco Bay hydrodynamics,
 - Water quality database web page
- 3. 5 Decision support systems or predictive models developed or improved and delivered to customers**
- **1 National Mapping Program decision support system** — Famine Early Warning System

- **1 new or improved hydrologic model** (2 currently available — Modular Modeling System and MODFLOW)
1 major model improvement in FY 1998 — an easy-to-use graphical user interface (GUI) was set up for MODFLOW, a three-dimensional ground-water flow model. The GUI enables users to run realistic ground-water simulations, providing immediate visualization of simulation results and giving water managers a better understanding of what the data mean.
- **0 new or improved biological decision support system or predictive model** (7 currently available Florida — Across Trophic Level System Simulation [ATLSS] model; Waterfowl recruitment model; Instream flow models; Upper Mississippi River corridor decision support system; Wetlands expert system [includes Moist Soil Management Advisor and Avian Botulism Risk Assessment Model]; Migratory bird continental population modeling; Regional Hydro-Ecological Simulation System [Glacier NP])
- **1 new or improved geological decision support system or predictive model**
energy resource decision support system
- **2 new or improved integrated ecosystem decision support systems**
Chesapeake Spatially referenced regressions on watershed attributes model (regional interpretation of water quality monitoring data);
Florida website
- 4. **270 University-based partnerships for natural system analysis**
- **55 grants are awarded annually to 54 State Water Resources Research Institutes** (the Institute in Guam receives 2 grants because it also serves the Federated States of Micronesia).
- **215 biological research work orders** (coop units)
- 5. **212 Stakeholder meetings**
- **24 National Mapping Program stakeholder meetings**
National States Geographic Information Council
Annual Cooperator Program Workshop (Central/Eastern Region)
National Cooperator Program Workshops (ASPRS, ACSM conferences) - 2
NMD National Mapping Managers Conference
USGS/USFS Single-Edition Steering Committee - 2
National Digital Orthophoto Steering Committee - 3
National Satellite Land Remote Sensing Data Archive Advisory Committee - 2
National Atlas Federal Steering Committee
NASA/NOAA/USGS Landsat 7 Program Management Review

- NASA/USGS Partnership Roundtable Review
 Inventory Management/IG Review
 International Map Trade Association Business Partner Program Review
 Land Processes Distributed Active Archive Center Advisory Committee - 2
 FGDC Subcommittee on Base Cartographic Data
 Interior Geographic Data Committee
 United Nations Environment Programme/Global Resources Information Database
 Advisory - 2
 DOI High-Priority Digital Base Data Program Steering Committee
- **24 Geologic Hazards, Resources, and Processes stakeholder meetings**
 16 energy resource meetings
 1 global change
 1 annual meeting of the Advisory Committee chartered by the National Cooperative
 Geologic Mapping Act
 5 coastal & marine environment
 1 mineral resources stakeholder meetings
 - **8 integrated ecosystem stakeholder meetings:**
 Chesapeake Liaison Committee/Client meetings
 Florida Bay Science Symposium
 Mercury Workshop
 Paleo workshop
 Mojave Client meeting
 San Francisco Bay - monitoring program design meetings
 Platte R. Symposium
 Greater Yellowstone Area Grand Teton Workshop
 - **87 Water Resources Investigations stakeholder meetings** including one meeting per
 program for Ground-Water Resources, Toxic Substances Hydrology, and Hydrologic
 Research & Development, and 2 meetings for Water Information Delivery (5 meetings
 total). One meeting per State for Fed-State Coop Water Program (50 meetings total). 32
 meetings for NAWQA Program (includes one meeting per year for each study unit in the
 high intensity phase of the study cycle).
 - **69 Biological Research stakeholder meetings**
National:
 38 Coop. Research Unit Management Meetings
 2 Program Reviews
 1 Theme/Issue workshops
 1 National Bureau Information Needs
Regional:
 5 Regional Bureau Information Needs Meetings
 16 Research Center Partner Coordination Meetings

- 2 Individual Bureau Coordination Meetings (National Park Service, Minerals Management Service)
- 2 Research Center Reviews
- 2 Theme/Issue Workshops