

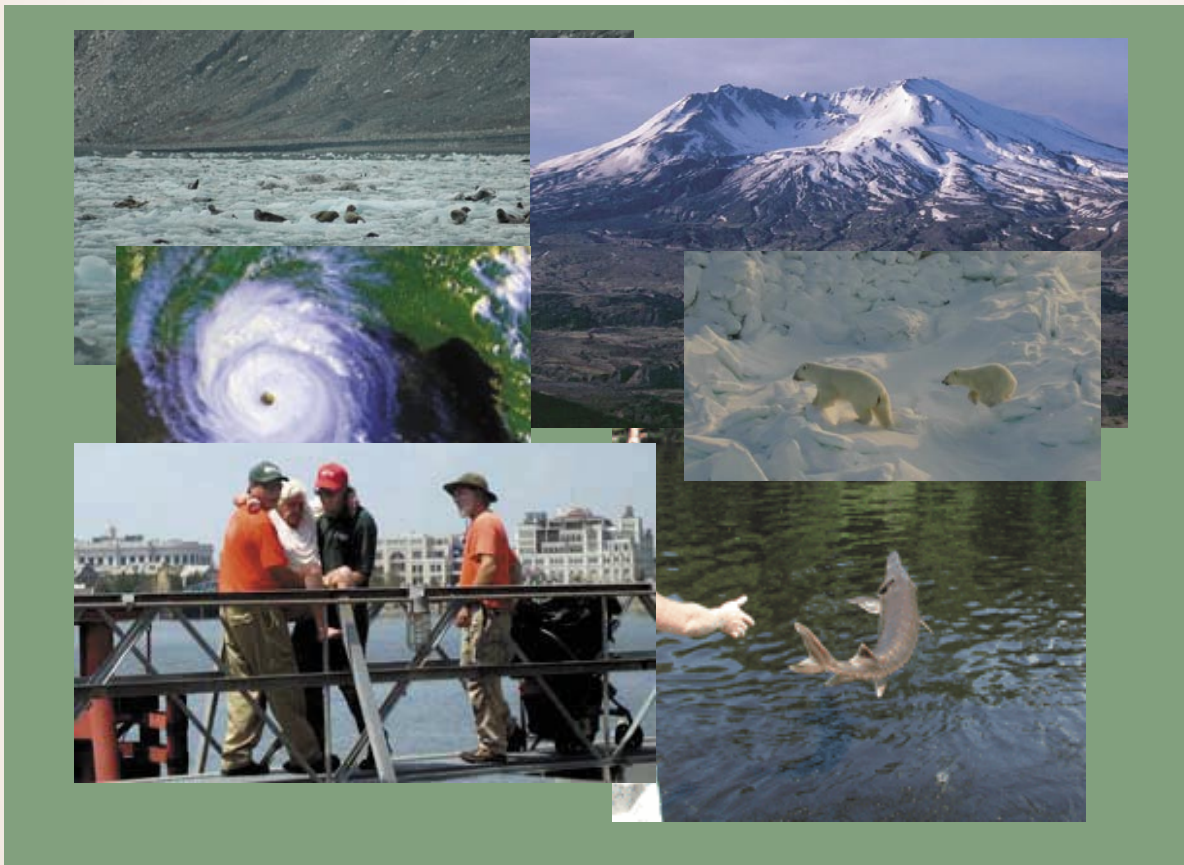
**FY 2006**

# **Performance and Accountability Report**



## On the Cover

The cover illustrates some of the dynamic events that have impacted the USGS during 2006. The USGS worked with rescue and recovery efforts after Hurricane Katrina, continues to monitor Mt. St. Helens volcanic activity, and studies the life and habitat of the Gulf Sturgeon in an effort to preserve the species. The USGS is also monitoring the melting of snow and ice on the glaciers as it affects the population of Arctic wildlife.



## Performance and Accountability Report

Limited copies of the FY2006 Performance and Accountability Report were printed in black and white.

The FY2006 Performance and Accountability Report is available at: [http://www.doi.gov/pfm/bur\\_annual\\_rpt/index.html](http://www.doi.gov/pfm/bur_annual_rpt/index.html).

# How to Read This Report: From Mission to Measurement

The U.S. Geological Survey (USGS) FY2006 Performance and Accountability Report (PAR) will reach many people who have specific needs for the information it contains. We have designed our presentation to serve multiple audiences, with varied approaches, points of view, and levels of interest.

Our PAR contains an introduction, three sections, and an appendix. Combined, these elements provide an accurate and thorough accounting of the USGS stewardship of critical resources and services to the American people.

The [introduction](#) contains a letter from our Director highlighting our mission, accomplishments, reliability of financial and performance data, and Federal Manager's Financial Integrity Act (FMFIA) assurances, followed by a depiction of the bureau at a glance.

[Section I: Management Discussion and Analysis](#) is a high-level overview of the USGS's performance in FY2006. It is designed for the public, legislators, officials from Federal, State, and local governments, and other interested parties.

After a brief discussion of our mission and organizational structure, Section I summarizes our performance for the year by highlighting results of our most important performance measures and discusses our procedures to ensure their relevance and reliability, along with a description of difficulties experienced in measuring performance.

Section I also discusses our financial statements, including a discussion of our key financial related measures and stewardship information.

In addition, Section I presents USGS's compliance with legal and regulatory requirements, such as the FMFIA, Federal Financial Management Improvement Act, and the President's Management Agenda.

Section I also shares some forward-looking information on the current and future challenges facing USGS, and discloses limitations to our financial statements.

[Section II: Performance Data and Analysis](#) presents an evaluation of our performance budget, the USGS's performance results in detail, and program evaluation and procedures undertaken to validate and verify our performance results.

This will be most useful to Congressional members and staff, program examiners with the Office of Management and Budget, analysts with the Office of the Inspector General, the Government Accountability Office, and interested citizens and customers.

[Section III: Financial Information](#) will interest anyone who is concerned with tracking the bureau's financial performance.

This section contains an assessment of our consolidated financial statements by an independent certified public accounting firm. The objective of a financial statement audit is to determine whether the consolidated financial statements are free of material misstatement. An audit includes examining, on a test basis, evidence supporting the amounts and disclosures in the consolidated financial statements. An audit also includes an assessment of the accounting principles used and significant estimates made by management, as well as an evaluation of the overall consolidated financial statement presentation.

Section III also presents consolidated financial statements, footnotes, required supplemental information, and required supplemental stewardship information.

The [Appendix](#) contains a list of acronyms.



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## Message from the Director



The U.S. Geological Survey (USGS) serves the Nation by providing timely and 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. This Performance and Accountability Report (PAR) highlights examples of USGS science that fulfill our mission and provide the information America needs.

Natural disasters and their aftermath have been a primary focus of USGS research and monitoring efforts again in fiscal year (FY) 2006. Wildfires in the West, active volcanoes in Alaska and Washington, and devastating earthquakes around the world served as stark reminders that such hazards are a natural part of life on this planet. Sound scientific information is essential for developing the policies needed to protect people and property.

The accomplishments described in this PAR, a few of which are highlighted here, attest to the breadth and value of USGS science:

- As Hurricane Rita approached the Texas and Louisiana coasts in September 2005, the USGS deployed an experimental water-level and barometric pressure gage network to record the magnitude, extent, and timing of hurricane storm surge and coastal flooding. A total of 47 sensors were deployed. The effort proved to be a success and the results showed that the technology works. The information provided to emergency managers and scientists is critical to future efforts to model and plan for similar coastal storm surge events.
- The USGS post-hurricane response efforts for Dennis, Katrina, Ophelia, Rita, and Wilma, including data collection and research as well as establishing and maintaining the Katrina remote sensing clearinghouse, will provide information needed to plan for future severe storms.
- A new 24/7 operation center and seismic-event processing system at the USGS National Earthquake Information Center will significantly reduce the time it takes to complete analysis and report earthquakes and related hazards that occur outside normal business hours.
- Worldwide, real-time telemetry was expanded to more than 90 percent of the Global Seismographic Network. Data from 8 of the 130 stations will flow directly to the National Oceanic and Atmospheric Administration's Pacific Tsunami Warning Center for use in developing tsunami warnings and alerts.
- Augustine Volcano, located close to the North Pacific air corridor in Cook Inlet, Alaska, began erupting in January 2006, after 6 months of increasing unrest. USGS scientists and colleagues at the Alaska Volcano Observatory implemented 24/7 monitoring to provide rapid warnings of explosive ash-forming eruptions. The eruption continued into May with 14 separate explosive events injecting volcanic ash to altitudes near or above the cruise altitudes of commercial jet airliners, causing rerouting of aircraft and cancellation of flights to avoid destruction of aircraft and personal injury.
- The USGS worked with State and local partners to develop and release a suite of seismic and landslide hazard maps for the Seattle urban corridor; Seattle authorities are using these USGS maps and information to assist in establishing city seismic hazard policies and priorities.

- USGS scientists worked with colleagues in the U.S. Fish and Wildlife Service to develop surveillance and detection strategies for sampling a wide range of wild birds for the new strain of highly pathogenic avian influenza.
- The USGS is collaborating with Federal, State, County, and local agencies and non-government organizations to develop procedures to use high-resolution satellite and airborne remote sensing to map and monitor the urban interface around forested communities in northern Arizona; the urban/wildland interface is particularly vulnerable to catastrophic wildfires. The results will be applicable to communities at risk from wildfire throughout the Western United States.
- Floods are the most frequent of all catastrophic natural hazards, threatening lives and property in every State. The USGS plays a critical role in reducing flood losses through scientific research and through operation of the national streamgaging network, which provides real-time information to the National Weather Service and emergency responders and long-term data to flood-plain managers. The USGS National Flood Summary information from 1970 to 1998, including maps and data, is now available on the World Wide Web. In addition to the real-time data on floods, the USGS periodically summarizes historic information about flooding. In 2006 the USGS released another in its series of reports "Summary of Significant Floods in the United States and Puerto Rico, 1994 through 1998 Water Years" and also made this information available on the World Wide Web.
- The USGS monitors the presence and evaluates impacts of natural and anthropogenic contaminants in many environmental settings across the nation. During the past year, collaborative work with the City of Austin Texas led to insights that coal-tar based sealcoat—the black, shiny emulsion applied to parking lots and driveways—is a major source of polycyclic aromatic hydrocarbons (PAHs) in urban watersheds. PAHs are toxic to aquatic life and are suspected human carcinogens. With the intent to protect aquatic life, the City of Austin banned the use of coal-tar based sealcoat (effective January 2006), while allowing continued use of asphalt-based sealcoats which have much lower PAH levels.

Our accomplishments have been described within performance data in this PAR, which is reliable and complete. Further discussion is provided by the Chief of the Office of Budget and Performance on page 32. The financial data in this PAR is also reliable and complete, and is discussed further by the Chief Financial Officer on page 94.

Last month I was honored to be named the 14th Director of the USGS. First and foremost, I am a scientist, and so it is with great excitement that I embark on a commitment to ensuring that the USGS continues to live up to its promise of providing sound science for citizens and decision makers. Throughout FY 2006, the bureau was guided under the leadership of Acting Director Patrick Leahy. Pat did an exceptional job of developing an integrated-science approach to addressing the issues facing land and resources while ensuring that the bureau's scientific integrity remained intact. I appreciate his leadership as Acting Director and efforts to make my transition as the new Director as seamless as possible.

The accomplishments described in this PAR attest to the diversity of USGS science conducted on behalf of the Nation and the importance of collaboration with partners in planning and implementing projects. The USGS is proud to provide the science needed for a safer, stronger America.

Mark D. Myers  
 Director  
 October 2006

# The Bureau

## History and Enabling Legislation

The USGS, a bureau within the Department of the Interior (Department and/or DOI), was created by an act in the final session of the 45th Congress in 1879 for the “classification of the public lands, and examination of the geological structure, mineral resources, and products of the national domain.”

## 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.

## Strategic Goals

- Resource Protection: Protect the Nation’s natural, cultural, and heritage resources
- Resource Use: Manage resources to promote responsible use and sustain a dynamic economy
- Serving Communities: Safeguard lives, property and assets, advance scientific knowledge, and improve the quality of life for communities we serve

## Organization

- Regions: Eastern, Central, and Western
- Scientific Disciplines: Biology, Geology, Geography, and Water
- Support Entities: Geospatial Information, Facilities, and Science Support

## Employees

USGS has scientists, technicians, and support staff in every State and several foreign countries with a total of approximately 8,600 employees.

## Budget

The Bureau’s FY2006 budget, including transferred and supplemental appropriations, was \$996.7 million.

## Internet

The Bureau’s Internet address is <http://www.usgs.gov>.

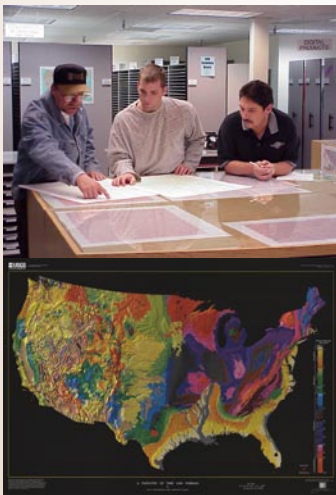


# at a Glance

## Biology



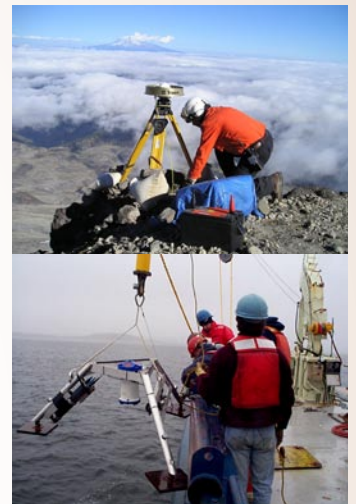
## Geography



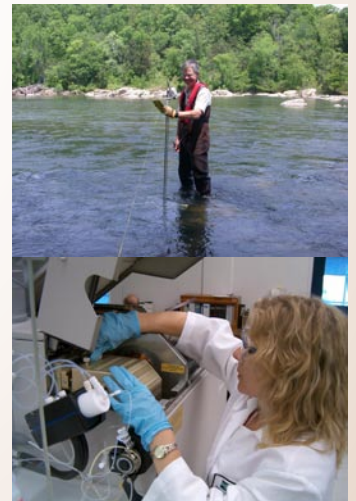
## Programs

- Biological Informatics
- Coastal and Marine Geology
- Contaminant Biology
- Cooperative Research Units - Biology
- Cooperative Topographic Mapping
- Cooperative Water
- Earth Surface Dynamics
- Earthquake Hazards
- Energy Resources
- Enterprise Information
- Facilities
- Fisheries: Aquatic and Endangered Resources
- Geographic Analysis and Monitoring
- Global Seismic Network
- Ground Water Resources
- Hydrologic Networks and Analysis
- Hydrologic Research and Development
- International
- Invasive Species
- Land Remote Sensing
- Landslide Hazards
- Mineral Resources
- National Cooperative Geologic Mapping
- National Geomagnetism
- National Streamflow Information
- National Water-Quality Assessment
- Priority Ecosystems Science
- Science Support
- Science Impact
- State Water Resources Research
- Status and Trends of Biological Resources
- Terrestrial, Freshwater, and Marine Ecosystems
- Toxic Substances Hydrology
- Volcano Hazards
- Wildlife and Terrestrial Resources

## Geology



## Water





USGS scientists wade into tule to collect Hg samples in Franks Tract, California.

# Section I

# Management Discussion and Analysis

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## Who We Are and What We Do

The USGS serves the Nation as an independent fact-finding agency that collects and analyzes natural resource data and provides scientific understanding about conditions, issues, and problems. The USGS is the science provider of choice for information and understanding to help resolve complex natural resource problems across the Nation and around the world.

The USGS was created by an act of Congress in 1879. When the USGS was established, the Federal government held title to more than 1.2 billion acres of land, nearly all of it west of the Mississippi River, and only 200 million acres of this land had been surveyed. John Wesley Powell, who led one of the great western surveys that preceded the creation of the USGS and who later served as the second USGS Director, suggested that very little of the remaining public land was suitable for conventional farming and that only a small fraction of the arid land was irrigable using known resources. Powell proposed radical changes in the land system, including organization of irrigation and pasturage districts, to improve management of water and natural resources by sociopolitical institutions, based on natural science. One hundred and twenty-seven years later, the USGS continues to provide the scientific foundation to ensure the best planning and the best decisionmaking.

Today, the USGS is sought out by thousands of partners and customers for its natural science expertise and its vast earth and biological data holdings, and is the only

### Vision

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

integrated natural resources research bureau in the Federal government. The value of USGS to the Nation rests on its ability to carry out studies on a national scale and to sustain long-term monitoring and assessment of natural resources. Because it has no regulatory or managerial mandate, the USGS provides impartial science that serves the needs of our changing world. Its diversity of scientific expertise enables

the USGS to carry out large-scale, multi-disciplinary investigations that build the base of knowledge about the Earth. In turn, decisionmakers at all levels of government and citizens in all walks of life have information available to them for their needs to address pressing societal issues.

The thousands of scientists, technicians, and support staff of the USGS are located in nearly 400 offices in every State and in several foreign countries. With an annual budget of approximately \$997 million, the USGS leverages its resources and expertise in partnership with more than 2,000 agencies of Federal, State, local, and Tribal governments; the academic community; non-governmental organizations; and the private sector. Field investigations, direct observations of natural science processes and phenomena, and monitoring and data collection are the scientific hallmarks of the USGS.

The USGS is proud of its outstanding history of public service and staying at the forefront of advances in understanding the Earth, its processes, and its resources. USGS scientists pioneered hydrologic



As a new employee of the USGS, I am eager to learn as much as I can about the diverse and excellent science we conduct every day. I also believe that the public is enthusiastic to learn about earth science and how it applies to their lives, and that the USGS is the perfect place for people to learn. The USGS is a sponsor and major material contributor to the international "Earth Science Week" event, organized by the American Geological Institute. One of our most important contributions is interacting with the public and enhancing its science literacy. This is a responsibility that comes with being the Nation's premiere earth science agency.

*Mark Myers, USGS Director*

techniques for gaging the discharge in rivers and streams and modeling the flow of complex ground-water systems. Innovative ventures with the private sector have given the world access to digital images of neighborhoods and communities in one of the largest data sets ever made available online. Modern-day understanding of the formation and location of energy and mineral resource deposits is rooted in fundamental scientific breakthroughs by USGS scientists. USGS biologists revolutionized thinking about managing wildlife resources, providing a sound scientific basis for waterfowl conservation and recreational hunting to work in tandem as adaptive management, not as conflicting interests. Advances in seismology are making early warnings of earthquakes a reality that will give the needed alert time to save lives. The future of the global community presents unprecedented opportunities for the science of the USGS to continue to make substantive and life-enhancing contributions to the betterment of the Nation and the world.

## Strategic Direction

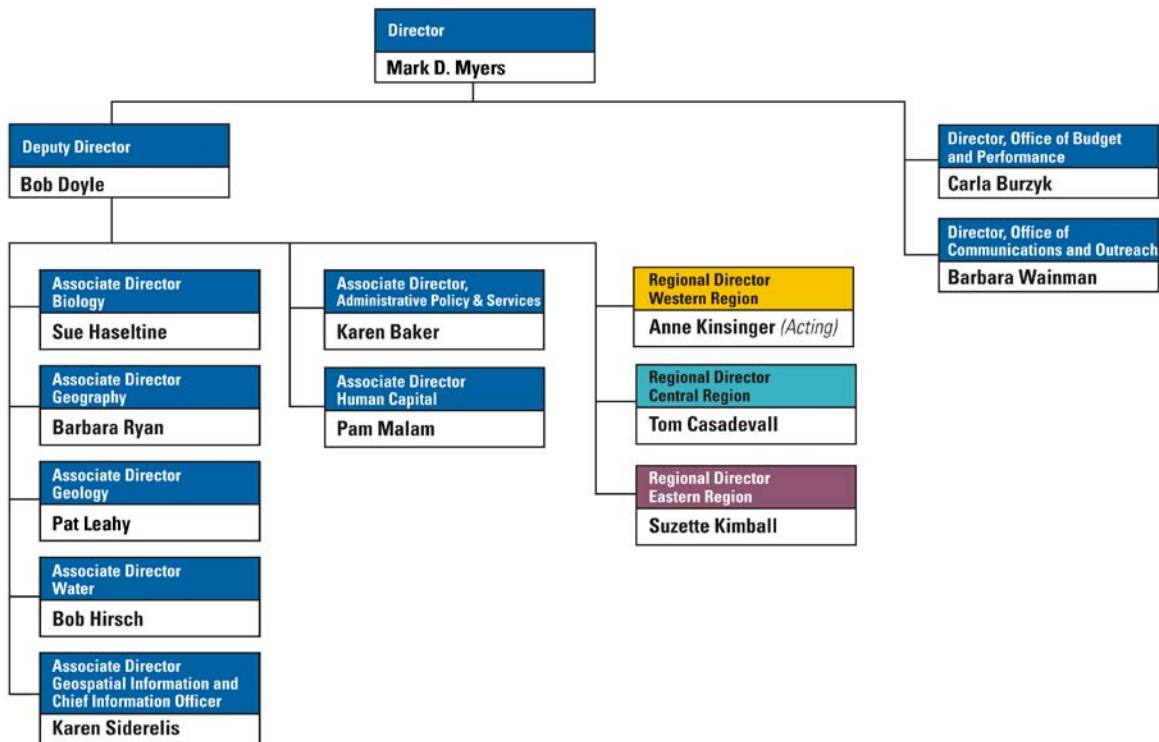
The USGS will combine and enhance our diverse programs, capabilities, and talents and increase customer involvement to strengthen our science leadership and contribution to the resolution of complex issues.

The USGS addresses both national program priorities and local science needs on the landscape through a matrix-management approach. (See organizational chart below.)

Regional Directors, Regional Executives, and Regional Science Coordinators are deployed across the Nation, bringing bureau leadership and programs closer to customers and their issues. Together, they ensure the

quality of our science and its relevance to the needs of land and resource management decisionmakers. National programs are overseen by Associate Directors for each discipline and administered by Program Coordinators at Headquarters in Reston, Virginia. Together, they offer holistic science solutions by bringing to bear the expertise of scientists from multiple disciplines, integrating science to confront the complexity of a continually changing world.

USGS resources and science benefit not only the immediate needs of partners and customers but also the Nation as a whole through application of the results to similar issues across the country and into the future.



October 2006

## How We Are Organized

The USGS has major field centers for the three regions in Reston, Virginia (Eastern), Denver, Colorado (Central), and Menlo Park, California (Western). The USGS rents 4.3 million square feet of space in about 192 GSA buildings nationwide and owns 34 installations with 1.3 million square feet of space in 283 owned buildings. The USGS operations include:

- an earthquake monitoring network comprising a global seismographic network of 141 stations located worldwide with national and regional networks located throughout 35 states and territories and the National Earthquake Information Center in Golden, Colorado;
- 14 geomagnetic observatories;
- a landslide network and the National Landslide Information Center;
- a volcano hazards network and volcano observatories in five States to monitor 51 U.S. volcanoes;
- 17 biological science centers and associated field stations and a center for biological informatics;
- approximately 7,000 streamgages and water quality monitors, the National Water Quality Laboratory, and the Hydrologic Instrumentation Facility;
- Map products and services that provide 24/7 online accessibility to over 187 gigabytes of geospatial data in The National Map, over 57,000 hard-copy topographic maps that cover all 50 States, U.S. territories, and Federated states, satisfied more than 43 million requests per month for web mapping services in [nationalatlas.gov](http://nationalatlas.gov) and more than 350,000 page-sized smaller-scale maps downloaded per month, 2.6 petabytes of cartographic and digital data stored at the EROS Data Center, archive aerial photographs, and 32 years of global satellite data;
- an average of 10,800,000 successful requests made to the USGS homepage every month, an average of 400,000 customer inquiries made to USGS libraries and Earth Science Information Centers annually, more than 25,000 scientific and technical publications previously available only in paper made electronically accessible, and an average of 21.8 million SPAM and virus-infected messages blocked monthly by Information Technology security operations (74% of incoming email); and
- affiliation with 40 Cooperative Research Units and 54 State Water Resources Research Institutes.

USGS also owns 8 research vessels, all of which are at least 45 feet in length, have accommodations for overnight use by more than one person, and are manned by licensed Captains. Many of these vessels also contain operating laboratories.

The Eastern region is composed of 175 sites in 26 States east of the Mississippi River, the District of Columbia, the Commonwealth of Puerto Rico, and the U.S. Virgin Islands and has approximately 2,580 employees distributed across duty stations throughout the region.

The Central region is composed of 15 States between the Mississippi River and the western slope of the Rocky Mountains. Approximately 2,000 employees and 900 onsite contractors are distributed in 76 cities and 21 field offices across the Central region.

The Western region is composed of 9 Western States, Guam, American Samoa, and the Commonwealth of the Mariana Islands. Approximately 2,170 employees are distributed in 33 cities and 64 field offices across the Western region.

The Headquarters location in Reston, Virginia, is within the District of Columbia metropolitan area and has approximately 1,850 employees stationed in Reston and in several foreign countries.

## The Focus of Our Science

The USGS vision, mission, and strategic direction focus on responsiveness and customer service, underscoring the application of science to customer, partner, and other stakeholder needs; directing the combined expertise of the bureau's scientific disciplines; and defining its commitment to pursuing an integrated approach to providing science for a changing world.

Information— about natural hazards, resources, and the environment— is the key to understanding the Earth. USGS science provides comprehensive, high-quality, and timely scientific information to decisionmakers and the public. The information holdings of the USGS offer an amazing gateway to rich data bases, manipulatable maps, newly acquired satellite images, real-time information, and a wealth of reports spanning more than a century of science. The growing global population lives in an information

age that is becoming incredibly complex. Scientific information is increasingly essential to an ever-widening—and demanding—customer base.

To meet the critical science needs of the 21st Century, USGS is building on its traditional strengths while becoming more flexible and responsive. USGS is working to integrate its scientific disciplines while building on its world leadership and scientific excellence; to streamline operations to become as efficient as possible; to use the rapid advances in information technology to better deliver information to support the needs of decisionmakers; and to do a better job of understanding our many customers and partners.

## The Focus of Our Strategic Plan

USGS long-term goals for meeting the challenges of the 21st Century are included in the Department-wide Strategic Plan and are supported by meaningful standards of performance. Measures for science and customer satisfaction build upon and are supported by internal goals and performance targets for employees and operations.

The following pages describe how our performance measures fit into the Department-wide Strategic Plan. First, a discussion of the Department Government Performance Results Act (GPRA) goals that are applicable to USGS operations is described. Following that discussion, a table of end outcome goals correlated to the GPRA goals is included to illustrate those relationships. To demonstrate the integration of performance and financial information, our financial results—discussed later in the Management Discussion and Analysis (MD&A)—are reported and directly correlated to the strategic plan GPRA goals and supporting end outcome goals. A high-level summary of performance results follows this discussion with a more comprehensive and detailed presentation of every performance goal and indicator in the performance budget following in Section II: Performance Data and Analysis.

## GPRA Goals

A logic model was used to develop GPRA goals across the Department and create one Department-wide Strategic Plan implemented in FY2004 and continuing

through the current year. It provides the Department a set of consistent goals with a common agenda and the means to increase focus on performance results; helps to make managers more accountable; and creates a springboard for communication, collaboration, and coordination in the interest of conservation with interested citizens, organizations, and constituents on a shared future direction.

USGS activities in FY2005 and FY2006 focused on 3 of the DOI's GPRA goals and 6 of the DOI's 17 end outcome goals, which support DOI's GPRA goals. USGS activities in relation to the GPRA goals, and supporting end outcome goals, are described below.

### Resource protection strategic goal

Protect the Nation's natural, cultural, and heritage resources. USGS biological studies assist in maintaining healthy ecosystems and natural resources so that these habitats can continue to provide food, energy, medicine, transportation, and recreation. The USGS will continue to serve the biological research needs of DOI bureaus and others by providing scientific information through research, inventory, and monitoring. Information generated by the Biological Research Program contributes to achieving DOI bureau goals for improved management of the Nation's land and water resources and biological communities and improved decisionmaking regarding land and resource use.

### Resource use strategic goal

Manage natural resources to promote responsible use and sustain a dynamic economy. USGS is the sole Federal provider of scientific information for objective resource assessments and unbiased research on mineral potential, oil, production, consumption, and environmental effects and is a primary Federal source for gas and alternative energy potential. The United States is the world's largest user of mineral commodities and depends on other countries for 100 percent of 17 mineral commodities and less than 50 percent of 42 commodities that are critical to the U.S. economy. USGS provides the information for decisions about resources and consequences of their development. Similarly, USGS conducts national and global energy resource assessments of oil, natural gas, coalbed natural gas, gas hydrates, and coal resources and evaluates the risks for environmental and ecological degradation associated with the production

and use of energy resources. These investigations enable the Nation to make sound decisions regarding significant increases in domestic energy production with an understanding of potential impacts on the environment.

## Serving communities strategic goal

Safeguard lives, property, and assets; advance scientific knowledge; and improve the quality of life for the communities we serve. The USGS hazards programs produce information and understanding that reduce the impact of natural hazards and disasters on human life and the economy. USGS analyses of the availability and quality of water resources help to develop, and monitor management practices to ensure the continued availability of water resources for human consumption, agriculture, business, recreation, and environmental stability. The USGS geography program is expanding its partnerships with Federal agencies and State and local governments to develop and promote the use of geographic data and mapping products that are essential for economic and community development, land and natural resource management, and health and safety services. Collection, management, and delivery of scientific information to inform land and resource decisionmaking is a primary focus of this goal.

## GPRA Performance Data Validation and Verification

In keeping with Departmental and Office of Management and Budget (OMB) policy for performance data validation and verification (V&V), USGS complies with requirements for performance data credibility.

Our approach to achieving performance data credibility includes providing extensive Budget and Performance Integration and Activity Based Cost (ABC) Management training, tying organizational performance measures to individual performance plans, and implementation of the Department Data V&V Assessment Matrix. During FY2006, USGS continued to include USGS-specific measures, outputs, Management Excellence, and all Program Assessment Rating Tool performance measures in the Data V&V process. This extends the assurance of credibility to more performance data, ensuring usability for management decisionmaking and oversight.

A more detailed discussion of Data V&V is in Section II: Performance Data and Analysis section.

## Performance Measurement Challenges

Measuring performance of science is inherently difficult, and the USGS has customized the methods of measurement to USGS in order to make the results meaningful. Any performance data limitations are documented in the following pages and no corrective actions were needed.

## How We Performed in FY2006

USGS met or exceeded 100 percent of the 19 key DOI performance measures monitored during FY2006. Results for these key measures are presented below, following a summary description of each strategic goal and the percentage of relevant key performance measures met or exceeded. For a full report of the USGS performance measures, see Section II: Performance Data and Analysis.

Many of USGS performance measures were new in FY2004, developed in conjunction with the Department's Strategic Plan. Consequently, actual data was not available for those measures in FY2003. FY2004 results became a point from which USGS began to show performance trends over a longer term, while identifying the factors that impact mission performance.

In evaluating performance, USGS is applying the Department's 5 percent threshold in determining the result, which dictates that if the result is within 5 percent of the target performance, this generates a "goal met" rating. The summary result for values that are less than 95 percent or more than 105 percent of the target must be either Target Not Met or Target Exceeded, respectively.

DOI is the Nation's principal conservation agency, conserving Federally managed lands and waters, protecting fish and wildlife, and preserving public lands for future generations to enjoy. Science is key to making decisions on how to best conserve the Nation's natural resources. USGS plays an important role in accomplishing DOI's mission to administer programs on thousands of upland, wetland, and aquatic parcels, and protecting native plant and animal species.



Strategic Goal of Resource Protection:  
Protect the Nation's Natural, Cultural, and Heritage Resources

**End Outcome Goal:** Improve the health of watersheds, landscapes, and marine resources that are DOI-managed or -influenced in a manner consistent with obligations regarding the allocation and use of water.

USGS met or exceeded 100 percent of the three key performance measures monitored during FY2006 related to this end outcome goal.

**End Outcome Goal:** Sustain biological communities on DOI-managed and -influenced lands and waters in a manner consistent with obligations regarding the allocation and use of water.

USGS met or exceeded 100 percent of the three key performance measures monitored during FY2006 related to this end outcome goal.

Strategic Goal of Resource Use:  
Manage Resources to Promote Responsible Use and Sustain a Dynamic Economy

Managing the vast resources of America's public lands has been a core DOI responsibility since the Department was founded in 1849. Lands and water managed by DOI produce resources critical to the Nation's economic health. Science is a key foundation upon which DOI bases management decisions that promote natural resource use to sustain a dynamic economy while maintaining healthy lands and waters. USGS plays an important role in accomplishing DOI's mission to administer programs providing information on millions of square miles of land across all of the United States.

**End Outcome Goal:** Energy – Manage or influence resource use to enhance public benefit, promote responsible use, and ensure optimal value.

USGS met or exceeded 100 percent of the two key performance measures monitored during FY2006 related to this end outcome goal.

**End Outcome Goal:** Non-Energy minerals – Manage or influence resource use to enhance public benefit, promote responsible use, and ensure optimal value.

USGS met or exceeded 100 percent of the two key performance measures monitored during FY2006 related to this end outcome goal.

Strategic Goal of Serving Communities:  
Safeguard Lives, Property, and Assets; Advance Scientific Knowledge; and Improve the Quality of Life for the Communities We Serve

DOI's responsibility to serve communities extends well beyond the lands and resources it manages. Interior is responsible for protecting lives, resources, and property, and providing scientific information for better decisionmaking. Science is the heart of performing these tasks. USGS plays a critical role in accomplishing DOI's mission to protect communities by providing scientific information to reduce risks from earthquakes, landslides, and volcanic eruptions; on the quality and quantity of the Nation's water resources; on geospatial and natural resource data; and in understanding the Earth.

**End Outcome Goal:** Protect lives, resources, and property.

USGS met or exceeded 100 percent of the three key performance measures monitored during FY2006 related to this end outcome goal.

**End Outcome Goal:** Advance knowledge through scientific leadership and inform decisions through the applications of science.

USGS met or exceeded 100 percent of the six key performance measures monitored during FY2006 related to this end outcome goal.



## 2006 Service to America Medal...

**A team of 45 USGS scientists, led by Tom Casadevall, received a 2006 Service to America Medal for their search and rescue work in the aftermath of Hurricane Katrina**

There's an old cliché that in the most trying times, you should follow your heart, not your head. The USGS team that responded to Hurricane Katrina followed both. As a result, they played an indispensable part in the rescue of thousands of Hurricane Katrina survivors.

Soon after it became apparent that the levees had broken and the flooding was severe, the Louisiana government put a call out to all government agencies to assist with the rescue of people stranded on rooftops. The employees at two USGS science centers in Louisiana, the National Wetlands Research Center (NWRC) and Louisiana Water Science Center (LWSC), who received this call may not have had any formal training with Search and Rescue work, but they had a lot of heart, as well as boats, and they put in a request to their Regional Director, Dr. Thomas Casadevall, to go out into the field and do what they could to help. This was not typical work for USGS scientists, but Dr. Casadevall also realized that this was no typical disaster, and he authorized the use of USGS equipment and personnel for this effort.

Boat rescues took place from August 31st to September 5th, 2005. Twenty-five USGS scientists left each morning before dawn to navigate the murky waters of New Orleans. They worked with a multi-agency group of state and federal volunteers, rescuing a total of 600 people directly from rooftops and porches, in addition to providing food, water and other assistance to 2,000 others.

Having done their part to address the immediate humanitarian needs, the USGS team began placing more emphasis on putting its technical expertise to use. One of the biggest problems with the recovery efforts was that stranded individuals making

*Hurricane Response Team Members  
at the Awards Ceremony*



*"I'm proud that the  
USGS was a part  
of that side of the  
Katrina story."*

*Tom Casadevall*

"911" calls were providing authorities with street addresses for their location, but flooded street signs and responders unfamiliar with New Orleans made locating victims virtually impossible. The USGS team was able to re-map the area, converting street maps to latitude and longitude reference points. These mapping techniques allowed them to provide "geo-addresses" for the origination point of 8,000 emergency calls. USGS gave coordinates to boat and helicopter rescuers with GPS equipment which made it simple to locate distressed callers. For responders without GPS, the scientists provided the maps with geographic coordinates overlaid upon the street grids.

The USGS worked with the Governor's Office of Emergency Preparedness and the Federal Emergency Management Agency literally around the clock, producing hundreds of maps and bits of digital data every day. The team supplied the U.S. Army Corps of Engineers with maps of the city's levee system and pumping stations. At the Army Corps' request, they installed temporary real-time gauges in Orleans, Plaquemines and St. Bernard Parish, in addition to Lake Pontchartrain, to learn how quickly the area was dewatering.

Every single member of the USGS team was a hero in his or her own right, and the two directors of the USGS centers, Charles Demas, LWSC, and Gregory Smith, NWRC, certainly deserve special recognition. But everyone credits the "can do" attitude of the unit to their regional supervisor, Tom Casadevall. He was the first Interior Department senior executive to travel to Louisiana after the storm, and his colleagues universally praise him for empowering his employees. In many ways, Katrina marked the closing of a circle in Casadevall's career. He had just begun his career with the USGS when Mount St. Helen's erupted in 1980. He still recalls how important it was to have the support of senior leadership in this earlier crisis. There is no question that Casadevall provided the necessary support for his staff during this historic disaster.

Much has been made about what went wrong with Hurricane Katrina. This is one story about intelligent, courageous government workers who deftly used all the resources available to them, and got it right.

By Lamar Robertson, Partnership for Public Service

## Resource Protection Key Performance Measures

### End Outcome Goal:

Improve the health of watersheds, landscapes, and marine resources that are DOI-managed or -influenced in a manner consistent with obligations regarding the allocation and use of water.

Performance	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
Restore Fire Adapted Ecosystems: Percentage satisfaction with scientific and technical products ( <u>DOI strategic plan key measure</u> )	97%	100%	100%	≥ 80%	96%
Forge Effective Partnerships: Satisfaction score (number score) on resource protection partnerships ( <u>DOI strategic plan key measure</u> )	97%	97%	94%	≥ 80%	91%
Quality: Percentage of watershed and landscape-related research studies validated through appropriate peer review or independent review ( <u>DOI strategic plan key measure</u> )	100%	100%	100%	100%	100%

### End Outcome Goal:

Sustain biological communities on DOI-managed and -influenced lands and waters in a manner consistent with obligations regarding the allocation and use of water.

Performance	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
Forge Effective Partnerships: Satisfaction score (number score) on biological research partnerships ( <u>DOI strategic plan key measure</u> )	97%	98%	100%	≥ 80%	83%
Quality: Percentage of biological research studies validated through appropriate peer review or independent review ( <u>DOI strategic plan key measure</u> )	100%	100%	100%	100%	100%
Facilities Condition: Conservation and biological research facilities are in fair to good condition as measured by the Facilities Condition Index (lower FCI is good) ( <u>DOI strategic plan key measure</u> )	n/a	.19	.19	.19	.19

# Management Discussion and Analysis

## Resource Use Key Performance Measures

### End Outcome Goal:

Energy – Manage or influence resource use to enhance public benefit, promote responsible use, and ensure optimal value.

Performance					
Baseline Information: Number of targeted basins with oil and gas resource assessments available to support management decisions ( <u>DOI strategic plan key measure and PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
	7	5	7	6	6
Quality and Utility of Information: Percentage of studies validated through appropriate peer review or independent review ( <u>DOI strategic plan key measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
	100%	100%	100%	100%	100%

### End Outcome Goal:

Non-energy minerals – Manage or influence resource use to enhance public benefit, promote responsible use, and ensure optimal value.

Performance					
Baseline Information: Average square miles of the United States with non-energy mineral information available to support management decisions ( <u>DOI strategic plan key measure and PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
	2,368,794	2,401,329	3,097,647	3,332,038	3,318,208
Quality & Utility of Information: Percentage of mineral studies validated through appropriate peer review or independent review ( <u>DOI strategic plan key measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
	100%	100%	100%	100%	100%

## Serving Communities Key Performance Measures

### End Outcome Goal:

Protect lives, resources, and property.

Performance					
Hazards: Percentage of communities using DOI science on hazard mitigation, preparedness, and avoidance for each hazard-management activity ( <u>DOI strategic plan key measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
	39.5%	43.2%	44.6%	47.5%	47.5%

Performance					
Facilities Condition: Buildings (administrative, employee housing) are in fair-to-good condition as measured by the Facilities Condition Index (FCI) (DOI strategic plan key measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
	n/a	.20	.20	.20	.20
Adequacy: Percentage of sampled stakeholders reporting adequacy of science base to inform decisionmaking for each hazard-management activity (volcanoes, earthquakes, etc.) (DOI strategic plan key measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
	97%	98%	99%	≥ 80%	100%

**End Outcome Goal:**

Advance knowledge through scientific leadership and inform decisions through the applications of science.

Performance					
Research: Soundness of methodology, accuracy, and reliability of science (program evaluation) (DOI strategic plan key measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
	100%	80%	100%	100%	100%
Inform decisions through the application of science: Improved access to needed science information (number score) (DOI strategic plan key measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
	92%	90%	92%	90%	87%
Inform decisions through the application of science: Stakeholders reporting that information helped achieve goal (number score) (DOI strategic plan key measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
	94%	93%	95%	90%	96%
Content and expanse of knowledge base: Percentage of land with temporal and spatial monitoring, research, and assessment/data coverage to meet land-use planning and monitoring requirements	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
	n/a	54.74%	58.9%	70.25%	80.38%
Quality: Percentage of studies validated through appropriate peer review or independent review (DOI strategic plan key measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
	100%	100%	100%	100%	100%
Facilities Condition: Facilities are in fair-to-good condition as measured by the Facilities Condition Index (FCI) (DOI strategic plan key measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
	n/a	.17	.17	.17	.17

# Management Discussion and Analysis

The USGS principal financial statements, which are included in Section III of this report, are prepared in accordance with accounting principles generally accepted in the United States of America as set forth for Federal entities, guidance issued by the OMB and the DOI. While the financial statements have been prepared from the USGS books and records in accordance with the formats prescribed by OMB, they are different from the financial reports used to monitor and control budgetary resources that are prepared from the same books and records. The financial statements should be read with the realization that they are a component of the U.S. Government, a sovereign entity.

The DOI Office of the Inspector General (OIG) is responsible for auditing the basic financial statements of USGS and has satisfied their responsibility by contracting these services to KPMG LLP.

This analysis of the financial statements contains highlights on selected aspects of the accompanying principal financial statements.

## Assets – What We Own

The Fund Balance with Treasury of \$257.6 million at September 30, 2006 is primarily composed of appropriated funds available to make authorized expenditures, and increased from FY2005 to FY2006 based on timing of expenditures.

The total net Accounts Receivable (A/R) of \$127.1 million at September 30, 2006 is represented by 42 percent of amounts owed from other Federal agencies and 58 percent owed from the public. The majority of the accounts receivable is established to cover the direct and indirect costs for reimbursable services performed in support of surveys, investigations, and scientific research.

<i>(In Thousands)</i>	<i>% Change</i>	<i>2006</i>	<i>2005</i>
<b>Condensed Financial Statement Data:</b>			
Fund balance with Treasury	+7%	\$ 257,660	\$ 240,082
Accounts and interest receivable, net	-5%	127,180	133,976
Property, plant, and equipment, net	-17%	133,092	162,170
Other	≤1%	3,171	3,367
<b>Total Assets</b>	<b>-3%</b>	<b>\$ 521,685</b>	<b>\$ 539,595</b>
Accounts payable	-14%	\$ 63,802	\$ 74,480
Employee related liabilities	-3%	138,014	142,453
Other	-3%	54,891	56,687
<b>Total Liabilities</b>	<b>-6%</b>	<b>\$ 256,707</b>	<b>\$ 273,620</b>
<b>Total Net Position</b>	<b>≤1%</b>	<b>\$ 264,978</b>	<b>\$ 265,975</b>
<b>Total appropriations received - SBR</b>	<b>+3%</b>	<b>\$ 997,692</b>	<b>\$ 960,374</b>
<b>Total costs</b>	<b>+1%</b>	<b>\$ 1,463,920</b>	<b>\$ 1,442,661</b>
<b>Total revenue</b>	<b>+1%</b>	<b>410,202</b>	<b>405,921</b>
<b>Total net cost of operations</b>	<b>+1%</b>	<b>\$ 1,053,718</b>	<b>\$ 1,036,740</b>

The majority of the receivable balance is unbilled: over 98 percent of the \$52.2 million in receivables from Federal agencies are unbilled, while 63 percent of the \$74.9 million in receivables from the public are unbilled. The large unbilled balance is due to the manner in which agreements are written for survey and research type work. The revenue for many agreements is recognized as work is completed, but the receipt of payment is often not due until completion of a survey or research report is accomplished. The balance of unbilled A/R remained consistent in FY2006 due to overall operations being generally consistent with the prior year.

The general property, plant, and equipment (PP&E), net of accumulated depreciation, amounted to \$133 million at September 30, 2006. Overall, PP&E decreased from FY2005 to FY2006 due to current year depreciation expense, combined with a volume of new purchases that were significantly offset by disposals incurred during the current fiscal year.

## Liabilities – What We Owe

The USGS is a scientific service organization where the majority of its liabilities are payroll and benefits related.

At September 30, 2006, the accrued payroll and benefits amount of \$33.2 million plus Federal Employees Compensation Act (FECA) liabilities and annual leave due to employees represents 52 percent of USGS total liabilities of \$256.7 million. The decrease from FY2005 is primarily due to a reduction in our FECA actuarial liability.

Accounts payable of \$63.8 million consists of 8 percent due to other Federal agencies and 92 percent due to the public. The balance of accounts payable decreased in FY2006 from the FY2005 balance in part due to USGS placing greater emphasis on making EFT payments to vendors, instead of issuing checks through Treasury to vendors, and due to a refinement of our accounts payable estimation methodology.

Deferred revenue, credits, and the deposit fund liability of \$13.9 million consists primarily of amounts advanced to the bureau to cover reimbursable services to be provided at a future date.

Unfunded liabilities represented a significant portion of the total outstanding liabilities in both FY2005 and FY2006. The largest liabilities in this balance consists of \$59.2 million of unfunded annual leave and \$45.6 million for both of the FECA liabilities. The other significant unfunded liabilities include the GSA Tenant Improvement liability of \$17.3 million and contingent liabilities of \$1.3 million.

## Budgetary Resources – What We Receive

The USGS received approximately 62% percent, or \$997.6 million, of its total budgetary resources of \$1.6 billion through appropriations received in FY2006.

The approved budget for the USGS was modestly increased from FY2005. Other major sources of budgetary resources include unobligated balances carried over from FY2005 and spending authority from offsetting collections, totaling \$116.2 million and \$497.5 million, respectively. As of September 30, 2006, \$1.5 billion of budgetary resources have been obligated.

The majority of the budgetary resources were used during the current year to support surveys, investigations, and scientific research. The following restrictions applied to the FY2006 appropriations received: \$63.8 million in funds available only for cooperation with States or municipalities for water resource investigations; \$8 million to remain available until expended for satellite operations; \$21.7 million for operation and maintenance of facilities and deferred maintenance and shall be available until September 30, 2007; \$1.6 million to remain available until expended for deferred maintenance and capital improvement projects that exceed \$100,000 in cost; and \$177.5 million for biological research activity and the operation of Cooperative Research Units until September 30, 2007.

The offsetting collections from the bureau's reimbursable programs include the following: reimbursements from non-Federal sources are from States, Tribes, and municipalities for cooperative efforts and proceeds from sale to the public of copies of photographs and records; proceeds from sale of personal property; reimbursements for permits and licenses of the Federal Energy Regulatory Commission; and reimbursements from foreign countries and international organizations for technical assistance. Reimbursements from other Federal agencies are for

mission-related work performed at the request of the financing agency.

Appropriations represent the vast majority of the budgetary financing sources of the bureau. Other major financing sources are comprised of \$2 million of transfers-in without reimbursement from other Federal agencies, \$1.6 million in donations, and \$67.9 million in imputed financing from costs absorbed by others, which represents costs paid by the Office of Personnel Management (OPM) for USGS retirement, health, and insurance benefits of USGS employees and Treasury's Judgment Fund on the behalf of USGS.

## Net Costs – What We Spend

In FY2006 and FY2005, net cost of operations totaled approximately \$1 billion each year.

Consistent with the prior year, our major GPRA end outcome goals were:

- Improve health of watersheds and landscapes,
- Sustain biological communities,
- Manage or influence resources— energy,
- Manage or influence resources— non-energy,
- Protect lives, resources, and property, and
- Advance knowledge through scientific leadership.

As mentioned in the previous budgetary resources discussion, the USGS budget was relatively flat from FY2005 to FY2006. Although the USGS instituted many changes in specific programs and operations at the cost center level during FY2006, there were generally no significant changes experienced in overall operations at the bureau level. As such, the costs presented on the FY2006 Statement of Net Cost per GPRA segment are generally consistent with the prior year amounts.

## Key Financial Metrics – What We Measure

### Delinquent Debt Referred to Treasury over 180 Days Past Due

The Debt Collection Improvement Act of 1996 requires that delinquencies older than 180 days be referred to the Department of the Treasury's Financial Management Service (FMS), which was established as the Federal government's debt collection center. The USGS reports the status of receivables on quarterly Treasury Report on Receivables (TROR) reports. As of September 30, 2006, USGS reported on the TROR that \$619 thousand, or 100 percent, in delinquencies over 180 days past due had been referred to FMS for cross servicing. In FY2006, USGS again surpassed the DOI's performance goal of referring 95 percent of the total amount eligible for referral to Treasury.

USGS billed accounts receivable due from the public increased from \$25.7 million in FY2005 to \$27.6 million in FY2006. Delinquent amounts from the public over 180 days past due decreased from \$649 thousand in FY2005 to \$630 thousand at the end of FY2006.

### Employee Bankcard Use and Delinquencies over 60 Days Past Due

The use of government issued bankcards for official employee travel has been required for several years within the USGS. Emphasis has also been placed internally on paying the balance due in full by the due date established on the bankcard statements, as well as requiring supervisors to closely review and approve bankcard statements for their employees.

The DOI set a performance goal of maintaining no more than 2 percent of the total balance due past 60 days old. USGS averaged about .5 percent of 60 days past due throughout FY2006. We attribute this success in part to our implementation during FY2005 of centralized billing of lodging cost, which significantly reduced the amount due by the individual traveler to the bankcard issuer and also increased the amount of rebate earned by the DOI from the credit card vendor. The rebate is available to the Secretary until expended for initiatives deemed appropriate and necessary.



## Vendor Payments Made On Time

The Prompt Payment Act requires interest to be paid on invoices that are not paid on time in accordance with the Act. USGS strives to pay vendors on-time and to avoid paying late payment interest penalties. DOI established a performance goal for bureaus to maintain 98 percent of the number of payments not requiring interest over the total number of payments subject to the Prompt Payment Act. USGS again exceeded the DOI's performance goal by paying 98.8 percent of vendor invoices on-time and without penalty. In addition, the late payment interest penalties decreased from \$18,392 in FY2005 to \$12,288 in FY2006. USGS will continue to monitor payment performance to ensure our timely vendor payment percentage stays on target.

## Vendor Payments Made Via Electronic Funds Transfer (EFT)

During FY2006, USGS continued its efforts to maximize the use of payment mechanisms compliant with EFT as required by the Debt Collection Improvement Act of 1996. The DOI established a performance goal to maintain over 96 percent of the number of vendor payments paid via electronic means over the total vendor payments made. During FY2006, the USGS exceeded the DOI's performance goal by maintaining 96.9 percent of payments made via EFT for vendor payments.

## Other Bureau Performance Metrics

During FY2006, USGS continued to closely evaluate the financial operations of the bureau through sampling and other tests of compliance and performance. The results of internal performance metrics are distributed bureau-wide and have helped to maintain high quality processing of bureau transactions.

## Stewardship Information

The USGS serves American citizens as a steward for a large, varied, and scientifically important body of heritage assets, and in conducting research and development that is critical to the health of our country and in understanding the Earth. Each year the USGS makes a substantial investment while fulfilling its stewardship responsibilities for the benefit of the Nation.

USGS has heritage assets in two categories: museum collections and scientific library collections. The museum collection includes a widespread collection of natural history specimens and cultural objects in many science and administrative centers throughout the United States. USGS library holdings, collected during more than a century of providing library services, are an invaluable legacy to the Nation.

Costs associated with stewardship initiatives are treated as expenses in the financial statements in the year the costs are incurred. However, these investments in stewardship are intended to provide long-term benefits to the public and are included as supplemental information to highlight their long-term-benefit nature and to demonstrate our accountability over them. Stewardship resources are not required to be included in the assets reported in our financial statements; they are, however, important to understanding the operations and financial condition of USGS. See the Required Supplemental Information and Required Supplemental Stewardship Information portions of Section III: Financial Section for complete disclosures regarding stewardship information.

## Improper Payments Act

The Improper Payments Information Act of 2002 (P.L. 107-300) requires Federal agencies to carry out a cost-effective program for identifying payment errors and recovering any amounts overpaid. An improper payment includes any payment that should not have been made, or that was made in an incorrect amount under statutory, contractual, administrative, or other legally applicable requirement. Incorrect amounts include: overpayments; underpayments (including inappropriate denials of payment or service); any payment made to an ineligible recipient or for an ineligible service; duplicate payments; payments for services not received; and payments that do not account for credit for applicable discounts.

USGS reviewed all programs to determine the risk susceptibility of making improper payments and to perform more in depth assessments for those programs meeting OMB's criteria for significant erroneous payments. We concluded that our programs have a low risk for making improper payments.

## Limitations to Our Financial Statements

The principal financial statements have been prepared to report the financial position and results of operations of the USGS, pursuant to the requirements of 31 U.S.C. 3515(b).

While the statements have been prepared from the books and records of USGS in accordance with U.S. generally accepted accounting principles for Federal entities and the formats prescribed by the Office of Management and Budget, the statements are in addition to the financial reports used to monitor and control budgetary resources which are prepared from the same books and records.

The financial statements should be read with the realization that they are for a component of the United States government, a sovereign entity.

## Management Assurances:

The Federal Managers' Financial Integrity Act of 1982 (FMFIA) and the OMB require all cabinet-level Federal agencies to annually review their management control system. The objectives of DOI's management control system are to provide reasonable assurance that:

- The Department's obligations and costs are in compliance with applicable laws;
- The Department's assets are safeguarded against waste, loss, unauthorized use, or misappropriation;
- The revenues and expenditures applicable to agency operations are properly recorded and accounted for to permit the preparation of reliable financial reports and to maintain accountability over assets;
- All programs are efficiently and effectively carried out in accordance with applicable laws and management policy.

The efficiency of the DOI's operations are continually evaluated using information obtained from reviews conducted by GAO, OIG, bureau reviews, and/or specifically requested studies. On a yearly basis, DOI requires all of its bureaus to conduct self-assessments of their FMFIA compliance. These diverse reviews provide a high level of assurance that Department systems and management controls comply with standards established by the FMFIA.

In support of the annually required DOI bureau reviews, the associate directors of Biology, Geology, Geography and Water; the regional directors of Eastern, Central, and Western Region; the Chief of Administrative Policy and Services; and the Chief Information Officer provided signed assurance statements to the Director that their areas of responsibility had assessed the systems of management, administration, and financial controls in accordance with standards, objectives, and guidelines prescribed by the FMFIA and the OMB Circular A-123, *Management's Responsibility for Internal Control*.

The objectives of the assessments ensured that:

- programs achieved their intended results;
- resources were used consistent with the bureau's mission;
- resources were protected from fraud, waste and mismanagement;
- laws and regulations were followed; and
- reliable and timely information was maintained, reported, and used for decision making.

In performing this assessment, USGS relied on the knowledge and experience management has gained from the daily operations of its programs and systems of accounting and administrative controls, and information obtained from sources such as management control assessments; OIG and GAO audits; program evaluations and studies; audits of financial statements; performance plans and reports; and other information.

Each assurance statement provided documentation on specific internal control assessments conducted and audits and/or reviews conducted by the OIG and/or GAO. The Acting USGS Director relied on this extensive documentation to support the bureau assurance statement on financial reporting to the Department as of June 30, 2006, and for the overall assurance statement provided to the Department on September 15, 2006 (see Section II: Performance Data and Analysis for additional information on the program evaluation).

## FFMIA Assurance Statement

Based on the results of the USGS FY2006 assessment, the USGS can provide reasonable assurance that its internal control over the effectiveness and efficiency of operations and compliance with applicable laws and regulations as of September 30, 2006, was operating effectively and no material weaknesses were found in the design or operation of the internal controls.

In addition, the USGS conducted its assessment of the effectiveness of internal control over financial reporting, which includes safeguarding of assets and compliance with applicable laws and regulations, in accordance with the requirements of Appendix A of OMB Circular A-123, *Management's Responsibility for Internal Control*, and the CFO Council's Implementation guide dated July 31, 2005, as implemented by the DOI. The assessment focused on the specific financial reports and the related financial statements' line items identified by the DOI as material to the consolidated Department of Interior financial reports. Based on the results of this assessment, the USGS can provide reasonable assurance that its internal control over the financial reports and related line items identified by the DOI as material to the consolidated Department of Interior financial reports were suitably designed and operating effectively as of June 30, 2006, and no material weaknesses were found in the design or operation of internal control over financial reporting. Further subsequent testing through September 30, 2006, did not identify any reportable changes in key financial reporting internal controls. The USGS has no material weaknesses or nonconformances identified in the FY2006 assessment or carried over from prior fiscal years to report any corrective action plans.

I also conclude that USGS information technology systems generally comply with the requirements of the Federal Information Security Management Act (FISMA) and Appendix III of OMB Circular A-130, Management of Federal Information Resources.

Further, I conclude that the USGS substantially complies with the three components of the Federal Financial Management Improvement Act; financial systems requirements, Federal Accounting Standards, and the U.S. Standard General Ledger at the transaction level.

Pat Leahy  
Acting Director, USGS  
September 15, 2006

## FY2006 Internal Control Automated Surveys:

In addition to the department-wide, discipline, region, and office-specific reviews, internal control automated surveys were sent to employees of 19 science centers (USGS Texas Water Science Center, Pacific Islands Ecosystem Research Center, USGS Wisconsin Water Science Center, USGS Indiana Water Science Center, USGS West Virginia Water Science Center, 6 offices in the Florida Integrated Science Center, USGS Idaho Water Science Center, USGS Caribbean Water Science Center, Woods Hole Science Center, USGS Nevada Water Science Center, Flagstaff Science Center, Leetown Science Center, USGS Portland Water Science Center, and USGS Tennessee Water Science Center), 1 office (National Center Cafeteria), and 2 teams (Earthquake Hazards Team, and Energy Resources Team). The employees were asked to evaluate various aspects of management control at their center, office, or team.

Science-support offices and products were assessed using email-administered employee opinion surveys. Standardized Internal Control Surveys were conducted at 22 science centers, offices, and teams, compared to the 16 conducted in FY2005.

## Resolution of Internal Control Weaknesses and Non-Compliance with Laws and Regulations:

As reported in the Independent Auditors' Report on Internal Control for FY2006, the USGS had no material weaknesses, one reportable condition, and one instance of noncompliance with laws and regulations.

## Unqualified Opinions on Principal Financial Statements:

The USGS is committed to strong financial management and has made much progress in this area in recent years. This achievement results from our commitment to strong management control and accountability over our financial resources, a commitment that we are extending into the future as we seek to further improve management of our financial resources.

Significant progress was also made in quickly addressing internal control reportable conditions. In FY2001, nine reportable conditions reported by KPMG LLP were considered to be material weaknesses. Though no opinion was issued in FY2002, most matters were still considered to be uncorrected at that fiscal year-end. In FY2003, all but one of the prior material weaknesses were corrected, while all but three others were downgraded to reportable conditions. In FY2004, USGS had two reportable conditions and no material weaknesses. In FY2005, USGS had no material weaknesses or reportable conditions. And in FY2006, USGS had no material weaknesses and one reportable condition. This progress illustrates our progression toward full attainment of unqualified audit opinions by correcting material weaknesses and maintaining that status through continuous improvement.

KPMG LLP's Opinions Issued to USGS	
FY2001	Disclaimer
FY2002	No Opinion
FY2003	Unqualified Balance Sheet
FY2004	Unqualified Financial Statements (all)
FY2005	Unqualified Financial Statements (all)
FY2006	Unqualified Financial Statements (all)

## The President's Management Agenda (PMA):

In FY2006, USGS continued to improve in areas targeted in the PMA, which focuses on improving Federal management and program performance. Organized around the mutually reinforcing components, the PMA applies to every agency. The initiatives are:

- Strategic Management of Human Capital;
- Competitive Sourcing;
- Expanding Electronic Government (E-Gov);
- Budget and Performance Integration;
- Improved Financial Performance; and
- Real Property Asset Management.

These initiatives share a common goal of enhancing citizen-centered governance focused on delivering results that matter to the American public.

OMB uses an Executive Branch Management Scorecard to monitor the status and progress of agencies toward attaining PMA goals. Color-coded ratings (red, yellow, and green) are used to visually depict agency ratings. USGS strived to make progress in all initiatives during FY2006. Current year accomplishments are discussed below.

## Strategic Management of Human Capital

**Workforce Planning**— The USGS continued to advance bureau workforce planning efforts with specific emphasis on the approval of six separate Voluntary Separation Incentive Payment and Voluntary Early Retirement authorities. These incentives were offered to over 1,200 employees and resulted in more than 200 separations. The impact of these separations served as the focus for FY 2006 organizational workforce plans and the development of staffing strategies needed to address skills for long-term science and science support goals. The USGS also invigorated its exit survey program to produce additional data to better address recruitment and retention issues for strategic workforce planning.

**Leadership Training**— The USGS continued to provide leadership training for the purpose of developing a critical mass of leaders at all levels of the organization. The Management/Supervisory Program implemented a 360-degree evaluation process for supervisors based on the Human Resources competencies identified in the Core Competency Model for Managers. The USGS also implemented the full suite of Core Competencies for Managers with the goal of improving managerial performance at all levels of the USGS. This effort has been linked with the USGS workforce planning effort and with the long-term leadership development goals of USGS.

## Competitive Sourcing

**Business Strategy Review**—The USGS continued execution of its Business Strategy Review (BSR) process, outlined in the USGS Competitive Sourcing Green Plan FY 2005–2008. All full time equivalent (FTE) positions were grouped into nine functional business areas. The science technician activities, other than Hydro-tech FTEs, located in Reston, Virginia and Cook, Washington remain in house as a result of two streamlined competitive sourcing studies. The

competitive sourcing study for the activities performed at the National Water Quality Laboratory was announced in September 2006.

**2006 Management Actions and OMB Circular A–76**— The USGS continued to restructure its map production workforce through two rounds of separation incentives. The USGS received buyout authority in December 2005. Sixty employees from the National Geospatial Program elected to take the two-phased buyout. Continuing with management decisions made in FY2005 (a scoping strategy for the National Geospatial Technical Operations Center (NGTOC) that was developed and approved by the Director with the decision to pursue OMB Circular A–76 competitive sourcing activity and an executive decision to centralize the NGTOC), a team was assembled in FY2006 and tasked to develop a Performance Work Statement and conduct a sourcing competition using A–76. Two Most Efficient Organization teams (Denver, Colorado, and Rolla, Missouri) were tasked to develop government-based proposals.

## Expanding E-Government

**Geospatial One-Stop (GOS)**— In support of the Administration’s E-Gov initiatives and to further develop the customer base of the National Spatial Data Infrastructure (NSDI), USGS converged similar functions of The National Map and the GOS portal. This included planning, testing, and implementing “phase 2” of the GOS portal. USGS continued to work with the Open Geospatial Consortium to develop specifications for open Web services and a common architecture for open services that reduces technical barriers to data sharing. The GOS surpassed 200,000 geospatial data resources in its catalog, and usage grew to 500,000.

**Information Security**— The USGS ensured that effective information security practices were carried out by (1) publishing standards, guidelines, and procedures; (2) providing general, role-based, and specialized IT security training; and (3) continuing to emphasize improved management, technical, and operational security controls. The transition of the security architecture to the Department’s Enterprise Services Network continued, with the goal of establishing a comprehensive network security infrastructure across the U.S. Department of the Interior.

**Security Certification and Accreditation (C&A)**— In FY2006, the USGS mitigated weaknesses identified in the C&A and Internal Control Review processes. Seven systems were re-certified and accredited in FY2006. Other Security C&A activities included tests of contingency plans, C&A training workshops held in USGS facilities across the country, and compliance reviews.

**Security Operations**— Specific accomplishments during FY2006 included (1) extending the proactive intrusion prevention technology to identify, log, alert, and automatically mitigate malicious network activities across the USGS Wide Area Network (WAN); (2) integrating internal vulnerability assessment procedures to reduce potential vulnerabilities; (3) establishing a penetration test capability to ensure compliance with published standards; and (4) continuing to deploy improved security controls using malicious code detection and mitigation profiles to enhance security for Web and File Transfer Protocol (FTP) servers.

**Enterprise Services Network (ESN)**— The USGS continued to migrate to the Department's ESN with the bulk of the science centers managed by the ESN Network Operations and Security Center (NOSC) by the end of FY2006. The transition of USGS science centers is accomplished regionally, starting with the Eastern Region, and is segmented into (1) monitoring science center network equipment (done automatically by ESN; USGS continues to make all configuration changes), (2) managing science center network equipment (ESN does monitoring and makes all changes), and (3) optimizing connections with changes in circuit configurations. When complete, all sites will have 24/7 proactive network monitoring and will be fully managed to include router and switch configuration changes by the NOSC.

The USGS was an active participant in the Remote Access and Virtual Private Network (VPN) system trial, which tested the ESN Remote Access service. This test used licenses from ESN's iPASS contract and involved dial access connectivity. Because it was proven successful, the ESN Remote Access service will replace the existing AT&T Remote Access service.

**High Performing Organization**— The USGS began implementing an Enterprise Publishing Network (EPN) on October 1, 2005. The EPN is the result of a significant restructure of the USGS workforce and business processes, using the High Performing Organization (HPO) model as the mechanism to accomplish this restructuring. The goals of this restructuring achieve a unified bureau publishing policy and a streamlining and improvement of technical and business publishing processes to ensure efficiency. The HPO model implementation continued through FY2006. The USGS fundamental science practices policy and guidance was approved and implemented, creating a consistent approach to peer review and approval of USGS scientific publications.

**Homeland Security and Critical Infrastructure Data Needs**— As an outgrowth of the many lessons learned from the 2005 Hurricane Katrina disaster and the emergency response efforts, the USGS is strengthening its coordination for geospatial data symbols on maps. In preparation for the 2006-07 hurricane seasons, work continued on providing a consistent national set of symbols for use in maps that support emergency response activities, developing linear and polygonal symbology to support emergency response, providing principles and guidance on geospatial information content useful for homeland security applications, facilitating implementation of geocoding techniques based on the U.S. National Grid, and identifying geospatial data that would be useful for homeland security applications.

**Partnership Implementation**— To better serve State partners, USGS pursued Memorandums of Understanding for building the National Spatial Data Infrastructure (NSDI) in every State; supported the Federal Geographic Data Committee (FGDC) Fifty States Initiative by assisting State partners in developing strategic business plans for geospatial activities; and worked with State authorities to integrate geospatial requirements into their State Homeland Security Plans. The USGS also created a more robust network of State partnership offices, maintaining NSDI liaisons in Alaska, Arkansas, California, Colorado, Delaware, Florida, Hawaii, Idaho, Kansas, Kentucky, Louisiana, Massachusetts, Minnesota, Missouri, Montana, New York, North Carolina, Ohio, Oregon, Pennsylvania,

South Carolina, Texas, Utah, Virginia, Washington, and Wisconsin; and expanding the network with new liaison offices in Michigan and Alabama.

## Budget and Performance Integration

**Program Assessment Rating Tool (PART)**— The PART was introduced in FY2002 by the Administration as a means to evaluate program level performance across Government, with a goal of reviewing 20 percent of Federal programs each year. Of nine USGS programs evaluated since 2002, eight were rated “moderately effective” and one “effective.” All PART evaluated programs have efficiency measures and action plans for continuous improvement with all milestones completed in FY2006.

**Cost and Performance**— Analysis of ABC data led USGS to conclude that more granularity was needed to begin to make appropriate use of the data for cost analysis. USGS began capturing ABC data at the task level rather than project level in FY2006, and also refined the way it captured IT costs in FY2006, creating a process that is useful for extracting Exhibit 53 IT information for the DOI at a detail level that has not been possible to retrieve until now. General ABC reports and data can be extracted by all managers at all levels on a daily basis for verifying and validating and for performing analyses for decisionmaking. Continued efforts are being applied to standardize processes and ensure consistency of interpretation before ABC data can be confidently used to manage operations.

## Improved Financial Management

**OMB Circular A-123**— USGS effectively implemented revised OMB Circular A-123, *Management’s Responsibility for Internal Control*. The Bureau established a senior assessment team and specifically tasked working groups, who addressed and completed the new requirements in Appendix A to OMB’s Circular A-123. As a result, the Director was able to issue an unqualified Statement of Assurance regarding internal control over financial reporting.

**Training**— The Bureau developed a comprehensive training plan to ensure that administrative officers and other financial staff receive ongoing training in various

bureau specific procedures, as well as general areas such as appropriation law and management skills. The Bureau trained at least 50 percent of the identified population during FY2005, and in FY2006 increased the percentage trained to 100 percent. During FY2006, USGS provided well attended training on various financial topics to administrative staff and cost center managers by conducting bureauwide workshops for cost center managers in November 2005 and for administrative staffs in March 2006.

**Financial and Business Management System**— In September 2005, the Department severed contractual relationships with the integrator of the new Financial and Business Management System (FBMS) and awarded a contract to the new integrator, IBM. The scope of the project remains as previously defined: provide a Department-wide solution that significantly improves access to reliable, accurate, current, and complete financial and business management information to support the decisionmaking process throughout all levels of the Department, affecting all employees and operations. FBMS will replace current systems for budget formulation, core finance, personal and real property, financial assistance, acquisition, fleet management, and executive management information system. Budget formulation and project planning at the highest level currently exists in the Strategic Enterprise Management (SEM) module, where “what if” scenario building can be performed. Based on a Department-wide revised schedule, USGS is scheduled to deploy FBMS in FY2009.

## Real Property Asset Management

**Strategic Facilities Master Plan**— The Strategic Facilities Master Plan (SFMP) outlines a strategy to provide a thorough analysis of the facilities program and identifies opportunities for the bureau to reduce cost through improved utilization. It further provides a strategy to properly fund operations and maintenance and deferred maintenance at USGS owned sites. In FY2006, the Bureau accomplished sixteen of the 39 SFMP recommendations. The remainder of these high priority recommendations have target completion dates. The SFMP also provided the basis and significantly contributed to the USGS Asset Management Plan that was completed in FY2006.

**Asset and Portfolio Management**— In accordance with Executive Order 13327, the Department issued an Asset Management Plan (AMP), which “establishes a strategic direction for the management of assets within the Interior portfolio.” DOI’s AMP required each bureau to develop a bureau real property AMP. The USGS AMP was completed and submitted to the Department on June 30, 2006. This document presents the strategic vision and plan of action for effective bureau facility management and supports the DOI’s AMP for compliance with Executive Order 13327. The USGS AMP summarizes the bureau’s current asset inventory, documents the condition of the inventory, and articulates the bureau’s strategy and process for managing the total cost of asset ownership and serves as a framework to guide asset investment decisions, including operations, preventative maintenance, component renewal and repair and construction.

**Space Savings**— In early FY2006, USGS Northern Prairie Wildlife Research Center (NPWRC) transferred the Woodworth Field Station site to the U.S. Fish and Wildlife Service (FWS), the primary user of the location. This action was important because it reduced the inventory of under-utilized real property assets for the USGS in accordance with Executive Order 13327. The result of the transfer is an annual savings of approximately \$10,000 in operations and maintenance costs, and a reduction of 5,382 square feet of mixed-use space. The Western Region has completed negotiations with GSA for a new Occupancy Agreement (OA) for the Menlo Park, California campus. The new OA retains USGS presence on the entire campus, includes cancellation rights in the years 2010-2012, and lowers the current rental rate for a 5-year period, 2008-2012. The cost savings will begin in FY2008. Any potential excess space, vacated through natural attrition during the term of the new OA, will allow the USGS to attract science partners into a highly desirable geographic area at a low rental rate, strengthening collaboration and enhancing the campus utilization rate. The New Ellenton, South Carolina, field office was closed, effective April 30, 2006. The staff was consolidated at the Columbia, South Carolina Water Science Center (WSC). The Nashville, Tennessee WSC office has reduced space; the Memphis, Tennessee WSC field office has relocated to cooperative space with a

university partner; and the Knoxville, Tennessee WSC office will move into space furnished by the Tennessee Valley Authority, all leading to cost reductions.

**Facilities Maintenance Management System**—

The USGS upgraded its Facilities Maintenance Management System (FMMS) to MAXIMO v5.2. to improve the performance of the system. The upgrade will enhance the reporting capabilities of the Facility Managers for the 14 sites that are actively using the system. It will also provide help desk, database, and system administration support along with maintaining the system in compliance with security requirements. The USGS participates in the Department Asset Management Team to help integrate the Department’s Asset Management Plan into the USGS FMMS.

**Participation with GSA on the Denver Federal Center Master Site Plan and Environmental Impact Statement**—

GSA is developing a new Master Site Plan and Environmental Impact Statement for the Denver Federal Center (DFC). The primary goal of the site plan is to transform the DFC into a dynamic, mixed-use urban center. Many of the proposed changes to the DFC will have a significant impact on the USGS, who is the largest tenant on the DFC campus. Because the USGS is the largest tenant on the DFC campus, GSA requested that the USGS be a permanent member of the DFC Round Table that meets monthly to discuss the developing plans. Ongoing participation on this executive-level committee is critical to ensure that the interests and special needs of the USGS science disciplines and their missions are represented. The information gained through partnering on this committee is used by the regional investment review board to approve and monitor internal strategic plans for the USGS on the DFC for the next 5 to 10 years.

**Denver Federal Center Renovations and Relocations**—

GSA developed a feasibility study for Building 53 on the DFC with significant input from the USGS tenants in the building. The GSA anticipates that Building 53 may be demolished in the next 5 to 7 years. GSA’s recommended action from the feasibility study is the proposed construction of a special use computer facility to house multiple agency computer operations, some of which are currently housed in Building 53. GSA submitted the study to their headquarters office in June 2006 along with draft occupancy agreements signed by



the affected agencies. USGS has agreed that the new computer facility might be a viable option for housing the USGS computer operations in the future but has not committed to occupy the space. The USGS Research Drilling Program was relocated from Buildings 111G and 111J on the DFC to an agency-leased facility in the local community. This action was necessitated by the GSA's demolition plans to accommodate the upcoming construction of the transit and light rail center and new hospital on the west side of the DFC. One result of this accomplishment is the consolidation of the drilling operation into a single building that is in much better condition and better configured to meet the operational needs of the drilling program. Another result is the drilling operation can operate without continued interruption due to the GSA's ongoing demolition and environmental cleanup projects on the west side of the DFC.

**Florida Integrated Science Center at St. Petersburg**— USGS managed the construction on the new 11,000 square foot building owned by the St. Petersburg Downtown Partnership in St. Petersburg that USGS leases, which started in May 2005. The project was completed in March 2006. There is still a requirement to furnish out the laboratory space but the overcrowding in the existing buildings has been significantly reduced.

**Patuxent Wildlife Research Center Facilities Modernization Project**— The USGS and FWS are continuing joint efforts to address the facilities deficiencies at the Patuxent Wildlife Research Center and the Patuxent Research Refuge. In response to FY2006 Congressional direction, a series of meetings were held with DOI and Congressional staff to report on progress in the development of a long-range facilities plan for Patuxent. In addition to construction options presented in a prior interim report, the joint team is now working with GSA to develop a set of leasing alternatives, and also is examining the feasibility of relocation of some Patuxent functions to other DOI locations in the area. In addition, the team has developed justifications for consideration for FY2008, for the replacement of the electrical, water, and sewer infrastructure at the site, and has tasked an architecture/engineering firm to refine electric utility replacement costs. A more robust revised set of alternatives will be submitted for DOI review and decision by the second quarter, FY2007.

**Deferred Maintenance**— In FY2006, the USGS continued to address critical life safety issues through the Deferred Maintenance Capital Improvements Program. This included funding seven projects that addressed fire and life safety deficiencies. Other bureau priorities included funding repairs and improvements to fume hood systems at two of our research laboratories. Replacement or renovation of cableways used to collect stream data continues to be a bureau priority. There are approximately 1,000 active cableways at 113 sites, which do not meet modern design and load-testing criteria to ensure the safe collection of essential scientific data. All 113 sites are scheduled for replacement or renovation. To date, a total of 354 reinforcement kits have been purchased to assist with the renovation of the cableways. A total of 278 sit-down and stand-up cable cars have been purchased for replacements. It is anticipated that the replacement and renovation of active deficient cableway systems will continue into FY2008. The Northern California Seismic Network consists of analog and microwave stations that have exceeded their expected life and cannot be expected to operate continuously. These stations will be replaced to avoid failure during an emergency. These stations provide earthquake monitoring and (or) warnings for large metropolitan areas. There are approximately 325 analog stations that are being converted to digital systems and approximately 25 microwave stations that are being upgraded.

**Condition Assessments**— The following centers had condition assessments scheduled and/or completed in FY 2006: Florida Caribbean Science Center, EROS Data Center, National Wetlands Research Center, Leetown Science Center, and Hammond Bay Fish Research Station. Condition assessments are performed on a 5-year cycle. The first 5-year cycle was completed in FY2004. The condition assessment reports identify the most critical maintenance deficiencies, update the deferred maintenance backlog, and help determine future priorities.

Asset Priority Index (API) scores for all of the USGS owned assets, as well as the bureau guidance and procedures for integrating API into the Deferred Maintenance and Capital Improvement process, were established by the end of FY2006.

## Looking Forward:

**A**nually, the USGS produces a program direction document, which is a collaborative effort between the bureau program coordinators, regional managers, and scientists and is issued by the Director. It contains details on opportunities to address new science thrusts; major changes in direction of, or emphasis of, program goals and related increases or decreases in funding; opportunities supported by multiple programs; and identification of new capabilities, facilities, and expertise available to support project work in the coming year. The document describes new directions in integrated science as well as new directions and opportunities from within the disciplines. Information about the possible effects of future events, conditions, and trends are incorporated into specific discussions on a variety of scientific projects. Because the science is integrated and focuses on complex issues, the research outcome will crosscut all DOI goals.

## Integrated Science Accomplishments:

The USGS continued its efforts in FY2006 to expand partnerships with other DOI bureaus, as well as other Federal, State, and local agencies, academia, and the public sector to address diverse issues on the horizon. This effort to strengthen existing partnerships and build new ones, especially with DOI bureaus, will be the focus of a new USGS regional structure that will be implemented in FY2007. With senior-level managers dispersed throughout newly designated regions, the USGS is positioning itself to be more responsive to regional and local issues and provide the scientific expertise and leadership necessary to assist managers in solving current problems and address future science needs. In addition to the opportunities for increased communication and collaboration, USGS is also placing an increased emphasis on integrated science that will solve complex, multidisciplinary resource problems. The USGS is committed to maintaining scientific excellence as it looks for new opportunities to work with others on finding solutions on Resource Protection, Resource Use, and Serving Communities.

Current examples of regional activities, highlighted below, illustrate how USGS will incorporate partnerships to conduct science and inform decisions in the future.

## Monitoring Endangered Suckers and Water Resources in the Upper Klamath Basin

The USGS has been monitoring spawning populations of endangered Lost River suckers and shortnose suckers in the upper Klamath Basin of Oregon and California since 1995, with the most intense monitoring from 2000 to the present. This work has been conducted in cooperation with multiple DOI bureaus, Tribes, and State agencies to provide unbiased and scientifically relevant information to aid in the restoration of these species. Because these suckers are long-lived (over 30 years), a long-term monitoring program is essential for assessing the status and health of adult populations as well as how these fish are affected by natural conditions and human activities.

In addition to monitoring these endangered species, the USGS is providing hydrologic information in the Upper Klamath River basin so resource managers can make informed decisions about management actions and remediation strategies for protecting these fish. Completed and ongoing studies include the development of a regional ground-water model to optimize the amount, timing, and location of ground-water withdrawals used to augment flows and lake levels for fish; improvements to seasonal runoff forecast into Upper Klamath Lake so water managers have accurate information on water availability well before the beginning of an irrigation season; investigation of the internal sources of nutrients to Upper Klamath Lake that cause severe water-quality problems for fish and to identify remedies for the dilemma; and the development of a hydrodynamic model of Upper Klamath Lake to assess the environmental factors that most affect fish die-off events. The FWS, the Bureau of Reclamation (BOR), and the Klamath Tribes are relying on these data sets and models in their efforts to manage natural resources and endangered species in the Klamath Basin, recover Lost River sucker and shortnose sucker populations to healthy levels, and restore critical habitats.

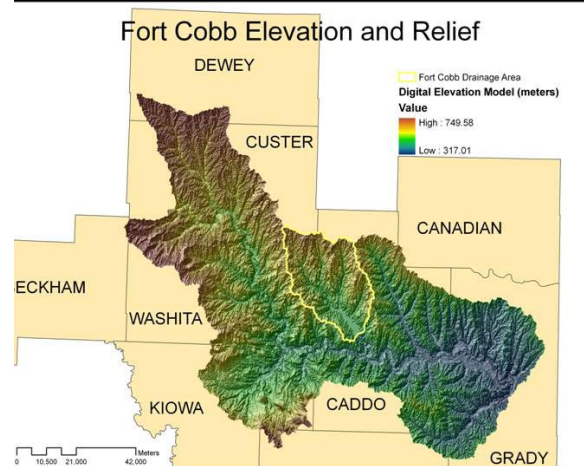
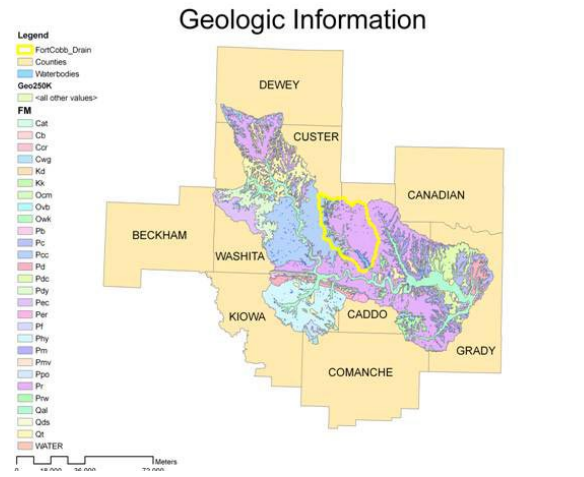
The ongoing monitoring of adult suckers will provide updated information on population status and vital rates and help provide measures for future recovery. Water-quality studies will provide real-time assessments of whether a sucker die-off event is probable in the future, whether poor water-quality events can be significantly improved through lake-level management, and provide

information concerning ways to control internal loading of nutrients that cause water-quality problems in Upper Klamath Lake.

## Environmental Effects of Agricultural Practices: Applying Environmental Information Science Methods and Techniques

The Fort Cobb Reservoir Watershed, Oklahoma, is composed of 314 square miles of predominantly agricultural land and is one of the primary focus areas for the Central Region Agricultural Practices Science Priority. The reservoir is managed by the BOR for drinking-water supplies, irrigation, conservation, surcharge, recreation, and fish and wildlife habitat. In 2002, the reservoir was listed on the Oklahoma State list of impaired waters under Section 303(d) of the 1972 Clean Water Act on the basis of sedimentation and excessive inputs of nutrients. This watershed has been identified as a priority watershed under the Conservation Effectiveness Assessment Project (CEAP) for the Agricultural Research Service and the National Resources Conservation Services (NRCS). CEAP watersheds will be used to quantify the environmental benefits of conservation practices implemented on agricultural lands.

Many data have been collected by Federal and State agencies since 1903; in 2006 the USGS consolidated these data in a digital data atlas — a geospatial tool for access, query, and studying the data in a comprehensive way. In 2007, the digital atlas will be released as a sustainable online resource using an outgrowth of the technology for The National Map called the Scientific Data Catalog. New data being collected and processed for the Agricultural Practices effort will be added to the Scientific Data Catalog in FY 2007. These data include (1) streamflow and water quality samples that are providing information on agricultural practices effects; (2) hyperspectral imagery that is being used to map algae in the reservoir as well as riparian and agricultural land cover; and (3) reservoir sampling that is providing insights into the factors influencing the excessive nutrient condition of the reservoir. Also in 2007, a workshop will be held with many Federal, State, Tribal, and private partners to introduce the concept of the online data atlas and test various information science hypotheses on the long-term sustainability of the data resource within a community of stakeholders.



Various images available in the digital data atlas.



Water-quality data collected from the reservoir and Advanced Spaceborne Thermal Emission and Reflection Radiometer (ASTER) imagery for mapping algae in the reservoir as well as riparian and agricultural land cover.

## Ridge-to-Reef Activities

The USGS Ridge-to-Reef partnership has worked to fill the needs of on-the-ground conservation projects for scientific information to guide watershed management efforts and gauge the results with studies and monitoring programs that relate reef health to terrestrial watersheds. The link between reef health and watershed integrity is sediment; hence, efforts have focused on determining rates and distribution of sediment accumulation on reefs, sediment sources and erosion processes within watersheds, and relations between erosion, vegetative cover, ungulate populations, and land uses. Examples of work accomplished in the past year include sediment samples trace metal chemistry analyses identifying terrestrial source areas in conjunction with erosional landform mapping; soil erosion monitoring corresponding with botanical vegetation mapping units; experimental radiometry utilized to complement and extend traditional stream-sediment monitoring across the watershed; remotely sensed data were collected to complement and extend vegetation and erosional landform mapping; streamflow and sediment monitoring station provided data for reef sedimentation assessment studies; and development of direct reef monitoring for biodiversity, survivability and impacts and tolerance from bacteria, sediment, and turbidity.

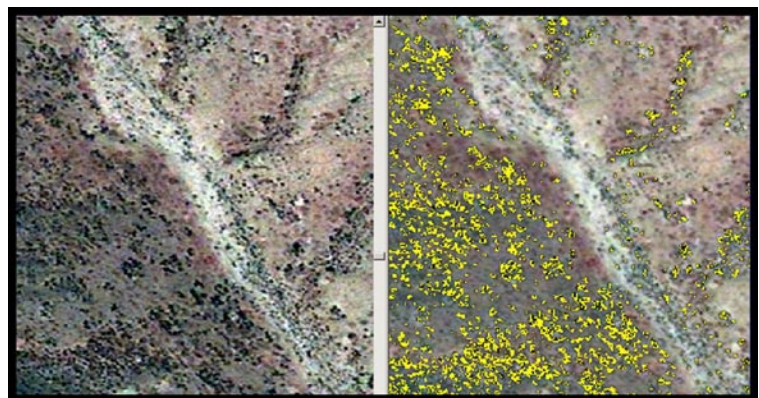
The Ridge-to-Reef studies have effectively demonstrated USGS capabilities to stakeholders, including Federal and State agencies with resource-management and regulatory responsibilities. These agencies have responded by funding related USGS projects in areas beyond the scope of the Ridge-to-Reef project, including Oahu, west Maui, and Kahoolawe. FWS refuge managers have expressed interest in using results from Ridge-to-Reef studies for managing sediment in south Molokai and Hanalei, Kauai islands in Hawaii.

Research conducted by the USGS and project partners will be available to the U.S. Coral Reef Task Force, the National Park Service (NPS), The Nature Conservancy Hawaii, and the Hanalei Heritage River Hui for future resource management decisions. The aerial imagery analysis conducted by the Survey will provide baseline and change-detection capabilities

to help monitor results of management actions such as reduction of impacts of feral ungulates on watershed vegetation. Systematic and extensive marine habitat sampling will provide information not only about the estimable history of sedimentation on research sites, but also a baseline and change-detection capabilities to help resource managers monitor results of future actions both on land and in water.

## Sagebrush Habitats: Maps for Managers

The Bureau of Land Management (BLM) has management responsibility for about 50 percent of remaining sagebrush habitats. Building from BLM needs, the USGS has developed statistically rigorous mapping products to assess habitat within the sagebrush ecosystem at three study areas in Wyoming. Through the use of satellite imagery, field measurements, and analytical tools, researchers have predicted the amount of sagebrush cover, bare ground, and other vegetation. Methods used to develop these maps will be applied to larger geographic areas and provide managers with landscape-scale tools to assess wildlife habitat across large areas of Wyoming, including those where energy development is occurring. These products will be the backbone for future management and planning efforts on BLM lands, and directly assist with resource assessments and conservation efforts, including the Wyoming Landscape Conservation Initiative, by providing a basis for trend monitoring and change detection.



Quickbird Image classified to identify sagebrush (yellow on right panel).



Comparison of Quickbird – 0.6m (left), Landsat – 30m and IRS – 56m (right).

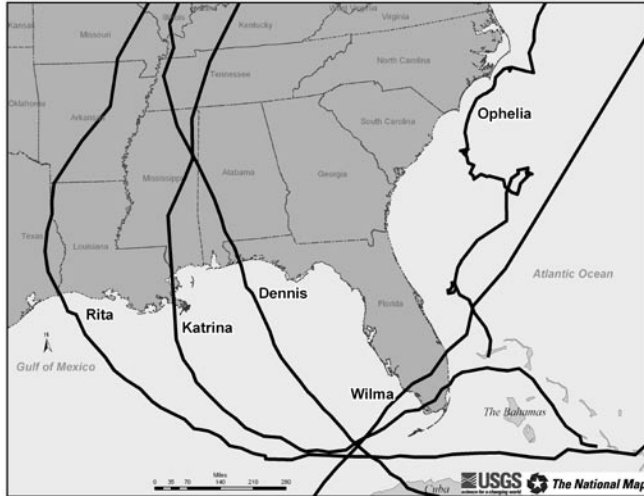
### USGS Post Hurricane Response Efforts Studies Aid Planning for Future Severe Storms

The USGS activated the Storm Response Team for five hurricanes that affected the Gulf and Atlantic coasts between July and October 2005: Dennis, Katrina, Ophelia, Rita, and Wilma. The response team grew to include BOR, FWS, NPS, MMS, Department of Defense (DOD), Environmental Protection Agency (EPA), National Oceanic and Atmospheric Administration (NOAA), U.S. Army Corp. of Engineers (USCOE), and others. Critical information was shared and used to understand the impact to managed parks, refuges, and marine sanctuaries. The team also ensured that the right information was being communicated within DOI and to the public during this disaster.

Despite extremely difficult conditions, USGS hydrological technicians in Louisiana, Mississippi, and Alabama worked vigorously after Katrina to collect perishable scientific data to accurately document storm surge, water elevation, and the extent of flooding after Katrina. Temporary streamgages were installed on Lake Pontchartrain and in New Orleans to monitor the drop in water levels as the USCOE worked to repair damage to levees and remove water from the inundated city. Water-quality and sediment sampling was conducted by USGS scientists in cooperation with the EPA and others to assess health hazards and the impacts of contaminants.

Over the storm season, USGS coordinated data collection and research efforts from Florida to Texas with Federal agencies that include NASA, NOAA, and USCOE and universities. Many aerial surveys were flown to obtain video, still photography, and laser altimetry surveys of post-storm beach conditions for comparison with earlier data to show the nature, magnitude, and spatial variability of coastal changes such as beach erosion, overwash deposition, and island breaching. Data were available through an enhanced USGS-developed Data and Information Management System (DIMS) for response, relief, and research efforts. FEMA used the DIMS as a decision support tool in deploying emergency supplies post-Hurricane Katrina and for pre-Hurricane Rita planning activities. The Louisiana State Department of Wildlife and Fisheries and the Louisiana State Police used it as a post-hurricane search and rescue tool. The Centers for Disease Control and Prevention used it to assess New Orleans' city population changes as the city deployed varying stages of disaster response. The impact to habitat of a wide variety of wildlife also can be evaluated. These data will also be used to further refine predictive models of coastal impacts from severe storms and help managers plan more effectively.

The DIMS is being used by USGS as a resource for the Gulf of Mexico Alliance Federal Partners database. The group, formed of USACE, EPA, NRCS, MMS, NPS, FWS, Department of Transportation (DOT), and NOAA, was created in support of the five Gulf States' initiative to protect the Gulf of Mexico in a regional effort.



USGS Hurricane response efforts.

The USGS continues to mobilize equipment and personnel for hurricane recovery efforts and to provide the science and data collection necessary for response with other Federal, State, and local agencies. USGS hydrological technicians in Louisiana, Mississippi, and Alabama are mapping the storm surge/high-water marks from Katrina in Florida and Louisiana. This information will be essential to current and future recovery and restoration efforts. USGS has also installed streamgages in Lake Pontchartrain to monitor water levels, and the USCOE is developing a list of additional sites for installation of USGS gages. The USGS has flown aerial surveys, taking video of the coastal changes from Florida to Louisiana and has undertaken topographic Light Detecting and Ranging (LIDAR) flights to collect a wider swath of imagery inland that is being used by the States in their continuing recovery efforts.

## Climate Change In The Arctic Influences Future Adaptive Strategies For Oil, Gas, And Trust Species Management

The USGS continued to provide critical science to help Federal, State, and Tribal resource managers better understand how patterns of climate change in the Arctic may influence future adaptive strategies for oil, gas, and trust species management. The USGS has integrated its physical process studies in sea ice development, coastal erosion, coastal river hydrology, lake limnology, permafrost patterns, and landform assessments with studies of key DOI trust species to better predict the cascading series of physical and ecological consequences of climate change on potential management action. In conjunction with USGS digital elevation models, scientists can now begin to project the pattern and magnitude of erosion, lake change, and corresponding migratory bird responses. In addition to increased wave and coastal erosion action that results from recent patterns of sea ice recession, USGS has reported that changes in multi-year sea ice may be influencing Alaska polar bear habitat and population patterns. USGS, Russian, and other U.S. colleagues have completed a series of eight papers examining key sea ice characteristics and factors influencing those characteristics. In 2006, USGS provided its partners within the North Slope Science Initiative-FWS, NPS, Mineral Management Service (MMS), BLM, and State agencies—with assessments that included the potential impacts of coastal erosion on proposed oil and gas lease sites in Northern Petroleum Reserve-Alaska (NPRA), how climate change and erosion may modify critical waterfowl habitat and subsistence use, and analyses of how insufficient long-term streamgaging data on the North Slope will impact engineering requirements of bridge and road infrastructure on the north slope. Additional information is available on the Web at: <http://alaska.usgs.gov/portal/>.

*In Memory of  
Jay Feuquay*





USGS scientists conducting a water column survey of a frozen pit lake at the Elizabeth mine superfund site in Vermont.



# Section II

# Performance Data and Analysis

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### Message from the Director, Office of Budget and Performance



The USGS is proud of the progress we have attained in reaching our long-term strategic goals. We take seriously the challenge to be accountable to the American people for the performance of our programs, and strive to achieve objectives that continue to serve the Nation by providing timely and reliable scientific information.

In our efforts to make our programs more efficient, effective and results-oriented, the USGS continues to be guided by the President's Management Agenda. The PMA is the President's strategy for improving the management and performance of the Federal Government. The "progress" and "status" ratings of the PMA use a color-coded system that is based on criteria determined by the Office of Management and Budget and used by all Federal agencies. Agency performance in specific areas is rated on a grading scale of red, yellow, and green.

The USGS has made considerable advancement in implementing the core governmentwide initiatives: strategic management of human capital, competitive sourcing, improved financial management, expanding electronic government, budget and performance integration, and real property/asset management, which was introduced as a new initiative in FY2006. The USGS is also engaged in activities that support environmental stewardship, energy management, and transportation management initiatives; new PMA components that will be scored in FY2007. I am pleased to report that the USGS achieved "green" scores for "progress" in implementing each of the six principal governmentwide PMA initiatives and "green" scores for "status" in three of the six primary initiatives. In the coming months, we look forward to the opportunity for improvement in all areas of the PMA.

The USGS continues to use performance information for planning and evaluation in the application of its science. An example is the USGS publishing services, which had been conducted by 254 FTE in 27 job series and supported by various publishing support contracts. These resources were dispersed throughout the USGS and managed independently of each other. An exhaustive analysis for establishing High Performing Organizations under Competitive Sourcing resulted in the establishment of the Enterprise Publishing Network. Three primary objectives of the restructuring were to support the USGS science mission; achieve better business practices; and reduce costs. Projected savings include (1) through attrition and voluntary incentives, reducing from 254 to 190 FTE, thereby reducing staffing costs by 15 percent; (2) reducing the number of publishing unit locations from 60 to approximately 25 sites; and (3) reducing operations costs. The total pre-EPN labor costs in 2006 are estimated at \$16.5 million.

To enhance the practical use of performance information, the USGS uses OMB's Program Assessment Rating Tool for measuring the performance of our programs. The PART sets clear, achievable, and measurable purposes and goals that complement traditional management techniques and stimulates constructive dialogues

between program managers, budget analysts, and policy officials. The findings and recommendations play a substantial role in spending and management of our programs. USGS has achieved promising results by utilizing the PART: PART measures have been used as the basis for revision of our Strategic Plan; the USGS Annual Performance Budget fully describes the relationship between all relevant Strategic Plan intermediate and end outcome goals and USGS performance measure targets; PART measures have been used in the annual plan (Performance Budget) to justify program initiatives; and the Executive Leadership Team Status of Funds and Performance Reviews focus on key measure and cost data. At the end of FY2006, USGS PART evaluations stand at eight programs “moderately effective,” one program “effective,” and none rating “adequate,” “ineffective,” or “results not demonstrated.”

As a research organization, the USGS has through our history relied upon peer review and program evaluations (NAS, NAPA, Federal Advisory Committees, etc.) as well as Customer Listening Sessions to ensure quality and relevance, and validate direction of science. The performance information collected through these evaluation processes is employed as a vehicle to manage for results.

In order to encourage the use of performance data information to manage for results even further, the USGS has developed a survey unit inside the Office of Budget and Performance. This unit works directly with individual programs/centers within the USGS to facilitate the collection, analysis, and use of performance information. The final result of each survey meet the goals of the DOI strategic plan and support PART evaluations and are immediately useful to the program manager. Many of our programs and products have been enhanced in response to the expressed needs of our customers. Additional information about these activities is included in this report.

Even though we are pleased with the results we have obtained during FY2006, we also recognize the opportunity for improvement. The information included in this report not only corresponds to our accomplishments of the past year, but also provides a benchmark to build upon. We continue to review and revitalize our organization and internal processes as we endeavor to become more effective and efficient and to improve the services that we provide. Through continued management innovation and the dedication and professionalism of our employees, we remain committed and confident that we will continue to expand our results and the benefits they provide to the Department, the Congress, and the American people. I encourage you to read this report as evidence of our accomplishments in carrying out the valued mission that has been entrusted to us.

Carla Burzyk  
Director, Office of Budget and Performance and Deputy Chief Financial Officer  
October 2006

## Performance Budget Results

The integration of budget and performance is critical to the planning for and evaluation of success achieved by the USGS in the application of its science to building long-term bodies of data and ensuring their relevance to partner and customer needs. The USGS has been particularly successful in this endeavor, owing to the physical integration of its budget, regional, and planning and performance teams in its Office of Budget and Performance.

Working in constant contact, these teams jointly develop and produce budget and performance documents that are fully integrated with respect to description of base programs and analyses, their funding and FTE implications, what the standards of their performance will be and how they will be evaluated. The three teams work closely with bureau program staff to understand, evaluate, and plan the science programs' budget and performance levels, ensuring responsiveness to USGS executive management decisions, departmental concerns, and Administration policies.

### FY2005 Criteria

Quarterly integrated assessment of budget & performance.

Link individual employee performance evaluations to mission performance.

Routine application of performance information in budget decisions.

Report/estimate full cost of changes in performance goals.

Apply PART efficiency measures to improve Performance.

Apply PART Information in resource and program management decisionmaking.

### FY2006 Criteria

Strategic and annual plans have a limited number of goals, use PART measures and focus on information used in senior management reports.

Performance appraisal plans adhere to merit system principles for SES, managers, and 60%+ of bureau employees.

Used performance information to improve results.

Reported full and marginal cost of achieving performance goals.

Every PARTed program has at least one efficiency measure.

PART ratings used to justify requests and fewer than 10% of PARTed programs are rated "results not demonstrated" for 2 years in a row.

FY2006 Criteria	Status
Strategic and annual plans have a limited number of goals, use PART measures and focus on information used in senior management reports.	Strategic and annual plans have a limited number of goals and PART measures have been used as the basis for revision of the Strategic Plan.
Performance appraisal plans adhere to merit system principles for SES, managers, and 60%+ of bureau employees.	<p>100% of SES, SL, and ST have plans in place. 98% of all employees have performance plans. The USGS performed sampling of cascading performance plans from executive through the first non-supervisory level. Sampling included regional, HQ, and discipline staff to check cascading goals. 100% were aligned to strategic goals/mission of the organization, were results oriented, and included measurable criteria.</p> <p>The USGS developed a database that contains all USGS commitments including GPRA; PART; Secretary's MBO; congressional directives; OMB directives and internal controls. Collectively, these represent the bureau's overall organizational commitments and will enable us to develop a robust Organizational Assessment and individual performance plans that are aligned with organizational commitments and easily cascaded into the bureau.</p>
Used performance information to improve results.	An exhaustive analysis for establishing High Performing Organizations under Competitive Sourcing resulted in the establishment of the Enterprise Publishing Network (EPN).
Reported full and marginal cost of achieving performance goals.	<p>USGS documents full cost of achieving performance goals, demonstrating the costing relationship of intermediate and outcome measures, and cites marginal cost and increment performance in program initiative funding requests.</p> <p>In FY 2006, the USGS began capturing ABC data at the task level rather than the project level to increase granularity and utility of data.</p>
Every PARTed program has at least one efficiency measure.	All PARTed programs have one efficiency measure as documented in the DOI Efficiency Report tables submitted to OMB.
PART ratings used to justify requests and fewer than 10% of PARTed programs are rated "results not demonstrated" for 2 years in a row.	<p>USGS has particularly focused on program improvement through the PART process. In FY 2006, PART evaluations stand at eight programs "moderately effective," one program "effective," and none rating "adequate," "ineffective," or "results not demonstrated."</p> <p>PART ratings and improvement plan actions are cited in the Budget submission.</p>

## PART

With program evaluations and peer review integral to our culture, USGS has particularly focused on program improvement through the PART process. By the end of FY2006, USGS completed PART evaluations stand at eight programs “moderately effective,” one program “effective,” and none rated “adequate,” “ineffective” or “results not demonstrated.” All OMB recommendations have been addressed with action plans having milestones and targets approved by the Department and OMB and tracked in the Department’s Management Initiatives Tracking System (MITS). All actions are on schedule or, when milestones appear to be delayed for cause, are renegotiated with OMB and the Department and amended in MITS. The Department quarterly reviews progress in achieving recommendations, improvement milestones, and performance targets. In addition, prior and current year efficiency measures results are reported. Further information on each recently conducted program evaluation is provided later in this section.

### Activity Based Cost/Management

In addition to continuing to verify and validate data and improve understanding and process application, USGS has also worked to standardize ABC, Strategic Plan, and PART outputs.

USGS believes that close linkages will enable better costing of outputs, understanding of relationships, and leveraging of management information. The process of developing these standardized outputs further refined the definition templates and further contributed to more consistent application.

Analysis of ABC data led USGS to conclude that more granularity was needed to begin to make appropriate use of the data for cost analysis. USGS began capturing ABC data at the task level rather than project level in FY2006. General ABC reports and data can be extracted by all managers at all levels on a daily basis for verifying and validating and for performing analyses for decisionmaking. Continued efforts are being applied to standardize processes and ensure consistency of interpretation.

## USGS Activities

The USGS conducts research, monitoring, and assessments to contribute to understanding the natural world—America’s lands, water, and biological resources and processes as well as its natural hazards. By combining biology, geology, hydrology, and geography expertise in one agency, the USGS is uniquely positioned to provide science information and conduct scientific research that ensures an integrated approach to advance scientific knowledge and utilize the latest technologies to provide timely answers and products and improve the quality of life for the communities we serve.

The USGS provides reliable, impartial information to the citizens of this country and to the global community in the form of maps, data, and reports containing analyses and interpretations of water, energy, mineral, and biological resources; land surfaces; marine environments; geologic structures; natural hazards; and dynamic processes of the Earth. The USGS provides scientific information to understand issues such as coastal erosion and pollution, sea-level rise, loss of wetlands and marine habitats, the geological processes controlling the invasion of cheat grass, and the role of dust in desert ecosystem health.

Armed with this knowledge, decisionmakers can respond better to both natural and human-induced changes. Through the application of science, decisionmakers are able to address complex issues concerning public safety, our environment, and natural resources; to address public health questions; and to promote public prosperity for the future well being of our country. USGS data and information are used daily by managers, planners, and citizens to understand, respond to, and plan for changes in the environment. USGS research and data products support the Department’s resource and land management needs and provide the science information needed by other Federal, State, Tribal, and local government agencies; industry groups; agricultural interests; academia; non-profit organizations; and the American public to guide planning, management, and regulatory programs.

## Performance Plan Development

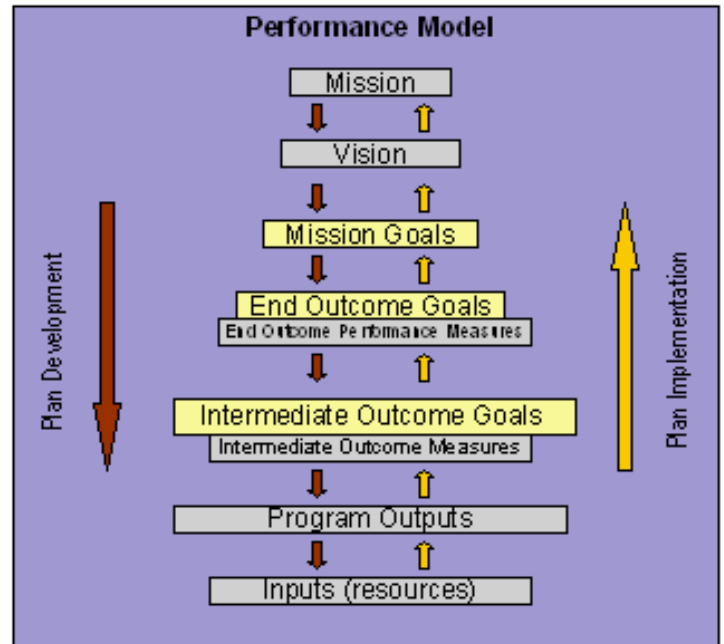
Natural science research is the foundation of the Department of the Interior's FY2003-2008 Strategic Plan, and USGS science directly supports three of the four DOI mission areas.

A logic model (see performance model at right) was used to develop GPRA goals across the organization to create one Department-wide strategic plan implemented in FY2004. The DOI Strategic Plan provides a high-level overview of performance, setting large mission goals and broad program objectives. Its greatest value, day-by-day, comes from connecting that larger view with each day's ground-level work.

The plan structure is focused on end outcomes, selected high-priority intermediate outcomes, and on performance measures, indicators, and output that verify progress toward outcome achievement. Just as each mission area has its own strategic goals, each strategic goal has its own end outcome goals and measures. Supporting those, in turn, are intermediate outcome goals and measures, with outputs and inputs below that. Targets are set at every level, providing numerical measures of USGS accomplishment.

Outputs are typically quantifiable products of work processes or activities. Activity-based costing, in its second year of implementation at USGS, holds the potential to connect outputs to costs and create a powerful management tool for identifying efficiencies, focus attention on achievement and innovation, and move more quickly to spread best practices throughout the organization.

Performance measures are also generated through application of OMB's Program Assessment Rating Tool (PART). The PART was developed by OMB to assess the effectiveness of Federal programs and help inform management actions, budget requests, and legislative proposals directed at achieving results. The PART examines various factors that contribute to the effectiveness of a program and requires that conclusions be explained and substantiated with evidence. The PART assesses if and how program evaluation is used to inform program planning and to corroborate program results.



Highlighted in the Management Discussion and Analysis section, USGS performance data and accomplishments are further expanded in this section to include all performance measures that were used to request funding and to match achievement of these metrics against the targets that were set on enactment of the appropriation. USGS outcomes and measures focus on providing science to customers for solving the Nation's complex land- and resource -management problems and to minimize the loss of life and property from natural disasters. The ultimate outcome related to providing scientific information is that our customers and partners have the information with which to make informed decisions. Performance measures serve as stepping stones to the goal and the outcome, keeping the program on track, on time, and within budget.

## Summary Performance Result

The PART performance measures and their performance results are included with the strategic plan measures within the tables to follow. The following legend applies:

- ▼ Target Not Met
- ▲ Target Exceeded
- ✓ Target Met

# Performance Data and Analysis

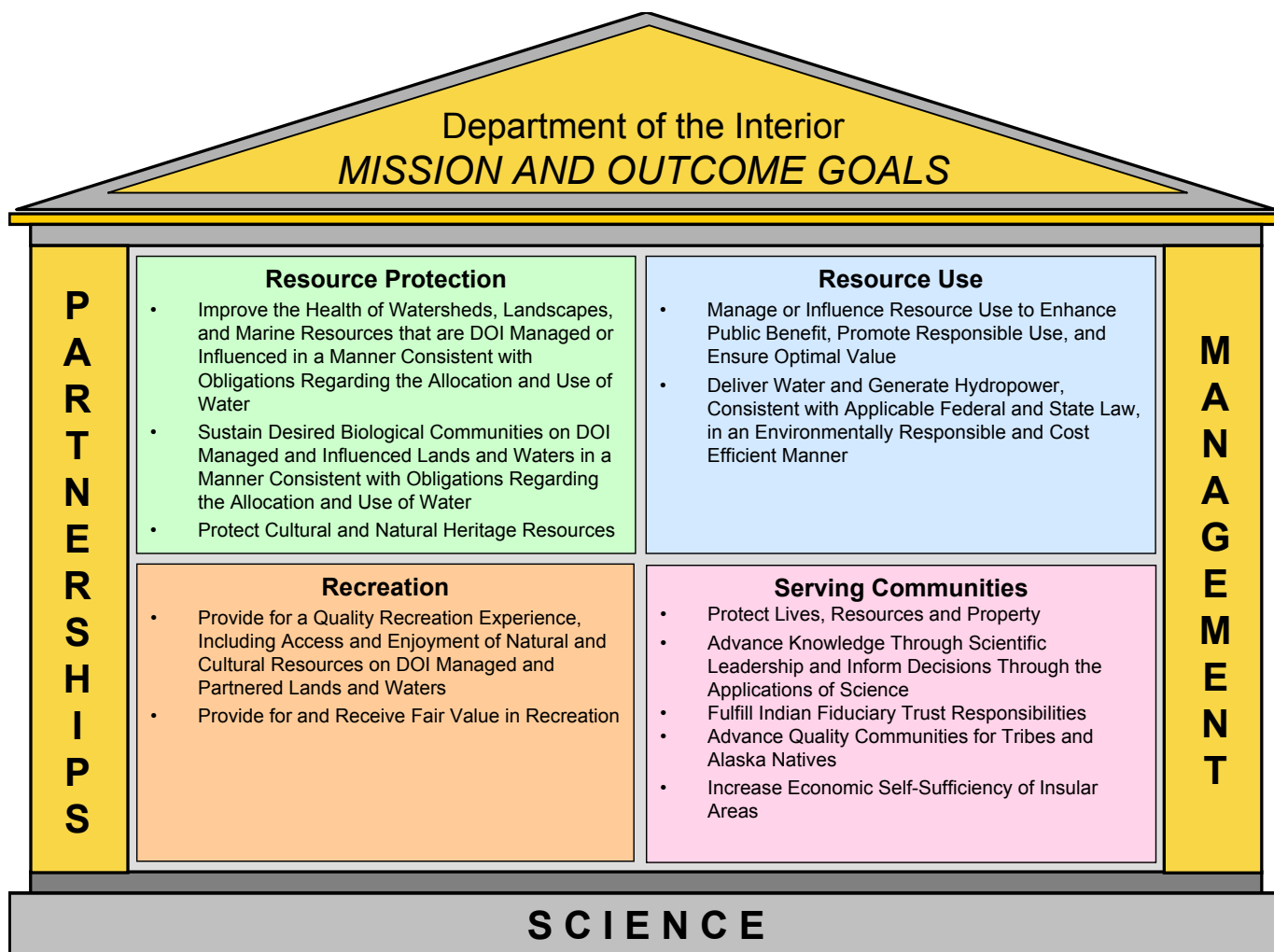
Each analysis of results begins with Target Met; Target Not Met; or Target Exceeded. USGS is applying the Department's 5 percent threshold in determining the result, which dictates that if the result is within 5 percent of the target performance, this generates a "goal met" rating. The summary result for values that are less than 95 percent or more than 105 percent of the target must be either Target Not Met or Target Exceeded, respectively.

The Department's Strategic Plan is available at the following address: [http://www.doi.gov/ppp/strat\\_plan\\_fy2003\\_2008.pdf](http://www.doi.gov/ppp/strat_plan_fy2003_2008.pdf)

## How We Performed in FY2006:

USGS met or exceeded 100 percent of the performance measures monitoring during FY2006. Summary results for these measures are presented at right.

For the most part, the measures not met resulted from diversion of efforts to disaster-related data collection for multiple catastrophic events and changing priorities of partners who contribute data. Planned data collection will resume when immediate priorities are met.



This structure depicts the four mission areas of the Department and the supporting pillars of partnerships and management. Science is presented as the foundation for informed resource-management decisions.



## Summary of How We Performed in FY2006:

√ **Targets Met** = 92      ▼ **Targets Not Met** = 9      ▲ **Targets Exceeded** = 49      ■ **Targets Rebaselined** = 4

End Outcome Goal	Total Number of Measures	Number of Measures Met	Number of Measures Exceeded	Number of Measures Not Met	Number of Measures Rebaselined
<b>Resource Protection: Protect the Nation’s Natural, Cultural, and Heritage Resources</b>					
Improve the health of watersheds, landscapes, and marine resources that are DOI-managed or -influenced in a manner consistent with obligations regarding the allocation and use of water.	10	5	4	1	0
Sustain biological communities on DOI-managed and -influenced lands and waters in a manner consistent with obligations regarding the allocation and use of water.	15	10	4	1	0
<b>Total</b>	<b>25</b>	<b>15</b>	<b>8</b>	<b>2</b>	<b>0</b>
<b>Resource Use: Manage Resources to Promote Responsible Use and Sustain a Dynamic Economy</b>					
Energy – Manage or influence resource use to enhance public benefit, promote responsible use, and ensure optimal value.	10	5	5	0	0
Non-energy minerals – Manage or influence resource use to enhance public benefit, promote responsible use, and ensure optimal value.	11	9	2	0	0
<b>Total</b>	<b>21</b>	<b>14</b>	<b>7</b>	<b>0</b>	<b>0</b>
<b>Serving Communities: Safeguard Lives, Property, and Assets; Advance Scientific Knowledge; and Improve the Quality of Life for the Communities We Serve</b>					
Protect lives, resources, and property.	24	18	5	1	0
Advance knowledge through scientific leadership and inform decisions through the application of science.	84	45	29	6	4
<b>Total</b>	<b>108</b>	<b>63</b>	<b>34</b>	<b>7</b>	<b>4</b>

In the following pages, we present each of our performance measures with historical and current year results in relationship to their applicable GPRA and end outcome goals. For those measures that did not meet expected results, comments are provided immediately following the tables depicting performance measure results. Highlights of significant accomplishments illustrating our work performed are also included in the following pages.

## Resource Protection: Protect the Nation's Natural, Cultural, and Heritage Resources

### End Outcome Goal:

Improve the health of watersheds, landscapes, and marine resources that are DOI-managed or -influenced in a manner consistent with obligations regarding the allocation and use of water.

✓ **Targets Met = 5**

▼ **Targets Not Met = 1**

▲ **Targets Exceeded = 4**

Intermediate Outcome: Restore and maintain proper functions to watersheds and landscape

1	Restore Fire Adapted Ecosystems: Percentage satisfaction with scientific and technical products (DOI strategic plan key measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		97%	100%	100%	≥ 80%	96%

▲ Target Exceeded. A different set of products is sampled each year; one year's aggregate measurement is not directly linked to the previous year. The intent is to maintain at least an 80 percent satisfaction level (i.e. 80% or greater is the target).

Intermediate Outcome: Improve information base, information management, and technical assistance

2	Forge Effective Partnerships: Satisfaction score (number score) on resource protection partnerships (DOI strategic plan key measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		97%	97%	94%	≥ 80%	91%

▲ Target Exceeded. A different set of products is sampled each year; one year's aggregate measurement is not directly linked to the previous year. The intent is to maintain at least an 80 percent satisfaction level (i.e. 80% or greater is the target).

3	Percentage improvement in detectability limits for selected high-priority environmentally available chemical analyses (PART Efficiency measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	n/a	n/a	6%	6%

✓ Target Met.

4	Customer Satisfaction: Percentage satisfaction with scientific and technical products and assistance to support decisions regarding improving health of watersheds, landscapes, and marine resources that are satisfied (PART measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	97%	96%	≥ 90%	91%

✓ Target Met.

5	Percentage of targeted science products that are used by partners for species, habitat, land management, and/or regulatory decisionmaking	2003	2004	2005	2006	2006
		Actual	Actual	Actual	Planned	Actual
		n/a	n/a	60%	60%	86.9%

▲ Target Exceeded. Actual is first time sampled through surveys; further target refinement is likely.

6	Quality: Percentage of watershed and landscape-related research studies validated through appropriate peer review or independent review ( <u>DOI strategic plan key measure</u> )	2003	2004	2005	2006	2006
		Actual	Actual	Actual	Planned	Actual
		100%	100%	100%	100%	100%

√ Target Met.

7	Facilities Condition: Conservation and biological research facilities are in fair to good condition as measured by the Facilities Condition Index (lower FCI is good)	2003	2004	2005	2006	2006
		Actual	Actual	Actual	Planned	Actual
		n/a	.24	.24	.24	.24

√ Target Met.

### Performance Outputs:

8	Average cost per sample for selected high-priority environmentally available chemical analysis ( <u>PART Efficiency measure</u> )	2003	2004	2005	2006	2006
		Actual	Actual	Actual	Planned	Actual
		n/a	n/a	\$700	\$700	\$680

√ Target Met.

9	Number of systematic analyses and investigations delivered to customers	2003	2004	2005	2006	2006
		Actual	Actual	Actual	Planned	Actual
		151	111	373	201	311

▲ Target Exceeded. Improved definition, verification, and validation. Redefined baseline, FY2007 target will be adjusted.

10	Number of formal workshops or training provided to customers	2003	2004	2005	2006	2006
		Actual	Actual	Actual	Planned	Actual
		63	20	98	30	20

▼ Target Not Met. Reprioritized for additional Avian Flu workshops in support of the Serving Communities/Protect Lives Resources and Property goal.

## Accomplishments

### Conservation and Carbon Sequestration in Natural and Restored Wetlands

An important DOI activity in the Prairie Pothole Region (PPR) and in the Lower Mississippi Valley (LMV) is the restoration of wetlands and adjacent upland habitats. Sites restored generally are previously farmed areas where native habitats were converted to facilitate the production of agricultural crops. While the goal of DOI has traditionally been to provide habitats for fish and wildlife, these restoration projects also have an important effect on storage or sequestration of carbon and emissions of greenhouse gases in the United States. Mitigation of greenhouse gas emissions through terrestrial carbon sequestration is a national priority. Thus, DOI land managers need to identify specific restoration techniques that maximize greenhouse gas mitigation, while also meeting traditional conservation, wildlife habitat, and ecosystem objectives.

USGS research evaluating DOI and U.S. Department of Agriculture (USDA) wetland restoration activities in the PPR and the LMV has quantified the influence of land-use change on ecosystem services, identified environmental factors controlling carbon sequestration and greenhouse gas emissions, and provided recommendations and decision support tools to maximize greenhouse gas benefits that are consistent with DOI goals for habitat conservation and restoration. The USGS reached several important milestones in this project. The "Conservation Reserve Program and Wetland Reserve Program Ecosystem Service Report," compiled in collaboration with USDA, quantified ecosystem services derived from agriculture lands enrolled in these two programs. In collaboration with the Plains CO<sup>2</sup> Reduction Partnership, USGS developed a database to estimate the regional potential of restored wetlands to sequester carbon in the U.S. and Canada. Finally, USGS was instrumental in developing the North Dakota Farmers Union Carbon Credit Program through the research and conferences sponsored by USGS.

### What is Normal? Answers for Endocrine Disruption in Fish

In FY2006, USGS published the results of a large national reconnaissance investigation of endocrine biomarkers in fish. The USGS measured multiple markers of reproductive function in largemouth bass and common carp in over 3,500 fish at 119 sites to determine their suitability for assessing reproductive-endocrine function in studies nationwide. The investigation summarized variation in biological markers by season, species, size, gender, and geographic region. The Internet-based report will provide DOI bureaus and other Federal and State agencies with valuable baseline data for distinguishing region-specific "normal" and "abnormal" endocrine measurements for a range of site conditions.



Largemouth bass taken in the Illinois River. (Photo by Paul T. Raibley)

## Resource Protection: Protect the Nation's Natural, Cultural, and Heritage Resources

### End Outcome Goal:

Sustain biological communities on DOI-managed and -influenced lands and waters in a manner consistent with obligations regarding the allocation and use of water.

✓ **Targets Met = 10**

▼ **Targets Not Met = 1**

▲ **Targets Exceeded = 4**

Intermediate Outcome: Improve information base, information management, and technical assistance

11	Forge Effective Partnerships: Satisfaction score (number score) on biological research partnerships (DOI strategic plan key measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		97%	98%	100%	≥ 80%	83%
	✓ Target Met.					
12	Customer Satisfaction: Percentage satisfaction with scientific and technical products and assistance to support decisions regarding sustaining biological communities that are satisfied (PART measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	98%	87%	≥ 90%	91%
	✓ Target Met.					
13	Percentage of targeted invasive species for which scientific information and decision support models are available to improve early detection (including risk assessments) and invasive species management (PART measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	n/a	51.6%	51.6%	51.6%
	✓ Target Met.					
14	Percentage of targeted science products that are used by partners for species, habitat, land management, and/or regulatory decisionmaking (PART measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	n/a	60%	60%	86.9%
	▲ Target Exceeded. Actual is first time sampled through surveys; further target refinement likely.					
15	Quality: Percentage of biological research studies validated through appropriate peer review or independent review (DOI strategic plan key measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		100%	100%	100%	100%	100%
	✓ Target Met.					

## Performance Data and Analysis

16	Percentage of North American migratory birds for which scientific information on their status (species distribution and number) and trend are available to inform and improve conservation ( <u>PART measure</u> )	2003 Actual n/a	2004 Actual n/a	2005 Actual 26%	2006 Planned 26%	2006 Actual 26%
	√ Target Met.					
17	Percentage of targeted fish and aquatic populations for which information is available regarding limiting factors, including migratory barriers, critical habitat for at-risk species, and effects of disturbance (fire, flood, and nutrient enrichment) ( <u>PART measure</u> )	2003 Actual n/a	2004 Actual n/a	2005 Actual n/a	2006 Planned 31%	2006 Actual 31%
	√ Target Met.					
18	Increase long-term precision (decrease bias) for existing species monitored through the Breeding Bird Survey to enable a detection of 50% population decline of relevant species within 20 years ( <u>PART measure</u> )	2003 Actual n/a	2004 Actual n/a	2005 Actual .0008	2006 Planned .0008	2006 Actual .0008
	√ Target Met.					
19	Percentage of CRU students that work on subsequent fish and wildlife science advanced degrees or obtain employment in the fish and wildlife or other natural resources field, within targeted dates post-graduation	2003 Actual n/a	2004 Actual n/a	2005 Actual n/a	2006 Planned baseline	2006 Actual 95%
	√ Target Met.					
20	Percentage of targeted science products that are used by cooperators and partners for species, habitat, or land management and/or regulatory decisionmaking within targeted dates following study completion ( <u>PART measure</u> )	2003 Actual n/a	2004 Actual 98%	2005 Actual 87%	2006 Planned ≥ 90%	2006 Actual 100%

▲ Target Exceeded. Actual is first time sampled through surveys; further target refinement likely.

21	Percentage of focal migratory bird populations for which scientific information is available to support resource management decisionmaking (USGS in coordination with FWS) ( <u>PART measure</u> )	2003 Actual n/a	2004 Actual n/a	2005 Actual n/a	2006 Planned baseline	2006 Actual 0
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▼ Target Not Met. Collaborative development of targets to be completed in FY2007 per PART improvement plan.

22	Facilities Condition: Conservation and biological research facilities are in fair-to-good condition as measured by the Facilities Condition Index (lower FCI is good) ( <u>DOI strategic plan key measure</u> )	2003 Actual n/a	2004 Actual .19	2005 Actual .19	2006 Planned .19	2006 Actual .19
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✓ Target Met.

Performance Outputs:

23	Number of systematic analyses and investigations delivered to customers	2003 Actual 796	2004 Actual 848	2005 Actual 1,177	2006 Planned 876	2006 Actual 1,299
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▲ Target Exceeded. Improved definition, verification, and validation. Redefined baseline, FY2007 target will be adjusted.

24	Number of formal workshops or training provided to customers	2003 Actual 97	2004 Actual 56	2005 Actual 174	2006 Planned 56	2006 Actual 132
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▲ Target Exceeded. Improved definition, verification, and validation. Redefined baseline, FY2007 target will be adjusted.

25	Number of students who completed degree requirements for MS, PhD, and post-doctoral programs under the direction and mentorship of CRU Scientists	2003 Actual n/a	2004 Actual 106	2005 Actual 100	2006 Planned 100	2006 Actual 103
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✓ Target Met.

## Accomplishments

### Breeding Bird Survey - 40 Years of Science-Based Avian Conservation

Counting birds since 1966, the USGS North American Breeding Bird Survey (BBS) is widely recognized as the foundation of non-game, avian conservation in the U.S. and Canada. Over 2,400 highly skilled observers sample 3,000 routes annually, representing more than a two-fold increase in BBS participation since the program began. Cumulatively, 7,800 people, mostly all volunteers, have participated in the BBS. In sampling over 82,000 routes, observers have identified and counted over 66 million birds representing 680 species. Through this scientifically rigorous, roadside sampling protocol, the BBS provides long-term, large-scale population trend data for over 400 bird species. These data are used by the FWS, the Canadian Wildlife Service, State conservation agencies, Partners in Flight, and the North American Bird Conservation Initiative to set national and regional avian conservation priorities.



Scientist near an excellent breeding habitat in Savoy, Massachusetts on the BBS route.

### Cooperative Northern Bobwhite Studies in Alabama

Quail hunting is popular throughout the Southeastern United States. However, populations of northern bobwhites, the common quail of the Southeast, have been in steady decline for at least 4 decades



Adult female northern bobwhite quail. (Photo by J.A. Spendelov)

and by 1999 dropped to 66 percent of the 1980 benchmark levels. This decline stimulated ratification of the Northern Bobwhite Conservation Initiative, a partnership for quail recovery supported by multiple State agencies and legislation in the 2002 Farm Bill. In the Southeast, restoration of northern bobwhites is often associated with restoration of longleaf pine savannah. These forested grasslands are important to several threatened and endangered species including the red-cockaded woodpecker, eastern indigo snake, green pitcher plant, and species of concern, such as Bachman's sparrow and gopher tortoise. Integral to the restoration of this ecosystem is the use of prescribed fire during spring and summer, which better mimics the natural wildfire season in the southeastern coastal plain. Game bird enthusiasts often question the use of prescribed fire during this, the nesting season for ground-nesting birds, such as northern bobwhites.

The Alabama Cooperative Fish and Wildlife Research Unit worked with USGS, the Alabama Department of Conservation and Natural Resources, the USDA Forest Service, and a local Quail Unlimited Chapter to conduct a 3-year study of the effects of prescribed fires during the growing season on the demographics of northern bobwhite populations on national forest lands. Using radio-telemetry data on over 300 marked quail, investigators determined that, while productivity of quail in areas burned during the growing season was lower than anticipated, it was offset by their higher survival rate. This survival rate was further enhanced by the presence of unburned plantings within the



burned areas. These findings are presently being incorporated into management plans for national forest lands and State wildlife management areas in Alabama by biologists from the USDA Forest Service and the Alabama Department of Conservation and Natural Resources. These and other results from this study are reported in one dissertation and several manuscripts submitted for peer-reviewed journals.

### Innovative Management and Control Techniques for Asian Carps

Bighead and silver carps were imported into the United States in the early 1970s for use in aquaculture production of food fishes and biological control of plankton in aquaculture ponds, reservoirs, and sewage treatment lagoons. The carps escaped confinement and are now well established with reproducing populations in much of the Mississippi River Basin. Asian carps have the potential to compete with native fishes, disrupt aquatic food webs, and transmit disease pathogens.

The USGS completed a Biological Synopsis and Environmental Risk Assessment summarizing the biology and current and potential distribution of the genus *Hypophthalmichthys*. The assessment presented the current state of knowledge regarding the potential ecological impacts associated with the spread of these carps, control measures, and applicable regulations. The FWS is using this information as part of its evaluation of silver and bighead carps under the Injurious Wildlife provisions of the Lacey Act. USGS scientists recently organized a 2-day symposium in Peoria, Illinois, showcasing the current status of the understanding of the science of bighead, silver, grass, and black carp biology and management. USGS scientists also recently determined that bighead and silver carps spawn for longer periods of time than previously thought. Additionally, they have completed toxicity tests to determine the sensitivity of silver and bighead carps to the pesticides rotenone and antimycin, and evaluated the efficacy of alarm pheromones to repel Asian carps. This information and tools allow State and Federal managers to better manage established silver and bighead populations and to curb the spread of these fish through the Chicago Sanitary and Ship Canal and other interbasin waterways.



Bighead carp captured by FWS employee.

# Performance Data and Analysis

## Resource Use: Manage Resources to Promote Responsible Use and Sustain a Dynamic Economy

### End Outcome Goal:

Energy – Manage or influence resource use to enhance public benefit, promote responsible use, and ensure optimal value.

√ **Targets Met = 5**

▼ **Targets Not Met = 0**

▲ **Targets Exceeded = 5**

Intermediate Outcome: Improve information base, information management, and technical assistance

26	Baseline Information: Number of targeted basins with oil and gas resource assessments available to support management decisions ( <u>DOI strategic plan key measure and PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		7	5	7	6	6

√ Target Met.

27	Quality & Utility of Information: Percentage of accessible data	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		95%	95%	96%	≥ 80%	93%

▲ Target Exceeded. A different set of products is sampled each year; one year's aggregate measurement is not directly linked to the previous year. The intent is to maintain at least an 80 percent satisfaction level (i.e. 80% or greater is the target).

28	Percentage satisfaction with scientific and technical products and assistance for energy resources	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		93%	93%	95%	≥ 80%	96%

▲ Target Exceeded. A different set of products is sampled each year; one year's aggregate measurement is not directly linked to the previous year. The intent is to maintain at least an 80 percent satisfaction level (i.e. 80% or greater is the target).

29	Quality and Utility of Information: Percentage of studies validated through appropriate peer review or independent review ( <u>DOI strategic plan key measure and PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		100%	100%	100%	100%	100%

√ Target Met.

## Performance Outputs:

30	Number of systematic analyses and investigations delivered to customers	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		7	5	7	5	5
	√ Target Met.					
31	Number of formal workshops or training provided to customers	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		9	8	8	7	7
	√ Target Met.					
32	Percentage of targeted analyses/investigations delivered which are cited by identified partners within 3 years of delivery ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	80%	86%	≥ 80%	82%
	√ Target Met.					
33	Average cost of a systematic analysis or investigation ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		\$2.75M	\$2.2M	\$2.73M	\$2.75M	\$1.98M
	▲ Target Exceeded. Average unit cost of a systematic analysis was less than the target value. The scope of the Alaska North Slope research activities in FY2006 was reduced, due to the completion of the Central North Slope assessment in the previous year. As a result, program resources placed greater emphasis on research activities in the Lower 48 states, resulting in a comparable output with lower associated unit costs. Research in the Alaska North Slope typically incurs higher relative costs due to the remote locations, travel logistics, and other factors.					
34	Number of annual gigabytes collected	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	.745	97.793	20.038	158.048
	▲ Target Exceeded. The rate of seismic data recovery was accelerated in order to meet high-priority research and assessment needs and ensure the timely completion and delivery of research and assessment products for the program.					
35	Number of cumulative gigabytes managed	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		2.713	211.458	351.289	371.327	509.338
	▲ Target Exceeded. Because data added to the database in FY2006 exceeded the target, so does the data in need of management.					

## Accomplishments

### Energy/Technical Assistance—Gas Hydrates Research

The Directorate General of Hydrocarbons (DGH), Ministry of Petroleum and Natural Gas, Government of India approached the USGS to provide technical expertise and cooperate in the study of Indian gas hydrate resources. Over a series of meetings in FY2006, the USGS provided technical expertise and training to key Indian, U.S., and international research collaborators and stakeholders, culminating in the planning and completion of a jointly led research cruise that studied, drilled, and sampled gas hydrates, and collected data from 21 sites located along the continental margin of India.

In addition to the work accomplished before (site location of potential hydrate-bearing zones from seismic data) and onboard the cruise (geophysical logging, core recovery, sample analysis), the joint science team has collected an unprecedented number of samples and data for analysis that will serve as the foundation for ongoing and future collaborative research by an international team of experts in microbiology, sedimentology, geochemistry, and numerous other disciplines. These data will further our knowledge and understanding of gas hydrates immeasurably.



Gas hydrates.

## National Oil and Gas Resources

During FY2006, the USGS completed oil and gas resource assessments for the following U.S. areas: Hanna, Laramie, and Shirley Basins, Wind River Basin, and the Eastern Oregon and Washington Province. Information from these assessments supports national priorities legislated in the Energy Policy and Conservation Act (EPCA) Amendments of 2000 and the Energy Policy Act of 2005. Specifically, these assessments support the EPCA Inventory, which outlines onshore Federal oil and gas resources and the constraints to their development. The inventory is developed in collaboration with several Federal agencies, including the BLM, USDA Forest Service, Department of Energy (DOE), and Energy Information Administration.

### Assessing Alaska's Energy Resources

Coalbed gas now accounts for almost 10 percent of the natural gas production in the United States, yet much remains to be studied about this important energy source. In rural Alaska, where the need for affordable energy sources is particularly acute because costly diesel fuel must be delivered by barge or plane, and tank leakage and pollution associated with diesel fuel pose significant health concerns, coalbed gas resources could become important to meeting local energy resource needs. USGS scientists have recently completed an assessment of undiscovered coalbed gas resources on the North Slope of Alaska. A mean estimate of undiscovered, technically recoverable resources indicates a potential for about 18 trillion cubic feet (TCF) of coalbed gas. This study represents the first detailed assessment by the USGS of undiscovered coalbed gas resources beneath the North Slope. This research facilitates the development of environmentally friendly, affordable energy resources to sustain remote communities, and supports partnership activities with the BLM, DOE, and State of Alaska, and Native Corporations.



Alaska North Slope illustration.

### Northern Afghanistan Oil and Gas Assessment

A USGS assessment of the petroleum resources of northern Afghanistan, done in cooperation with Afghan Ministry of Mines and Industry, and funded by the U.S. Trade and Development Agency, determined that the petroleum resource of northern Afghanistan is significantly greater than previously believed. The estimates increased the oil resources by 18 times and more than tripled the natural gas resources. Undiscovered petroleum resources in the assessed region of northern Afghanistan consist of about 36.5 trillion cubic feet of natural gas and approximately 3.6 billion barrels of oil. Natural gas liquids are estimated at about 1.3 million barrels. Results of the assessment can be found at: <http://pubs.usgs.gov/fs/2006/3031/> and <http://pubs.usgs.gov/of/2006/1253/>.

The resource estimates were based on detailed studies of geochemistry, petroleum geology, and tectonics of the country, combined with analysis of previous exploration efforts. The assessment effort included the training of Afghan Ministry of Mines and Industry counterparts by USGS scientists to update their petroleum geology, geochemistry, log analyses, seismic interpretation, computer and GIS, and oil and gas assessment skills. This assessment is designed to provide information required by the Afghan Government for policymaking regarding resource development. These results are the first publicly available estimates of undiscovered, technically recoverable oil and gas resources for Afghanistan, follow standard USGS methodology and protocol, and provide the basis for lease block designation and information required to attract the interest of oil and gas exploration companies.



Map of Afghanistan.

# Performance Data and Analysis

## Resource Use: Manage Resources to Promote Responsible Use and Sustain a Dynamic Economy

### End Outcome Goal:

Non-energy minerals – Manage or influence resource use to enhance public benefit, promote responsible use, and ensure optimal value.

✓ **Targets Met = 9**

▼ **Targets Not Met = 0**

▲ **Targets Exceeded = 2**

### Intermediate Outcome: Improve information base, information management, and technical assistance

36	Baseline Information: Average square miles of the United States with non-energy mineral information available to support management decisions ( <u>DOI strategic plan key measure and PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		2,368,794	2,401,329	3,097,647	3,332,038	3,318,208

✓ Target Met.

37	Quality & Utility of Information: Percentage of U. S. with geologic, geochemical, geophysical, and mineral locality data ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		67%	68%	87%	94%	94%

✓ Target Met.

38	Percentage satisfaction with scientific and technical products and assistance for mineral resources	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		84%	84%	100%	84%	99%

▲ Target Exceeded. A different set of products is sampled each year; one year's aggregate measurement is not directly linked to the previous year. The intent is to maintain at least an 80 percent satisfaction level (i.e. 80% or greater is the target).

39	Quality & Utility of Information: Percentage of mineral studies validated through appropriate peer review or independent review ( <u>DOI strategic plan key measure and PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		100%	100%	100%	100%	100%

✓ Target Met.

## Performance Outputs:

40	Number of systematic analyses and investigations delivered to customers (PART measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		4	5	3	6	6
	✓ Target Met.					
41	Number of cumulative gigabytes managed	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		1.818	15.420	16.131	16.221	16.221
	✓ Target Met.					
42	Number of formal workshops or training provided to customers (PART measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		9	8	8	8	8
	✓ Target Met.					
43	Number of mineral commodity reports available for decisions (PART measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	733	746	720	690
	✓ Target Met.					
44	Percentage of expected responses for which canvas forms have been converted to electronic format (PART measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		80%	80%	87%	88%	88%
	✓ Target Met.					
45	Percentage of targeted analyses/investigations delivered that are cited by identified partners within 3 years of delivery (PART measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	58%	81%	≥ 80%	93%
	▲ Target Exceeded. More partners than anticipated responded as having used the analyses within the reporting timeframe.					
46	Average cost of a systematic analysis or investigation (PART measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		\$4.125M	\$4.31M	\$4.18M	\$4.4M	\$4.3M
	✓ Target Met.					

## Accomplishments

### Alaska: Understanding Connections between Minerals and Petroleum Resources on Federal Lands

The large endowment of mineral and energy resources in the Brooks Range of Alaska suggests that the scale of the fluid flow and flux of metals and petroleum in the sedimentary basins was vast. A recently completed project examined why and how the world-class deposits of zinc, barite, phosphate, and petroleum were formed. The multidisciplinary studies demonstrate that coupling of many processes resulted in the formation of the large deposits of zinc, barite, and phosphate in the Brooks Range. The processes that led to the formation of barite were not independent of those that formed phosphate or zinc, but rather the deposits were enhanced (demonstrated by the higher grade and larger quantities of the commodities) by simultaneous processes. Direct evidence that rocks deposited in deep water were a source for some North Slope oils and that hydrocarbon migration occurred in the same rocks that host the phosphate deposits also resulted from the studies.

The research, supported by both the Mineral Resources Program (MRP) and the Energy Resources Program, demonstrates the vitality that multidisciplinary collaboration can bring to the understanding of the complex relationships between mineral and energy resources. Ensuring the availability of up-to-date quantitative assessments of potential for undiscovered mineral deposits is a fundamental goal of the MRP.

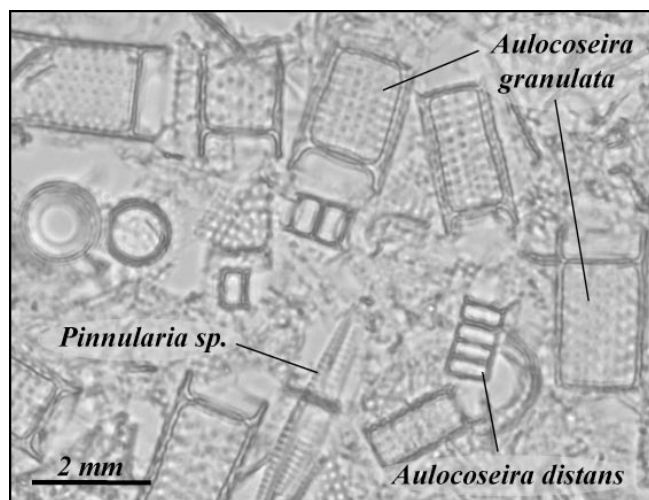
### Metallogeny of the Great Basin: Crustal Evolution, Fluid Flow, and Ore Deposits

The Great Basin physiographic province in Nevada and portions of neighboring States currently is the second largest gold producing area in the world. It also is host to world-class base-metal deposits, a variety of other metallic and industrial mineral resources, as well as petroleum and geothermal energy resources. Although the area has been the focus of many studies over the past century, new techniques that utilize Geographic Information Systems (GIS) and geoinformatic tools

to organize and display legacy data have provided researchers with new ways to synthesize and reinterpret geologic, geophysical, geochemical, and hydrologic information in space and time.

This, in combination with ongoing research on specific aspects of the geologic history and ore deposits, has resulted in new insights into the interplay between key tectonic events, hydrothermal fluid flow, and ore genesis in the Great Basin. The databases, geologic maps, sections, reconstructions, and hydrogeologic models produced as part of this project are valuable products in their own right. The increased understanding of relationships between ore deposits, mineral belts, and the geologic evolution of the Great Basin represents cutting edge research on the main mining and exploration areas in the region that will be extremely useful to industry and land-use managers in Federal, State, and local agencies.

The increased understanding of when, where, and how hydrothermal systems operate and interact with local factors to produce significant ore deposits for particular commodities is also useful in the evaluation of similar terrains and deposit types in other parts of the world.



Diatoms that formed 15 million years ago in a lake near Carlin, Nevada, as seen through a high-powered microscope.



## Freshwater Diatomite Deposits Identified in the Western United States

Widely used for filtration, absorption, and abrasives, diatom-rich sediments contain the Nation's largest commercial diatomite deposits. In 2004, the United States accounted for approximately 30 percent of world diatomite production. New studies by USGS MRP scientists reveal how ancient lakes in the Western States produced large numbers of diatoms, a type of single-celled algae found in lakes, streams, and oceans. Diatom accumulations in some lakes occurred over thousands of years, producing a thick layer called diatomite. But the formation of a diatomite deposit in a freshwater lake requires that many processes take place in and adjacent to the lake. The absence of one or more of these processes can limit or prevent the growth of diatoms and thus the formation of a thick diatomite deposit.

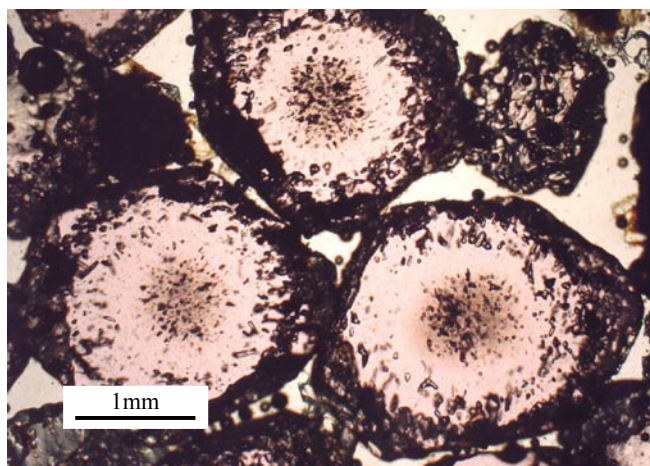
In fact, far more freshwater lake sediments in the Western States do not contain diatomite deposits, or contain only small deposits, than contain deposits of commercial value. Identifying the processes that formed economically large diatomite deposits was an important facet of the MRP-funded research. Because many diatomite deposits may be present on public lands in the west, the results of this research is of use to both Federal and non-Federal land-use managers in the evaluation of diatomite resources. The results also further knowledge about ancient climate ("paleoclimate") and landscape evolution in the Western States and have important applications to studies of ground water and other types of mineral deposits.

## Industrial Minerals in the Eastern United States

Industrial mineral production in the Eastern United States is significant and the arrangement, distribution, and genesis of industrial mineral commodities and deposit types are important to infrastructure development and maintenance, agriculture, recreation, industry, and mitigation of environmental problems. The diverse set of commodities we call industrial minerals are being used increasingly in novel and

unconventional applications. Research supported by the MRP has resulted in the development of geologic, geophysical, and statistical methods and models to predict the occurrence, grades, and tonnages of industrial minerals, such as garnet, talc, sand and gravel, building stone, and aggregate.

Garnet, for example, is a gemstone as well as an industrial mineral used in abrasive airblasting, abrasive coatings, filtration media, waterjet cutting, and grinding. Recent MRP-supported studies aid in the identification of garnet source rocks, types of garnet, and determination of the optimal use for a garnet resource. The results of the research in the Northeast on industrial minerals has proved useful to regional land-use managers from the NPS, BLM, U.S. Forest Service (USFS), and the National Academy of Science Transportation Research Board.



Garnets suitable for a variety of uses including both as an abrasive and as a gemstone. In the Eastern United States, garnet has been mined in New York, North Carolina, Pennsylvania, and Arkansas. Data on mineral chemistry, weathering characteristics, and bulk chemistry made available by MRP scientists, can be used to determine appropriate uses for the garnet resources. Photograph by N. Foley.

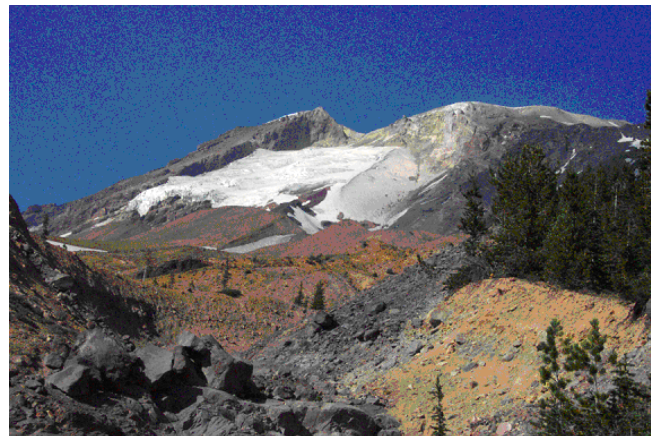
### Three-Dimensional Model Shows Distribution of Hydrothermally Altered Rocks on Mount Adams, Washington

Stratovolcanoes, such as those that constitute the Cascade Range in Washington, Oregon, and Northern California, can be weakened by migration and circulation of hot fluids from deep below the surface. This process is called hydrothermal alteration and can be particularly damaging when clay-rich altered rocks are later saturated with water.

The likelihood of catastrophic collapse increases with the presence of weakened altered rocks. The collapse of the volcano edifice, in turn, can trigger destructive debris flows that are known to extend long distances from the volcano. Because hydrothermally altered rocks are an integral component of many mineral deposits, the MRP has long supported research to study them. Newly completed research demonstrates that the information acquired can also be used to aid evaluation of volcanic hazards.

At Mount Adams, Washington, a dormant stratovolcano in the Cascade Range, hydrothermal alteration is ongoing and new high-resolution geophysical data over the edifice of the volcano, combined with geologic mapping and rock property measurements, have been used to build a three-dimensional model of hydrothermally altered rocks. Altered rocks are postulated to extend to depths greater than 1,000 m beneath the summit and to encompass more than 1.5 km<sup>3</sup> total volume of material in the central core north of the summit.

The three-dimensional model can be used to understand hydrothermal alteration and mineral-deposit-forming processes, as well as to aid in the evaluation of the debris avalanche hazard associated with hydrothermal alteration and in quantitative models of slope stability for hazards assessments conducted by the Volcano Hazards Program (VHP) and used by a variety of local planners in the region.



View of the southwest side of Mount Adams showing hydrothermal alteration on the edifice (white and yellow areas near top of cone), the White Salmon glacier, and, in the foreground, the young debris flow known as the Salt Creek lahar (deposited less than 200 years before present) that contains abundant blocks of hydrothermally altered rocks derived from near the summit. The White Salmon glacier occupies a cirque formed by the collapse of hydrothermally altered rocks that produced debris flows that flowed down the White Salmon River in the past.

### Complex Systems Theory Applied to Basin Studies in the Southwest United States

Complex systems theory allows scientists to model systems by considering entities as “agents” that interact with each other and their surroundings in time and space. When we observe the ensemble of interactions at various scales, unexpected behavior often occurs that is called “emergent behavior” or “self-organization.” Mineral deposits can be viewed as a case of complex system self organization.

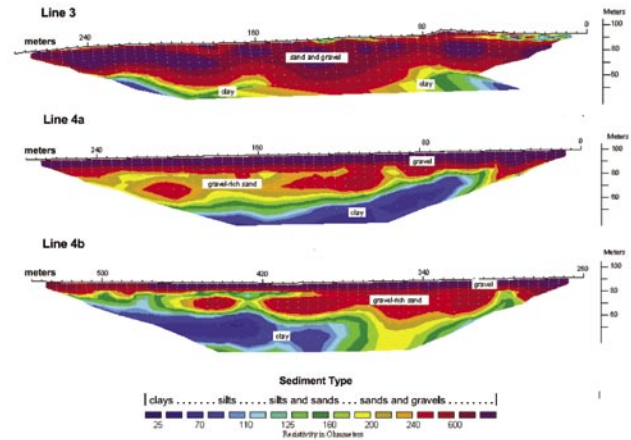
Basins in the southwestern part of the U.S. were chosen for the MRP-funded study because these basins are thought to host undiscovered mineral deposits and are a critical source of water for developing urban areas in the Southwest. Regional mapping of probable deep penetrative fracture systems on the Colorado Plateau in Arizona, supported in part by the NPS and the BOR, led to the development of a method for producing maps of probable recharge ability, taking into account the variation of deep-fracture densities. The U.S. Army funded USGS

scientists to conduct electromagnetic soundings surveys to map depth to water and clay content of basin fill sediments and to define water reservoir properties in support of long-term planning for their bases. The USFS has supported determinations of metal ion movement from developed and undeveloped mineral occurrences in surrounding mountains into the basins by ground water.

Simple models of mine development using fuzzy cognitive maps demonstrate the extreme non-linear response of development to factors such as environmental quality and nearby urban development, yielding surprising scenarios in which mining can coexist with urban development and environmentally sound quality of life issues. Most important, these models allow development of robust methods for combining disparate datasets into models that can be objectively evaluated for many land-use scenarios.

## Geophysical Techniques Help the Aggregate Industry

Scientists from the MRP collaborated with two major U.S. aggregate producers and with the Indiana State Geological Survey to determine the best geophysical methods to use for the characterization of sand and gravel deposits. Studies were conducted to compare five well-established and well-tested surface geophysical techniques. Because aggregate commonly is developed in or near urbanized areas, methods were chosen that were able to minimize the effects of cultural features, such as buildings, road traffic, radio transmitters, fences, buried utilities, surface power lines, and construction and manufacturing equipment.



Interpretations of electrical resistivity surveys collected over a sand and gravel deposit. These show the distribution of grain size from very fine clay and silt (blue to green) through the coarser sand and gravel (red to black).

# Performance Data and Analysis

## Serving Communities: Safeguard Lives, Property, and Assets; Advance Scientific Knowledge; and Improve the Quality of Life for the Communities We Serve

### End Outcome Goal:

Protect lives, resources, and property.

✓ **Targets Met = 18**

▼ **Targets Not Met = 1**

▲ **Targets Exceeded = 5**

#### End Outcome Measure: Protect lives, resources, and property

47	Hazards: Percentage of communities using DOI science on hazard mitigation, preparedness, and avoidance for each hazard-management activity ( <u>DOI strategic plan key measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		39.5%	43.2%	44.6%	47.5%	47.5%

✓ Target Met.

#### Intermediate Outcome: Improve public safety and security and protect public resources from damage

48	Facilities Condition: Buildings (administrative, employee housing) are in fair-to-good condition as measured by the Facilities Condition Index (FCI) ( <u>DOI strategic plan key measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	.20	.20	.20	.20

✓ Target Met.

#### Intermediate Outcome: Provide information to assist communities in managing risks from natural hazards

49	Use Rate — Earthquakes: Percentage of communities using DOI science on hazard mitigation, preparedness, and avoidance for each hazard management activity	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		56.5%	62.7%	63.4%	63.9%	63.9%

✓ Target Met.

50	Use Rate — Landslides: Percentage of communities using DOI science on hazard mitigation, preparedness, and avoidance for each hazard management activity	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		3.3%	3.7%	3.9%	4.4%	4.4%

✓ Target Met.

51	Use Rate — Volcanoes: Percentage of communities using DOI science on hazard mitigation, preparedness, and avoidance for each hazard management activity	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		58.6%	63.3%	66.4%	74.2%	74.2%

✓ Target Met.

52	Use Rate — Landslide Hazards: Number of responses to inquiries from the public, educators, and public officials to the National Landslide Information Center on hazard mitigation, preparedness, and avoidance strategies for landslide hazards	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		1,600	1,600	5,200	1,600	1,600

√ Target Met.

53	Adequacy: Percentage of sampled stakeholders reporting adequacy of science base to inform decisionmaking for each hazard-management activity (volcanoes, earthquakes, etc.) (DOI strategic plan key measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		97%	98%	99%	≥ 80%	100%

▲ Target Exceeded. A different set of products is sampled each year; one year's aggregate measurement is not directly linked to the previous year. The intent is to maintain at least an 80 percent satisfaction level (i.e. 80% or greater is the target).

### Performance Outputs:

54	Number of risk/hazard assessments delivered to customers	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		4	3	6	6	4

▼ Target Not Met. Impacted by the eruption of the Augustine Volcano during 2006.

55	Percentage of earthquake monitoring global seismic network stations that have telemetry (increase reporting speed from one hour to 20 minutes)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	80%	86%	89%	89%

√ Target Met.

56	Number of real-time earthquake sensors (reported yearly and cumulative at the end of the year) (PART measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		46 (cum 428)	95 (cum 523)	40 (cum 563)	106 (cum 669)	133 (cum 696)

▲ Target Exceeded. Rebaselined to earned-value management accounting to bring the performance reporting in line with the Exhibit 300 reporting to OMB. The number reflects work undertaken on station installation in FY2006.

57	Number of formal workshops or training provided to customers	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		13	14	21	13	15

▲ Target Exceeded. One additional Landslide and Geographic Seismic Network workshop to meet customer needs.

## Performance Data and Analysis

58	Number of formal workshops or training provided to customers (Avian Flu)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	n/a	n/a	3	16
	▲ Target Exceeded. Increased number reflects reprioritization and evolving focus as compared to the start of the year.					
59	Number of sites (mobile or fixed) monitored for ground deformation to identify volcanic activity	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		75	85	88	98	94
	√ Target Met.					
60	Number of urban areas for which detailed seismic hazard maps are completed ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		1	2	3	3	3
	√ Target Met.					
61	Number of areas or locations for which geophysical models exist that are used to interpret monitoring data ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		3	4	4 ⅓	4 ⅔	4 ⅔
	√ Target Met.					
62	Number of metropolitan regions where Shakemap is incorporated into emergency procedures ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		4	5	5	5	5
	√ Target Met.					
63	Number of volcanoes for which information supports public-safety decisions ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		48	49	51	51	51
	√ Target Met.					
64	Percentage of potentially active volcanoes monitored ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		66%	67%	72.9%	72.9%	72.9%
	√ Target Met.					

65	Percentage of potentially hazardous volcanoes with published hazard assessments <u>(PART measure)</u>	2003 Actual 61.4%	2004 Actual 61.4%	2005 Actual 62.8%	2006 Planned 64.3%	2006 Actual 64.3%
	√ Target Met.					
66	Number of counties, or comparable jurisdictions, that have adopted improved building codes, land-use plans, emergency response plans, or other hazard mitigation measures based on USGS earthquake-hazards information <u>(PART measure)</u>	2003 Actual 503	2004 Actual 559	2005 Actual 565	2006 Planned 569	2006 Actual 569
	√ Target Met.					
67	Number of counties, or comparable jurisdictions, that have adopted improved building codes, land-use plans, emergency-response plans, or other hazard-mitigation measures based on USGS landslide hazards information <u>(PART measure)</u>	2003 Actual 60	2004 Actual 68	2005 Actual 71	2006 Planned 80	2006 Actual 80
	√ Target Met.					
68	Number of counties, or comparable jurisdictions, that have adopted improved building codes, land-use plans, emergency-response plans, or other hazard-mitigation measures based on USGS volcano-hazards information <u>(PART measure)</u>	2003 Actual 162	2004 Actual 162	2005 Actual 170	2006 Planned 190	2006 Actual 190
	√ Target Met.					
69	Percentage data availability for real-time data from the GSN <u>(PART measure)</u>	2003 Actual 90%	2004 Actual 90.5%	2005 Actual 89%	2006 Planned 90%	2006 Actual 87.8%
	√ Target Met.					
70	Data processing and notification costs per unit volume of input data from earthquake sensors in monitoring networks (in cost per gigabyte) <u>(PART measure)</u>	2003 Actual 1.007 \$/Gb	2004 Actual .90 \$/Gb	2005 Actual 0.79 \$/Gb	2006 Planned 1.42 \$/Gb	2006 Actual 1.3 \$/Gb

▲ Target Exceeded. FY2006 projected increased cost was due to increase in contractor. Higher than expected volume of data for FY2006 resulted in holding the average cost lower than anticipated.

## Accomplishments

### Development and Implementation of the Avian Influenza Surveillance Program

Wild migratory birds, particularly waterfowl, are natural hosts of avian influenza viruses. A highly pathogenic avian influenza (HPAI) strain has become endemic in poultry in Southeast Asia, has spread to Russia and Eastern Europe, and has killed many people. The strain has also caused mortality in several species of migratory birds in Asia. The HPAI has not been detected in humans, poultry, or wild birds in North America; however, Alaska and corresponding areas of the Russian Far East are a unique area where migratory bird species mix during migrations to and from breeding and wintering grounds. Thus, if HPAI is carried to North America in migratory birds, the virus would most likely arrive first in Alaska.

The USGS, in cooperation with the FWS, formed a national interagency working group and led the development of surveillance and detection strategies for sampling wild, live-caught birds; birds found during mortality events; domestic and sentinel bird species; and birds harvested by sport and subsistence hunters. This strategy is being used by Federal, State, and private organizations to protect the Nation from potential environmental, human health, and economic effects of HPAI. This information will be used to provide an early warning to the health, agriculture, and wildlife communities regarding the presence of avian influenza in wild birds and will provide time to implement biosecurity measures that will reduce the chances of the virus being passed to either people or poultry.

### 24/7 at the National Earthquake Information Center

In January 2006, the National Earthquake Information Center (NEIC) began 24/7 operations. A major milestone for the developing Advanced National Seismic System (ANSS), round-the-clock operations were enabled by an increase in funding to the USGS as part of the President's tsunami risk reduction initiative, built in response to the Indian Ocean tsunami disaster of 2004. Having 24/7 staff coverage will cut in half or better the reporting times for earthquakes worldwide.



Photograph of the glass-enclosed nerve center at NEIC.

### National Earthquake Prediction Evaluation Council (NEPEC) Re-established

Due to the high level of interest in the field of earthquake prediction and forecasting, it is imperative that the USGS continue to provide scientific and public leadership, by evaluating proposed earthquake prediction methods, providing guidance to the government on appropriate public policy, and managing public expectations when earthquake predictions arise. To this end, USGS has re-established the NEPEC to provide the Director and the Nation with authoritative evaluations of proposed earthquake predictions by individuals and organizations within the United States and worldwide. The Council is established pursuant to Earthquake Hazards Reduction Act of 1977 and furthers the objectives of Sec. 202 of the Disaster Relief Act of 1974.

### Seattle Urban Seismic and Landslide Hazard Maps

The USGS, working with State and local partners, is completing and releasing a suite of seismic and landslide hazard maps for the Seattle urban corridor. The USGS partnered with the City of Seattle, Washington and the University of Washington Pacific Northwest Center for Geologic Mapping Studies, to produce a new geologic map for the City. Combined with high resolution topography data acquired with another partnership with the City of Seattle, the



new geology allows more precise calculations of earthquake shaking and landslide susceptibility. Building on existing relations with the USGS, the City of Seattle is developing uses for the maps in establishing city landslide and earthquake hazard policies and retrofit priorities.

## Ferguson-Highway 140, California Landslide

Scientists from the USGS Landslide Hazards Program are assisting the Sierra National Forest, Yosemite National Park, California Department of Transportation and other State and local government agencies to understand the potential behavior of the May 2006 Ferguson-Highway 140 landslide. This landslide has already buried the main highway into Yosemite National Park and could eventually block the Merced River. Monitoring the rate of movement of the landslide will be a key first step in evaluating the potential for continued and accelerated slope movement that could dam the Merced River. In cooperation with other agencies, USGS scientists are using near-real-time, high-precision Global Positioning Satellite (GPS) equipment to monitor movement of the large landslide mass that could fail catastrophically. This equipment, developed for monitoring active volcanoes, can be placed from a helicopter without endangering humans.



Photograph of the Ferguson-Hwy 140, California landslide, which occurred in April-May 2006, along the Merced River about 8 miles west of El Portal and the entrance of Yosemite National Park. As much as 40 million tons of rock and debris cascaded down a very steep slope and blocked the highway. Photograph courtesy of Pacific Gas and Electric Company.

## GSN telemetry upgrades

Also enabled by an increase in funding to the USGS as part of the President's tsunami risk reduction initiative, built in response to the Indian Ocean tsunami disaster of 2004, has been the expansion of real-time telemetry to the seismic stations of the Global Seismographic Network (GSN). By the end of 2006, real-time telemetry will be established at 121 sites, an increase of 37 sites and comprising over 90 percent of the 130-station GSN.



Seismic station operator Adisorn Foongkajorn pours sand down the sensor borehole at the Chaing Mai station (CHTO) in Thailand. The USGS, in collaboration with the Thai Meteorological Organization, upgraded station CHTO to continuous telemetry this year. Ted Kromer from the USGS's Albuquerque Seismological Laboratory visited the site in May 2006 to replace the down-hole seismic sensor and repair the station electronics.

To accomplish this task in the most cost-effective manner, USGS has worked with the Global Communications Infrastructure (GCI) and its contractor, Hughes, as well as with host institutions to obtain additional bandwidth for the upgrades at no additional cost to the U.S. Government. Data from eight stations will flow directly to the NOAA Pacific Tsunami Warning Center for use in developing warnings and alerts. Three additional stations will be added in early FY2007 as they are installed.

## ANSS Backbone Network Completion

The national “backbone” seismic network of the developing Advanced National Seismic System (ANSS) was largely completed in FY2006. It will consist of 106 stations distributed nationwide, and provide the USGS and State partners with the capability to detect and locate all earthquakes with magnitudes greater than about 3.0 or smaller in many areas. Thanks to a substantial contribution to this network by the National Science Foundation, through the USArray element of the Earthscope initiative, the expansion and upgrading of the backbone network was accelerated in FY2004 and will be completed in FY2006.



Mike Busby of the USGS's Albuquerque Seismological Laboratory stands astride seismic sensors in the 10-foot-deep vault of station EGAK in Alaska near the Yukon border. EGAK is one of over 100 stations in the Advanced National Seismic System (ANSS) ‘backbone’ network.

## Uniform Volcano Alert-Level System

In FY2006, The VHP implemented a common system nationwide for characterizing the level of unrest and eruptive activity at volcanoes. The new volcano alert-level system replaces three separate systems used in the United States. Under the new system, the USGS will rank the level of activity at a U.S. volcano using the terms “Normal”, for typical volcanic activity in a non-eruptive phase; “Advisory”, for elevated unrest; “Watch”, for escalating unrest or a minor eruption underway that poses limited hazards; and, “Warning”, if a highly hazardous eruption is underway or imminent.

These levels reflect conditions at a volcano and the expected or ongoing hazardous volcanic phenomena. When an alert level is assigned by an observatory, accompanying text will give a fuller explanation of the observed phenomena and clarify hazard implications to affected groups.

## Stakeholders’ Workshop to Develop a National Volcano Early Warning System

The VHP sponsored a major workshop in Portland, Oregon, on February 22-23 2006, to obtain stakeholder input into the development of a National Volcano Early Warning System (NVEWS). Seventy-five attendees represented a broad cross-section of agencies, communities, and corporations represented at the meeting, including the NPS, the USFS, Washington Emergency Management Division, Oregon Emergency Management, Pierce County Department of Emergency Management, Emergency Management Office of the Commonwealth of the Northern Mariana Islands, the Federal Aviation Administration, FEMA, FWS, The National Weather Service, NOAA, the Airforce Weather Agency, the Alaska Division of Homeland Security and Emergency Management, Alaska Division of Geophysical and Geological Surveys, Oregon Department of Geology and Mineral Industries, the Wyoming State Geological Survey, the Air Line Pilots’ Association, Alaska Airlines, United Airlines, the Universities of Washington, Hawaii, and Alaska, and East Tennessee State University, and the Yakama Nation. The workshop highlighted the need to make the connection between improved volcano monitoring and use of volcanic-hazard information in education, mitigation, and response at the national, State, and local levels. Major findings and recommendations are summarized in USGS Open-File Report 2006-1224.

## Volcano Hazards Response to the Eruption of Augustine Volcano

Augustine volcano, Cook Inlet, Alaska, began erupting on January 11, 2006, following 6 months of increasing volcanic unrest. Prior to the current eruption, the Augustine volcano was ranked as a very high-threat volcano by the NVEWS analysis and was identified as one of the highest priority targets for improved monitoring. The volcano erupts frequently, lies close to the North Pacific air corridor, and is in close proximity

to civilian and military airports in the Anchorage area. In addition to hazards posed by volcanic ash to en route aircraft and communities and airports on the ground, Augustine is capable of generating tsunamis. In 1883, an eruption of Augustine produced a tsunami 20 feet high at English Bay on the East Coast of the Cook Inlet.

Because of these threats, the Alaska Volcano Observatory (AVO) improved the monitoring network on the volcano after the onset of unrest, and implemented continuous 24/7 monitoring to provide rapid warnings of explosive, ash-forming eruptions. The eruption continued into May, with 14 separate explosive events injecting volcanic ash to altitudes of 25,000 to 50,000 feet, i.e. near or above the cruise altitudes of commercial jet airliners, causing rerouting of aircraft and cancellation of flights. The monitoring effort was successfully maintained throughout the eruption despite the destruction of about half of the monitoring network by pyroclastic flows. As of March 17, 2006, the cost of responding to the eruption has been \$1,150,000. The eruption has destroyed approximately half of the telemetered monitoring equipment on the island.



USGS scientists walking along the path from the lagoon towards camp on Augustine Island on August 19, 2006. Photograph taken by Michelle Coombs, AVO.

The estimated cost to bring the network back to its pre-eruption level is \$320,000 for equipment purchase and installation. An additional \$830,000 in expenses have been incurred to date to pay for emergency deployment of additional monitoring equipment,



View of Augustine's new lava dome at the summit on August 6, 2006. Photograph taken by Michelle Coombs, AVO.

maintenance of a 24/7 watch operation to provide rapid notification of explosive eruptions to the aviation sector, contracting helicopter and fixed-wing flights for surveillance, and logistical expenses to maintain our data receive node in Homer, Alaska.

Based on continuation of the eruption for an additional 5 months, an additional \$1,000,000 in unanticipated expenditures will be required to maintain a 24/7 watch operation, support helicopter and fixed-wing flights to the volcano to monitor changes in gas production, conduct visual and infrared surveillance of changing eruption conditions, perform maintenance on the telemetered monitoring network, and maintain the data receive node in Homer, Alaska.

# Performance Data and Analysis

## Serving Communities: Safeguard Lives, Property, and Assets; Advance Scientific Knowledge; and Improve the Quality of Life for the Communities We Serve

### End Outcome Goal:

Advance knowledge through scientific leadership and inform decisions through the application of science.

✓ **Targets Met = 45**    ▼ **Targets Not Met = 6**    ▲ **Targets Exceeded = 29**    ■ **Targets Rebaselined = 4**

End Outcome Measure: Advance knowledge through scientific leadership and inform decisions through the application of science

71	Research: Soundness of methodology, accuracy, and reliability of science (program evaluation) ( <u>DOI strategic plan key measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		100%	80%	100%	100%	100%
	✓ Target Met.					
72	Inform decisions through the application of science: Improved access to needed science information (number score) ( <u>DOI strategic plan key measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		92%	90%	92%	90%	87%
	✓ Target Met.					
73	Inform decisions through the application of science: Stakeholders reporting that information helped achieve goal (number score) ( <u>DOI strategic plan key measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		94%	93%	95%	90%	96%
	▲ Target Exceeded. A different set of products is sampled each year; one year's aggregate measurement is not directly linked to the previous year. The intent is to maintain at least an 90 percent satisfaction level (i.e. 90% or greater is the target).					
74	Inform decisions through the application of science: Improved access to needed science information, number of USGS science publications cataloged in master USGS publications database	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		56,086	66,626	68,945	67,500	70,351
	✓ Target Met.					
75	Inform decisions through the application of science: Improved access to needed science information, number of associated USGS science publications accessible online	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		3,533	25,909	35,869	45,000	45,816
	✓ Target Met.					
76	Inform decisions through the application of science: Improved access to needed science information (number of cumulative biological partnership links)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		32,500	36,000	76,155	83,770	94,682
	▲ Target Exceeded. Reassessing subsequent year targets due to FY2006 actual performance.					

## Intermediate Outcome: Improve information base, information management, and technical assistance

77	Content and expanse of knowledge base: Percentage of land with temporal and spatial monitoring, research, and assessment/data coverage to meet land-use planning and monitoring requirements (Roll-up of all components below)	2003 Actual n/a	2004 Actual 54.74%	2005 Actual 58.9%	2006 Planned 70.25%	2006 Actual 80.38%
	▲ Target Exceeded. Change due to greater than anticipated influx of reimbursable funding.					
78	Content and expanse of knowledge base: Percentage of land with temporal and spatial monitoring, research, and assessment/data coverage to meet land-use planning and monitoring requirements (number of square miles assessed by GAP analysis) (DOI strategic plan key measure)	2003 Actual n/a	2004 Actual 82%	2005 Actual 83%	2006 Planned 83%	2006 Actual 90.6%
	▲ Target Exceeded. This measure represents a percentage of the country based on the cumulative square miles for which a GAP analysis has been completed. Miles are added at the completion of each GAP project. In FY2006, a project was completed ahead of schedule.					
79	Content and expanse of knowledge base: Percentage of land with temporal and spatial monitoring, research, and assessment/data coverage to meet land-use planning and monitoring requirements (NCGMP) (DOI strategic plan key measure)	2003 Actual n/a	2004 Actual n/a	2005 Actual 53%	2006 Planned 55%	2006 Actual 55%
	√ Target Met.					
80	Content and expanse of knowledge base: Percentage of proposed streamflow sites currently in operation that meet one or more Federal Needs (DOI strategic plan key measure and PART measure)	2003 Actual 65%	2004 Actual 64%	2005 Actual 61%	2006 Planned 62%	2006 Actual 61%
	√ Target Met.					
81	Content and expanse of knowledge base: Percentage of surface area with temporal and spatial monitoring, research, and assessment/data coverage to meet land-use planning and monitoring requirements (satellite data collected over global land surface) (DOI strategic plan key measure)	2003 Actual n/a	2004 Actual 100%	2005 Actual 100%	2006 Planned 100%	2006 Actual 100%
	√ Target Met.					
82	Content and expanse of knowledge base: Percentage of surface area with temporal and spatial monitoring, research, and assessment/data coverage to meet land-use planning and monitoring requirements (GAM) National Land Cover dataset, 66 mapping units across country (DOI strategic plan key measure and PART measure)	2003 Actual 17%	2004 Actual 45%	2005 Actual 65%	2006 Planned 75%	2006 Actual 94%
	▲ Target Exceeded. Metric was exceeded due to partnerships with NGA and DHS, and subsequent reimbursable funding for acquiring urban area imagery.					

## Performance Data and Analysis

83	Content and expanse of knowledge base: Percentage of surface area with temporal and spatial monitoring, research, and assessment/data coverage to meet land-use planning and monitoring requirements (number of completed eco-region assessments out of 84 eco-regions) ( <u>DOI strategic plan key measure and PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		18%	31%	37%	48%	48%
	√ Target Met.					
84	Content and expanse of knowledge base: Average percentage of coverage for 6 data themes in The National Map in national databases at medium resolution; does not measure currentness (TNM) ( <u>DOI strategic plan key measure and PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		67%	67%	69%	78%	100%
	▲ Target Exceeded. USGS received unexpectedly high amounts of reimbursable funding from NGA and DHS for urban imagery. Goal achieved, measure will be eliminated in FY2007.					
85	Content and expanse of knowledge base: Average percentage of coverage for 7 data themes in The National Map in national databases at high resolution; does not measure currentness (TNM) ( <u>DOI strategic plan key measure and PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		33%	41%	46%	61%	94.43%
	▲ Target Exceeded. After achieving coverage of the 133 urban areas, the metric coverage will be expanded to the lower 48 States in FY2008.					
86	Content and expanse of knowledge base: Percentage of data accessible: Percentage of satellite data available from archive within 24 hours of capture (PART measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		95%	90%	97.2%	90%	98.7%
	▲ Target Exceeded. Metric was exceeded due to the migration of data to newer media and easier access from archive silo.					
87	Quality: Percentage of studies validated through appropriate peer review or independent review ( <u>DOI strategic plan key measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		100%	100%	100%	100%	100%
	√ Target Met.					
88	Percentage of US land with land characterization and species distribution information available for resource management decisionmaking updated in the last 5 years (PART measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	18.3%	23.3%	28.3%	42.3%
	▲ Target Exceeded. Reassessing subsequent year targets due to FY2006 actual performance.					

89	Percentage of North American migratory birds for which scientific information on their status (species distribution and number) and trends are available in a standardized and exchangeable format, to improve conservation plans of Federal and State agencies (PART measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	15%	20%	25%	25%
	√ Target Met.					
90	Percentage of North American amphibians and reptiles for which scientific information on their status (species distribution) are available in a standardized and exchangeable format, to improve conservation plans of Federal and State agencies (PART measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	91%	90%	91%	91%
	√ Target Met.					
91	Percentage of North American mammals for which scientific information on their status (species distribution) are available in a standardized and exchangeable format, to improve conservation plans of Federal and State agencies (PART measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	91%	93%	94%	94%
	√ Target Met.					
92	Percentage of US Federally-listed threatened and endangered or indicator fish species for which scientific information on a species status is available in a standardized and exchangeable format, to improve conservation plans of Federal and State agencies (PART measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	2.6%	7.5%	12.5%	12.4%
	√ Target Met.					
93	Percentage of river basins that have streamflow stations (PART measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	77%	82%	81%	81%
	√ Target Met.					
94	Percentage of streamflow stations with real-time measurement/reporting of water quality (PART measure)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	6%	7%	8%	9%

▲ Target Exceeded. Additional reimbursable funding resulted in exceeding the target.

## Performance Data and Analysis

95	Percentage of ground-water stations that have real-time reporting capability in the ground-water climate response network ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	57%	67%	67%	47%
	<p>▼ Target Not Met. Even though the target was not met as defined by the PART measure, real progress was made on the development of a national climate response network. The total network grew by 36% in FY2006 resulting in greater national coverage and was complemented by 9% growth in the number of wells with real-time capability that improved the timeliness of the overall network. In practice, we find that the measure as written does not capture the goals of the network. A more appropriate metric would measure the progress being made in the development of the ground water climate response network, where the goal is to ensure broad geographical coverage of the U.S. and maximize the timeliness (real-time) of the reported data. A revision will be proposed in the FY2008 budget process.</p>					
96	Percentage of the Nation's 65 principal aquifers with monitoring wells used to measure responses of water levels to drought and climatic variations to provide information needed for water-supply decisionmaking ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	60%	61%	62%	61%
	<p>√ Target Met.</p>					
97	Percentage of U.S. with ground-water quality status and trends information to support management decisions ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	0	39%	45%	58%
	<p>▲ Target Exceeded. Reprioritized work to achieve smoother long-term field operations.</p>					
98	Percentage of States with Web-based streamflow statistic tools to support water management decisions ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	4%	10%	18%	14%
	<p>▼ Target Not Met. Cooperative Water Program funding limitations have slowed progress on jointly funded streamstats projects at state level. See <a href="http://water.usgs.gov/osw/streamstats/ssonline.html">http://water.usgs.gov/osw/streamstats/ssonline.html</a> for current National status.</p>					
99	Percentage of U.S. ground-water availability status and trends information to support resource management decisions ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	5%	7%	8%	8%
	<p>√ Target Met.</p>					
100	Percentage of targeted contaminants for which methods are developed to assess potential environmental and human health significance ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	10%	20%	30%	85%
	<p>■ Target Rebaselined. Rebaselining in progress during FY2005-FY2006. The rate was not able to be estimated at the time we set targets for FY2005 and FY2006 because at that time the list of contaminants was still being developed. Many contaminants on the initial (draft) list were dropped because they are not feasible to develop methods for at this time. Because the total number of contaminants was reduced on the final list, we were able to achieve 85%, thereby exceeding the target.</p>					



101	Percentage improvement in accuracy of watershed (SPARROW) model prediction for total nitrogen and total phosphorus (measured as reduced error) ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
	■ Target Rebaselined.	n/a	40%	31%	32%	24%
102	Percentage of geologic investigations in NPS units that are cited for use by the NPS within three years of delivery ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
	√ Target Met.	n/a	n/a	80%	80%	80%
103	Percentage of EDMAP students that work on subsequent geoscience degrees or obtain a job in a geoscience field ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
	√ Target Met.	n/a	95%	94%	95%	95%
104	Number of counties or comparable jurisdictions that have adopted hazard mitigation measures based in part on geologic mapping and research ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
	√ Target Met.	n/a	n/a	10	12	12
105	Percentage of US with geologic maps that are being integrated into ground-water availability status and trends to support resource management decisions ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
	√ Target Met.	n/a	3%	5%	6%	6%
106	Facilities Condition: Facilities are in fair-to-good condition as measured by the Facilities Condition Index (FCI) ( <u>DOI strategic plan key measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
	√ Target Met.	n/a	.17	.17	.17	.17
107	Percentage of time that all WAN and Internet access locations are up and running and accessible	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
	√ Target Met.	99.8%	99.7%	99.27%	98.99%	98.76%
108	IT Investment: Percentage of major IT investment projects for which cost estimates, established in project or contract agreement, meet actual costs with a variance of 5 percent	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
	√ Target Met.	100%	100%	100%	100%	100%

# Performance Data and Analysis

## Performance Outputs:

109	Number of annual gigabytes collected (Enterprise Information)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	34,815	6,023	26,728	76,550
	▲ Target Exceeded. Metric was exceeded due to partnerships with National Geospatial Intelligence Agency (NGA) and the U.S. Department of Homeland Security (DHS), and subsequent reimbursable funding for acquiring urban area imagery.					
110	Number of cumulative gigabytes managed (Enterprise Information)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		51,042	85,857	108,035	175,207	187,842
	▲ Target Exceeded. Metric exceeded due to significant volumes of urban area geospatial data acquired from (1) unexpected NGA and DHS reimbursable funding and (2) addition of very high resolution elevation data over the entire State of WV.					
111	Number of annual terabytes collected (Geography)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	527.2	438.8	534	537.9
	√ Target Met.					
112	Number of cumulative terabytes managed (Geography)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		1,921.1	2,448.3	2,887.4	3,509.8	3,425.3
	√ Target Met.					
113	Number of annual gigabytes collected (Geology)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	407.2	117.8	210.8	218.8
	√ Target Met.					
114	Number of cumulative gigabytes managed (Geology)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		491	898.2	1,016	1,226.8	1,235
	√ Target Met.					
115	Number of cumulative gigabytes managed (Biology)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		400	360	791.25	800	1,134.22
	▲ Target Exceeded. Significant increase in GAP.					
116	Number of systematic analyses and investigations delivered to customers	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		573	571	576	555	543
	√ Target Met.					

117	Number of formal workshops or training provided to customers	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		61	107	131	121	148
	▲ Target Exceeded. Metric exceeded due to (1) the National Hydrologic Dataset (NHD) staff was able to capitalize on the requirement for NHD workshops as part of building the NHD Stewardship program, and (2) several unanticipated workshops were given to partners by other data themes, such as LIDAR workshops for elevation.					
118	Number of hours for fieldwork, compilation, and publication of a typical geologic map ( <u>PART Efficiency measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	3,160	3,070	2,980	2,980
	√ Target Met.					
119	Number of State Geological Surveys that add geologic map information to the NGMDB ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	47	48	49	49
	√ Target Met.					
120	Number of EDMAP students trained each year ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	60	62	60	66
	▲ Target Exceeded. More students attached to individually funded projects.					
121	Number of real-time streamgages reporting in NWIS Web ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		5,621	5,978	6,246	6,165	6,496
	▲ Target Exceeded. Change due to greater than anticipated influx of reimbursable funding.					
122	Number of real-time ground-water sites reporting in NWIS Web	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		697	799	796	692	917
	▲ Target Exceeded. Change due to greater than anticipated influx of reimbursable funding.					
123	Number of real-time water-quality sites reporting in NWIS Web	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		891	1,062	1,125	896	1,102
	▲ Target Exceeded. Change due to greater than anticipated influx of reimbursable funding.					
124	Percentage of USGS streamflow stations with 30 or more years of record ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	60%	58%	62%	59%
	√ Target Met.					

## Performance Data and Analysis

125	Percentage of daily streamflow measurement sites with data that are converted from provisional to final status within 4 months of day of collection ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	0 baseline	10%	20%	20%
	√ Target Met.					
126	Average cost per analytical result, adjusted for inflation, is stable or declining over a 5-year period ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	\$8.64	\$8.63	\$8.64	\$8.34
	√ Target Met.					
127	Percentage of ground systems designed, built, and tested	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	n/a	n/a	28%	8%
	■ Target Rebaselined. On December 23, 2005, the President's Office of Science and Technology Policy (OSTP) issued a memorandum changing the scope of the Landsat Data Continuity project. As a result, the project lifecycle extended one year and USGS acquired additional responsibilities.					
128	Number of partnerships formed to link scientific information and societal decisions (Science Impact)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	n/a	8	0 (cum 8)	0 (cum 8)
	√ Target Met.					
129	Number of mapping nodes (publicly available Web mapping services available through <i>The National Map</i> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		50	90	152	155	195
	▲ Target Exceeded. Partnership Liaison staff were successful in promoting The National Map and engaging partners to participate in The National Map for data and web page servers.					
130	Number of partnerships for <i>The National Map</i> built with State and local governments that collect and maintain higher resolution, more current data ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		10	30	35	20	47
	▲ Target Exceeded. Partnership Liaison staff were successful in promoting The National Map and engaging partners to participate in The National Map for data and web page servers.					
131	Number of data standards used in implementing <i>The National Map</i> ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		17	17	22	22	22
	√ Target Met.					

132	Percentage of total cost saved through partnering for data collection of high-resolution imagery ( <u>PART measure</u> )	2003 Actual n/a	2004 Actual 71%	2005 Actual 72%	2006 Planned 44%	2006 Actual 76%
	▲ Target Exceeded. USGS received unexpectedly high amounts of reimbursable funding from NGA and DHS for urban imagery.					
133	Percent of the Nation's surface for which hydrography, elevation, and orthoimagery data are available through the National Spatial Data Infrastructure Clearinghouse and supported through partnerships ( <u>PART measure</u> )	2003 Actual 41%	2004 Actual 62%	2005 Actual 71%	2006 Planned 86%	2006 Actual 99%
	▲ Target Exceeded. Leveraged funds from NGA and DHS resulted in an increase in the number of partnerships that participate in The National Map and make the data discoverable and accessible.					
134	Percentage of the area of 11 Western States for which orthoimagery have been acquired through a FSA/USGS partnership with other entities to achieve a 5-year cycle for 1-meter NAIP imagery	2003 Actual n/a	2004 Actual n/a	2005 Actual 43%	2006 Planned 36%	2006 Actual 23%
	▼ Target Not Met. Only three of the 11 States were acquired in FY2006 because of the cyclic nature of statewide imagery acquisition and impacts from other Farm Services Administration priorities.					
135	Percentage of total cost FSA and USGS saved through partnering with other entities for imagery acquisition of 1-meter NAIP orthoimagery	2003 Actual n/a	2004 Actual n/a	2005 Actual 44%	2006 Planned 40%	2006 Actual 41%
	√ Target Met.					
136	Number of bureauwide data-integration practices and/or policies adopted	2003 Actual n/a	2004 Actual 1	2005 Actual 4	2006 Planned 3	2006 Actual 3
	√ Target Met.					
137	Number of new NSDI Clearinghouse nodes established for serving data	2003 Actual 41	2004 Actual 82	2005 Actual 43	2006 Planned 50	2006 Actual 50
	√ Target Met.					
138	Number of informal NSDI conference outreach exhibits	2003 Actual 52	2004 Actual 52	2005 Actual 56	2006 Planned 50	2006 Actual 50
	√ Target Met.					
139	Number of new NSDI standards developed (cumulative)	2003 Actual 2	2004 Actual 20	2005 Actual 22	2006 Planned 30	2006 Actual 26
	▼ Target Not Met. The completed development of NSDI standards is involving a longer and more complex approval process than previous years. It also involves additional public comment periods.					

## Performance Data and Analysis

140	Number of new NSDI partnership agreements	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		51	52	36	60	25
	▼ Target Not Met. Metric not achieved due to funding amounts for individual grants being larger than anticipated.					
141	Number of IT help desks operational in major USGS offices	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		8	5	5	4	4
	✓ Target Met.					
142	Number of significant Web sites co-located on consolidated hardened, secure, and redundant Internet servers	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		61	167	189	225	195
	▼ Target Not Met. Metric not met due to consolidation of USGS websites.					
143	Percentage of Internet hosts potentially vulnerable to unauthorized access	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	5%	2.01%	<1%	0%
	✓ Target Met.					
144	Number of workshops/short courses/training provided to Tribal colleges and universities and Tribes	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	7	6	5	11
	▲ Target Exceeded. Metric exceeded due to additional FGDC support.					
145	Number of Native American internships/students	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	8	9	10	12
	▲ Target Exceeded. Science funding supported the additional internships and students to work on science projects.					
146	Number of bureau-conditional assessments in progress or completed (within a 5-year cycle)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		39	41	9	15	14
	✓ Target Met. One of the 15 planned facilities was transferred to FWS, and a bureau-conditional assessment for that facility was no longer needed.					
147	Number of deferred maintenance and capital improvements completed (cumulative)	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		24	36	53	67	63
	✓ Target Met.					

148	Amount of fire-related data and information available on-line via the NBII, to assist land managers in fire management decisionmaking ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	.5 gb	1.5 gb	2.0 gb	15.42 gb
	▲ Target Exceeded. Northwest pilot project concluded sooner than planned, and second project for fire data in the Southwest opened.					
149	Percentage of Natural History Museum specimen data records available on-line via the NBII, to assist researchers in identifying and addressing threats to human and animal health ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	5%	17%	25%	26%
	√ Target Met.					
150	Number of NBII Clearinghouse metadata records	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		6,600	7,500	17,937	18,000	26,808
	▲ Target Exceeded. Metric exceeded due to partners contributing more new records than planned.					
151	Amount of invasive species data and information available on-line via the NBII, to assist in modeling and forecasting the spread of invasives ( <u>PART measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	750 mb	800 mb	900 mb	1,137 mb
	▲ Target Exceeded. Consistently exceeding the target, reevaluation of methodology for target estimation will revise outyear targets.					
152	Average cost per gigabyte of data available through servers under program control ( <u>PART Efficiency measure</u> )	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	\$66,000	\$63,000	\$60,000	\$17,155
	■ Target Rebaselined.					
153	Number of NBII nodes	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		10	14	14	14	14
	√ Target Met.					
154	Number of Natural History Museum specimen data records available on-line via the NBII, to assist researchers in identifying and addressing threats to human and animal health	2003 Actual	2004 Actual	2005 Actual	2006 Planned	2006 Actual
		n/a	n/a	20 million	30 million	57.6 million
	▲ Target Exceeded. Consistently exceeding the target, reevaluation of methodology for target estimation will revise outyear targets.					

## Accomplishments

### Design of a National Monitoring Network

As co-chair of the National Water Quality Monitoring Council (NWQMC) of the Federal-non-Federal Advisory Committee on Water Information (ACWI), the USGS is participating in the design of a National Water Quality Monitoring Network for U.S. coastal waters and their tributaries. The task was requested by the Council on Environmental Quality and the Office of Science and Technology Policy in January 2005 and responds to an OMB PART recommendation that directs the USGS to “work with the EPA and other Federal and State agencies through the ACWI and NWQMC to develop shared water monitoring plans.” In FY2005, the NWQMC documented network goals, objectives, and management issues, and identified methods to ensure comparability. A preliminary report provided in September 2005 was well received, and the final report was submitted to ACWI in January 2006. The resulting network design will become part of the response to President’s Ocean Action Plan, will be used by the NOAA to enhance monitoring of upland effects on coastal waters and to link with the output from the Integrated Ocean Observing System, and will be used by the USGS and EPA to evaluate and enhance monitoring efforts to meet coastal and upland monitoring needs.

### The National Cooperative Geologic Mapping Program

In the past year, the National Cooperative Geologic Mapping Program (NCGMP) has mapped 87,000 square miles in 47 States. These geologic maps were produced in high priority areas determined by USGS panels and State Mapping Advisory Committees in all States with input from a Federal Advisory Committee. Needs of sister agencies such as the NPS, BLM, and the USFS were also considered. In addition to the accomplishments cited below, NCGMP has leveraged nearly \$6.5 million of State and university funds with cooperative agreements through a unique Federal-State-University partnership.

## Data Collection and Analysis

Many products were delivered by projects supported by NCGMP including geologic maps and research papers related to (1) Atlantic estuaries, (2) Quaternary stratigraphy in the Los Angeles region, (3) land, resources, and hazards issues in Alaska, (4) improving the geohydrologic framework of the Edwards and Trinity aquifers, south-central Texas, (5) surficial geologic mapping in the Southwest U.S., and (6) three dimensional geologic maps and visualization in California.

### Geology of Parks and Federal Lands of the Southwest

A new project, “Geology of parks and Federal lands of the Southwest,” conducted geologic mapping in Death Valley National Park, Glen Canyon National Recreation Area, Grand Canyon National Park, Havasu National Wildlife Refuge, Kaibab National Forest, Kaibab-Paiute Indian Reservation, Lake Mead National Recreation Area, Mesa Verde National Park, Mojave National Preserve, Navajo Nation, Parashant National Monument, Pipe Spring National Monument, Vermilion Cliffs National Monument, and Wupatki National Monument. This geologic mapping is addressing specific needs of national parks through involvement of USGS geologists in NPS geologic scoping sessions.

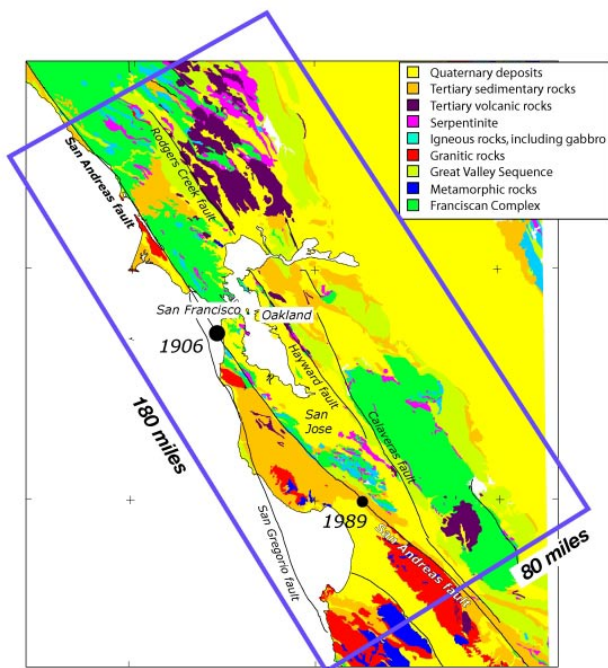


USGS scientist Paul Stone captured this image of the Death Valley dunes inside the Death Valley National Park.



## 100th Anniversary of the 1906 San Francisco Earthquake

NCGMP produced a number of important products summarizing major advancements in understanding the tectonic history of the greater San Francisco region. A geologic map and poster explaining how geology affects the shaking in this region was released and has been used by the public in many venues. Also, computer simulations of ground shaking were produced using three-dimensional geology.



Simple traditional two-dimensional geologic map of the San Francisco Bay region. The blue rectangle shows the horizontal outline of the 3D geologic map. Black dots show the epicenters of the 1906 San Francisco earthquake and the 1989 Loma Prieta event. Different colors correspond to different rock types found in the region.

## New PART Measures

In FY2006, NCGMP established baselines for new PART measures that link to work done with major program partners—primarily the NPS, the Ground-Water Resources Program, and communities that are trying to mitigate against natural hazards.

## Preservation of Geological and Geophysical Data and Samples

In response to the Energy Policy Act of 2005, Section 351, the NCGMP Federal Advisory Committee wrote a report to Congress that addresses the need to preserve geological and geophysical data, samples, and core. In addition, the program began the process of consolidating and preserving paleontologic data and specimens at risk.

## Geologic Mapping and Hydrogeology of Karst Aquifers

In conjunction with ground-water hydrologists of the USGS, the NCGMP-funded Karst Project completed three geologic maps and published an investigative report on the quantity of ground water in a county on the outskirts of the Washington, D.C., metropolitan area. Information from these geologic maps and the report is being used in two ground-water models of different scales and addresses the future resources for several counties where rapid population growth is occurring.

## StateMap

In FY2006, 127 projects were carried out in 47 States through the StateMap, the State geological survey's part of the National Geologic Mapping Act, 1992. More than 450 geologic maps, as pre-publication drafts, were delivered.

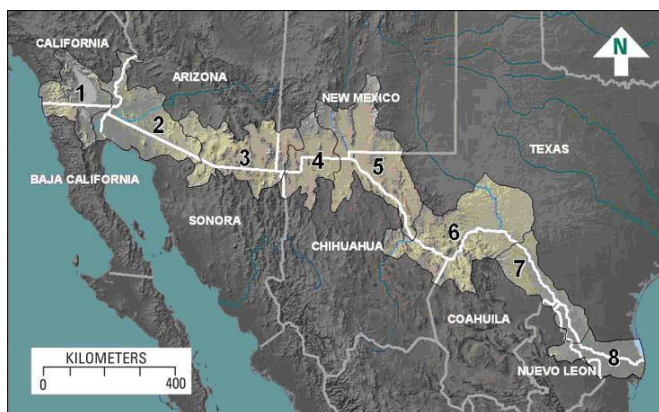
## EdMap

In 2006, 64 students working on 41 projects from 36 universities learned and applied geologic mapping techniques in 21 States through support by EdMap, a program to encourage the training of future geologic mappers at colleges and universities. All of these student activities were coordinated with projects within the USGS and (or) State geological surveys. The maps were used for various university projects, theses, and dissertations. Each year, the Program reaches out to new geoscience departments to participate in the EdMap component of the Program. In FY2006, three universities that previously had not participated applied for and received EdMap grants.

## Facilitating U.S.-Mexican Environmental Cooperation with Geographic Tools

Rapid population growth, economic development, and land-use changes are pushing the limits of environmental sustainability in places along the United States border with Mexico. As a result, infrastructure development has lagged behind and concerns exist about environmental degradation and the availability of natural resources to support human and wildlife needs. To help public officials at all levels of government understand the relationships between the environment and human health, the USGS's Border Environmental Health Initiative integrates U.S. and Mexican natural resource, demographic, and environmental contaminant datasets with base mapping layers. International agreements between the USGS and select Mexican Federal agencies provide Web access to the Mexican copyrighted data and assist scientific analysis of complex datasets through documented procedures. The data is displayed over the Web in an Internet Map Service (<http://borderhealth.cr.usgs.gov>), which provides geographic information tools that allow users to zoom into areas of interest, select a combination of layers, and query features.

The project is being expanded through cooperative partnerships such as the Southwest Consortium of Environmental Resources Program for environmental sustainability, EPA's Border 2012 Environmental Health Indicators Working Group, and Natural Heritage Institute's Physical Assessment project to model water availability of the Rio Grande/Rio Bravo



U.S. - Mexico Border Environmental Health study area divided into eight watershed subregions.

watersheds. The goal is to provide city planners, resource managers, and public health officials in both nations access to accurate scientific information to try to balance societal needs for resource utilization, environmental quality, and human health.

## What Happens to the Water Supply of Los Angeles in the Event of a Major Earthquake?

California's Department of Water Resources has reported that a 6.5 magnitude earthquake in northern California could render water imported from this area unusable for at least 15 months. An earthquake in southern California could also critically affect water supplies from the Colorado River. The probability of a 6.7 or greater magnitude earthquake in the Los Angeles region is 60 percent.

Economists at the USGS Western Region Geographic Science Center have developed a ground-water model to determine the physical impacts of an extended and severe water shortage on two of the Los Angeles aquifers. The USGS is now in the early stages of expanding the model to include the economic impacts of groundwater/aquifer impairment in an extended imported water shortage. This tool will help answer the following questions: If the aquifers are not able to supply the region's water demand in the event of an extended water shortage, what are the economic impacts? If, in a worst-case scenario, the structure of the aquifers is jeopardized and widespread subsidence and saltwater intrusion occurs, what are the socioeconomic impacts given communities' different vulnerabilities to subsidence and intrusion? What are the ways (in other words, conservation measures, infrastructure construction, policy measures) that we can prepare for potential water disasters, and at what cost? What are the implications of preparing for a disaster versus not preparing for a disaster and what magnitude disaster are we prepared for?

This conceptual model was introduced at a workshop in June 2006. Over 30 water authorities from the region attended to discuss how the model could assist in their disaster preparedness efforts. Researchers presented an earthquake scenario for how the impact on ground-water over time is modeled. This scenario was used

to elicit from stakeholders their opinions on potential earthquake scenarios and their degree of disaster preparedness. Stakeholders felt this was valuable research and provided good input on what they would like to see in the model. The USGS is partnering with the Water Replenishment District of Southern California which has responsibility for protecting the groundwater resources for the 4 million people who live in the Central and West Coast Basins. Regional and local water authorities can use the model to create disaster scenarios and anticipate how different magnitude disasters will impact the basins' water supply and economy. From this, they can develop disaster plans and look at infrastructure options to mitigate disaster impacts.



The Cascades of the Los Angeles Aqueduct near Sylmar, California.

### **Building a Remote Sensing Capability for Tribal Land Management: San Carlos Apache Indian Reservation (San Carlos Apache Tribe)**

As part of a collaborative effort, the USGS is working closely with tribal leaders and Bureau of Indian Affairs (BIA) to develop a long-term remote sensing capability within the Tribal Natural Resources Department that will enable Tribal natural resource managers to better manage their lands.

Satellite data are being used to characterize and map land cover change across the reservation over a 3-decade period (1975, 1989, and 2003). Rangeland health is being ascertained by the use of satellite data to assess grassland health and desertification processes. The study is providing insight into the desertification rates and processes acting on tribal rangelands. Maps have been developed showing the relative health of Tribal rangelands and impacts of desertification and will be used to develop management plans and monitoring protocols for future resource utilization and management of tribal lands. Researchers are using the satellite and field data to study the distribution of forest trees infested with bark beetles. Results of this study will provide a method for monitoring the earliest observable signs of tree decline as a result of the beetle attacks. The digital maps, produced of forested areas that are affected by bark beetle infestations, are important to Tribal natural resource managers in developing forest management plans. The USGS is using its expertise in remote sensing and data analysis to train San Carlos Tribal and BIA personnel in an effort to build their own remote sensing capability. This effort not only provides the hardcopy and digital products necessary to make current management decisions, but most importantly builds a remote sensing and analysis capability for long-term monitoring and decisionmaking which did not previously exist within the tribe prior to this effort.

### **Fort Apache Indian Reservation (White Mountain Apache Tribe)**

Tribal leaders and natural resource personnel have expressed their desire to monitor their surface water resources using satellite data. The USGS is working with Tribal personnel to develop techniques for monitoring surface water using Landsat satellite imagery. Several digital map products (1993 – very wet year and 1999 – very dry year) identifying water bodies have been produced. These products will be evaluated and compared to the manually derived Tribal maps to determine their accuracy. Products produced provide the initial datasets necessary to evaluate current conditions. In addition, the USGS will provide a training program as the impetus for building a long-term remote sensing monitoring, analysis, and decisionmaking capability within the Tribal natural resources staff.

## Helping to Minimize the Risks of Wildfires on Communities

In the Western United States over the last 20 years, the number of people living in and (or) near wild lands has increased dramatically. Add to this a combination of the current drought, unhealthy forest, and bark beetle die-off conditions, the potential for catastrophic wildfires, such as those occurring the last few years in New Mexico, Arizona, and California has increased. Within the State of Arizona several communities have been identified as being at extreme risk for large wildfire disasters. Because the increased emphasis on wildfires and unhealthy forest is relatively new, there is a lack of high-resolution maps at the proper scale that can be used before or during wildfires to help with management decisions associated with lowering the risk to a community.

With the increased resolution of satellite and airborne digital imaging high-resolution remote sensing is a promising tool that needs to be investigated to document its capabilities and limitation for applications dealing with wildfires, including the potential for detecting, mapping, and monitoring the wild land-urban interface. The USGS is collaborating with the Greater Flagstaff Forest Partnership that includes Federal, State, county, and local agencies, as well as non-



Homes in the community of Mountainaire south of Flagstaff, AZ are embedded in dense thickets of ponderosa pine.

government organizations. This project is investigating the detection, mapping, and monitoring of the wild land-urban interface around forested communities in northern Arizona by using high-resolution satellite and airborne remote sensing (6 to 24 inch pixel resolutions) as it relates to wildfire hazards. Algorithms and procedures that are being developed will be applicable throughout the Western United States.

The USFS, NPS, and the University Forestry Department, have been doing extensive fuel treatment and field-based mapping within the study site for over a decade. The USGS will be using their data as ground truth for the remotely sensed images. Examples of the types of products that are being generated using these very high-resolution images are percent vegetation canopy cover, potential old growth, coarse and fine fire fuels, and wildfire vulnerability maps that are useful at a proper local scale for determining fire hazards and helping to reduce risks to communities.

## Adding Fuel to the Fire

National fire science projects are being conducted by the USGS in collaboration with several fire management agencies that use the current and historical Landsat archive at EROS. The integration of Landsat imagery and remote sensing and GIS technology provides a valuable tool for mapping vegetation, monitoring change, and evaluating the effects of fire on the landscape.

The LANDFIRE project is a cooperative effort between the USGS, the USFS, and The Nature Conservancy, to generate comprehensive landscape-scale maps of vegetation and fuel characteristics of the entire United States. This interagency project provides consistent, geospatial data layers across land management boundaries to help land-use managers prioritize fuel treatment projects, identify where to restore ecosystems, and enhance their knowledge of local fire behavior to improve firefighting safety. These are key issues under the National Fire Plan, the Healthy Forest Restoration Act and agencies' 10-year comprehensive strategy for fire management. The USGS is providing the Landsat satellite imagery, mapping vegetation, forest composition, canopy cover and canopy height from the satellite imagery .

During FY2006, the USGS completed vegetation mapping for 17 map zones in the Western U.S. and an eastern prototype zone. Maps from the project can be found on the Internet at <http://www.landfire.gov>.



Fuel added to the fire.

### A Tool to Help Communities Evaluate Options for Reducing Risks of Natural Hazards

Natural hazards pose a significant threat to public safety and economic health worldwide. As financial losses from natural hazard events continue to rise, decisionmakers need a strategy for planning and investing scarce resources to protect communities. The problem requires integrating knowledge and techniques from geology, hydrology, ecology, geography, mathematics, statistics, and economics.

The Transboundary Project is a cooperative effort between the USGS and Natural Resources Canada to provide a scientific basis for natural hazards management and mitigation along the Pacific Coast boundary between the two nations. The case study focused on the district of Squamish, a coastal community about 1 hour north of Vancouver, British Columbia. The community will be the gateway to the 2010 Winter Olympics in Whistler, British Columbia.

The goal of this joint project has been to incorporate indicators of natural hazard risk into the evaluation of future growth plans and to support the investigation of the effectiveness, costs, and benefits of risk reduction strategies. Squamish is exposed to at least three types of natural hazards: debris flows, earthquakes, and

floods. Most attention was given to floods since they are the most frequent and most severe natural hazard to affect the developed area of Squamish. The USGS Land Use Portfolio Model (LUPM) was linked to the community visioning process so that stakeholders in the community could evaluate alternative natural hazard risk reduction options. The LUPM is a modeling, mapping, and risk-communication tool that can assist public agencies and communities in understanding and reducing vulnerability to and risk of natural hazards. This application required development of new model features that accommodates flooding, regional (versus parcel level) mitigation, parcel level reporting, partial losses, future concept (growth) plans, and risk communication. USGS and NRCan researchers presented results to Squamish stakeholders, planners, and emergency management personnel.

### Visualizing the Spread of West Nile Virus across the United States

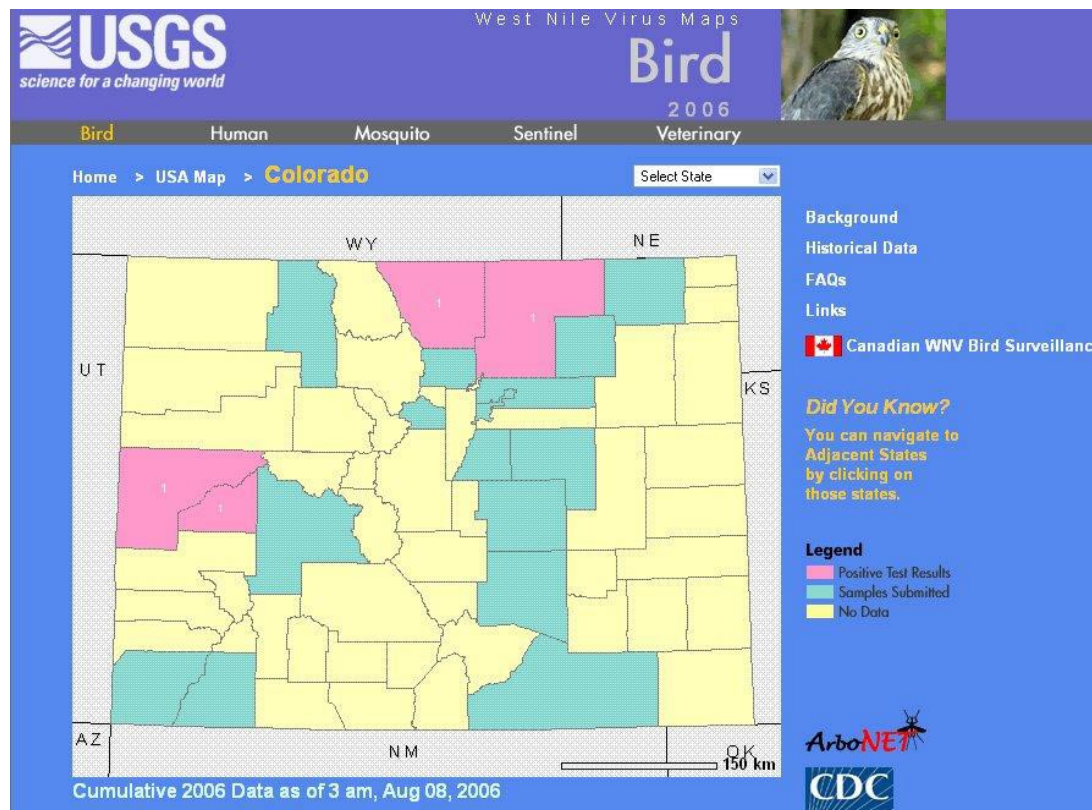
To see how the West Nile Virus (WNV) has and is spreading across the U.S. in five categories (bird, human, mosquito, sentinel, and veterinary), go to <http://westnilemaps.usgs.gov/>. The site is updated weekly during the WNV season that typically runs from April to October. Using data from the Centers for Disease Control and Prevention (CDC), the USGS shows the data in easy to understand ways:

- Maps showing disease activity-color-coded maps labeled with the number of cases per county are shown for each State. You can easily navigate between categories (for example, human to bird) and to adjacent States.
- Charts showing how the disease spreads over time. Below each State map, special charts show the weekly spread of WNV. Historically, the peak season is late summer and early autumn.
- Total counts at the county-level data. The total number of cases per county are shown in an easy-to-read table below each chart.
- Total counts for regions. The total number of cases for each State and the nation are printed at the bottom of the Web page.

# Performance Data and Analysis

The mapping of five additional diseases that the CDC deems important to share with the public will soon be available on this Web site.

- Assessing spatial variations in community exposure and sensitivity to tsunami hazards on the Oregon coast, in terms of land-cover, people, and economic assets;



West Nile Virus Web site.

## Assessing Societal Vulnerability to Tsunamis in the Pacific Northwest

As the 2004 Indian Ocean disaster demonstrated, tsunamis are significant threats to the safety, economic well-being, and natural resources of coastal communities. Although high-hazard areas have been identified for tsunamis related to a Cascadia subduction zone earthquake, far less is known on potential impacts of these tsunamis to coastal communities in the U.S. Pacific Northwest. Understanding societal vulnerability to tsunamis is critical if public- and private-sector decisionmakers are to reduce risks and increase the resilience of threatened coastal communities. Through innovative uses of GIS technology and workshops, USGS Geography researchers are helping State and local and practitioners understand community vulnerability to a tsunami in the Pacific Northwest. This geographic research work has involved:

- Co-hosting a community workshop in Cannon Beach, Oregon, to improve the integration of scientific knowledge and local values in tsunami post-disaster recovery planning (in collaboration with the University of Oregon and the Cascadia Region Earthquake Workgroup);
- Developing dasymetric-mapping techniques to improve estimates of population exposure to tsunami hazards in Clatsop County, Oregon, for local response-planning efforts; and
- Developing a social vulnerability index that characterizes demographic sensitivity of residential populations to tsunami hazards on the Oregon coast (in collaboration with the University of South Carolina).

USGS researchers and their partners are providing geographic information that helps local officials make informed and realistic decisions on mitigation, outreach, preparedness, response, and recovery strategies for increasing community resilience to Cascadia-related tsunami threats. Results from these studies have been used to prepare practitioners for the regional "Pacific Peril" table-top exercise in FY2006 and have led FEMA and American Red Cross to re-evaluate their regional preparedness plans for a Cascadia event in Oregon. Developing and applying new approaches

for understanding community vulnerability to natural hazards helps the Nation improve its ability to reduce risk and increase resilience.

## Katrina Remote Sensing Clearinghouse

Within hours of Katrina's disastrous landfall on the Gulf Coast, the USGS began channeling vital imagery to State and local governments, the FEMA, and other Federal agencies providing views of the devastated area, which helped prioritize the relief efforts. Pre- and post-hurricane imagery have been assembled by the USGS from many commercial, international, and Federal data sources. This massive influx of data is a result of U.S. Government purchases and the USGS activation of the International Charter for Space and Major Disasters (see <http://www.disasterscharter.org>). As a member of the International Charter, the USGS has the ability to access global international satellite image resources, for example, French SPOT Satellite Imaging System, India Indian Remote Sensing Satellite, Canadian RadarSat, and others) in times of emergency, at no cost.

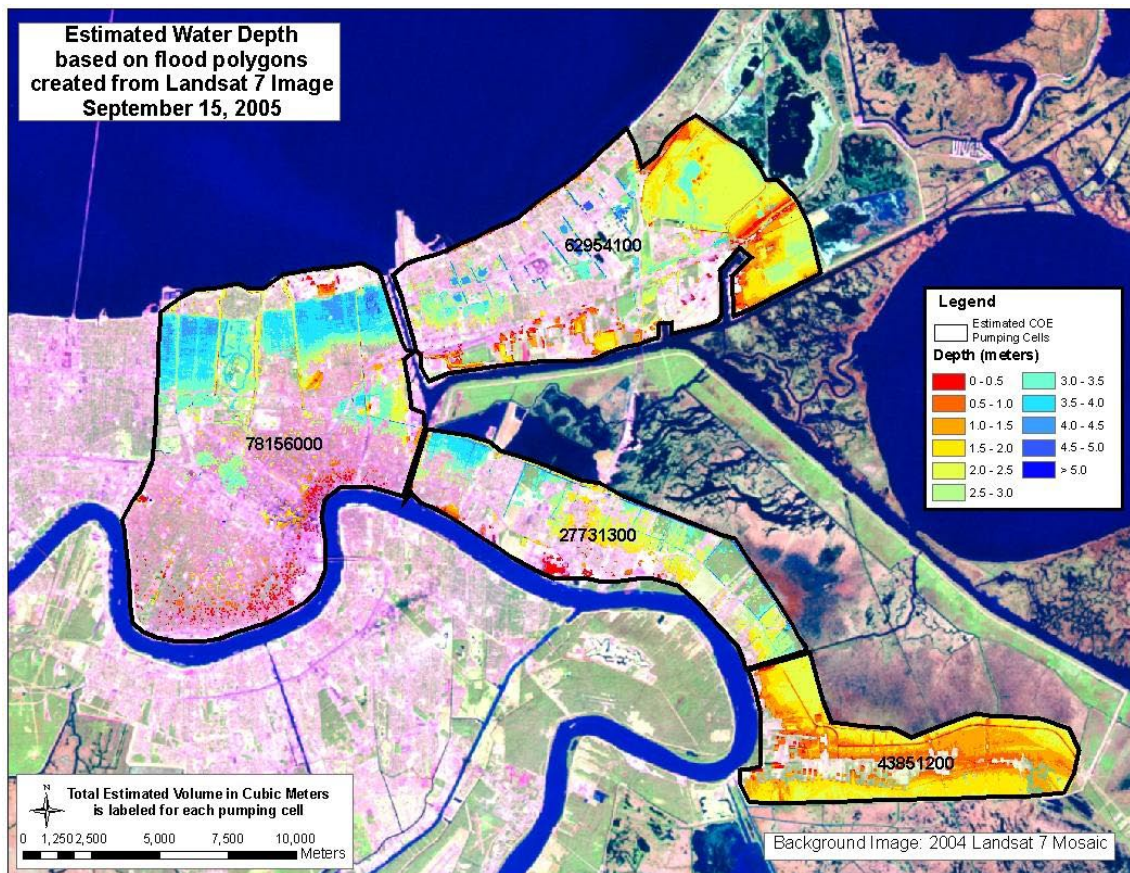
Imagery of this kind is invaluable for directing emergency response, as well as guiding efforts to mitigate the effects of future disasters on human life and property.

Since Hurricane Katrina, over 250,000 geospatial data files, totaling over 3,500 gigabytes (3.5 terabytes), have been delivered via FTP download to over 50 Federal, State, local, commercial and (or) international users. All of these images are accessible through the following Web site: <http://eros.usgs.gov/katrina>.

## Best Management Practices Designed to Improve Developing Landscapes

Land use change, associated with development, alters surface water flow patterns, affects landscape water quality, quantity, and timing, and impacts area streams and downstream estuaries and ecosystems. Best Management Practices (BMPs) are specific structures and actions designed to mitigate the negative environmental effects of land use change; however, the individual and cumulative benefits of these efforts

at the local and regional scale are poorly tracked and understood. USGS scientists are working in partnership with the EPA, Montgomery County, Maryland government, and the University of Maryland to better understand the mitigating effects of local level BMPs on the impacts of development. The Clarksburg Special Protection Area (CSPA) in Montgomery



Katrina remote sensing.

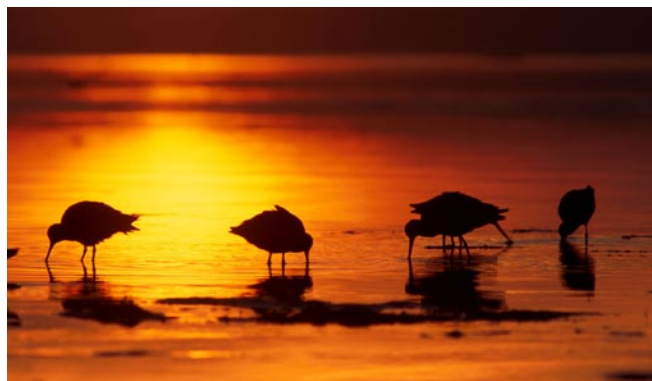
County, Maryland, an area currently undergoing rapid suburban development, is using advanced BMP designs.

USGS scientists are creating a geographic database to map and interpret the use of different BMPs in relation to land cover change. Data are being integrated with available BMP, climate, and receiving stream physical, biologic, and chemical data to identify patterns of land use change and BMP usage with environmental information. The data integration is designed to improve communication among stakeholders and provide a platform to guide upcoming targeted data collection. The results may be directly applied to inform local and regional land use decisionmakers for mitigation planning (in other words, BMP use), remediation actions (in other words, BMP retrofitting) in preexisting, developed communities, and to better understand the potential results of specific development mitigation practices on ecosystem health.

### Salton Sea Water Level Impacts Air Quality and Human Health

Air quality continues to be an important public health concern within the Salton Sea Air Basin in southern California, with areas in both Riverside and Imperial Counties at times violating EPA air quality standards. With a recent agreement between the water stakeholders and the urban areas in southern California, some of the water that drains into the Salton Sea will be diverted to the cities. Over time, this will cause the water level to drop and up to 80,000 acres of the lake's bottom will be exposed to become potential new dust sources.

Several Federal, State, and local agencies are involved in investigating the possible best methods to restore the Salton Sea to protect the wildlife habitats and minimize the impact to human health caused by new dust sources. Restoration costs are estimated to be in the hundreds of millions to several billions of dollars. The major issues being investigated by the USGS under this project in collaboration with the BOR and the California Department of Water Resources are (1) to map the Salton Sea's lake bottom sediment characteristics to generate a first order potential wind erosion vulnerability map; (2) to analyze and study the region's wind characteristics to help predict the potential impact to air quality the lower water levels



Photograph taken at the Salton Sea National Wildlife Refuge.

will have on the area, including identifying the areas that may be affected the most; and (3) to identify some of the current on-land large dust sources within the Salton Sea region and investigate their current impact to the region's air quality. This information is vital to land resource managers to determine how best to restore the Salton Sea and minimize the impact to both wildlife habitats and human health.

### Supporting Conservation through Land Trusts

There are a large number of land conservation groups, often referred to as land trusts, in the Mid-Atlantic region. These groups are very active in the acquisition of development rights through purchase or easement for the purpose of cultural preservation, green space protection, and ecological conservation. They are very interested in targeting lands that not only provide conservation opportunities for preserving open space, but also complement existing protected land systems, Federal and State conservation programs, and preserve viewsheds from key recreation and historical locations.

In FY2006, the National Biological Information Infrastructure (NBII) Mid-Atlantic Information Node worked with the New River Land Trust in Virginia to develop an Internet-based mapping and decision-support system that allows members to identify lands that offer the greatest economy for meeting their, and cooperators, objectives. Users can view spatial data layers and integrate land trust objectives with their own priorities and they can then make their own maps of lands that meet their highest priority for conservation. At this time, the land trust system allows users to display and query spatial information through the Mid-



Atlantic Information Node. The second phase of the project will allow user input, weighting, and results to be displayed.

This interagency effort integrates biodiversity-related spatial data layers from the Virginia Natural Heritage Program with datasets from the USGS, including the National Land Cover Data, National Hydrography Dataset, and elevations. New data layers can be incorporated very easily as they are identified. While the tool was initially developed for the New River Land Trust, other land trusts have expressed an interest in using it as well.

Feedback from Elizabeth Obenshain, Executive Director, New River Land Trust, has been extremely positive: "It's hard for us to adequately express our admiration and gratitude for the work you have done. This map of conservation lands will be a great help in focusing our work and even more in documenting why certain sites are so important... this final version will be so useful for efforts to save more land."

### Is the Fish Safe to Eat: Modeling Mercury in Fish Tissue

Determining when to issue fish consumption warnings is a constant challenge for all States. The Eastern Geographic Science Center has been working for several years to encourage broader use of the National Descriptive Model of Mercury in Fish to assist States in improving their fish-tissue sampling efforts so public health advisories about eating fish can be made more effective and economical.



Scientist studies if fish are safe to eat.

The Environmental Mercury Mapping, Monitoring, and Analysis Web site was developed to provide State-level decisionmakers and other users with direct access to a state-of-the-art mercury in fish estimation model and the relevant data and what-if capability to define model inputs and estimate mercury levels according to fish species, size, and location. The site at <http://emmma.usgs.gov/fishHgAbout.aspx> also offers techniques for geographic analysis and scientific visualization of model inputs and outputs. Among the benefits of the fish model are reduced monitoring program costs for State fisheries managers, more complete fish consumption advisories, and better spatial and temporal trend estimates for mercury distribution in fish.

Potential directions for this research include investigation of the relationship of mercury contamination with disease on the landscape, mapping of temporal trends in mercury in fish, identification of geological and mining sources of mercury in fish, and the extension of this Web-based modeling approach to other environmental contaminants.

### Management Excellence goals

USGS supports the Department's Management Excellence goals, many of which are directly related to the PMA initiatives. See the Management Discussion and Analysis- Compliance with laws and regulations section in the PAR starting on page 21 for examples of accomplishments related to the President's Management Agenda initiatives below:

- Strategic Management of Human Capital;
- Competitive Sourcing;
- Expanding Electronic Government (E-gov);
- Budget and Performance Integration;
- Improved Financial Performance; and
- Real Property Asset Management.

# Performance Data and Analysis

In keeping with Departmental and OMB policy for performance data verification and validation (V&V), USGS has complied with requirements for performance data credibility.

During FY2006, USGS GPRA coordinators for each Budget Activity/scientific discipline completed and certified a validation checklist comprised of criteria in the DOI V&V Assessment Matrix for the key, non-key performance measures of the DOI Strategic Plan, bureau specific, PART measures, and outputs to which USGS contributes. USGS will demonstrate accountability by establishing a clear connection among mission, work, and what work accomplishes for the funds that have been authorized and appropriated. Criteria include scrutiny to determine that goals are realistic and measurable, understandable to users, and ultimately used in decisionmaking. In addition, several of the Strategic Plan measures were assessed by the

PART during FY2006, for select biology and geology programs. This will add additional documentation and assurance of creditability and usability of USGS performance measures for management decisionmaking.

Also, during FY2006, USGS GPRA coordinators for each Budget Activity/scientific discipline completed and certified a verification checklist comprised of criteria in the DOI V&V Assessment Matrix for all performance measures—comprising of, key, non-key and bureau-specific measures, PART measures, and PART outputs. This included assessing data accuracy, completeness, consistency, availability, and inter-control practices that serve to determine the overall reliability of the data collected. GPRA coordinators will document any inconsistencies, inaccuracies or anomalies in performance data to ensure that problems are addressed so that integrity of the performance data are ensured.

Data Validation and Verification Element	Explanation
Status of Data V&V implementation in bureau activity area	Response to GPRA requirements and DOI-AS-PMB Data V&V directive January 16, 2003.
1. Extent to which data V&V criteria have been disseminated throughout the bureau activity area units	Data V&V criteria have been disseminated and reviewed by all USGS GPRA coordinators for each Budget Activity/scientific discipline.
2. Extent to which protocols have been implemented in units providing performance data	
a) Are collection standards followed?	Performance measure names, terminology and DOI performance definition templates are understood and being followed. There is no common data entry system or data entry point for collection of performance data, but standard protocols for database queries and retrieval are used. For example, Facilities Condition Index is defined by DOI guidance as deferred maintenance costs divided by replacement value. Both of these components of FCI are based on common industry standards and used by USGS Facilities to capture and calculate performance data. The Biological Information Management and Delivery Web site requires common collection standards to report quarterly accomplishments. Reporting stations are notified at the same time of a reporting requirement, and all use the same procedure for reports. For Biological Research & Monitoring, new GPRA guidance was communicated to center directors and Regional Executive (REX) staff. This guidance establishes collection and review and editing procedures involving REX staff, with headquarters follow-up. Consistent reporting procedures, including database formats are used by centers and regions.

Data Validation and Verification Element	Explanation
b) Are data entry and transfer rules used?	Systems used to track performance data do not have extensive editing capabilities, but standard processes are used to capture performance data. Program offices understand how to obtain information about performance data and maintain data currency. For example, Water procedures for data entry, data sources and assumptions, and methods are documented by OBP discipline coordinator and are available to other OBP staff. Facilities procedures for data collection for the Condition Assessment (CA) program are documented in the contract.
c) Are data security measures implemented?	1) Firewalls, password protection, etc. are established according to bureau information system requirements. 2) Access to the databases and/or Excel spreadsheets are only available to registered, logged-on USGS users.
3. Does the bureau conduct oversight and certification of data?	USGS GPRA coordinators for each budget activity/scientific discipline provide oversight and standards to be followed, verify performance data accuracy, ensure documentation is maintained, and certify performance data reported. OBP provides a second level of oversight.
4. Are other relevant actions taken to insure credibility of performance data?	Yes, for example, the Facilities CA report is generated by a third-party contractor and reviewed by Government personnel. Also, OBP makes comments in the DOI database, if for any reason, the data is changed after it has been entered.
Data Source(s)	Data sources such as large databases, local files, Excel spreadsheets, reference files, and hardcopy files are documented. For example, the Water Discipline uses a software query to extract the performance data from the National Water Information System (NWIS), a database and user interface through which the streamgages, ground-water sites, and water-quality sites report their hydrologic data on the Internet. For Facilities, the CA data are kept in hard copy form and on a USGS facilities database.
Data Limitations	Any data limitations are documented.
Corrective/Improvement Actions (Needed, In Progress, or Recently Completed)	During FY2006, a Departmental contractor reviewed all data verification and validation processes for all bureaus in the Department. Action plans will be developed by the bureau to address all recommendations made by the contractor.

## Performance Data and Analysis

Program evaluations are an important tool in analyzing the effectiveness and efficiency of our programs and evaluating whether they are meeting their intended objectives. These evaluations are the foundation on which USGS gauges performance relative to the DOI End-Outcome measures for soundness of methodology, accuracy, and reliability of science. Our programs are evaluated through a variety of means, including performance audits, PART, financial audits, internal control reviews, and external reviews from Congress, OMB, OIG, and other organizations, such as the National Academy of Public Administration and the National Academy of Science.

These reviews, which may take several years to complete, are critical to maintaining the USGS's reputation for scientific excellence and credibility as well as providing guidance for future research needs. The evaluations improve the accountability and quality of programs, but also identify and address gaps in programs; redirect or reaffirm program directions;

identify and provide guidance for development of new programs; and review and/or motivate managers and scientists.

We conduct both internal and external peer and management reviews to improve the accountability and quality of programs; identify and address gaps in programs; redirect or reaffirm program directions; identify and provide guidance for the development of new programs; and review and/or motivate managers and scientists.

Reviews are both internal and external, conducted by USGS and non-USGS scientists, technicians, or specialists who are not involved in the specific proposal, project, program, or product under review. Our goal is to conduct an independent external peer review of ongoing programs about every 5 years, combined with more frequent independent internal management reviews.

Program	Strategic Plan Mission Area	Purpose of Program Evaluation	Actions Taken in Response to Evaluation
Cooperative Water Program (Advisory Committee on Water Information)	Serving Communities	Assess the effectiveness of the USGS in addressing the recommendations of the 1999 external Cooperative Program review Task Force, and continued actions to be taken by the USGS to more fully implement the recommendations of 1999 report.	The National Hydrologic Warning Council (NHWC) has completed their cost benefit study and prepared two reports "Benefits of USGS Streamgaging" is available on line at: <a href="http://nhwc.udfcd.org/PDF/nhwc_nsip_phaseA.pdf">http://nhwc.udfcd.org/PDF/nhwc_nsip_phaseA.pdf</a> . The second report a more quantitative benefit analysis compares those benefits to the costs of the program. That report will be released publicly by NHWC on Oct 23 at the Southwestern Association of ALERT systems conference. At that time, the recommendations will be reviewed and discussed for potential action.
Vulnerability and Risk Analysis for Decisionmaking	Serving Communities	Assess the need for a national strategy on effectively using vulnerability assessments and risk analyses for decision making by community planners and emergency managers.	The American Association of Geographers (AAG) panel highlighted the concept of a national strategy and the need for developing a coherent research agenda to provide direction in establishing a framework. The USGS is partnering with the Wharton School at the University of Pennsylvania, and the AAG to begin development of the research agenda with the collaboration of key academic, government, and private sector leaders.

Program	Strategic Plan Mission Area	Purpose of Program Evaluation	Actions Taken in Response to Evaluation
<p>Cost Benefit Analysis of WRD Stream-gaging Program (National Hydrologic Warning Council)</p>	<p>Serving Communities</p>	<p>The USGS developed the National Streamflow Information Program (NSIP) to plan for future streamgaging activities. The purpose of the evaluation was to: 1) Identify and describe the range of tangible and intangible benefits of the USGS streamgaging network, and 2) Estimate the probable tangible benefits of the network, thus permitting a comparison of economic benefit to cost.</p>	<p>The National Hydrologic Warning Council (NHWC) has completed their cost benefit study and prepared two reports "Benefits of USGS Streamgaging" is available on line at: <a href="http://nhwc.udfcd.org/PDF/nhwc_nsip_phaseA.pdf">http://nhwc.udfcd.org/PDF/nhwc_nsip_phaseA.pdf</a>. The second report a more quantitative benefit analysis compares those benefits to the costs of the program. That report will be released publicly by NHWC on Oct 23 at the Southwestern Association of ALERT systems conference. At that time, the recommendations will be reviewed and discussed for potential action.</p>
<p>National Academy of Science "Beyond Mapping: The Challenges of New Technologies in the Geographic Information Sciences"</p>	<p>Serving Communities</p>	<p>Rapidly changing mapping technologies are nearly outpacing the workforce skills of government mapping agencies. As the nation's civilian mapping agency, USGS recognized the strategic and societal implications of increased demand for geospatial information. USGS turned to the National Research Council (NRC) to help assess its future programmatic needs for a well educated GIScience workforce.</p>	<p>The Geospatial Information Office (GIO) is considering the strategic implications of the National Research Council (NRC) recommendations with respect to the USGS mission on sound science and in particular GIScience (geographic information systems, data management techniques, visualization, remote sensing, and spatial statistics and modeling).</p>
<p>American Society of Photogrammetry and Remote Sensing "Panel Report to USGS on Digital Orthoimagery"</p>	<p>Serving Communities</p>	<p>USGS is a prominent partner with other Federal agencies and National States Geographic Information Council in a business plan, Imagery for the Nation (IFTN), for sustainable acquisition, maintenance, and dissemination of orthoimagery and elevation data on a national basis. The American Society of Photogrammetry and Remote Sensing (ASPRS) Panel on Digital Orthoimagery was chartered to examine the status and forecast the future of orthoimage technology, to describe how such technology will affect current and future orthoimage programs, and to make recommendations based on these predictions.</p>	<p>Report recommendations included: (1) a strong program supporting the acquisition, maintenance and distribution of orthoimagery for the Nation; (2) reinvigorated program leadership by USGS; (3) greater support for clearinghouse functions and standards; and (4) establishment of an archive of last resort for these "invaluable data." In FY2007 a cost benefits analysis will be undertaken to predict the benefits of IFTN to stakeholders and to quantify costs. The FGDC is strengthening orthoimagery and elevation data standards to achieve national and international acceptance. Working with the National Archives and Records Administration (NARA), the USGS Earth Resources Observation and Science Data Center is in the midst of being NARA-certified as a national archive for geospatial data.</p>

USGS scientist recording discharge measurements in Redwell Basin, Colorado.



# Section III

## Financial Information

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### Message from the Chief Financial Officer



The Performance and Accountability Report for Fiscal Year 2006 provides our most important financial and program performance information for the USGS. It also is our principal publication and report to the President and the American people on our stewardship, management, and leadership of the public funds to which we have been entrusted.

It has been an exceptional year. As a result of the dedicated efforts of the financial and administrative management staff across the bureau, for the third consecutive year, the independent CPA firm selected by our Inspector General has issued an unqualified (“clean”) opinion on the bureau’s consolidated financial statements. This is the best possible audit result. With it the American people can have confidence that the financial statement information presented here is both accurate and reliable. Along with this opinion, USGS achieved a number of other significant management improvement initiatives.

- For the third year in a row, the independent CPA firm has reported no material weakness in internal control or instances of non-compliance with laws and regulations;
- Taking proactive steps to comply with the expanded requirements of OMB Circular A-123, Management’s Responsibility for Internal Control, the Bureau established a senior assessment team and specifically tasked working groups to address the new requirements. As a result, the Director has been able to issue an unqualified Statement of Assurance regarding internal control over financial reporting;
- As part of our diligence in maintaining excellence in financial operations, USGS has continuously monitored bureau activity through statistical sampling and by conducting other internal reviews;
- After conducting two streamlined competitive sourcing studies, we made a decision that resulted in science technician activities remaining in-house. USGS is preparing to announce another competitive sourcing study on our National Water Quality Lab;
- In answering the call to service surrounding the catastrophic events associated with hurricanes Katrina and Rita, we facilitated the receipt and use of funding to ensure the bureau’s ability to immediately engage in life-saving activities;



- The President has challenged us to meet rigorous standards through the President's Management Agenda. USGS has continued to make great strides in meeting the goals of the PMA;
- USGS completed its first ever Asset Management Plan and comprehensive real property inventory to meet the requirements of Executive Order 13327; and
- To demonstrate our commitment to training personnel, USGS held National training events for all of our administrative officers and cost center managers.

The PAR details how our science is helping to transform the world for the better during a time of unprecedented historical change and opportunity. It also demonstrates that the USGS takes this responsibility seriously and, through a sustained focus on results, is working diligently to ensure that taxpayers' dollars are well managed. This PAR and the achievements that it describes could not have been accomplished without the extraordinary efforts of the bureau's dedicated staff. USGS is proud of being effective and accountable stewards of the taxpayer's money, and looks forward to continued improvement in meeting our commitment to the American people in the years to come.

Karen D. Baker  
Chief Financial Officer and  
Associate Director, Administrative Policy and Services  
October 2006



United States Department of the Interior

OFFICE OF INSPECTOR GENERAL  
Washington, DC 20240

JAN 19 2007

Memorandum

To: Director, U.S. Geological Survey

From: Anne L. Richards *Anne L. Richards*  
Assistant Inspector General for Audits

Subject: Independent Auditors' Report on the U.S. Geological Survey Financial Statements for Fiscal Years 2006 and 2005 (Report No. X-IN-GSV-0015-2006)

***INTRODUCTION***

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This memorandum transmits the KPMG LLP (KPMG) auditors' report of the U.S. Geological Survey (USGS) financial statements for fiscal years 2006 and 2005 (Attachment 1). The Chief Financial Officers Act of 1990 (Public Law 101-576), as amended, requires the Inspector General or an independent auditor, as determined by the Inspector General, to audit the Department of the Interior (DOI) financial statements. Under a contract issued by DOI and monitored by the Office of Inspector General (OIG), the independent public accounting firm KPMG performed an audit of USGS fiscal years 2006 and 2005 financial statements. The contract required that the audit be performed in accordance with the "Government Auditing Standards" issued by the Comptroller General of the United States and with Office of Management and Budget Bulletin No. 06-03, "Audit Requirements for Federal Financial Statements."

***RESULTS OF INDEPENDENT AUDIT***

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In its audit report dated November 9, 2006, KPMG issued an unqualified opinion on the USGS financial statements. However, KPMG identified one reportable condition in internal controls over financial reporting, which was not considered to be a material weakness. KPMG also identified one instance where USGS did not comply with laws and regulations. The report contains five recommendations that, if implemented, should resolve the findings.

***STATUS OF RECOMMENDATIONS***

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In its December 28, 2006 response (Attachment 2) to the draft report, USGS agreed with the two findings. USGS also addressed each recommendation, stating that it was in the process of implementing the five recommendations (see Attachment 3, "Status of Audit Report Recommendations").

We will refer the five unimplemented recommendations to the Assistant Secretary for Policy, Management and Budget for tracking of implementation.

## ***EVALUATION OF KPMG AUDIT PERFORMANCE***

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To fulfill our monitoring responsibilities, the OIG:

- assessed KPMG's approach and planning of the audit;
- evaluated the qualifications and independence of the auditors;
- monitored the progress of the audit at key points;
- coordinated periodic meetings with USGS management to discuss audit progress, findings, and recommendations;
- reviewed and accepted KPMG's audit report; and
- performed other procedures we deemed necessary.

KPMG is responsible for the attached auditors' report and for the conclusions expressed in the report. We do not express an opinion on USGS financial statements or KPMG conclusions on the effectiveness of internal controls or compliance with laws, regulations, and FFMIA.

## ***REPORT DISTRIBUTION***

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The legislation, as amended, creating the OIG (5 U.S.C.A. app. 3) requires semiannual reporting to the Congress on all audit reports issued, actions taken to implement audit recommendations, and recommendations that have not been implemented. Therefore, we will include this report in our next semiannual report. The distribution of the report is not restricted, and copies are available for public inspection.

We appreciate the courtesies and cooperation extended to KPMG and the OIG staff during the audit. If you have any questions regarding the report, please contact me at 202-208-5512.

### Attachments

cc: Assistant Secretary for Water and Science  
 Audit Liaison Officer, Water and Science  
 Chief Financial Officer, U.S. Geological Survey  
 Audit Liaison Officer, U.S. Geological Survey  
 Focus Group Leader, Management Control and Audit Followup, Office of Financial Management  
 Focus Leader, Financial Reporting, Office of Financial Management



**KPMG LLP**  
2001 M Street, NW  
Washington, DC 20036

### **Independent Auditors' Report**

Director of the U.S. Geological Survey and Inspector General  
U.S. Department of the Interior:

We have audited the accompanying consolidated balance sheets of the U.S. Geological Survey (USGS) as of September 30, 2006 and 2005, and the related consolidated statements of net cost, changes in net position, financing, and the combined statements of budgetary resources (hereinafter referred to as "consolidated financial statements") for the years then ended. The objective of our audits was to express an opinion on the fair presentation of these consolidated financial statements. In connection with our fiscal year 2006 audit, we also considered USGS's internal control over financial reporting, Required Supplementary Stewardship Information, and performance measures and tested USGS's compliance with certain provisions of applicable laws, regulations, contracts, and grant agreements that could have a direct and material effect on these consolidated financial statements.

#### **SUMMARY**

As stated in our opinion on the consolidated financial statements, we concluded that USGS's consolidated financial statements as of and for the years ended September 30, 2006 and 2005, are presented fairly, in all material respects, in conformity with U.S. generally accepted accounting principles.

As discussed in our opinion, in fiscal year 2006, USGS changed its method of accounting for and reporting of earmarked funds, heritage assets and stewardship land to adopt changes in accounting standards.

Our consideration of internal control over financial reporting, Required Supplementary Stewardship Information, and performance measures resulted in the following condition being identified as a reportable condition:

#### **A Improve Controls over Charge Cards**

However, the reportable condition is not believed to be a material weakness.

The results of our tests of compliance with certain provisions of laws, regulations, contracts, and grant agreements disclosed an instance of noncompliance that is required to be reported under *Government Auditing Standards* issued by the Comptroller General of the United States, and Office of Management and Budget (OMB) Bulletin No. 06-03, *Audit Requirements for Federal Financial Statements*.

#### **B Single Audit Act Amendments of 1996**

The following sections discuss our opinion on USGS's consolidated financial statements; our consideration of USGS's internal control over financial reporting, Required Supplementary Stewardship Information, and performance measures; our tests of USGS's compliance with certain provisions of applicable laws, regulations, contracts, and grant agreements; and management's and our responsibilities.



## OPINION ON THE CONSOLIDATED FINANCIAL STATEMENTS

We have audited the accompanying consolidated balance sheets of USGS as of September 30, 2006 and 2005, and the related consolidated statements of net cost, changes in net position, financing, and the combined statements of budgetary resources for the years then ended.

In our opinion, the consolidated financial statements referred to above present fairly, in all material respects, the financial position of USGS as of September 30, 2006 and 2005, and its net costs, changes in net position, budgetary resources, reconciliation of net costs to budgetary obligations for the years then ended, in conformity with U.S. generally accepted accounting principles.

As discussed in Note 16 to the consolidated financial statements, USGS changed its method of accounting for and reporting earmarked funds in fiscal year 2006 to adopt the provisions of the Federal Accounting Standards Advisory Board's Statement of Federal Financial Accounting Standards (SFFAS) No. 27, *Identifying and Reporting Earmarked Funds*. Also as discussed in Note 11 to the consolidated financial statements, USGS changed its method of reporting for heritage assets and stewardship land in fiscal year 2006 to adopt the applicable provisions of the SFFAS No. 29, *Heritage Assets and Stewardship Land*.

The information in the Management's Discussion and Analysis, Required Supplementary Stewardship Information, and Required Supplementary Information sections is not a required part of the consolidated financial statements, but is supplementary information required by U.S. generally accepted accounting principles and OMB Circular No. A-136, *Financial Reporting Requirements*. We have applied certain limited procedures, which consisted principally of inquiries of management regarding the methods of measurement and presentation of this information. However, we did not audit this information, and accordingly, we express no opinion on it.

Our audits were conducted for the purpose of forming an opinion on the consolidated financial statements taken as a whole. The information in the Introduction, Performance Data and Analysis, and Appendix sections of the Performance and Accountability Report, as listed in the accompanying table of contents, are presented for purposes of additional analysis and are not required as part of the consolidated financial statements. This information has not been subjected to auditing procedures, and accordingly, we express no opinion on it.

## INTERNAL CONTROL OVER FINANCIAL REPORTING

Our consideration of internal control over financial reporting would not necessarily disclose all matters in the internal control over financial reporting that might be reportable conditions. Under standards issued by the American Institute of Certified Public Accountants, reportable conditions are matters coming to our attention relating to significant deficiencies in the design or operation of the internal control over financial reporting that, in our judgment, could adversely affect USGS's ability to record, process, summarize, and report financial data consistent with the assertions by management in the consolidated financial statements.

Material weaknesses are reportable conditions in which the design or operation of one or more of the internal control components does not reduce to a relatively low level the risk that misstatements caused by error or fraud, in amounts that would be material in relation to the consolidated financial statements being audited, may occur and not be detected within a timely period by employees in the normal course of performing their assigned functions. Because of inherent limitations in internal control, misstatements due to error or fraud may nevertheless occur and not be detected.

In our fiscal year 2006 audit, we noted a certain matter, described below, involving the internal control over financial reporting and its operation that we consider to be a reportable condition. However, the reportable condition is not believed to be a material weakness.



## **A Improve Controls over Charge Cards**

In fiscal year 2006, USGS charge cards were used in transactions totaling approximately \$85 million. By not ensuring that controls are operating effectively, USGS increases its risk that charge cards may be used for purposes other than official government related business which could lead to waste, fraud and abuse. USGS issues charge cards to its employees to streamline acquisition and payment procedures and to reduce administrative burden associated with traditional and emergency purchasing of travel items, supplies, and services. In conjunction with the issuance of charge cards, the U.S. Department of the Interior (DOI) published guidance and instructions on the charge card's utilization through the *Integrated Charge Card Program Guide*. This guidance sets forth policies regarding the restrictions on use of the charge cards as well as certain internal control procedures such as timely and complete reconciliation of billing statements by cardholders and approving officials and surrender and destruction of charge cards and convenience checks upon a cardholder's resignation, transfer or termination. However, USGS does not consistently follow these internal control procedures due to the need for more diligent management oversight at the field level.

Specifically, during our testwork, we noted in 13 out of 86 cardholder statements examined, the statements had not been reviewed and approved by the USGS approving officials in a timely manner. This condition, which has been an issue for the past three years, has progressively gotten worse. Consequently, this condition has been elevated to a reportable condition in our FY 2006 report.

### ***Recommendations***

We recommend that:

- 1 USGS continue to provide users and approving officials training on its charge card procedures.
- 2 USGS management, at the field levels, be more diligent in monitoring and enforcing compliance with its charge card policies.
- 3 USGS verify that statements are reviewed and approved in a timely manner, and the expenses are charged to the correct BOC during the quarterly sampling of charge card purchases.
- 4 Consider a more frequent sampling review of the charge card transactions to ensure that statements are reviewed and instituting appropriate disciplinary actions as warranted.

### ***Management Response***

Management has prepared an official response presented as a separate attachment to this report. In summary, management agreed with our findings, and its comments were responsive to our recommendations.

## **INTERNAL CONTROLS OVER REQUIRED SUPPLEMENTARY STEWARDSHIP INFORMATION AND PERFORMANCE MEASURES**

Under OMB Bulletin No. 06-03, the definition of material weaknesses is extended to other controls. Material weaknesses are reportable conditions in which the design or operation of one or more of the internal control components does not reduce to a relatively low level the risk that misstatements caused by error or fraud, in amounts that would be material in relation to the Required Supplementary Stewardship Information or material to a performance measure or aggregation of related performance measures, may occur and not be detected within a timely period by employees in the normal course of performing their assigned functions. Because of inherent limitations in internal control, misstatements due to error or fraud may nevertheless occur and not be detected.



Our consideration of the internal control over the Required Supplementary Stewardship Information and the design and operation of internal control over the existence and completeness assertions related to performance measures reported in the Management's Discussion and Analysis section would not necessarily disclose all matters involving the internal control and its operation related to Required Supplementary Stewardship Information or the design and operation of the internal control over the existence and completeness assertions related to key performance measures that might be reportable conditions.

In our fiscal year 2006 audit, we noted no matters involving the internal control and its operation related to Required Supplementary Stewardship Information that we considered to be material weaknesses as defined above.

In our fiscal year 2006 audit, we noted no matters involving the design and operation of the internal control over the existence and completeness assertions related to key performance measures that we considered to be material weaknesses as defined above.

## COMPLIANCE AND OTHER MATTERS

Our tests of compliance with certain provisions of laws, regulations, contracts, and grant agreements, as described in the Responsibilities section of this report, exclusive of those referred to in the *Federal Financial Management Improvement Act of 1996* (FFMIA), disclosed one instance of noncompliance that is required to be reported under *Government Auditing Standards* or OMB Bulletin No. 06-03, and is described below.

### B Single Audit Act Amendments of 1996

OMB Circular No. A-133, *Audits of States, Local Governments, and Non-Profit Organizations*, subpart D – Federal Agencies and Pass Through Entities and Appendix B – Circular A-133 Compliance Supplement requires Federal awarding agencies to perform the following procedures for the Federal awards it makes: (1) inform recipients of the Catalog of Federal Domestic Assistance title and number, award name and number, award year, and if the award is for research and development costs; (2) advise recipients of requirements imposed on them by Federal laws, regulations, and the provisions of contracts or grant agreements; (3) ensure that audits are completed and reports are received in a timely manner; (4) provide technical advice and counsel to auditees and auditors as requested; (5) issue a management decision on audit findings within six months after receipt of the audit report and ensure that the recipient takes appropriate and timely corrective action; and (6) assign a person responsible for providing annual updates to the Compliance Supplement to OMB.

To test USGS's compliance with the Single Audit Act Amendments of 1996 (the Act), we first obtained a population of USGS grantee Single Audit reports issued on or before December 31, 2005 from the OMB Single Audit Clearinghouse that identified internal control or compliance findings related to a USGS Federal awards program. For 25 of our 32 samples selected for testing, USGS had not issued a management decision on the audit findings reflected in the audit reports and ensured that the recipient has taken appropriate and timely corrective action as required by the Act. This resulted from USGS Office of Acquisitions and Grants (OAG) not following up with the DOI Office of Inspector General or the OMB Federal Clearinghouse to obtain the grantee Single Audit reports. Of these 25 reports, 1 was issued during fiscal year 2006, and the remaining 24 were issued in prior fiscal years.

### *Recommendation*

We recommend that USGS management work with the Department to obtain the necessary audit reports in a timely fashion to meet the requirements of the Act. If the Department is unable to provide the audit



reports in a timely fashion to USGS, then USGS should use the Federal Clearinghouse website in determining if any follow up is necessary.

### ***Management Response***

Management has prepared an official response presented as a separate attachment to this report. In summary, management agreed with our findings and its comments were responsive to our recommendations.

The results of our tests of compliance with certain provisions of other laws and regulations, exclusive of those referred to in FFMIA, disclosed no instances of noncompliance or other matters that are required to be reported under *Government Auditing Standards* or OMB Bulletin No. 06-03.

The results of our tests of FFMIA disclosed no instances in which USGS's financial management systems did not substantially comply with the three requirements discussed in the Responsibilities section of this report.

## **RESPONSIBILITIES**

**Management's Responsibilities.** The United States Code Title 31 Section 3515 and 9106 require agencies to report annually to Congress on their financial status and any other information needed to fairly present their financial position and results of operations. To assist the U.S. Department of Interior meet these reporting requirements, USGS prepares consolidated financial statements in accordance with OMB Circular No. A-136.

Management is responsible for the consolidated financial statements, including:

- Preparing the consolidated financial statements in conformity with U.S. generally accepted accounting principles;
- Preparing the Management's Discussion and Analysis (including the performance measures), Required Supplementary Information, and Required Supplementary Stewardship Information;
- Establishing and maintaining effective internal controls over financial reporting; and
- Complying with laws, regulations, contracts, and grant agreements applicable to USGS, including FFMIA.

In fulfilling this responsibility, management is required to make estimates and judgments to assess the expected benefits and related costs of internal control policies.

**Auditors' Responsibilities.** Our responsibility is to express an opinion on the fiscal year 2006 and 2005 consolidated financial statements of the USGS based on our audits. We conducted our audits in accordance with auditing standards generally accepted in the United States of America; the standards applicable to financial audits contained in *Government Auditing Standards*, issued by the Comptroller General of the United States; and OMB Bulletin No. 06-03. Those standards and OMB Bulletin No. 06-03 require that we plan and perform the audits to obtain reasonable assurance about whether the consolidated financial statements are free of material misstatement. An audit includes consideration of internal control over financial reporting as a basis for designing audit procedures that are appropriate in the circumstances, but not for the purpose of expressing an opinion on the effectiveness of USGS's internal control over financial reporting. Accordingly, we express no such opinion.





An audit also includes:

- Examining, on a test basis, evidence supporting the amounts and disclosures in the consolidated financial statements;
- Assessing the accounting principles used and significant estimates made by management; and
- Evaluating the overall financial statement presentation.

We believe that our audits provide a reasonable basis for our opinion.

In planning and performing our fiscal year 2006 audit, we considered USGS's internal control over financial reporting by obtaining an understanding of USGS's internal control, determining whether internal controls had been placed in operation, assessing control risk, and performing tests of controls in order to determine our auditing procedures for the purpose of expressing our opinion on the consolidated financial statements. We limited our internal control testing to those controls necessary to achieve the objectives described in *Government Auditing Standards* and OMB Bulletin No. 06-03. We did not test all internal controls relevant to operating objectives as broadly defined by the *Federal Managers' Financial Integrity Act of 1982*. The objective of our audit was not to provide an opinion on USGS's internal control over financial reporting. Consequently, we do not provide an opinion thereon.

As required by OMB Bulletin No. 06-03, in our fiscal year 2006 audit, we considered USGS's internal control over the Required Supplementary Stewardship Information by obtaining an understanding of USGS's internal control, determining whether these internal controls had been placed in operation, assessing control risk, and performing tests of controls. We limited our testing to those controls necessary to test and report on the internal control over Required Supplementary Stewardship Information in accordance with OMB Bulletin No. 06-03. However, our procedures were not designed to provide an opinion on internal control over the Required Supplementary Stewardship Information and, accordingly, we do not provide an opinion thereon.

As further required by OMB Bulletin No. 06-03, in our fiscal year 2006 audit, with respect to internal control related to performance measures determined by management to be key and reported in the Management's Discussion and Analysis section, we obtained an understanding of the design of internal controls relating to the existence and completeness assertions and determined whether these internal controls had been placed in operation. We limited our testing to those controls necessary to test and report on the internal control over key performance measures in accordance with OMB Bulletin No. 06-03. However, our procedures were not designed to provide an opinion on internal control over reported performance measures and, accordingly, we do not provide an opinion thereon.

As part of obtaining reasonable assurance about whether USGS's fiscal year 2006 consolidated financial statements are free of material misstatement, we performed tests of USGS's compliance with certain provisions of laws, regulations, contracts, and grant agreements, noncompliance with which could have a direct and material effect on the determination of the financial statement amounts, and certain provisions of other laws and regulations specified in OMB Bulletin No. 06-03, including certain provisions referred to in FFMIA. We limited our tests of compliance to the provisions described in the preceding sentence, and we did not test compliance with all laws, regulations, contracts, and grant agreements applicable to USGS. However, providing an opinion on compliance with laws, regulations, contracts, and grant agreements was not an objective of our audit and, accordingly, we do not express such an opinion.

Under OMB Bulletin No. 06-03 and FFMIA, auditors are required to report whether certain federal entities' financial management systems substantially comply with (1) Federal financial management systems requirements, (2) applicable Federal accounting standards, and (3) the United States Government



Standard General Ledger at the transaction level. To assist the auditors of the U.S. Department of the Interior meet this requirement, we performed tests of compliance with FFMIA Section 803(a) requirements.

We also noted certain other matters involving internal control over financial reporting and its operation that we have reported to management of USGS in a separate letter dated November 9, 2006.

### **RESTRICTED USE**

This report is intended solely for the information and use of USGS's management, the U.S. Department of the Interior Office of Inspector General, OMB, the U.S. Government Accountability Office, and the U.S. Congress and is not intended to be and should not be used by anyone other than these specified parties.

**KPMG LLP**

November 9, 2006

ATTACHMENT 2




## United States Department of the Interior


U.S. GEOLOGICAL SURVEY  
Office of the Director  
Reston, Virginia 20192

### MEMORANDUM

DEC 28 2006

To: Anne L. Richards  
Assistant Inspector General for Audits

Through: Mark Limbaugh   
Assistant Secretary - Water and Science

From: Mark D. Myers   
Director, U.S. Geological Survey

Subject: Draft Independent Auditor's Report on the U.S. Geological Survey Financial Statements for Fiscal Years 2005 and 2006 (Assignment No. X-IN-USGS-0015-2006). Comments Are Due December 29, 2006

Thank you for the opportunity to comment on the Draft Independent Auditors' Report on the U.S. Geological Survey's (USGS) Financial Statements for Fiscal Year 2006 (Assignment No. X-IN-USGS-0015-2006). We have reviewed the report and concur with the findings of one reportable condition related to internal controls over charge card usage, which is not a material weakness, and one noncompliance with laws and regulations condition related to grants monitoring requirements prescribed within OMB Circular A-133, *Audits of States, Local Governments, and Non-Profit Organizations*.

The bureau has already begun implementing corrective actions that respond to the recommendations included in the report. Karen Baker, USGS Associate Director for Administrative Policy and Services and the bureau's Chief Financial Officer, is the responsible official for ensuring that these actions are completed. Specifically for:

A. Improve Controls over Charge Cards

We have implemented revised guidance that allows a 30-day review period of charge card statements (in accordance with revised Department of the Interior (DOI) guidance. We have drafted policy regarding cardholder suspensions and notifications to our Office of Human Resources when approving officials have failed to appropriately monitor charge card usage.

We are also developing procedures to institute more effective documentation of our charge card program's quality assurance plan which will include monthly analysis of charge card statements using statistical sampling. The results of these analyses will be immediately communicated to the cardholder, supervisory approving official, and the cost center manager; the same results will be summarized and reported quarterly to the bureau's executive leadership.

- Completion Date: December 31, 2006

B. Single Audit Act Amendments of 1996

- We have designated a Single Audit Act Liaison responsible for compliance.
- We have revised procedures to track and maintain all single audits pertaining to USGS programs.
- We are implementing policies and procedures to comply with the September 1, 2004, memorandum from the Office of Financial Management which prescribes responsibilities for the Single Audit Act Functions.
- We will issue a memorandum to implement these new procedures during the first quarter of fiscal year 2007.
- Completion Date: December 31, 2006

Should you have any questions regarding this memorandum or any of our responses, please feel free to contact Karen Baker at 703-648-7200.

Copy to: Jeffrey Norris, C/O KPMG LLP  
Audit Liaison, Water and Science  
Chief Financial Officer, USGS  
Audit Liaison, USGS  
Director, Office of Financial Management

## ATTACHMENT 3

**STATUS OF AUDIT REPORT RECOMMENDATIONS**

<b><u>Recommendation</u></b>	<b><u>Status</u></b>	<b><u>Action Required</u></b>
A1, A2, A3, A4, and B	Resolved; not implemented	Recommendations will be referred to the Assistant Secretary, Policy, Management and Budget for tracking of implementation.



USGS scientist sampling bulk density to characterize soil properties in a backhoe trench dug to investigate soil and stratigraphic controls on boundaries between sagebrush and grasslands.

# Consolidated Financial Statements

This part of the Section III *Financial Information* contains our basic financial statements.

## Contents include:

Consolidated Balance Sheets .....	110
Consolidated Statements of Net Cost .....	112
Consolidated Statements of Changes in Net Position.....	113
Combined Statements of Budgetary Resources .....	114
Consolidated Statements of Financing .....	115

U.S. Geological Survey  
 Consolidated Balance Sheet  
 As of September 30, 2006  
*(in thousands)*

**Assets (Note 2):**

Intragovernmental assets:	
Fund balance with Treasury (Note 3)	\$ 257,660
Accounts and interest receivable (Note 4)	52,291
Other	3,149
Total intragovernmental assets	313,100
Accounts and interest receivable, net (Note 4)	74,889
Inventory and related property, net (Note 5)	582
General property, plant, and equipment, net (Note 6)	133,092
Other	22
<b>Total assets</b>	<b>\$ 521,685</b>
Stewardship assets (Note 11)	

**Liabilities (Note 7):**

Intragovernmental liabilities:	
Accounts payable	\$ 5,448
Other (Notes 2, 7, and 8)	34,910
Total intragovernmental liabilities	40,358
Accounts payable	58,354
Federal employee and veteran benefits (Note 8)	38,873
Environmental and disposal liabilities (Note 10)	66
Other:	
Unfunded annual leave	59,175
Abandoned sites liabilities	21,049
Other liabilities	38,832
<b>Total liabilities</b>	<b>256,707</b>
Commitments and contingencies (Notes 10 and 12)	

**Net position:**

Unexpended appropriations - other funds	193,230
Cumulative results of operations - earmarked funds (Note 16)	3,079
Cumulative results of operations - other funds	68,669
<b>Total net position</b>	<b>264,978</b>
<b>Total liabilities and net position</b>	<b>\$ 521,685</b>



U.S. Geological Survey  
Consolidated Balance Sheet  
As of September 30, 2005  
(in thousands)

**Assets (Note 2):**

Intragovernmental assets:	
Fund balance with Treasury (Note 3)	\$ 240,082
Accounts and interest receivable (Note 4)	58,048
Other	2,518
Total intragovernmental assets	<u>300,648</u>
Cash	1
Accounts and interest receivable, net (Note 4)	75,928
Inventory and related property, net (Note 5)	789
General property, plant, and equipment, net (Note 6)	162,170
Other	59
<b>Total assets</b>	<b>\$ <u>539,595</u></b>
Stewardship Assets (Note 11)	

**Liabilities (Note 7):**

Intragovernmental liabilities:	
Accounts payable	\$ 8,670
Other (Notes 2, 7, and 8)	36,922
Total intragovernmental liabilities	<u>45,592</u>
Accounts payable	65,673
Federal employee and veteran benefits (Note 8)	41,010
Environmental and disposal liabilities (Note 10)	82
Other:	
Unfunded annual leave	59,712
Abandoned sites liabilities	21,459
Other liabilities	40,092
<b>Total liabilities</b>	<b>\$ <u>273,620</u></b>
Commitments and contingencies (Notes 10 and 12)	

**Net position:**

Unexpended appropriations	181,906
Cumulative results of operations	84,069
<b>Total net position</b>	<b><u>265,975</u></b>
<b>Total liabilities and net position</b>	<b>\$ <u>539,595</u></b>

U.S. Geological Survey  
 Consolidated Statements of Net Cost  
 For the Years Ended September 30, 2006 and 2005  
*(in thousands)*

(Note 13)	<u>2006</u>	<u>2005</u>
<b>Resource Protection</b>		
<b>Improve Health of Watersheds and Landscapes</b>		
Costs	\$ 95,271	\$ 112,262
Less: earned revenue	<u>34,354</u>	<u>34,307</u>
Net costs	<u>60,917</u>	<u>77,955</u>
<b>Sustain Biological Communities</b>		
Costs	180,277	162,853
Less: earned revenue	<u>37,255</u>	<u>34,612</u>
Net costs	<u>143,022</u>	<u>128,241</u>
<b>Resource Use</b>		
<b>Manage or Influence Resources— Energy</b>		
Costs	28,785	29,174
Less: earned revenue	<u>1,662</u>	<u>1,694</u>
Net costs	<u>27,123</u>	<u>27,480</u>
<b>Manage or Influence Resources— Non-Energy</b>		
Costs	66,089	67,709
Less: earned revenue	<u>3,138</u>	<u>4,076</u>
Net costs	<u>62,951</u>	<u>63,633</u>
<b>Serving Communities</b>		
<b>Protect Lives, Resources, and Property</b>		
Costs	118,577	110,735
Less: earned revenue	<u>12,450</u>	<u>14,605</u>
Net costs	<u>106,127</u>	<u>96,130</u>
<b>Advance Knowledge through Scientific Leadership</b>		
Costs	974,921	959,928
Less: earned revenue	<u>321,343</u>	<u>316,627</u>
Net costs	<u>653,578</u>	<u>643,301</u>
<b>Total</b>		
Costs	1,463,920	1,442,661
Less: earned revenue	<u>410,202</u>	<u>405,921</u>
Net cost of operations	<u>\$ 1,053,718</u>	<u>\$ 1,036,740</u>

U.S. Geological Survey  
 Consolidated Statement of Changes in Net Position  
 For the Year Ended September 30, 2006  
 (in thousands)

	(Note 16)		2006	2005
	Earmarked	All Other		
<b>Unexpended appropriations:</b>				
<b>Beginning balances</b>	\$ -	181,906	181,906	163,343
<b>Budgetary financing sources:</b>				
Appropriations received, general funds	-	995,204	995,204	958,021
Appropriations transferred in/(out)	-	2,023	2,023	5,647
Appropriations used	-	(966,424)	(966,424)	(924,389)
Other adjustments	-	(19,479)	(19,479)	(20,716)
<b>Net change</b>	-	11,324	11,324	18,563
<b>Ending balances - unexpended appropriations</b>	\$ -	193,230	193,230	181,906
<b>Cumulative results of operations:</b>				
<b>Beginning balances</b>	\$ 3,721	80,348	84,069	125,708
<b>Budgetary financing sources:</b>				
Appropriations used	-	966,424	966,424	924,389
Non-exchange revenue and other	-	18	18	(104)
Transfers in/(out) without reimbursement	878	150	1,028	1,527
Donations and forfeitures of cash and cash equivalents	2,400	-	2,400	2,272
<b>Other financing sources:</b>				
Imputed financing from costs absorbed by others (Note 9)	-	67,931	67,931	62,772
Transfers in/(out) without reimbursement	-	1,999	1,999	2,150
Donations	-	1,597	1,597	2,095
<b>Total financing sources</b>	3,278	1,038,119	1,041,397	995,101
<b>Net cost of operations</b>	(3,920)	(1,049,798)	(1,053,718)	(1,036,740)
<b>Net change</b>	(642)	(11,679)	(12,321)	(41,639)
<b>Ending balances - cumulative results of operations</b>	\$ 3,079	68,669	71,748	84,069

U.S. Geological Survey  
 Combined Statements of Budgetary Resources  
 For the Years Ended September 30, 2006 and 2005  
*(in thousands)*

	2006	2005
<b>Budgetary resources (Note 14):</b>		
Unobligated balance		
Beginning of fiscal year	\$ 116,266	120,310
Recoveries of prior year unpaid obligations	7,875	8,570
Budget authority		
Appropriations received	997,692	960,374
Spending authority from offsetting collections		
Earned		
Collected	498,703	464,807
Change in receivables from Federal sources	(8,603)	(7,334)
Change in unfilled customer orders		
Advance received	(1,268)	3,601
Without advance from Federal sources	8,739	3,066
Total budget authority	1,495,263	1,424,514
Nonexpenditure transfers, net	1,500	5,437
Permanently not available	(19,479)	(20,716)
<b>Total budgetary resources</b>	<b>\$ 1,601,425</b>	<b>1,538,115</b>
<b>Status of budgetary resources:</b>		
Obligations incurred:		
Direct	\$ 985,933	946,344
Reimbursable	492,189	475,505
Total obligations incurred	1,478,122	1,421,849
Unobligated balance		
Apportioned	100,022	85,644
Unobligated balance not available	23,281	30,622
<b>Total status of budgetary resources</b>	<b>\$ 1,601,425</b>	<b>1,538,115</b>
<b>Obligated balance:</b>		
Obligated balance, net		
Unpaid obligations, brought forward, beginning of fiscal year	\$ 297,155	289,259
Less: Uncollected customer payments from Federal sources, brought forward, beginning of fiscal year	(181,240)	(185,507)
Total unpaid obligated balances, net, beginning of fiscal year	115,915	103,752
Obligations incurred, net	1,478,122	1,421,849
Less: gross outlays	(1,461,615)	(1,405,384)
Less: recoveries of prior year unpaid obligations, actual	(7,875)	(8,570)
Change in uncollected customer payments from Federal sources	(138)	4,268
Total, unpaid obligated balance, net, end of period	124,409	115,915
<b>Obligated balance, net, end of period - by component:</b>		
Unpaid obligations	305,785	297,155
Less: Uncollected customer payments from Federal sources	(181,376)	(181,240)
Total, unpaid obligated balance, net, end of period	124,409	115,915
<b>Net outlays:</b>		
Net outlays:		
Gross outlays	1,461,615	1,405,384
Less: offsetting receipts	(497,435)	(468,409)
Less: distributed offsetting receipts	(2,483)	(2,353)
Net outlays	\$ 961,697	934,622

U.S. Geological Survey  
Consolidated Statements of Financing  
For the Years Ended September 30, 2006 and 2005  
(in thousands)

	2006	2005
<b>Resources used to finance activities:</b>		
Budgetary resources obligated:		
Obligations incurred (Note 14)	\$ 1,478,122	1,421,849
Less: Spending authority from offsetting collections and recoveries	(505,446)	(472,710)
Obligations net of offsetting collections and recoveries	972,676	949,139
Less: Offsetting receipts	(2,483)	(2,353)
Net obligations	970,193	946,786
Other resources:		
Donations and forfeitures of property	1,597	2,095
Transfers in/(out) without reimbursement	1,999	2,150
Imputed financing from costs absorbed by others (Note 9)	67,931	62,772
Net other resources used to finance activities	71,527	67,017
<b>Total resources used to finance activities</b>	1,041,720	1,013,803
<b>Resources used to finance items not part of the net cost of operations:</b>		
Change in budgetary resources obligated for goods, services, and benefits ordered but not yet provided	(21,025)	(19,829)
Change in unfilled customer orders	7,470	6,667
Resources that fund expenses recognized in prior periods	(4,551)	1,115
Budgetary offsetting collections and receipts that do not affect net cost of operations:		
Offsetting receipts not part of the net cost of operations	452	2,168
Resources that finance the acquisition of assets	(14,682)	(13,774)
Other Resources or Adjustments to net obligated resources that do not affect net cost of operations	(80)	(2,322)
Total resources used to finance items not part of the net cost of operations	(32,416)	(25,975)
<b>Total resources used to finance the net cost of operations</b>	1,009,304	987,828
<b>Components of net cost of operations that will not require or generate resources in the current period:</b>		
Components requiring or generating resources in future periods:		
Increase in annual leave liability	-	2,060
Increase in exchange revenue receivable from the public	-	(424)
Increase in other	117	1,034
Total components of net cost of operations that will require or generate resources in future periods (Note 15)	117	2,670
Components not requiring or generating resources:		
Depreciation and amortization (Note 6)	40,551	43,650
Revaluation of assets or liabilities	1,853	525
Allocation transfers reconciling items (Note 15)	1,699	1,495
Other	194	572
Total components of net cost of operations that will not require or generate resources in the current period	44,297	46,242
<b>Total components of net cost of operations that will not require or       generate resources</b>	44,414	48,912
<b>Net cost of operations</b>	\$ 1,053,718	1,036,740

## An Idea That Worked...

On September 21, 1966, Secretary of the Interior Stewart Udall issued a press statement stating his belief that “the time is now right and urgent to apply space technology towards the solution of many pressing natural resources problems being compounded by population and industrial growth.”

During his time as Secretary, and through research for his environmental classic, *The Quiet Crisis*, Udall focused on finding new tools through which people could observe and study environmental changes and impacts on Planet Earth. Further, Udall understood that the Department of Interior’s own US Geological Survey had the scientific expertise and the mission to tackle the challenges.

On that day, forty years ago, Secretary Udall announced the beginning of Project EROS, a revolutionary program aimed at gathering facts about the natural resources of our planet from earth-orbiting satellites carrying sophisticated remote sensing observation instruments. Over the course of the next several years, that announcement stimulated a partnership between the National Aeronautics and Space Administration and the Department of the Interior that resulted in the 1972 launch of the first Earth Resources Technology Satellite, eventually dubbed “Landsat”.

This summer, USGS staff, at the Secretary’s invitation, visited his home in New Mexico. Udall and the USGS staff discussed the genesis of Project EROS, the ways in which earth imaging science has helped to meet the challenges defined in *The Quiet Crisis*, and the future of land imaging technology. Fortunately for us all, the discussions were captured on video.

The observation of the fortieth anniversary of this program comes at an especially fitting time. Today, we are poised on the threshold of an exciting new period of land imaging. On August 14, 2004, Dr. John Marburger III, director of the White House Office of Science Technology and Policy issued a memorandum outlining Landsat Data Continuity Strategy. The memorandum recognized Landsat as a national asset and recommended



transitioning Landsat to a sustained operational program.

On December 23, 2005, Dr. Marburger authorized the construction of a new Landsat “free-flyer” satellite. In addition, the memo states that the National Science and Technology Council, in coordination with NASA, the Department of Interior and USGS will lead an effort to develop a long-term plan for operational land imaging.

And, on May 6, 2006, in a letter to Dr. Marburger, the Department of the Interior stated: “The Department stands ready to accept the challenge of this new

century and assume leadership for the Nation’s civilian operational land imaging program, underscoring our commitment to stewardship and science in service to the Nation.”

The stage is now set for the new generation of land imaging satellites and a new focus on studying the earth from space. Secretary Udall’s stature as an elder statesman for conservation, environmentalism and the protection of wild lands makes his statements on the past and the future of land imaging technology especially vivid. The interview conducted by the USGS gives us the opportunity to tell the USGS EROS story in a new way.

We are in the process of creating several video presentations which focus on land imaging and remote sensing science. A goal is to tell the story for all to understand and appreciate. We want the general public to understand the societal relevance of the USGS, the EROS Project, and the future of land imaging. Udall’s message from 1966 has never been more timely or poignant—monitoring our planet’s environment from space is a key to a better future.

The video presentations will acknowledge the roots of land imaging for resource management and USGS participation in meeting the challenges of a rapidly changing environment in the 1960s. Through the lens of history, the videos will provide a sense of America’s long-term commitment to conservation, illustrate the depth of the USGS EROS archive and supply an historic anchor for Project EROS during the excitement of the US race to the moon.

September 21, 2006 marked the 40th anniversary of “Project EROS” or the beginning of Earth Observation of our land resources. While the USGS and AmericaView Inc. are recognizing the genesis of Earth Observation through an education and awareness effort (see [www.americaview.org](http://www.americaview.org)), a date will be forthcoming when we will gather to formally celebrate the contributions of Secretary Stewart Udall here at EROS.

# Notes to the Financial Statements

This part of the Section III *Financial Information* contains our accompanying notes, which are an integral part of the financial statements.

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## Note 1 Summary of Significant Accounting Policies

### A. Reporting Entity

The USGS, a bureau within the Department of the Interior, was established on March 3, 1879, by an act of Congress to conduct systematic and scientific "classification of the public lands, and examination of the geological structure, mineral resources, and products of the national domain." The mission of the USGS is to serve 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.

The USGS accomplishes its mission through integrated science programs consisting primarily of

- the National Mapping program, which meets the Nation's needs for accurate, nationally-consistent base geospatial data by ensuring access to and advancing the application of these data and related natural science information for users;
- the Geologic Program, which provides Earth science information used to evaluate resource potential, define risks associated with natural hazards, and characterize the potential impact of natural geologic processes on human activity, the economy, and the environment;
- the Water Resources program, which continuously assesses the Nation's water availability and quality, provides geographic and cartographic information, and addresses flood hazards by moderating the impacts of floods and improving flood disaster response; and
- the Biologic Research program, which generates and distributes information needed in the conservation and management of the Nation's biological resources.

### B. Basis of Presentation

These financial statements have been prepared to report the consolidated financial position, net cost of operations, changes in financial position, combined budgetary resources, and financing of the USGS, consistent with the Chief Financial Officers' Act of 1990 and the Government Management Reform Act of 1994. These financial statements have been prepared from the books and records of the USGS in accordance with accounting principles generally accepted in the United States of America using guidance issued by the Federal Accounting Standards Advisory Board (FASAB), OMB, and USGS accounting policies, which are summarized in this note. These consolidated financial statements present proprietary and budgetary information, while other financial reports also prepared by the USGS pursuant to OMB directives are used to monitor and control USGS use of Federal budgetary resources. The Statements of Budgetary Resources are presented on a combined, rather than consolidated basis, and therefore intra-entity eliminations were not made for the purpose of this statement. The Statements of Financing reconcile combined amounts from the Statements of Budgetary Resources to amounts from the Consolidated Statements of Net Cost.

### C. Basis of Accounting

Financial transactions are recorded on an accrual accounting basis and a budgetary basis. Under the accrual method, revenues are recognized when earned and expenses are recognized when a liability is incurred, without regard to receipt or payment of cash. Budgetary accounting facilitates compliance with legal requirements and mandated controls over the use of Federal funds. It generally differs from the accrual basis of accounting in that obligations are recognized when new orders are placed, contracts are awarded, and services are received that will require payments during the same or future period. Except for the Statements of Budgetary Resources and portions of the Statements of Financing, all statements are presented on a consolidated basis and use eliminating entries to avoid overstatement of balances caused by intra-entity activity.



**D. Assets**

Assets presented on USGS Consolidated Balance Sheets include both entity and non-entity balances. Entity assets are assets that USGS has authority to use in its operations. Non-entity assets are held and managed by USGS, but are not available for use in operations.

Intragovernmental assets arise from transactions between USGS and other Federal entities.

**E. Stewardship Assets**

Stewardship assets consist of museum and library collection heritage assets that have been entrusted to USGS to be maintained in perpetuity for the benefit of current and future generations. The stewardship heritage assets managed by USGS are considered priceless and irreplaceable. Because of this, USGS assigns no financial value to them and the property, plant, and equipment capitalized and reported on the Consolidated Balance Sheets excludes these assets in accordance with Federal accounting standards. Any purchases of new stewardship assets are expensed in the year they were incurred.

**F. Property, Plant, and Equipment**

Property, plant, and equipment consist of land, structures, facilities and leasehold improvements, facilities under construction, equipment, and software purchased or developed for internal use. There are no restrictions on the use or convertibility of property, plant, and equipment.

The USGS capitalizes property, plant, and equipment purchases with an acquisition cost in excess of \$100 thousand for land, structures, facilities, and software, and \$15 thousand for all other capital assets. Depreciation or amortization is computed using the straight-line method over the assets' useful lives of 30 years for structures and facilities, and ranging from 3 to 25 years for equipment and 2 to 10 years for software.

Internal use software includes purchased commercial off-the-shelf software (COTS), contractor-developed software, and software that was internally developed by USGS employees. Internal use software is capitalized at cost if the acquisition cost is \$100 thousand or more. For COTS software, the capitalized costs include the amount paid to the vendor for the software; for contractor-developed software it includes the amount paid to a contractor to design, program, install, and implement the software. Capitalized costs for internally developed software include the full cost (direct and indirect) incurred during the software development stage. Amortization of capitalized software begins on the date of acquisition, if purchased, or when the module or component has been successfully tested if developed internally.

Costs for construction projects are recorded as construction-in-progress until completed. Depreciation expense begins once the asset is placed into service.

The USGS leases the majority of its office space and vehicles from the General Services Administration (GSA). The lease costs approximate commercial lease rates for similar properties and vehicles.

**G. Fund Balance with Treasury and Cash**

Fund balance with Treasury is a cash balance remaining as of fiscal year-end from which USGS is authorized to pay liabilities resulting from operational activity, except as restricted by law. Fund balance with Treasury includes funds received from direct appropriations, transfers, offsetting receipts, recoveries, and funds held in budget clearing accounts. The USGS is permitted by law to use appropriated funds to finance its working capital fund.

**H. Other Assets, Advances, and Prepayments**

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

## I. Accounts and Interest Receivable

Accounts receivable consist of amounts owed to the USGS by other Federal agencies and the public. Unbilled accounts receivable represent amounts that have been earned but not yet billed to reimbursable customers. Receivables from Federal agencies result from reimbursable services performed, and from joint funding agreements with State, local, and regional agencies for cooperative work in support of the "Surveys, Investigations, and Research" (SIR) appropriation. Receivables also include balances owed for credit sales of products and maps to Federal agencies and the public and for interest, administrative costs, and penalties due on delinquent receivables. The majority of USGS accounts receivable are generated from the water resource and national mapping programs.

Amounts due from Federal agencies are considered fully collectible. Receivables due from the public are stated net of an allowance for estimated uncollectible amounts, determined by considering the debtor's current ability to pay, the debtor's payment record and willingness to pay, and an analysis of aged receivable activity.

## J. Inventory

Inventory includes maps and map products that are held for sale and raw materials held for future use. All inventory products and materials are valued at historical cost, using a method of averaging actual costs to produce like-kind scale maps within the same fiscal year. The USGS estimates an allowance for excess, spoiled, or obsolete map inventory to arrive at a net realizable value, based on inventory turnover and current stock levels.

## K. Liabilities

Liabilities covered by budgetary or other resources are those liabilities of USGS for which Congress has appropriated funds or funding is otherwise available to pay amounts due. Liabilities not covered by budgetary or other resources represent amounts owed in excess of available Congressionally-appropriated funds or other amounts. The liquidation of liabilities not covered by budgetary or other resources is dependent on future Congressional appropriations or other funding. Intragovernmental liabilities are claims against USGS by other Federal entities.

## L. Other Liabilities: Deferred Revenue, Deferred Credits, and Deposit Fund Liability

Deferred revenue and deferred credits consist of advances received from Federal and public entities for goods and services that will not be fully earned until the related goods or services have been provided by USGS. The majority of USGS deferred revenue is generated from the Water Resources Program. Revenue is recognized as reimbursable costs are incurred, and the deferred revenue balance is reduced accordingly.

The deposit fund liability represents receipts of funds held on deposit prior to completion of a signed agreement to provide reimbursable services to Federal and public entities. The deposit fund liability also consists of monies that were not obligated prior to the agreement expiration that are funded by annual year appropriations, which will be returned to the customer.

## M. Revenues, User Fees, and Financing Sources

*Appropriations.* The USGS receives the majority of the funding needed to support its programs through Congressional appropriations. Financing sources are received in annual, multi-year, and no-year appropriations that may be used, within statutory limits, for operating and capital expenditures.

Upon expiration of an annual or multiple-year appropriation, the obligated and unobligated balances retain their fiscal year identity, and are maintained separately within an expired account. The unobligated balance can be used to make adjustments to existing obligations, but is otherwise not available for expenditures. Annual and multiple-year appropriations are canceled at the end of the fifth year after expiration. No-year appropriations do not expire. Appropriations of budget authority are recognized as used when a liability for goods and services or benefits and grants are incurred.

*Exchange revenues.* Additional funds are obtained through reimbursements for services performed for other Federal agencies and the public, and fees charged for surveys, investigations, and research. Revenue and intra-governmental reimbursements are recognized as earned when the goods have been delivered or services rendered by USGS.

Revenues earned from public sources are derived from States and municipalities for making cooperative topographic and geologic surveys and water resource investigations; proceeds from the sale of photographs, maps, and records; proceeds from the sale of personal property; and reimbursements from permits and licenses of the Federal Energy Regulatory Commission. Revenues from certain cooperators represent about half of the total cost; the USGS pays the remaining half of the total cooperators cost. Revenues earned from other Federal agencies are derived from special-purpose mapping and investigations. Revenues are also received through the Department of State, from foreign countries, and international organizations for scientific and technical assistance.

The USGS has specific legislative authority to receive revenue from non-Federal reimbursable customers as budgetary resources. The USGS also has authority to receive contributions from outside organizations to perform work desired mutually by multiple parties. In addition, the USGS receives rental receipts for quarters provided at remote locations.

User fees are set at a level that will recover the full costs associated with the services for specific customers. Prices for information products that are sold on a retail basis are set at a level that will recover the full costs of reproduction and dissemination, or costs incurred after the mission related information is collected and archived. User fees and product prices are developed in accordance with cost components of OMB Circular A 25, *User Charges* with review and approval by the Director, or a delegated party. The annual Cost Recovery Report and regularly scheduled independent pricing reviews by product line are among the methods used to monitor compliance with the USGS policies.

*Imputed financing sources.* In certain cases, operating costs of the USGS are paid for by funds appropriated to other Federal entities. For example, pension benefits for most USGS employees are paid for by the OPM and certain legal judgments against the USGS are paid from the Judgment Fund maintained by Treasury. OMB indicates that imputed costs to be recognized by Federal entities include the following: (1) employees' pension benefits; (2) health insurance, life insurance,

and other benefits for retired employees; (3) other post employment benefits for retired, terminated, and inactive employees, including severance payments, training and counseling, continued health care, and unemployment and workers' compensation under the Federal Employees' Compensation Act; and (4) losses in litigation proceedings. USGS also records intra-departmental imputed costs in accordance with Department policy and FASAB's Interpretation Number 6, *Accounting for Imputed Intra-departmental Costs: An Interpretation of SFFAS Number 4*. The USGS includes applicable imputed costs on the Consolidated Statements of Net Cost. In addition, an imputed financing source is recognized on the Consolidated Statements of Changes in Net Position.

#### **N. Contingent Liabilities**

A contingency is an existing condition, situation, or set of circumstances involving uncertainty as to possible gain or loss. The uncertainty will ultimately be resolved when one or more future events occur or fail to occur. USGS recognizes a contingent liability when a past event or exchange transaction has occurred and a future outflow or other sacrifice of resources is measurable and probable. A contingency is disclosed in the Notes to the Financial Statements when any of the conditions for liability recognition are met and when the chance of the future confirming event or events occurring is more than remote but less than probable. A contingency is not disclosed in the Notes to the Financial Statements when any of the conditions for liability recognition are not met and when the chance of the future event or events occurring is remote.

#### **O. Accrued Annual, Sick, and Other Leave and Compensatory Time**

Annual leave and other compensatory leave time are accrued when earned. The accrual is presented as a component of other liabilities with the public in the Consolidated Balance Sheets and is adjusted for changes in compensation rates and reduced for annual leave taken. Sick leave is provided to employees on a use or lose basis and is expensed when taken.

### P. Workers' Compensation

The Federal Employees Compensation Act provides income and medical cost protection to covered Federal civilian employees injured on the job, to employees who have incurred work-related occupational diseases, and to beneficiaries of employees whose deaths are attributable to job-related injuries or occupational diseases. The FECA program is administered by the Department of Labor (DOL), which pays valid claims and subsequently seeks reimbursement from the Federal agencies employing the claimants.

The FECA liability consists of two components. The first component is based on actual claims paid by DOL but not yet reimbursed. USGS reimburses DOL for the amount of the actual claims as funds are appropriated for this purpose. Reimbursements to the DOL on payments made occur approximately two years subsequent to the actual disbursement. As a result, USGS recognizes a liability for the actual claims paid by DOL and to be reimbursed by USGS. Budgetary resources for this intra-governmental liability are made available to USGS as part of its annual appropriation from Congress in the year in which the reimbursement to the DOL takes place.

The second component is the estimated liability for future benefit payments as a result of past events. This liability includes death, disability, medical, and miscellaneous costs. DOL determines this component annually, as of September 30, using a method that considers historical benefit payment patterns, wage inflation factors, medical inflation factors, and other variables. The projected annual benefit payments are discounted to present value using OMB's economic assumptions for 10-year Treasury notes and bonds. To provide for the effects of inflation on the liability, wage inflation factors (i.e., cost of living adjustments) and medical inflation factors (i.e., consumer price index medical adjustments) are applied to the calculation of projected future benefit payments. These factors are also used to adjust historical benefit payments to current-year constant dollars. A discounting formula is also used to recognize the timing of benefit payments as thirteen payments per year instead of one lump sum payment per year. Based on information provided by the DOL, the Department allocates the actuarial liability to its bureaus and Departmental offices based on the

payment history for the bureaus and Departmental offices. The estimated liability is not covered by budgetary resources and will require future funding.

DOL also evaluates the estimated projections to ensure that the estimated future benefit payments are appropriate. The analysis includes three tests: (1) a comparison of the current-year projections to the prior-year projections; (2) a comparison of the prior-year projected payments to the current-year actual payments, excluding any new case payments that had arisen during the current year; and (3) a comparison of the current-year actual payment data to the prior-year actual payment data. Based on the outcome of this analysis, adjustments may be made to the estimated future benefit payments.

### Q. Retirement Plans

*Civil Service Retirement System (CSRS) and Federal Employees Retirement System (FERS).* All USGS employees with permanent status participate in either the CSRS or FERS defined-benefit pension plans. FERS went into effect on January 1, 1987. FERS automatically covers most employees hired after December 31, 1983. Employees hired prior to January 1, 1984, could elect to either join FERS or remain in CSRS.

USGS is not responsible for and does not report CSRS or FERS assets, accumulated plan benefits, or liabilities applicable to its employees. OPM administers the plans, is responsible for, and reports these amounts.

For CSRS-covered employees, in both FY2006 and FY2005, USGS was required to make contributions to the plan matching the employee's contribution, which was 7 percent of the employee's basic pay. For each fiscal year, OPM calculates the U.S. government's service cost for covered employees, which is an estimate of the amount of funds that, if accumulated annually and invested over an employee's career, would be enough to pay that employee's future benefits. Since the U.S. government's estimated service cost exceeds contributions made by employer agencies and covered employees, this plan is not fully funded by the USGS and its employees.

USGS has recognized an imputed cost and imputed

financing source for the difference between the estimated service cost and the contributions made by USGS and its covered employees.

FERS contributions made by employer agencies and covered employees exceed the U.S. Government's estimated service cost. For FERS-covered employees, USGS was required in FY2006 and FY2005 to make contributions of 10.7 percent of basic pay. Employees contributed 0.8 percent of basic pay. Employees participating in FERS are covered under the Federal Insurance Contributions Act (FICA), for which USGS contributes a matching amount to the Social Security Administration.

*Thrift Savings Plan (TSP).* Employees covered by CSRS and FERS are eligible to contribute to the U.S. Government's TSP, administered by the Federal Retirement Thrift Investment Board. A TSP account is automatically established for FERS-covered employees, and USGS makes a mandatory contribution of 1 percent of basic pay. FERS-covered employees are entitled to contribute up to \$15,000 of basic pay to their TSP account, with USGS making matching contributions up to 5 percent of basic pay. Employees covered by CSRS are entitled to contribute up to \$15,000 of basic pay to their TSP account. USGS makes no matching contributions for CSRS-covered employees.

*Federal Employees Health Benefit (FEHB) Program.* Most USGS employees are enrolled in the FEHB Program, which provides post-retirement health benefits. OPM administers this program and is responsible for the reporting of liabilities. Employer agencies and covered employees are not required to make any contributions for post-retirement health benefits. OPM calculates the U.S. government's service cost for covered employees each fiscal year. USGS has recognized the entire service cost of these post-retirement benefits for covered employees as an imputed cost and imputed financing source.

*Federal Employees Group Life Insurance (FEGLI) Program.* All USGS employees with permanent status can elect to participate in the FEGLI Program. Participating employees can obtain basic term life insurance, with the employee paying two-thirds of the cost and USGS paying one-third. Additional coverage is

optional, to be paid fully by the employee. The basic life coverage may be continued into retirement if certain requirements are met. OPM administers this program and is responsible for the reporting of liabilities. For each fiscal year, OPM calculates the U.S. government's service cost for the post retirement portion of basic life coverage. USGS contributions to the basic life coverage are fully allocated by OPM to the pre-retirement portion of coverage, and accordingly, USGS has recognized the entire service cost of the post-retirement portion of basic life coverage as an imputed cost and imputed financing source.

#### **R. Income Taxes**

The USGS, as a Federal agency, is not subject to Federal, State, or local income taxes and, accordingly, no provision for income taxes has been recorded in the accompanying financial statements.

#### **S. Use of Estimates**

The preparation of financial statements in accordance with accounting principles generally accepted in the United States of America requires management to make certain estimates and assumptions in reporting assets, liabilities, revenues, expenses, and financial sources; and in the related note disclosures. Actual results could differ from these estimates. Significant estimates underlying the accompanying financial statements include accounts payable; the allowance for doubtful accounts receivable; property, plant, and equipment useful lives and impairments; contingent and environmental liabilities; the FECA actuarial liability; and the allowance for obsolete inventory.

#### **T. Reclassifications**

Certain reclassifications have been made to the 2005 balances to conform to the 2006 presentation.

## Note 2 Assets Analysis

All USGS assets are entity assets, except a portion of fund balance with Treasury of \$67 and \$212 thousand at September 30, 2006 and 2005, respectively. Non-entity assets include amounts due to USGS from accrued interest and penalties on delinquent debt. A corresponding payable to Treasury is recorded in other liabilities. USGS does not have any entity restricted assets.

## Note 3 Fund Balance with Treasury

Fund Balance with Treasury consists of the following as of September 30, 2006 and 2005:

	2006	2005
General funds	\$ 159,892	150,234
Special funds	815	1,380
Revolving funds	87,016	80,386
Trust funds	1,254	1,759
Other fund types	8,683	6,323
Total fund balance with Treasury by fund type	\$ <u>257,660</u>	<u>240,082</u>

USGS maintains balances with Treasury by fund type. The fund types and purpose are described below:

*General funds.* These funds consist of expenditure accounts used to record financial transactions arising from Congressional appropriations.

*Special funds.* These accounts are credited with receipts from special sources that are designated by law for a specific purpose. When collected, these receipts are available immediately for expenditure for special programs, such as providing housing for employees on field assignments, operations and maintenance for the temporary housing, cleanup associated with the Exxon Valdez oil spill, and operating science and cooperative programs.

*Revolving funds.* These funds account for cash flows to and from the government resulting from operations of the Working Capital Fund and do not fund normal operating expenses of the bureau. These funds are also restricted to the purposes set forth in the legislation that established the Working Capital Fund and related investment plans.

*Trust funds.* These funds are used for the acceptance and administration of funds contributed from public and private sources and programs in cooperation with other Federal and State agencies or private donors.

*Other Fund Types.* These include miscellaneous receipt accounts, transfer accounts, performance bonds, deposit and clearing accounts maintained to account for receipts, and disbursements awaiting proper classification.

Unobligated, unavailable fund balance represents amounts from appropriations for which the period of availability for obligation has expired. These balances remain available for upward adjustments of obligations incurred during the period for which the appropriation was available.

Status of Fund Balance with Treasury as of September 30, 2006 and 2005 is as follows:

	<u>2006</u>	<u>2005</u>
Unobligated		
Available	\$ 100,937	86,635
Unavailable	23,281	30,622
Obligated not yet disbursed	124,759	116,502
Subtotal	<u>248,977</u>	<u>233,759</u>
Fund balance with Treasury not covered by budgetary resources		
Clearing and deposit accounts	8,683	6,323
Total status of fund balance with Treasury	<u>\$ 257,660</u>	<u>240,082</u>

**Note 4 Accounts and Interest Receivable, Net**

Accounts receivable consist of amounts owed to the USGS by other Federal agencies and the public. Unbilled accounts receivable represents amounts that have been earned but not yet billed to reimbursable customers. This account functions much like a “work-in-progress” record of the costs incurred on customer agreements. Due to the nature of certain agreements with reimbursable customers that require invoicing upon completion of the work, USGS sometimes bills customers years after the project was initiated. This procurement practice results in the majority of accounts receivable being comprised of unbilled balances.

Accounts receivable are reduced to net realizable value by an allowance for doubtful accounts. The allowance for public receivables is estimated quarterly based on identification of specific delinquent receivables, an analysis of aged receivable activity and historical trends adjusted for current market conditions, as well as management’s judgment regarding the debtor’s willingness and ability to pay. Federal receivables are considered fully collectible.

Interest receivable represents interest income earned on outstanding receivables that has not yet been collected. Interest accrues on a daily basis beginning thirty days from the date the notice of amount due was sent. Interest is charged at the rate established by the Secretary of the Treasury.

Accounts and Interest Receivable from Public Agencies as of September 30, 2006 and 2005, respectively, consists of:

	<u>2006</u>	<u>2005</u>
Accounts and interest receivable from the public		
Current	\$ 20,365	21,382
1 - 180 days past due	6,663	3,689
181 - 365 days past due	527	349
1 to 2 years past due	103	300
Total billed accounts and interest receivable - public	<u>27,658</u>	<u>25,720</u>
Unbilled Accounts and Interest Receivable	47,692	52,452
Total accounts and interest receivable - public	<u>75,350</u>	<u>78,172</u>
Allowance for doubtful accounts - public	(461)	(2,244)
Total accounts and interest receivable - public, net of allowance	<u>\$ 74,889</u>	<u>75,928</u>

# Financial Information

Accounts and Interest Receivable from Federal Agencies as of September 30, 2006 and 2005, respectively, consists of:

	2006	2005
Accounts and interest receivable from Federal agencies		
Billed	\$ 674	125
Unbilled	51,617	57,923
Total accounts and interest receivable - Federal	<u>\$ 52,291</u>	<u>58,048</u>

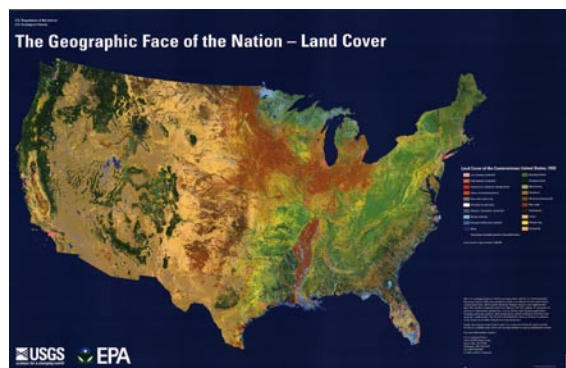
## Note 5 Inventory and Related Property, Net

Inventory consists of the following as of September 30, 2006 and 2005:

	2006	2005
Inventory		
Published maps held for sale	\$ 8,600	9,676
Allowance for obsolescence	(8,018)	(8,887)
Net inventory and related property	<u>\$ 582</u>	<u>789</u>

USGS disseminates earth, water, and biological science information through various media, including maps, reports, digital data sets, and general interest publications of the USGS and other Federal agencies. Maps and map products are located at the USGS Rocky Mountain Mapping Center in Denver, Colorado, and at several Earth Science Information Centers across the United States. The USGS maintains an inventory of maps and map products that are available to respond to national emergencies and resource management needs, as well as governmental requests.

Below are examples of maps included in inventory available for sale.





**Note 6 General Property, Plant, and Equipment, Net**

Property, plant, and equipment consist of the following as of September 30, 2006:

	<u>Acquisition Cost</u>	<u>Accumulated Depreciation</u>	<u>Net Book Value</u>
Land and land improvements	\$ 300	-	300
Buildings	104,678	72,938	31,740
Structures and facilities	13,340	10,024	3,316
Leasehold improvements	27,512	9,643	17,869
Construction in progress - general	3,048	-	3,048
Equipment and vehicles	464,787	392,769	72,018
Internal use software:			
In use	10,783	6,209	4,574
In development	227	-	227
Total property, plant, and equipment	<u>\$ 624,675</u>	<u>491,583</u>	<u>133,092</u>

Property, plant, and equipment consist of the following as of September 30, 2005:

	<u>Acquisition Cost</u>	<u>Accumulated Depreciation</u>	<u>Net Book Value</u>
Land and land improvements	\$ 300	-	300
Buildings	104,678	70,508	34,170
Structures and facilities	13,230	9,613	3,617
Leasehold improvements	25,730	5,897	19,833
Construction in progress - general	1,745	-	1,745
Equipment and vehicles	466,582	370,068	96,514
Internal use software:			
In use	10,545	4,563	5,982
In development	9	-	9
Total property, plant, and equipment	<u>\$ 622,819</u>	<u>460,649</u>	<u>162,170</u>

Depreciation and amortization expense amounted to approximately \$40.5 million and \$43.6 million, for the years ended September 30, 2006 and 2005, respectively.

The Landsat 7 satellite suffered a technical failure during FY2003, at which point USGS recorded a one-time impairment for \$81.1 million. The normal depreciation rate estimate was also changed at the point of impairment to equal the net book value (after impairment) at May 31, 2003, divided by the remaining useful life previously established. As a result, depreciation expense and net cost of operations were reduced for the years ended September 30, 2006 and 2005, by \$27.8 million each year. The net book value of the Landsat 7 satellite was approximately \$1.4 million and \$25.1 million at September 30, 2006 and 2005, respectively.

## Note 7 Liabilities Not Covered by Budgetary Resources

Liabilities not covered by budgetary or other resources represent amounts owed in excess of available Congressional appropriated funds or other amounts. The liquidation of liabilities not covered by budgetary or other resources is dependent on future Congressional appropriations or other funding source.

Liabilities consist of the following as of September 30, 2006:

	Covered by Budgetary Resources	Not Covered by Budgetary Resources		2006
	Current	Current	Non-Current	
Intragovernmental Liabilities:				
Accounts payable	\$ 5,448	-	-	5,448
Other				
Resources payable to Treasury	-	98	-	98
Advances and deferred revenue	626	-	-	626
Deposit funds	-	1,912	-	1,912
Accrued employee benefits	5,276	-	3,006	8,282
Unfunded FECA liability	-	2,694	4,042	6,736
GSA tenant improvement loans	-	3,821	13,435	17,256
Total other intragovernmental liabilities	5,902	8,525	20,483	34,910
Total intragovernmental liabilities	11,350	8,525	20,483	40,358
Public liabilities:				
Accounts payable	58,354	-	-	58,354
Federal employee and veterans' benefits				
FECA actuarial liability	-	-	38,873	38,873
Total Federal employee veterans' benefits	-	-	38,873	38,873
Environmental and disposal liabilities	-	-	66	66
Other				
Unfunded annual leave	-	2,959	56,216	59,175
Abandoned sites liabilities	-	-	21,049	21,049
Other liabilities				
Contingent liabilities	-	-	1,279	1,279
Accrued payroll and benefits	24,948	-	-	24,948
Advances and deferred revenue	4,517	129	-	4,646
Deposit funds	-	6,770	-	6,770
Contract holdbacks	151	-	1,038	1,189
Total other liabilities	29,616	6,899	2,317	38,832
Total other public liabilities	29,616	9,858	79,582	119,056
Total public liabilities	87,970	9,858	118,521	216,349
Total liabilities	\$ 99,320	18,383	139,004	256,707

Liabilities consist of the following as of September 30, 2005:

	Covered by Budgetary Resources		Not Covered by Budgetary Resources		2005
	Current	Current	Non-Current		
Intragovernmental liabilities:					
Accounts payable	\$ 8,670	-	-		8,670
Other					
Resources payable to Treasury	-	81	-		81
Advances and deferred revenue	1,975	-	-		1,975
Deposit funds	-	255	-		255
Accrued employee benefits	5,341	-	2,889		8,230
Unfunded FECA liability	-	2,932	4,398		7,330
GSA tenant improvement loans	-	5,288	13,763		19,051
Total other intragovernmental liabilities	7,316	8,556	21,050		36,922
Total intragovernmental liabilities	15,986	8,556	21,050		45,592
Public liabilities:					
Accounts payable	65,673	-	-		65,673
Federal employee and veterans' benefits					
FECA actuarial liability	-	-	41,010		41,010
Total Federal employee veterans' benefits	-	-	41,010		41,010
Environmental and disposal liabilities	-	-	82		82
Other					
Unfunded annual leave	-	2,986	56,726		59,712
Abandoned sites liabilities	-	-	21,459		21,459
Other liabilities					
Contingent liabilities	-	-	2,208		2,208
Accrued payroll and benefits	26,171	-	-		26,171
Advances and deferred revenue	4,437	32	-		4,469
Deposit funds	-	6,069	-		6,069
Contract holdbacks	137	-	1,038		1,175
Total other liabilities	30,745	6,101	3,246		40,092
Total other public liabilities	30,745	9,087	81,431		121,263
Total public liabilities	96,418	9,087	122,523		228,028
Total liabilities	\$ 112,404	17,643	143,573		273,620

## Note 8 FECA Liabilities

USGS has recorded an estimated, unfunded liability for the expected future cost for death, disability, and medical claims under the Federal Employees Compensation Act. This estimated liability is calculated by the Department of Labor (DOL) using a method that considers historical benefit payment patterns, wage inflation factors, medical inflation factors, and other variables. These actuarially computed projected annual benefit payments are discounted to present value using the OMB's economic assumptions for 10-year Treasury notes and bonds. USGS also recorded an estimated, unfunded liability for the expected future payments to the DOL in payment of outstanding workers compensation claims.

FECA liabilities for the years ended September 30, 2006 and 2005, consisted of:

	2006	2005
Department of Labor		
FECA actuarial liability	\$ 38,873	41,010
FECA workers compensation liability	6,736	7,330
Total FECA liabilities	\$ <u>45,609</u>	<u>48,340</u>

## Note 9 Imputed Financing from Costs Absorbed by Others

Imputed financing sources are recorded in the financial statements for amounts paid or to be paid on behalf of the USGS by other Federal agencies. The OPM pays Federal employee pension and other future retirement benefits on behalf of Federal agencies. The OPM provided rates for recording the estimated cost of pension and other future retirement benefits paid by OPM on behalf of Federal agencies. The costs of these benefits are reflected as imputed financing in the consolidated financial statements.

During FY2005, USGS prospectively implemented the FASAB's Interpretation Number 6, *Accounting for Imputed Intra-departmental Costs: An Interpretation of SFFAS Number 4*. This implementation resulted in USGS recording intra-departmental costs originating from services received by the Department's Solicitor office.

Imputed financing costs for the years ended September 30, 2006 and 2005, consisted of:

	2006	2005
Office of Personnel Management:		
Pension expense	\$ 23,237	24,793
Federal employees health benefits	38,250	37,459
Federal employees group life insurance program	91	90
Total OPM	61,578	62,342
Intra-departmental imputed costs	5,903	330
Non-reimbursable claims paid by Treasury's judgment fund	450	100
Total imputed financing costs	\$ <u>67,931</u>	<u>62,772</u>

**Note 10 Contingent and Environmental and Disposal Liabilities**

The USGS is a party to various administrative proceedings, legal actions, environmental suits, and claims that may eventually result in the payment of substantial monetary claims to third parties, or in the unplanned reallocation of material budgetary resources to pay for the cleanup of environmentally damaged sites.

USGS has accrued any legal liabilities deemed to be probable of loss in the Consolidated Balance Sheets. The payment of any judgments against USGS would be made from the U.S. Department of the Treasury's Judgment Fund.

Additionally, USGS has several cases that the Solicitor believes are reasonably possible of loss, none of which can be estimated. Because no range of loss for reasonably possible cases could be estimated by the Solicitor, those cases are excluded from the disclosure below.

The USGS has accrued the probable and estimable liability represented by environmental site cleanup. Additionally, USGS has several environmental cases that USGS experts believe the range of loss cannot presently be estimated.

Changes in existing estimated environmental and disposal costs are based on progress made in, and revision of, the cleanup plans assuming current technology, laws, and regulations. There are no material changes in total estimated cleanup costs that are due to changes in technology, laws, and regulations.

Estimated contingent and environmental disposal liabilities as of September 30, 2006 and 2005, are:

	2006	Estimated Range of Loss	
		Accrued Liabilities	Upper End of Range
Contingent liabilities			
Probable	\$ 1,279	1,279	5,279
Environmental and disposal liabilities			
Probable	66	66	66
	2005	Estimated Range of Loss	
		Accrued Liabilities	Upper End of Range
Contingent liabilities			
Probable	\$ 2,208	2,208	6,408
Environmental and disposal liabilities			
Probable	82	82	112

## Note 11 Stewardship Assets

The USGS serves the Nation by providing reliable scientific information to describe and understand the Earth. The USGS serves American citizens as a steward for a large, varied, and scientifically important body of heritage assets, and in conducting research and development that is critical to the health of our country and in understanding the Earth.

During FY2006, USGS prospectively implemented the FASAB's Statement of Federal Financial Accounting Standard No. 29, *Heritage Assets and Stewardship Land*. USGS considers its four library collections to be heritage assets which provide scientific information needed by Interior researchers, as well as researchers of other government agencies, universities, and professional communities. Besides providing resources for USGS scientific investigations, the library collections provide access to geographical, technical, and historical literature in paper and electronic formats for the general public and the industry. USGS manages these assets to the standards set in the Survey Manual, and utilizes a library classification system designed for earth science libraries.

USGS also considers its museum collections, comprised of collections of natural history specimens and cultural objects, to be heritage assets. Natural history specimens are important as they contribute reliable scientific information to our research activities, while our cultural objects provide educational and informational services on the history of the bureau through museum and other exhibits of historical activities/events. USGS endeavors to manage these assets to the standards set in the Departmental Manual 411, Policy and Responsibilities for Managing Museum Property, and other Federal authorities.

## Note 12 Leases and Occupancy Agreements

The USGS has many cancelable occupancy agreements with the GSA, primarily for office space. Some of these agreements do not have a stated expiration. USGS also has many operating leases, primarily for storage and housing for employees working on location, with public entities. There were no personal property lease agreements exceeding one year as of September 30, 2006.

USGS has estimated its future minimum liability for GSA occupancy agreements by adding OMB approved inflationary rate increases per year to the FY2006 lease rental expense. Public operating leases were calculated based on lease agreement terms.

Future estimated minimum operating lease payments as of September 30, 2006 are:

		Real Property		2006
		Federal	Public	Total
FY2007	\$	69,608	2,267	71,875
FY2008		64,653	2,122	66,775
FY2009		47,052	1,858	48,910
FY2010		42,225	1,588	43,813
FY2011		38,030	1,610	39,640
Thereafter		81,630	4,931	86,561
Total future operating lease payments	\$	343,198	14,376	357,574

Rental expenses for occupancy agreements, operating leases, and exhibit hall space during FY2006 and FY2005 were approximately \$79.7 and \$86.2 million, respectively.

In some cases, USGS secures funds from GSA's building fund to finance improvements made to space where USGS is the tenant. Because these improvements are made to convert the existing structures into workable space tailored to USGS needs, USGS is required to repay GSA the cost of the improvements over the term of the occupancy agreement, which is incorporated into the total rent payments billed to USGS by GSA. The principal loan balance of approximately \$17.3 and \$19 million at September 30, 2006 and 2005, respectively, is recorded as a liability and the corresponding leasehold improvements are recorded in Property, Plant & Equipment, which are amortized over the period of the occupancy agreements.

Examples of some of USGS facilities are included below:



The Alaska Science Center— Biological Science Office provides biological information and research findings to resource managers, policymakers, and the public to support sound management of biological resources and ecosystems in Alaska.



The Earth Resources Observation Systems (EROS) Data Center is a data management, systems development, and research field center for the USGS Geographic Discipline.



The U.S. National Ice Core Laboratory is a facility for storing, curating, and studying ice cores recovered from the polar regions of the world. It provides scientists with the capability to conduct examinations and measurements on ice cores, and it preserves the integrity of these ice cores in a long-term repository for current and future investigations.

### Note 13 Statements of Net Cost by Segment

Consistent with the FY2005 presentation, USGS's four responsibility segments within the Statement of Net Cost represent the major operating segments by which achievement of USGS's mission and goals are measured: Biology, Water, Geology, and Geography.

DOI has four major GPRA goals as presented in the unified strategic plan for the Department as a whole. USGS activities correspond to all of the DOI GPRA goals (except providing recreation) and 6 of the DOI's 17 end outcome goals. These six end outcome goals represent the major programs presented within the Statement of Net Cost.

The following tables reflect USGS net cost by responsibility segment for the years ended September 30, 2006 and 2005, respectively.

Consolidating Schedule of Net Cost  
For the Year Ended September 30, 2006  
(in thousands)

	Water	Geology	Geography	Biology	Eliminations	Total
<b>Improve Health of Watersheds and Landscapes</b>						
Intragovernmental costs	\$ -	-	-	26,070	(1,784)	24,286
Public costs	-	-	-	70,985	-	70,985
Total costs	-	-	-	97,055	(1,784)	95,271
Intragovernmental earned revenue	-	-	-	32,645	(1,784)	30,861
Public earned revenue	-	-	-	3,493	-	3,493
Total earned revenue	-	-	-	36,138	(1,784)	34,354
Net costs	-	-	-	60,917	-	60,917
<b>Sustain Biological Communities</b>						
Intragovernmental costs	-	-	-	34,927	(2,876)	32,051
Public costs	-	-	-	148,226	-	148,226
Total costs	-	-	-	183,153	(2,876)	180,277
Intragovernmental earned revenue	-	-	-	35,952	(2,876)	33,076
Public earned revenue	-	-	-	4,179	-	4,179
Total earned revenue	-	-	-	40,131	(2,876)	37,255
Net costs	-	-	-	143,022	-	143,022
<b>Energy - Manage or influence resources</b>						
Intragovernmental costs	-	8,239	-	-	(522)	7,717
Public costs	-	21,068	-	-	-	21,068
Total costs	-	29,307	-	-	(522)	28,785
Intragovernmental earned revenue	-	2,123	-	-	(522)	1,601
Public earned revenue	-	61	-	-	-	61
Total earned revenue	-	2,184	-	-	(522)	1,662
Net costs	-	27,123	-	-	-	27,123
<b>Non-energy Minerals - Manage or influence resources</b>						
Intragovernmental costs	-	18,668	-	-	(1,383)	17,285
Public costs	-	48,804	-	-	-	48,804
Total costs	-	67,472	-	-	(1,383)	66,089
Intragovernmental earned revenue	-	4,029	-	-	(1,383)	2,646
Public earned revenue	-	492	-	-	-	492
Total earned revenue	-	4,521	-	-	(1,383)	3,138
Net costs	-	62,951	-	-	-	62,951
<b>Protect Lives, Resources and Property</b>						
Intragovernmental costs	-	25,475	-	147	(1,718)	23,904
Public costs	-	93,177	-	1,496	-	94,673
Total costs	-	118,652	-	1,643	(1,718)	118,577
Intragovernmental earned revenue	-	11,890	-	-	(1,718)	10,172
Public earned revenue	-	2,278	-	-	-	2,278
Total earned revenue	-	14,168	-	-	(1,718)	12,450
Net costs	-	104,484	-	1,643	-	106,127
<b>Advance Knowledge through scientific leadership</b>						
Intragovernmental costs	198,099	36,804	43,334	10,976	(50,065)	239,148
Public costs	443,493	97,256	157,444	37,580	-	735,773
Total costs	641,592	134,060	200,778	48,556	(50,065)	974,921
Intragovernmental earned revenue	137,190	11,998	34,675	5,872	(50,065)	139,670
Public earned revenue	159,111	7,580	14,760	222	-	181,673
Total earned revenue	296,301	19,578	49,435	6,094	(50,065)	321,343
Net costs	345,291	114,482	151,343	42,462	-	653,578
<b>Total</b>						
Intragovernmental costs	198,099	89,186	43,334	72,120	(58,348)	344,391
Public costs	443,493	260,305	157,444	258,287	-	1,119,529
Total costs	641,592	349,491	200,778	330,407	(58,348)	1,463,920
Intragovernmental earned revenue	137,190	30,040	34,675	74,469	(58,348)	218,026
Public earned revenue	159,111	10,411	14,760	7,894	-	192,176
Total earned revenue	296,301	40,451	49,435	82,363	(58,348)	410,202
Net costs	\$ 345,291	309,040	151,343	248,044	-	1,053,718



Consolidating Schedule of Net Cost  
For the Year Ended September 30, 2005  
(in thousands)

	Water	Geology	Geography	Biology	Eliminations	Total
<b>Improve Health of Watersheds and Landscapes</b>						
Intragovernmental costs	\$ -	-	-	28,852	(616)	28,236
Public costs	-	-	-	84,026	-	84,026
Total costs	-	-	-	112,878	(616)	112,262
Intragovernmental earned revenue	-	-	-	29,729	(616)	29,113
Public earned revenue	-	-	-	5,194	-	5,194
Total earned revenue	-	-	-	34,923	(616)	34,307
Net costs	-	-	-	77,955	-	77,955
<b>Sustain Biological Communities</b>						
Intragovernmental costs	-	-	-	30,946	(637)	30,309
Public costs	-	-	-	132,544	-	132,544
Total costs	-	-	-	163,490	(637)	162,853
Intragovernmental earned revenue	-	-	-	31,479	(637)	30,842
Public earned revenue	-	-	-	3,770	-	3,770
Total earned revenue	-	-	-	35,249	(637)	34,612
Net costs	-	-	-	128,241	-	128,241
<b>Energy - Manage or influence resources</b>						
Intragovernmental costs	-	8,276	-	-	(156)	8,120
Public costs	-	21,054	-	-	-	21,054
Total costs	-	29,330	-	-	(156)	29,174
Intragovernmental earned revenue	-	1,764	-	-	(156)	1,608
Public earned revenue	-	86	-	-	-	86
Total earned revenue	-	1,850	-	-	(156)	1,694
Net costs	-	27,480	-	-	-	27,480
<b>Non-energy Minerals - Manage or influence resources</b>						
Intragovernmental costs	-	18,444	-	-	(394)	18,050
Public costs	-	49,659	-	-	-	49,659
Total costs	-	68,103	-	-	(394)	67,709
Intragovernmental earned revenue	-	3,738	-	-	(394)	3,344
Public earned revenue	-	732	-	-	-	732
Total earned revenue	-	4,470	-	-	(394)	4,076
Net costs	-	63,633	-	-	-	63,633
<b>Protect Lives, Resources and Property</b>						
Intragovernmental costs	-	22,857	-	-	(475)	22,382
Public costs	-	88,353	-	-	-	88,353
Total costs	-	111,210	-	-	(475)	110,735
Intragovernmental earned revenue	-	13,288	-	-	(475)	12,813
Public earned revenue	-	1,792	-	-	-	1,792
Total earned revenue	-	15,080	-	-	(475)	14,605
Net costs	-	96,130	-	-	-	96,130
<b>Advance Knowledge through scientific leadership</b>						
Intragovernmental costs	185,195	34,082	37,934	12,233	(37,153)	232,291
Public costs	434,398	96,753	159,402	37,084	-	727,637
Total costs	619,593	130,835	197,336	49,317	(37,153)	959,928
Intragovernmental earned revenue	133,158	11,133	31,005	5,480	(37,153)	143,623
Public earned revenue	149,247	7,795	15,714	248	-	173,004
Total earned revenue	282,405	18,928	46,719	5,728	(37,153)	316,627
Net costs	337,188	111,907	150,617	43,589	-	643,301
<b>Total</b>						
Intragovernmental costs	185,195	83,659	37,934	72,031	(39,431)	339,388
Public costs	434,398	255,819	159,402	253,654	-	1,103,273
Total costs	619,593	339,478	197,336	325,685	(39,431)	1,442,661
Intragovernmental earned revenue	133,158	29,923	31,005	66,688	(39,431)	221,343
Public earned revenue	149,247	10,405	15,714	9,212	-	184,578
Total earned revenue	282,405	40,328	46,719	75,900	(39,431)	405,921
Net costs	\$ 337,188	299,150	150,617	249,785	-	1,036,740

## Note 14 Budgetary Resources

The USGS receives budgetary resources from appropriations, offsetting receipts, and reimbursable activities. At September 30, 2006 and 2005, respectively, approximately \$123.3 and \$116.3 million of the budgetary resources were unobligated. These amounts include expired budget authority of \$23.3 and \$30.6 million at September 30, 2006 and 2005, respectively. The expired funds remain available for up to five years to pay expenses against obligations incurred. Recoveries of prior year obligations are comprised of canceled or downward adjustments of obligations incurred in prior years that were not subsequently disbursed. Undelivered orders as of September 30, 2006 and 2005 totaled \$214.9 million and \$193.9 million, respectively.

### Apportionment categories of obligations incurred

Apportionments are categorized as either A, B, or C. Category A apportionments are those where OMB makes a distribution of budgetary resources by calendar quarters; category B apportionments are made by other specified time periods, programs, activities, projects, or combinations thereof; and category C represents budgetary resources that are not subject to apportionment. USGS obligations incurred during FY2006 and FY2005 were all category B and were subject to apportionment.

Obligations incurred balances as of September 30, 2006 and 2005 are:

	<b>Apportioned, Category B</b>	
	<b>2006</b>	<b>2005</b>
Obligations incurred:		
Direct	\$ 985,933	946,344
Reimbursable	492,189	475,505
Total obligations incurred	\$ 1,478,122	1,421,849

### Permanent Indefinite Appropriations

Permanent indefinite appropriations refer to the appropriations that come from permanent public laws, which authorize USGS to retain certain receipts rather than a specific annually appropriated amount. These funds do not require annual appropriation action by Congress as they are subject to the authorities of the permanent law. USGS has three permanent indefinite appropriations. The majority of funding is from the "Surveys, Investigations, and Research" appropriation used to conduct operations in topography, geology, hydrology, biology, and mineral resources.

### Appropriations Received

Appropriations received on the Consolidated Statements of Changes in Net Position differs from that reported on the Combined Statements of Budgetary Resources because appropriations received on the Combined Statements of Budgetary Resources does not include budgetary entries for funds in which USGS is the child to parent funds of other agencies, or available receipt funds.

### Legal Arrangements Affecting Use of Unobligated Balances

Unobligated balances whose period of availability has expired are not available to fund new obligations but are available to pay for adjustments to obligations incurred prior to expiration. For a no-year account, the unobligated balance is carried forward indefinitely until (1) specifically rescinded by law; or (2) the head of the agency concerned or the President determines that the purposes for which the appropriation was made have been carried out and disbursements have not been made against the appropriation for 2 consecutive years.

For a fixed appropriation account, the balance can be carried forward for five fiscal years after the period of availability ends. At the end of the fifth fiscal year, the account is closed and any remaining balance is canceled. Canceled authority is returned to the U.S. Treasury at the end of the 5th year of availability for annual and multi-year funds under Public Law 101-510. Resources permanently not available were adjusted pursuant to Public Law 114 Stat 2763A-214, SEC 1403.

### Explanation of Differences between the Combined Statement of Budgetary Resources and the Budget of the United States Government

The Combined Statements of Budgetary Resources (SBR) have been prepared to coincide with the President's Budget (PB), the Budget of the United States Government. The FY2006 actual amounts as shown on the FY2008 President's Budget were not available at the time the financial statements were prepared. The FY2008 President's Budget is expected to be available in February 2007 and will be located at <http://www.whitehouse.gov/omb>.

USGS had differences that existed between the FY2005 Statement of Budgetary Resources and the FY2005 actual amounts reported in the President's FY2007 budget request. The differences relate to amounts included in the Statement of Budgetary Resources that are not reported in the President's Budget. These amounts include expired amounts and cancelled authority, working capital fund obligation balances, and offsetting collections. Below is a table with significant differences and explanations between the FY2005 Statement of Budgetary Resources and the FY2005 actual amounts reported in the President's FY2007 budget request.

	Amount per PB	Amount per SBR	Expected differences
Unobligated balance, beginning of fiscal year	\$ 95,000	\$ 120,310	\$ 25,310 (A)
Spending authority from offsetting collections	\$ 602,000	\$ 464,140	\$ 137,860 (B)
Unobligated balance available and not available	\$ 88,000	\$ 116,266	\$ 28,266 (A)
Obligated balance, net, end of fiscal year	\$ 114,000	\$ 115,915	\$ 1,915 (C)
Offsetting Collections	\$ 334,000	\$ 468,409	\$ 134,409 (A)

(A) Amount of expired authority included in the SBR but not in the PB.

(B) Amount of collections included in the PB but not in the SBR.

(C) Amount of working capital fund obligations included in the SBR but not in the PB.

## Note 15 Consolidated Statements of Financing Reconciling Items

There is a relationship between certain line items reported on the Consolidated Statements of Financing under "Total components of net cost of operations that will not require or generate resources in future periods" and the change in components of costs that are included in liabilities not covered by budgetary resources reported in Note 8.

The USGS is a recipient of allocation transfers of funds from the DOI Office of the Secretary.

The total components of net cost of operations related to transfer accounts where budgetary activity is reported by parent Federal entities that occurred during the years ended September 30, 2006 and 2005, respectively, consist of:

Appropriation	Nature and purpose of transfer	2006	2005
DOI - Departmental Offices:			
14x5198.008	Natural resource damage assessment and restoration fund	\$ 1,413	1,408
14-14x1618.008	Natural resource damage assessment and restoration fund	280	87
14x1121.008	Government Hill central hazardous material fund site - Alaska	6	-
Net allocation transfer reconciling items		<u>\$ 1,699</u>	<u>1,495</u>

Deferred credits, deposit fund liabilities, and other liabilities representing amounts payable to Treasury are reflected as not covered by budgetary resources in Note 8; however, they are not presented as a reconciling item on the Consolidated Statements of Financing.

The total components of net cost of operations related to changes in certain unfunded liabilities and receivable balances that occurred during the years ended September 30, 2006 and 2005, respectively, consist of:

	2006	2005	Increase
Accrued payroll and benefits	3,006	2,889	117
Total	<u>\$ 3,006</u>	<u>2,889</u>	<u>117</u>
	2005	2004	Increase
Annual leave liability	\$ 59,712	57,652	2,060
Accrued payroll and benefits	2,889	2,296	593
FECA actuarial liability	41,010	40,569	441
Total selected unfunded liabilities	103,611	100,517	3,094
Less: Exchange revenue receivable from the public	503	79	424
Total	<u>\$ 103,108</u>	<u>100,438</u>	<u>2,670</u>

**Note 16 Earmarked Funds**

During FY2006, USGS prospectively implemented the FASAB's Statement of Federal Financial Accounting Standard No. 27, *Identifying and Reporting Earmarked Funds*. Earmarked funds are financed by specifically identified revenues and are required by statute to be used for designated activities or purposes, and must be accounted for separately from the Government's general revenues. The following funds have been designated as earmarked as of September 30, 2006.

**14X5055— Quarters**

5 U.S.C. 591 allows the USGS to provide an employee stationed in the United States with quarters and facilities when conditions of employment or the availability of quarters warrant the action. In 1985, 5 U.S.C. 591 was amended to allow for the rental rates for the provided quarters to be collected into a special fund. The collections are then available until expended for the maintenance and operation of the quarters. The collections are accounted for as offsetting receipts that do not effect the net cost of operations.

**14X5198.008— Natural Resource Damage Assessment and Restoration Fund**

The Natural Resource Damage Assessment and Restoration Fund (NRDAR) program assesses the damages and injuries to natural resources entrusted to the Department of the Interior and negotiates legal settlements or takes other legal actions against the responsible parties for the spill or release. Settlements often include the recovery of the costs incurred in assessing the damages. These funds are then used to fund further damage assessments. USGS receives a portion of the funds from the Department to assist with the damage assessment process. These funds are accounted for as Transfers-In for the USGS.

**14X8562— Contributed funds**

43 U.S.C. 36C allows the USGS to accept lands, building, equipment, and other contributions from public and private sources and to participate in projects in cooperation with other agencies, Federal, State, or private. Contributions come from donations received from private individuals, Technical Assistance Agreements, and Consortiums for Cooperative Research and Development Agreements. The contributions received via agreement are dedicated to specific projects and are accounted for as offsetting receipts that do not effect the net cost of operations.

## Financial Information

Earmarked funds as of September 30, 2006 consist of:

	Contributed Fund	Natural Resources, Damage Assessment, and Restoration Fund	Quarters Fund	2006
<b>Balance Sheet</b>				
Assets				
Fund balance with Treasury	\$ 1,255	683	132	2,070
Accounts receivable, net	130	-	-	130
General property, plant, and equipment, net	1,344	-	-	1,344
Total assets	<u>\$ 2,729</u>	<u>683</u>	<u>132</u>	<u>3,544</u>
Liabilities				
Accounts payable	\$ 69	141	5	215
Other Liabilities	239	11	-	250
Total Liabilities	<u>308</u>	<u>152</u>	<u>5</u>	<u>465</u>
Net position				
Cumulative results of operations	2,421	531	127	3,079
Total net position	<u>2,421</u>	<u>531</u>	<u>127</u>	<u>3,079</u>
Total liabilities and net position	<u>\$ 2,729</u>	<u>683</u>	<u>132</u>	<u>3,544</u>
<b>Statement of Net Cost</b>				
Gross costs	2,502	1,413	93	4,008
Earned revenue	-	-	(88)	(88)
Net cost of operations	<u>\$ 2,502</u>	<u>1,413</u>	<u>5</u>	<u>3,920</u>
<b>Statement of Changes in Net Position</b>				
Net position, beginning balance	\$ 2,523	1,066	132	3,721
Budgetary financing sources				
Donations and forfeitures of cash and cash equivalents	2,400	-	-	2,400
Transfers in/(out) without reimbursement	-	878	-	878
Net cost of operations	<u>(2,502)</u>	<u>(1,413)</u>	<u>(5)</u>	<u>(3,920)</u>
Change in net position	<u>(102)</u>	<u>(535)</u>	<u>(5)</u>	<u>(642)</u>
Net position, ending balance	<u>\$ 2,421</u>	<u>531</u>	<u>127</u>	<u>3,079</u>

# Required Supplemental Information

(Unaudited; see  
Auditors' Report)

This part of the Section III *Financial Information* contains our required supplemental information disclosures.

## Contents include:

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### Surveys, Investigations, and Research (Treasury Symbol 0804):

The USGS is primarily funded by the SIR appropriation. The SIR appropriation is for expenses necessary for the USGS to perform surveys, investigations, and research covering topography, geology, hydrology, biology, and the mineral resources of the United States, its territories and possessions, and other areas authorized by law; classify lands as to their mineral and water resources; give engineering supervision to power permittees and FERC licensees; administer the minerals exploration program; and to conduct inquiries into the economic conditions affecting mining and materials processing industries and related purposes as authorized by law. [Department of the Interior and Related Agencies Appropriations Act, 2004]

The following activities are funded by the SIR appropriation: Geographic Research, Investigations, and Remote Sensing; Geologic Hazards, Resources, and Processes; Water Resources Investigations Activity; Biological Research; Enterprise Information; Science Support; and Facilities. Each activity is described below.

#### Geography

The Geographic Research, Investigations, and Remote Sensing activity seeks to observe the earth at various scales using remote sensing to understand the human and environmental dynamics of land change. The Geography Program also provides scientific information to describe and interpret America's landscape by mapping the terrain, monitoring changes over time, and analyzing how and why these changes have occurred. The knowledge gained through these activities is used to model the processes of change and to forecast future changes.

The Geographic Research, Investigations, and Remote Sensing activity is broken down into three subactivities: Cooperative Topographic Mapping, Land Remote Sensing, and Geographic Analysis and Monitoring.

#### Geology

The Geologic Hazards, Resources, and Processes activity provides the Earth science information needs for a wide variety of partners and customers, including Federal, State, and local agencies, non-government organizations, industry, and academia. This information is used by the USGS and its partners, cooperators, and customers in evaluating resource potential, defining and mitigating risks associated with natural hazards, and characterizing the potential impact of natural geologic processes on human activity, the economy, and the environment.

USGS programs improve the safety of the United States from natural disasters and include efforts to (1) increase USGS ability to rapidly determine the location, size, and depth of large earthquakes, (2) discriminate kinds of earthquakes and geologic areas of the Pacific and Caribbean likely to cause tsunamis, (3) improve landslide models, assessments, and alert systems, (4) improve monitoring of the most dangerous volcanoes, and (5) work with Federal, local, and foreign partners to improve coordination, ensure timely warnings can be issued for all geologic hazards, and provide information so that informed community response plans can be developed and put in place.

The Geologic Hazards, Resources, and Processes activity supports three subactivities: Geologic Hazard Assessments, Geologic Landscape and Coastal Assessments, and Geologic Resource Assessments.

#### Water

The Water Resources Investigations activity funds work on issues related to water availability, water quality, and flood hazards. Over 4,000 scientific and support staff in offices located in every State support and/or perform work involving collection, management, and dissemination of hydrologic data; analysis of hydrologic systems through modeling or statistical methods; and research and development leading to new methods and new understanding.

USGS programs involve operating streamgages that measure the flow of rivers and provide data that are used in resource planning and dispute resolution, performing water-quality studies that have a strong connection to human health issues, and collecting



and providing data that enables citizens, communities, businesses, and local emergency-response agencies to make the best possible decisions about protecting lives and property in floods. The Water Resources Investigations activity supports three subactivities: Hydrologic Monitoring, Assessments, and Research, Cooperative Water Program, and the Water Resources Research Act Program.

## Biology

The Biological Research activity generates and distributes information needed in the conservation and management of the Nation's biological resources. Biological Research activities contribute to achieving improved management of the Nation's water resources, availability of maps and map data, and improved decisionmaking regarding land and water use.

USGS programs provide scientific information through research, inventory, and monitoring investigations, and increase the quantity of biological information available by improving access to and interactions with biological data. USGS biologists and information scientists, in partnership with many others, provide the scientific understanding and technologies necessary to support sound management and conservation of the Nation's biological resources. Biological studies develop new methods and techniques to identify, observe, and manage fish and wildlife, including invasive species, and their habitats; inventory populations of animals, plants, and their habitats; and monitor changes in abundance, distribution, and health of biological resources through time.

The Biological Research activity is broken down into three subactivities: Biological Research and Monitoring, Biological Information Management and Delivery, and Cooperative Research Units.

## Support Services: Enterprise Information, Science Support, and Facilities

The Enterprise Information activity supports bureau-level activities and investments in the areas of information technology, information security, information management, information policy and standards, and information science. In 2007 a budget restructure moved the National Map from Geographic Research, Investigations, and Remote

Sensing to Enterprise Information. The National Geospatial Program is focused on improving, geospatial data access, integration, and applications through implementation of the National Map and the National Spatial Data Infrastructure. Partnerships with other Federal, State, and local agencies and the private sector and academia are the keystone for accomplishing this mission. Enterprise Information is broken down into three subactivities: Enterprise Information Security and Technology, Enterprise Information Resources, and the National Geospatial Program.

The Science Support activity provides resources for the executive and managerial direction of the bureau and support services to all USGS scientific programs. Science Support is broken down into two subactivities: Bureau Operations and Payments to the National Business Center.

The Facilities activity provides workspace and facilities for accomplishing the bureau mission. The Facilities activity supports three subactivities: Rental Payments, Operations and Maintenance, and Deferred Maintenance and Capital Improvement.

## Working Capital Fund (Treasury Symbol 4556):

The Working Capital Fund was established by law to provide USGS with the ability to finance a continuing cycle of operations in two components: Investments and Fee-for-Service. The Investment Component provides funding for Telecommunications, Equipment, Facilities, and Publications. The fee-for-service component provides continuing funding for the National Water Quality Laboratory, the USGS Hydrologic Instrumentation Facility, Publications, bureau Laboratories, the National Training Center, Drilling, Landsat 7, and GSA Delegated Buildings.

## Other Aggregated Accounts:

The USGS also receives a variety of other funding. Other appropriations include donations and contributions, reimbursables, miscellaneous receipts, natural resource damage assessment, and operations and maintenance of quarters.

Combining Statement of Budgetary Resources  
For the Year Ended September 30, 2006  
(in thousands)

	Fund 0804	Fund 4556	Other Budgetary Accounts	2006
<b>Budgetary resources (Note 14):</b>				
Unobligated balance				
Beginning of fiscal year	\$ 52,864	62,242	1,160	116,266
Recoveries of prior year unpaid obligations	7,276	584	15	7,875
Budget authority				
Appropriations received	995,205	-	2,487	997,692
Spending authority from offsetting collections				
Earned				
Collected	435,933	62,770	-	498,703
Change in receivables from Federal sources	(8,603)	-	-	(8,603)
Change in unfilled customer orders				
Advance received	(1,268)	-	-	(1,268)
Without advance from Federal sources	8,739	-	-	8,739
Total budget authority	1,430,006	62,770	2,487	1,495,263
Nonexpenditure transfers, net	1,500	-	-	1,500
Permanently not available	(19,479)	-	-	(19,479)
<b>Total budgetary resources</b>	<b>\$ 1,472,167</b>	<b>125,596</b>	<b>3,662</b>	<b>1,601,425</b>
<b>Status of budgetary resources:</b>				
Obligations incurred:				
Direct	\$ 983,363	-	2,570	985,933
Reimbursable	438,492	53,697	-	492,189
Total obligations incurred	1,421,855	53,697	2,570	1,478,122
Unobligated balance				
Apportioned	27,031	71,899	1,092	100,022
Unobligated balance not available	23,281	-	-	23,281
<b>Total status of budgetary resources</b>	<b>\$ 1,472,167</b>	<b>125,596</b>	<b>3,662</b>	<b>1,601,425</b>
<b>Obligated balance:</b>				
Obligated balance, net				
Unpaid obligations, brought forward, beginning of fiscal year	\$ 278,270	18,144	741	297,155
Less: Uncollected customer payments from Federal sources, brought forward, beginning of fiscal year	(181,240)	-	-	(181,240)
Total unpaid obligated balances, net, beginning of fiscal year	97,030	18,144	741	115,915
Obligations incurred	1,421,855	53,697	2,570	1,478,122
Less: gross outlays	(1,402,472)	(56,140)	(3,003)	(1,461,615)
Less: recoveries of prior year unpaid obligations, actual	(7,276)	(584)	(15)	(7,875)
Change in uncollected customer payments from Federal sources	(138)	-	-	(138)
Total, unpaid obligated balance, net, end of period	108,999	15,117	293	124,409
<b>Obligated balance, net, end of period - by component:</b>				
Unpaid obligations	290,375	15,117	293	305,785
Less: Uncollected customer payments from Federal sources	(181,376)	-	-	(181,376)
Total, unpaid obligated balance, net, end of period	108,999	15,117	293	124,409
<b>Net outlays:</b>				
Gross outlays	1,402,472	56,140	3,003	1,461,615
Less: offsetting receipts	(434,665)	(62,770)	-	(497,435)
Less: distributed offsetting receipts	-	-	(2,483)	(2,483)
Net outlays (receipts)	\$ 967,807	(6,630)	520	961,697

Combining Statement of Budgetary Resources  
For the Year Ended September 30, 2005  
(in thousands)

	Fund 0804	Fund 4556	Other Budgetary Accounts	2005
<b>Budgetary resources (Note 14):</b>				
Unobligated balance				
Beginning of fiscal year	\$ 46,298	72,710	1,302	120,310
Recoveries of prior year unpaid obligations	8,158	375	37	8,570
Budget authority				
Appropriations received	958,021	-	2,353	960,374
Spending authority from offsetting collections				
Earned				
Collected	411,119	53,688	-	464,807
Change in receivables from Federal sources	(7,334)	-	-	(7,334)
Change in unfilled customer orders				
Advance received	3,601	-	-	3,601
Without advance from Federal sources	3,066	-	-	3,066
Total budget authority	1,368,473	53,688	2,353	1,424,514
Nonexpenditure transfers, net	5,437	-	-	5,437
Permanently not available	(20,716)	-	-	(20,716)
<b>Total budgetary resources</b>	<b>\$ 1,407,650</b>	<b>126,773</b>	<b>3,692</b>	<b>1,538,115</b>
<b>Status of budgetary resources:</b>				
Obligations incurred:				
Direct	\$ 943,813	-	2,531	946,344
Reimbursable	410,973	64,532	-	475,505
Total obligations incurred	1,354,786	64,532	2,531	1,421,849
Unobligated balance				
Apportioned	22,242	62,241	1,161	85,644
Unobligated balance not available	30,622	-	-	30,622
<b>Total status of budgetary resources</b>	<b>\$ 1,407,650</b>	<b>126,773</b>	<b>3,692</b>	<b>1,538,115</b>
<b>Obligated balance:</b>				
Obligated balance, net				
Unpaid obligations, brought forward, beginning of fiscal year	\$ 275,979	12,423	857	289,259
Less: Uncollected customer payments from Federal sources, brought forward, beginning of fiscal year	(185,507)	-	-	(185,507)
Total unpaid obligated balances, net, beginning of fiscal year	90,472	12,423	857	103,752
Obligations incurred	1,354,786	64,532	2,531	1,421,849
Less: gross outlays	(1,344,338)	(58,435)	(2,611)	(1,405,384)
Less: recoveries of prior year unpaid obligations, actual	(8,158)	(375)	(37)	(8,570)
Change in uncollected customer payments from Federal sources	4,268	-	-	4,268
Total, unpaid obligated balance, net, end of period	97,030	18,145	740	115,915
<b>Obligated balance, net, end of period - by component:</b>				
Unpaid obligations	278,270	18,145	740	297,155
Less: Uncollected customer payments from Federal sources	(181,240)	-	-	(181,240)
Total, unpaid obligated balance, net, end of period	97,030	18,145	740	115,915
<b>Net outlays:</b>				
Gross outlays	1,344,338	58,435	2,611	1,405,384
Less: offsetting receipts	(414,719)	(53,690)	-	(468,409)
Less: distributed offsetting receipts	-	-	(2,353)	(2,353)
Net outlays (receipts)	\$ 929,619	4,745	258	934,622

The Working Capital Fund (WCF) was established by Public Law (P.L.) 101-512 (November 5, 1990), as codified in 43 U.S.C. 50a. The fund was originally established to support the Washington Administrative Service Center (currently the National Business Center) and to support the replacement of the USGS mainframe computer, telecommunications equipment, and related Automated Data Processing equipment. Congress later expanded the existing Telecommunications Amortization Fund to establish the USGS Working Capital Fund by P.L. 103-332, dated September 30, 1994, which enabled USGS to use the WCF to fund laboratory modernization and equipment replacement; acquisition or development of software; facilities improvements; acquisition and replacement of computers, publications, scientific instrumentation, telecommunications, and other types of equipment replacement.

The two operating components of the WCF are fee-for-service operations and investments.

### Fee-for-Service:

WCF fee-for-service components operate in a business-like manner, recovering fees for services performed based on a fee schedule established through a rate-setting process. WCF fee-for-service components must operate in compliance with OMB Circular A-25, User Charges, and recover the full cost of goods, services, and resources provided to customers. User charges should be based on market prices and create neither a shortage nor surplus of the goods or services. For each component fund, an annual budget and pricing schedule is required. User charges are required to be reviewed no less than biannually.

Fee-for-service component activities have been structured by use of seven components, based on type of servicing activity: National Water Quality Laboratory, Hydrologic Instrumentation Facility, publications, research laboratories, National Training Center, drilling, and GSA delegated buildings.

### Investments:

A key purpose of the WCF is to plan for long-term capital investments and accumulate the required funds over several fiscal years. The USGS is authorized to use the WCF to invest funds from appropriations and/or reimbursable agreements, without fiscal year limitations, for materials, supplies, telecommunications, and other equipment and facilities renovations in support of USGS programs and other agencies of the Federal Government. Normal operating expenses may not be funded through the WCF investment plans. All investments and expenditures from a WCF investment component must be documented in an approved, multi-year Investment Plan (IP). Investments must occur, at a minimum, in two fiscal years before acquisition can occur and are expected to be evenly balanced over the time period defined in the IP. Prior year contributions may not be withdrawn from the WCF under any circumstances; they must be expended from the WCF for an approved capital investment. Current year contributions may be withdrawn, subject to appropriate approvals, in rare instances.

Investment component activities have been structured by the use of four components, based on type of investment activity: telecommunications, equipment, facilities, and publications.



The Working Capital Fund authority is a benefit allowed by Congress and the Office of Management and Budget, predicated on wise application to U.S. Geological Survey programs, exercised through prudent fiscal management. The fund provides a mechanism to assist USGS managers in planning for and acquiring goods and services that are too costly to acquire in a single fiscal year or that, due to the nature of services provided, must operate in a multi-year, as opposed to a single-year, basis of funding. The Office of Budget and Performance and the Office of Administrative Policy and Services work with the fund owners in the disciplines and regions to monitor fund plans, contributions, and expenditures, enabling managers to ensure the fund is used according to the guidelines established by Congress.

*Michael A. Kelley, Budget Officer*

Working Capital Fund Balance Sheets and Schedules of Net Costs  
(in thousands)

	<u>2006</u>	<u>2005</u>
<b>Assets</b>		
Intragovernmental assets:		
Fund balance with Treasury	\$ 87,016	80,386
<b>Total intragovernmental assets</b>	<u>87,016</u>	<u>80,386</u>
Accounts and interest receivable, net	19	2
General property, plant and equipment, net	11,447	9,382
<b>Total Assets</b>	<u>\$ 98,482</u>	<u>89,770</u>
<b>Liabilities</b>		
Intragovernmental liabilities:		
Accounts payable	\$ 558	870
Other liabilities	88	114
<b>Total intragovernmental liabilities</b>	<u>646</u>	<u>984</u>
Accounts payable	2,624	3,691
Other liabilities	419	545
<b>Total liabilities</b>	<u>3,689</u>	<u>5,220</u>
<b>Net position</b>		
Cumulative results of operations	94,793	84,550
<b>Total net position</b>	<u>94,793</u>	<u>84,550</u>
<b>Total liabilities and net position</b>	<u>\$ 98,482</u>	<u>89,770</u>

	<u>Fee For Service</u>	<u>Investments</u>	<u>2006</u>
Full cost of goods and services provided	\$ 39,764	10,920	50,684
Related exchange revenues	(41,257)	-	(41,257)
Excess of cost over revenues	<u>\$ (1,493)</u>	<u>10,920</u>	<u>9,427</u>

	<u>Fee For Service</u>	<u>Investments</u>	<u>2005</u>
Full cost of goods and services provided	\$ 38,270	15,917	54,187
Related exchange revenues	(40,784)	-	(40,784)
Excess of cost over revenues	<u>\$ (2,514)</u>	<u>15,917</u>	<u>13,403</u>

See accompanying Independent Auditors' Report in Section V of this Performance and Accountability Report.

The Office of Management Services (OMS) at USGS provides for safe, functional, and high-quality workspace for accomplishing the bureau's science mission and ensuring that workspaces are maintained in compliance with applicable safety and other standards set by GSA and the Occupational Safety and Health Administration.

The USGS has key science facilities that are mission critical, including those that are fundamental to providing timely warnings of geologic hazards, as well as scientific understanding and technologies needed to support the sound management and conservation of the Nation's biological, energy, water, and mineral resources. The USGS is committed to improving the maintenance of existing facilities to ensure the health and safety of the public and employees, protection of cultural and natural resources, and compliance with building codes and standards.

USGS developed a "Five-Year Deferred Maintenance and Capital Improvement Plan" to provide necessary up-keep on property and equipment and to provide facilities that will best fulfill our mission. Deferred maintenance is work that was not performed when it was or should have been scheduled, often because of funding or priority ranking of work, and was thus delayed to a future period. Capital improvements include the construction of new facilities or the alteration of an existing facility to accommodate a change of function or unmet programmatic need. All capital improvement components of projects were excluded from the estimate in this report.

The Five-Year Plan is re-evaluated annually pursuant to the budget process and is subject to adjustments at that time depending on funding levels and revised priorities.

Estimations on deferred maintenance are based on condition assessment surveys that are conducted every 5 years at each USGS site to determine the current condition of facilities and the estimated cost to correct deficiencies. These surveys are conducted by an independent architect/engineering firm and are supplemented by annual condition surveys performed by USGS personnel. These installation-wide, building specific assessments are the linchpin of the DOI program to establish core data on the condition of the Department's constructed assets.

The FY2008 budget formulation process was used to establish the base from which the FY2006 deferred maintenance priority listing was derived. OMS, which formulates the bureau's deferred maintenance budget, collected project proposals from regional and headquarters facilities projects for possible inclusion in the bureau plan for FY2007 – FY2011, which were then ranked to reflect the criticality of the health and safety deficiencies being addressed. A project that addressed a critical health and safety deferred maintenance need received a higher ranking than one addressing a critical mission deferred maintenance need. Teams of regional and headquarters facility and safety specialists reviewed the ranked proposals to confirm the accuracy of rankings and otherwise ensure the adequacy of the project proposals. Due to funding constraints, USGS addresses the most critical maintenance and capital improvement needs first.

A summary of the USGS deferred maintenance estimate at September 30, 2006, is reflected below. The amount is presented as the low estimate range and the high estimate range, which is based on the low estimate plus future funding requests of \$2.0 million per year through 2031, including inflation.

		<i>(in thousands)</i>	
		<u>Low</u>	<u>High</u>
Buildings	\$	28,984	35,450
Other Structures		<u>12,376</u>	<u>15,137</u>
Total	\$	<u>41,360</u>	<u>50,587</u>

The USGS serves the citizens of the United States as steward for a large, varied, and scientifically important body of heritage assets, and in conducting research and development that is critical to the health of our country and in understanding the Earth. Each year the USGS makes a substantial investment while fulfilling its stewardship responsibilities for the benefit of the Nation.

Costs associated with stewardship initiatives are treated as expenses in the financial statements in the year the costs are incurred. However, these investments in stewardship are intended to provide long-term benefits to the public and are included as Required Stewardship Information (RSI) reporting to highlight their long-term-benefit nature and to demonstrate our accountability over them. Stewardship resources are not required to be included in the assets reported in our financial statements; they are, however, important to understanding the operations and financial condition of USGS.

Stewardship assets often have physical properties that resemble those of the general property, plant, and equipment that is traditionally capitalized in the financial statements of Federal entities. However, due to the nature of these assets, valuation would be difficult and matching costs with specific periods would not be meaningful. Heritage assets have one or more of the following characteristics: historical or natural significance; special cultural, educational, or aesthetic value; or significant architectural characteristics.

USGS has heritage assets in two categories: museum collections and scientific library collections. The mission-related importance of these assets is described in the following pages.



Making science fun is the first requirement when communicating science to youngsters. Science Camp, a partnership between the USGS and Reston Association, offers 8-to-12-year-old children an opportunity to meet scientists, participate in science experiments, learn and practice new computer skills, create a newspaper, take field trips, and participate in swimming, boating, crafts, and sports. Science Camp demonstrates the many exciting scientific activities in which the USGS is involved. Meeting real scientists and specialists working at the USGS is a vital part of our camp program, providing opportunities for children to think about pursuing a career in science.



The USGS manages a widespread collection of natural history specimens and cultural objects that support the mission of the bureau in many science and administrative centers throughout the United States. These unique collections serve to illustrate important achievements and challenges to the Earth Sciences, to document the history of the USGS, and to enlighten those who use the collections. The collections also provide the public with an interpretive demonstration of the history and enterprise of the USGS. The museum collections are divided into two major categories: historical (including art, history, ethnography, and documents), and zoology.

### Historical Collections:

USGS manages hundreds of historical objects that are loaned to other institutions for exhibits and placed on exhibit in the USGS National Center in Reston, VA, hallways or lobbies in regional offices, and science



Geologist Levi Noble's hat

centers around the country. These collections are evidence of the resources, events, and people associated with USGS activities, and are studied by historians and scientists alike.

Our collection includes many special objects related to the cultural history of USGS, including a hat (pictured above) worn by geologist Levi Noble while attending the 3rd Pan-Pacific Science Congress held in Tokyo, Japan, in 1927; oil paintings of many historical figures; a 1930 Model A Ford (pictured below) used to successfully map the geology of California



1930 Model A Ford used to map the deserts of California

deserts through the 1960s; and the Lunar Rover used in the southwestern deserts to train astronauts in the lunar landing program through the 1970s. USGS had previously loaned the lunar rover to NASA to conduct space suit ergonomic studies, fuel-cell power system studies, and vehicle operational capability studies in advance of NASA's planned Mars exploration.

Other interesting objects in the collection include John Wesley Powell's commission, one of the few documents signed by President James A. Garfield, appointing Powell as the second director of the USGS; an oak arm chair used by John Wesley Powell in his office when he served as USGS director from 1881 to 1894; geologic field mapping equipment from Arnold Hague's late 19th Century expedition to map Yellowstone National Park; a field desk used in the American West shortly after the turn of the century; and Director Thomas Nolan's field equipment and academic robe from St. Andrew's University in Scotland.

### Zoology Collections:

Our zoology objects, which represent over 40,000 natural specimens, are housed at the Biological Research Arid Lands Field Station of the Fort Collins Science Center. These zoological specimens were collected to document the status of the environment on our public lands. A USGS wildlife research biologist and USGS zoology museum specialist stationed at the University of New Mexico's Museum of Southwestern Biology maintain this collection under a joint agreement between the USGS and the University of New Mexico at Albuquerque.

Of primary importance in our collection is the unique natural history collection of vertebrates that were used in support of food habit studies by researchers at the USDA's Food Habits Laboratory in Denver, CO. Transferred to Fort Collins in the mid-1970s and then to the University of New Mexico in the 1990s, this collection (pictured on next page) includes over 8,000 fluid-preserved specimens of amphibians and reptiles, as well as mammal and avian skeletons and skins. Specimens have continued to be acquired as a result of the research emphasis to document mammal species from public lands in the West.





Fluid-preserved amphibian and reptile specimens storage

**Condition Evaluations:**

Cataloging efforts have also been a priority within USGS, as 100 percent of our museum collections have been catalogued. During the cataloging process, USGS evaluates the condition of each collection object. “Good” is considered to show little or no sign of aging or wear; “fair” applies to objects that are showing signs of deterioration such as faded color of fabric or wood, and “poor” objects that have missing parts or are extremely worn. Additions to the collection in the current year were donated. No deferred maintenance is necessary for our museum collections.

USGS also evaluates the condition of the locations housing the collections in accordance with Departmental guidelines. The evaluation is based on a lengthy list of conditions. Regarding the non-storage facilities housing our collections, a good condition rating means it met more than 70% of standards in Departmental Manual Chapter 411, Museum Property. Per Department policy, the condition of storage facilities is not required to be assessed.



USGS personnel evaluating the condition of natural specimens

**Museum Collections at a Glance:**

During both FY2005 and FY2006, USGS maintained four collections in bureau facilities and two collections in non-Federal facilities in an effort to maximize accessibility to the public. Although there were additions of objects to the existing collections, there were no new collections added during FY2006. There were also no disposals of collections during FY2006.

Museum objects housed in two non-storage facilities were both evaluated as good using the Department’s definitions. For the museum objects housed in storage facilities, we monitored the collection’s environmental conditions by hydrothermographs.

USGS museum collections	Condition assessments of facilities housing collections	
	Good	Not assessed
Held at USGS facilities	2	2
Held at non-USGS facilities	2	-

Total objects in collections	Condition assessments		
	Good	Fair	Poor
40,704	40,566	120	18

**Public Information:**

The public has been granted access to view these collections through a new Web site ([www.usgs.gov/aboutusgs/who\\_we\\_are/museum](http://www.usgs.gov/aboutusgs/who_we_are/museum)) and can visit USGS facilities to see them on exhibit. During FY2006, USGS responded to dozens of requests for information on our museum collections.

**U**SGS library holdings, collected during more than a century of providing library services, are an invaluable legacy to the Nation. Congress established the library in the 1879 legislation that founded the USGS. The Act decreed that copies of reports published by the USGS should be given to the library to exchange for publications of State and national geological surveys and societies. The USGS Library built from this notable and cost-effective exchange program, plus purchases and gifts, has become the world's largest collection of earth science information. The library was originally located in Washington, D.C.; however, the library collection is now housed in four libraries across the country in Reston, VA, Menlo Park, CA, Denver, CO, and Flagstaff, AZ.



The reception desk at the National Center Library in Reston, Virginia.

In addition to the annual purchases of serials, maps and books, the library has built its collection through exchange. Since its beginning, the library has administered a major program of international and domestic exchange of earth science publications authorized by the legislation that established USGS. The exchange program, with national and foreign geological surveys and research organizations, has enabled the library to collect materials published in small numbers, never widely distributed, and never reprinted.

While responding to the current and anticipated subject interests of USGS researchers, such as those in ecology, geology, hydrology, health, and biology, the library maintains its heritage collection of core science publications dating back to the 17th century, providing a unique historical record of the progress of natural

science. Besides providing resources for scientific investigations, the library's multi-disciplinary collection provides access to geographical, technical, and historical literature in paper and electronic formats for the general public and industry.

Library users bring their questions to the library daily, in person or by phone or email, and expert librarians assist them in using the wealth of well-organized information to find answers.

During a century of collecting, the library has acquired many treasures such as the George F. Kunz collection. George F. Kunz was a former employee of the USGS, a vice-president of Tiffany & Co., and one of the world's preeminent gem experts at the time of his death in 1932. The Kunz collection includes rare books on gemology, the lapidary arts, the folklore of gemstones through history, and archival gem trade records, including the original provenance of the Hope diamond.

Another unusual acquisition was the group of books and maps known as the Heringen collection. These military geology texts and maps were looted by the Nazis from European libraries, including Russia, and hidden in a potash mine in Heringen, Heese, Germany. At the end of World War II they were transported by the U.S. military to the United States and are now part of the USGS library.

The map collections include an archival and working collection of USGS topographical maps, plus thematic and topographical maps of the United States and the World. These maps have provided invaluable aid to authorities and scientists in times of disasters and military interventions. Maps, photographs, and literature in the USGS library have provided evidence to solve boundary disputes and water rights litigation, to trace geographic names, and to research natural and man-made changes in an area over time.

Our Field Records collection in Denver includes items such as field notes, field maps and sketches, and project-related correspondence created or collected by USGS scientists during official project work. The Photographic Archive provides the public with access to over 19,000 photographs and original sketches dating from 1868 to the present. Additionally, USGS maintains a collection of over 500,000 photographs taken during geologic studies of the U.S. and its territories dating



Map collections at the National Center Library in Reston, VA.

from 1868 to present. Some photographs have been used to illustrate publications, but most have never been published.

The Library supports the research of the DOI and other government agencies, universities, and professional communities. Libraries throughout the world, including the largest and most renowned, borrow from our library’s unique collection. The USGS library has loaned scientific publications and objects to thousands of libraries in every State and in over 37 foreign countries that were public, State, Federal, nonprofit, company, and academic libraries. Although not defined by Congress as a national library, the library is recognized as the premier national collection of geologic and hydrologic publications, supplementing the Nation’s large library collections in major universities and government agencies.

**Condition Evaluations:**

Careful consideration is given to assessing the condition of each item in the library collections. A category of “good” is defined as materials protected for reasonable use which includes publications bound or with sturdy covers, maps loosely shelved in drawers without crowding or in archival grade envelopes with minimal folds, photographs mounted in archival quality albums, or materials protected by archival quality paper or plastic sleeves or boxes. Materials evaluated as “fair” are those which can be circulated, but require binding or further treatment to ensure long-term protection. “Poor” materials are those that

cannot be circulated or used without special attention until preservation repairs are made. This includes publications with old brittle or mottled paper, loose pages, loose or thin covers, tears, water-damage or other damage, improper binding with tight covers, flaking binding covers, loose photographs, nitrate or glass photograph negatives, and multimedia and digital disks without containers. No deferred maintenance is necessary for our library collections.

**Library Collections at a Glance:**

During both FY2005 and FY2006, USGS maintained library collections at four Federal facilities. Although there were additions of objects to the existing collections, there were no new library locations/ collections added during FY2006. There were also no disposals of library locations/collections during FY2006.

Condition assessments per collection with the majority of items in “good” condition

USGS Library Collections	4
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USGS Library Collections	Condition Assessments of items per collection		
	Good	Fair	Poor
National Center Library	80%	15%	5%
Denver Branch Library	65%	20%	15%
Flagstaff Branch Library	80%	15%	5%
Menlo Park Branch Library	70%	20%	10%

The USGS library system (four libraries) contains over 1.2 million books and over 1.8 million non-book items, including maps, photographs, pamphlets, field record notebooks, digital media, and other collectible items, for a total of over 3 million items.

Materials are acquired from extensive exchange agreements with institutions and agencies worldwide, from research projects and purchases from a wide variety of publishers and institutions. Items are withdrawn only after the professional library staff has made a critical analysis of the collection.

USGS scientist conducting a geophysical survey on the Youghiogheny River in Pennsylvania.



# Required Supplemental Stewardship Information

(Unaudited; see  
Auditors' Report)

This part of the Section III *Financial Information* contains our required supplemental stewardship information disclosures.

## Contents include:

Research and Development Investments..... 156

The USGS is the earth and natural science research bureau of the Department and the only integrated natural science bureau in the Federal government. By combining biology, geology, hydrology, and geography in one agency, the USGS is uniquely positioned to provide science information and conduct scientific research that ensures an integrated approach to advance scientific knowledge and utilize the latest technologies to provide timely answers and products, and improve the quality of life for the communities we serve. USGS research and data products support the Department's resource and land management needs and provide the science information needed by other Federal, State, Tribal, and local government agencies to guide planning, management, and regulatory programs.

The USGS reviews Research and Development (R&D) investments and weighs the value of existing programs against changing needs and priorities. The Director prioritizes new initiatives on the basis of the following criteria: interdisciplinary science; collaboration and partnerships with Department bureaus, other government agencies, and universities (**relevance**, first of OMB's three R&D investment criteria); results of program evaluations; and demonstration of progress toward meeting the Department's **performance** (second of three OMB R&D criteria) goals and objectives. The Director then selects from among the prioritized initiatives those that can be accommodated within the funding target. The Capital Planning and Investment Control process provides support for decisions on technology necessary to support science and the business processes of the bureau.

Peer review has been the **quality** (third OMB R&D criteria) standard for USGS scientific publications and a documented component of USGS policy throughout our 127-year history. Our programs are cyclically evaluated to ensure the quality and timeliness of our science. The evaluations not only improve the accountability and quality of programs, but also identify and address gaps in programs; redirect or reaffirm program directions; identify and provide guidance for development of new programs; and review and (or) motivate managers and scientists. All of USGS programs evaluated by OMB's PART process have received a "moderately effective" rating or better. These evaluations are the foundation on which USGS gauges performance relative to the Department End Outcome measure for soundness of methodology, accuracy, and reliability of science.

Investments in research and development are expenses incurred to support the search for new or refined knowledge and ideas, the application or use of such knowledge and ideas, and the development of new or improved products or processes with the expectation of maintaining or increasing national economic productive capacity or yielding other future benefits.

In accordance with OMB Circular No. A-11, USGS research activities are classified as basic, applied, or developmental research. A definition of each of the categories is below.

**Basic** – defines activities as systematic studies directed toward fuller knowledge or understanding of the fundamental aspects of phenomena and of observable facts without specific applications toward processes or products in mind.

**Applied** – defines activities as systematic studies to gain knowledge or understanding necessary for determining the means by which a recognized and specific need may be met.

**Developmental** – defines activities as systematic application of knowledge or understanding, directed toward the production of useful materials, devices, and systems or methods, including design, development, and improvement of prototypes and new processes to meet specific requirements.

Our science is being used more and more in decisionmaking, and this is essential to our success in demonstrating relevance. That doesn't mean that all of what we do needs to be applied; as former Director Walter C. Mendenhall said, "There can be no applied science unless there is science to apply."

Research and development activities are a vital part of work performed in accomplishing our mission.

### Summary Information:

Total research and development investments were \$742 and \$809 million during FY2006 and FY2005, respectively.

A summary table reflecting R&D stewardship investments by GPRA goal is presented at right.

DOI Goals and R&D Type	2002	2003	2004	2005	2006	
<b>Resource Protection</b>						
Improve health of watersheds and landscapes	\$					
Basic research				10	7	
Applied research				71	59	
Developmental research				6	8	
Sustain biological communities						
Basic research				13	16	
Applied research				115	107	
Developmental research				8	13	
<b>Resource Use</b>						
Manage or influence resources — Energy						
Basic research				5	4	
Applied research				19	18	
Developmental research				-	-	
Manage or influence resources — Non-Energy						
Basic research				10	10	
Applied research				44	40	
Developmental research				1	-	
<b>Serving Communities</b>						
Protect lives, resources, and property						
Basic research				4	4	
Applied research				45	42	
Developmental research				20	20	
Advance knowledge through scientific leadership						
Basic research				37	31	
Applied research				364	323	
Developmental research				37	40	
<b>Total research and development</b>						
Basic research		82	77	71	79	72
Applied research		799	681	740	658	589
Developmental research		83	101	72	72	81
Total	\$	964	859	883	809	742

Data not available by GPRA end outcome goals.

USGS implemented a new strategic plan during FY2004, establishing performance measurement under these end outcome goals.

Below are outputs and outcomes examples of how our research and development activities demonstrate results that are consistent with their intended purpose, and highlights from each science discipline's FY2006 research and development activities describing the research program.

Additional outputs and outcomes demonstrating results that are consistent with the intended research program purpose beyond the examples provided are presented in Section II: Performance Data and Analysis – Performance Measure Results.

### Basic Research Outputs and Outcomes

#### New Geochemical Method to Evaluate Bio-available Metals in Low Temperature Water

Understanding the relationships between metal concentrations and their availability and toxicity to aquatic biota is critical for land managers and regulatory agencies that must assess the impacts of mine drainage to the environment or develop remediation strategies for areas affected by historical mining activities. MRP scientists, in work completed in FY2006, have used a new method, called Diffusion Gradients in Thin Films (DGT), in combination with the Biotic Ligand Model (TBLM) to determine metal bio-availability and toxicity to aquatic organisms and to assist in evaluating the environmental impacts of mine drainage. The DGT method measures the concentration of a dissolved metal that is able to diffuse through membranes with very small pore sizes. It has been postulated that this concentration is similar to the portion of total dissolved metal that is available for uptake by organisms.

The Biotic Ligand Model uses the composition of a solution to determine whether dissolved metal concentrations at a given site are too high to maintain a healthy aquatic community. The DGT and TBLM results in several mine drainage systems were in very good agreement with previously conducted toxicity studies at the sites and demonstrated that the relatively easy DGT and TBLM methods can provide land managers with a faster and less expensive alternative to assess and monitor water quality in such systems. This basic research is in support of DOI's Resource Use goal.



USGS scientist tests new method for determining dissolved bio-available metal concentrations using the Diffusion Gradients in Thin Films (DGT) technique to assess and monitor water quality in areas affected by mining activities.

### Applied Research Outputs and Outcomes

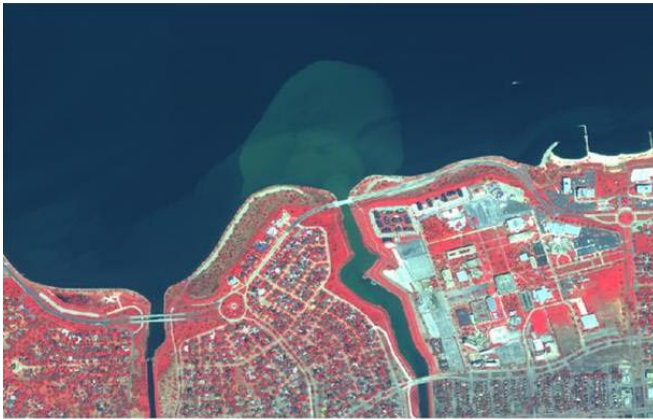
#### Tools to Monitor and Analyze Natural Hazards

Starting with the 2005 hurricane season and ending with the active 2006 summer fire season, the USGS Rocky Mountain Geographic Science Center (RMGSC) provided crucial and timely support to Federal, State, and local agencies for their natural-hazard monitoring, analysis, response, and recovery activities.

USGS has implemented several monitoring and analysis tools for natural-hazard events that provide decisionmakers access to the real-time information they must have to better understand, plan for, and respond to the environmental and ecological impact of natural-hazard events. Among these tools are the Geospatial Multi-Agency Coordination (GeoMAC) system, which provides the public and fire responders with up-to-date information about the locations of wildfires (<http://geomac.gov>) and the Natural Hazards Support System (NHSS), which integrates near-real-time data for multiple types of natural-hazard events (<http://nhss.cr.usgs.gov>). These tools allow users to easily monitor a single natural-hazard event and to see the geospatial relationships between the event and other activities that may have an impact on that event, such as the progress of a wildland fire and/or heavy rain, both of which are tracked by other types of data systems.



GeoMAC, with over 40 million hits a year, has become one of the primary public tools used to monitor the current location and status of wildfires across the United States. During the 2005 hurricane season, NHSS, which contained information on the path of the hurricanes was integrated with systems that contained near-real-time information on stream levels, wind speeds, and precipitation. By integrating this information, Federal agency personnel were able to efficiently monitor, and respond to the impacts of the hurricanes.



Post-hurricane satellite image of a portion of the Orleans Parish and Lake Pontchartrain collected on September 8, 2005, by the Quickbird Multispectral sensor. Sediment plumes can be seen forming in the lake as water was pumped out of the parish through the canal system. This image is displayed as a false color composite, using the near-infrared and green multispectral bands, whereby vegetation is portrayed in red.

During events like the 2005 hurricane season, USGS quickly incorporated both pre- and post-event information into these monitoring systems and generated a wide variety of analysis products in support of the response and recovery activities of Federal and State agencies. For example, during the first days after the flooding of New Orleans, the USGS developed a technique for automated feature extraction that was used to identify and assess structural damage. Once the pumping of the greater Orleans Parish began, issues surrounding the increase of sediments in Lake Pontchartrain began to surface. USGS used commercial satellite datasets to generate a time series of image maps that depicted sediment plumes in the lake close to the pumping stations. These maps enabled hydrologists to effectively take water samples from the lake to determine the extent of the sediment plumes that existed.



The NHSS is a near-real-time natural-hazard monitoring tool that was developed at RMGSC. This image shows a snapshot of the Texas Gulf coast with near-real-time NEXRAD weather information combined with the geospatial base layers. This tool is the type of near-real-time capability that was used to monitor the approaching storms during the 2005 hurricane season.

## Rapid Exploitation of Remotely Sensed Data from Multiple Sources

The National Civil Applications Program (NCAP) serves the Federal civil community by providing a modernized method of acquiring, disseminating, and exploiting classified remote-sensing systems and data in order to address such issues as land and resource management, the environment, natural hazards, disasters, and other issues that require scientific analysis. USGS research activities focused on the development of methods and strategies to rapidly exploit multiple sources of remotely sensed data to support the analysis of natural disasters ranging from hurricanes and wildland fires in the United States to landslides in Pakistan. Geospatial information and products derived from remotely sensed data that would normally take days to generate were instead created in hours. For example, the geographic locations of structures in the path of a wildland fire are critical for incident response. USGS analysts developed and implemented strategies to rapidly exploit this information using complex provisioning and feature extraction algorithms. USGS continues to refine these

techniques and to expand into other research activities such as the automatic feature extraction of oil- and gas-well pads in support of BLM air-quality studies.



National Agricultural Imagery Program (NAIP) natural color one-meter imagery was used to rapidly extract structures that were potentially threatened by a wildland fire. Techniques were developed to acquire the imagery and extract this information within a few hours.

### Enabling Science and Adaptive Management in Unique Wetland Environments

In the Florida Everglades, scientific studies and adaptive management strategies require system-wide information on elevation to (1) estimate variables like water depth, which strengthens the understanding of how and where water flows through South Florida; and (2) characterize habitat for important plant and animal species. Detailed information on Everglades wetland ground-surface elevation was non-existent before the USGS began collecting highly accurate surface elevations at the regional scale. Hydrologists, biologists, and other potential users of highly accurate elevation data requested a height accuracy of +/-15 centimeters (6 inches) approximately every 400 meters across the region. Typical satellite and airborne imaging systems cannot meet that accuracy specification in this unique environment.

The USGS combined modern GPS technology with historic radio-based surveying approaches that were originally developed to measure heights in rugged terrain. The result was called the “Airborne Height Finder.” The system has been deployed in a series of survey campaigns to collect over 53,000 data points, which cover the Everglades National Park and most of the nearby water conservation areas. Because the height finder is able to penetrate the Everglades’ vegetation and water cover, it has provided an unprecedented regional view of the Everglades’ topographic gradients and sub-water surface structure.

These data are now being used to (1) simulate water flow in the Everglades with higher resolution and greater accuracy in order to estimate water depths in real time for field-study planning; and (2) as input for habitat models, which are used to forecast the effects of water-level changes on various important species. These high-accuracy elevation data are made available online to anyone through the South Florida Information Access Web site data exchanges pages (<http://sofia.usgs.gov>).



The USGS-developed Airborne Height Finder system being tested at an airport before starting a data-collection mission. This system has efficiently characterized Everglades elevation gradients for adaptive management and scientific study by restoration partners in South Florida.

**Pesticides in the Nation’s Streams and Ground Water, 1992-2001**

The USGS released a report in March 2006 describing the occurrence of pesticides in streams and ground water between 1992 and 2001. The report concluded that pesticides are typically present throughout the year in most streams in urban and agricultural areas of the Nation but are less common in ground water. Findings show that pesticides are seldom at concentrations likely to affect humans; however, they do occur in many streams (particularly those draining urban and agricultural areas) at concentrations that may affect aquatic life or fish-eating wildlife. The USGS worked closely with the U.S. Environmental Protection Agency (EPA) during the 10-year study because the EPA uses the data extensively in their exposure-and-risk assessments for regulating the use of pesticides. For example, the EPA used USGS data in its risk assessments for the re-evaluation of diazinon, chlorpyrifos, cyanazine, and alachlor. Uses of three of these pesticides (diazinon, chlorpyrifos, and cyanazine) have now been significantly limited, and the usage of alachlor was voluntarily reduced and largely replaced by a registered alternative. The USGS findings show strong relationships between the occurrence of pesticides and their effects, and point out that some of the frequently detected pesticides are declining. As new pesticides are approved for use, the EPA will continue to need monitoring data to ensure that levels in the environment are safe.

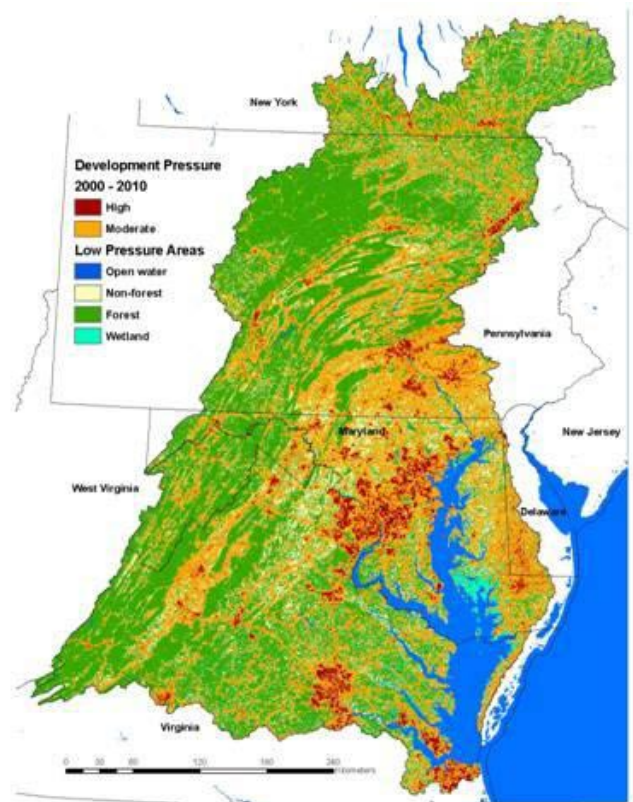
**National Pesticide Assessment Released**

In March 2006, the USGS National Water-Quality Assessment Program (NAWQA) released its decadal, nationwide assessment on pesticide occurrence and concentrations in streams and ground water. The assessment provides the most comprehensive national-scale analysis to date of pesticide occurrence, distribution and sources, and potential for effects on humans, aquatic life, and wildlife. Among the major findings are that pesticides are frequently present in streams and ground water, were seldom found at concentrations likely to affect humans, but were found in many streams at concentrations that may have effects on aquatic life or fish-eating wildlife. These findings can be used to help guide and inform State and national regulations and policies for water-quality

protection. For example, the science-based insights can help decisionmakers (1) better anticipate the types of pesticides most likely to affect water quality in urban and agricultural areas, and (2) improve investments in water-quality monitoring and management across the Nation’s diverse environmental and pesticide use patterns.

**Forecasting Future Water-Quality Conditions in the Chesapeake Bay Watershed**

Excessive nutrients and sediments are the leading causes of impairment to the health of the Chesapeake Bay. Both land-use and land-management practices throughout the 64,000 square-mile Chesapeake Bay watershed contribute the majority of nutrients (nitrogen and phosphorus) to the estuary and are a major source of sediments in the upper bay. Therefore, the management of land uses, practices, and landscape changes is the main activity which will help restore water quality in the Chesapeake Bay.



Conditions at Chesapeake Bay Watershed

Eight- to ten-year forecasts of land change have been produced to establish nutrient- and sediment-reduction goals in the bay watershed. Longer term forecasts of land change are needed given the rapid rate of urbanization and evidence that increased nutrient loads from urban development may be impeding progress in reducing nutrients. The USGS (in partnership with the Woods Hole Research Center, Shippensburg University, and the Maryland Department of Planning) is developing a model to forecast land changes in the bay watershed through 2030. USGS expertise in land change and water-quality modeling is a key component of this effort. The land-change forecasts will be coupled with a watershed model to simulate future nutrient and sediment loads to the bay. This information will be used by State agencies and local governments to inform decisionmakers on how best to implement environmentally sound land-use policies as a means of maintaining nutrient and sediment load reductions.

### **Survival of Paddlefish Released as Bycatch in a Commercial Gill Net Fishery**

Paddlefish are commercially used for their caviar in six States in the Mississippi River Basin. Tennessee usually leads the Nation in the amount of eggs harvested each year. Last year, the commercial harvest in Tennessee exceeded 12,000 kg of eggs, which had a retail value of more than \$5.0 million.



Jodi Stinson, research technician, with a paddlefish captured in the lower Tennessee River during an ongoing study investigating commercial overfishing of this caviar-producing species.

USGS scientists in close cooperation with Tennessee Wildlife Resources Agency (TWRA) biologists had previously concluded that Tennessee paddlefish stocks were being overfished. They also noted that too many males and immature female paddlefish were being caught in commercial gill nets. Many of these males and immature female paddlefish were dead when nets were retrieved, particularly when it was warm. Those fish that were alive were released, but the fate of these accidentally caught fish (known as “bycatch”) was unknown. The harmful effect of bycatch on aquatic ecosystems has received considerable attention in recent decades. Bycatch is a serious obstacle to rebuilding depleted marine and freshwater fish stocks around the world.

USGS scientists and TWRA biologists teamed up to attach radio transmitters to more than 100 paddlefish that were caught in commercial fishing gear and then released by commercial fishermen because the fish did not have eggs or were too small to keep. The tagged fish were closely monitored for several weeks and researchers concluded that most of the paddlefish released alive as bycatch subsequently survived. Based on these data, TWRA biologists worked with the commercial fishing industry to shorten future fishing seasons, thus eliminating fishing when temperatures are too warm to ensure the survival of undersized paddlefish. Knowing that most released fish will survive improves the chances that future efforts by the State of Tennessee will protect this fishery from being overfished.

### **Smallmouth Bass Management in Eastern Oklahoma Streams: Implications for Stream Restoration**

A mid-1990s survey of stream fishing activity in eastern Oklahoma found that anglers spent an estimated \$29.0 million on fishing trips. Smallmouth bass are the most sought-after stream sport fish in Oklahoma, and the western extent of the native range of this species occurs in eastern Oklahoma. The Oklahoma Cooperative Fish and Wildlife Research Unit (one of 40 units nationwide in State agencies and universities which the USGS has developed partnerships) worked with the Oklahoma Department of Wildlife Conservation to conduct a three-year study (2002-2005) to evaluate



Dan Dauwalter tags a smallmouth bass to assess its growth and movement in an eastern Oklahoma stream.

relationships between the stream geomorphology and the abundance of smallmouth bass that inhabit eastern Oklahoma streams. The goal of this study was to classify streams according to their geomorphic type and their fish abundance to aid the Oklahoma Department of Wildlife Conservation (ODWC) in their stream restoration efforts. Knowledge of relationships between smallmouth bass abundance, channel geomorphology, and habitat will be used to guide ODWC's management of smallmouth bass populations and habitat restoration projects in eastern Oklahoma streams.

### **Population Viability Models and the Recovery of Endangered Desert Fish in the Great Basin and Mojave Desert**

The USGS provides research support for other DOI bureaus and other Federal agencies in the management of federally listed threatened and endangered species. In North America, some fish species in the arid West are particularly vulnerable to extinction. The high demand for limited water in a parched environment, alteration of severely restricted habitat, and invasion of non-indigenous fish species have produced the greatest concentration of federally listed fish species in the desert West. One of these, the cui-ui, is endemic to Pyramid Lake, Nevada. The Native American Pyramid

Lake Paiute Tribe, which resides nearby, relies heavily on the Cui-ui as a traditional subsistence species, and as part of its cultural identity. Cui-ui are obligatory lake dwellers but spawn in the only perennial tributary, the Truckee River. In the 20th century, their spawning migration was discontinued due to agricultural water diversions. Severe declines in the cui-ui population and its Federal endangered species listing led to the construction of a fish bypass facility around the Truckee River delta and to changes in water operations to enhance riverflow. Through investigations on the influence of water manipulation, habitat modification, and non-indigenous fish introductions, USGS biologists developed a cui-ui population viability model, which is sensitive to spawning frequency. The model includes life history and survival information in order to determine whether these management measures are sufficient to restore the cui-ui population. This model and information about cui-ui life history, traits, and survival is being used by the FWS, Pyramid Lake Paiute Tribe, and the State of Nevada in adaptive management decisions and water management for the recovery of this endangered species.

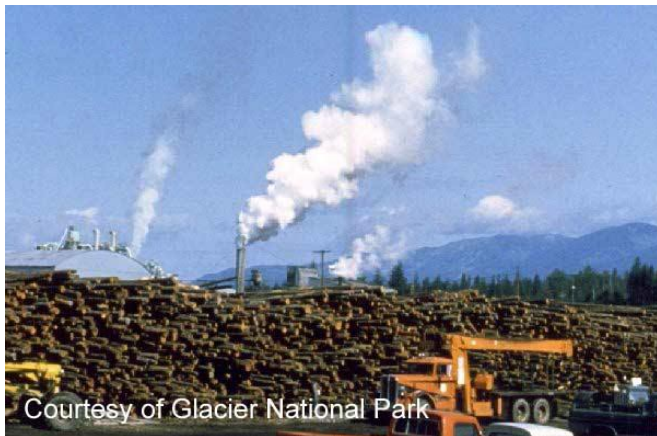
### **National Flood Summary Describing Major Floods and Damages Now Available on World Wide Web**

Floods are the most frequent of all catastrophic natural hazards, costing an average of \$6 billion in losses annually and threatening lives and property in every State. The USGS compiled the National Flood Summary from 1970-1998. The summary, which includes maps and data, is now available online at <http://ks.water.usgs.gov/Kansas/floodsummary>. The Web site provides the public a tool to compare current or possible flood conditions with past historical flood information by State and year with regard to magnitude, cause, loss of life, damage, and cost for this 28-year time period. Included in the National Flood Summary Web site is the latest volume of the National Flood Summary series, describing significant floods in the U.S. and Puerto Rico from 1994 to 1998. For more than 125 years, the USGS has played a critical role in reducing flood losses through scientific research and, most importantly, by operating the national streamgaging network, which provides real-time information to emergency responders and long-term data to flood-

plain managers. These components work together to provide the information—before, during, and after each flood—to manage flood risks today and expand our understanding of flood processes and characteristics to save lives and property tomorrow. The NWS relies upon long-term flow records to develop models that are used with the real-time streamflow data to issue the flood warnings that are vital for flood-damage prevention and public safety.

### **National Ecosystems Mapping to Support Resource and Land Management**

Ecosystem management is a strategy for the integrated management of land, water, and living resources that promotes conservation and sustainable use in an equitable way. Understanding the types, locations, and conditions of the ecosystems is a prerequisite to ecosystem management. Ecosystems are recognized as fundamental components of biodiversity that need to be conserved and, in some cases, restored. However, the U.S. lacks a standardized ecosystem map at an appropriate scale for local, on-the-ground management of ecosystems. In an effort to address this need, the USGS Rocky Mountain Geographic Science Center has embarked on the classification and delineation of ecosystems for the conterminous 48 States at a scale that is appropriate for ecosystem management. The components used to define and map ecosystems are landforms, surficial geology, bioclimate, and land cover.



Courtesy of Glacier National Park

National Ecosystem Mapping

During FY2006, USGS researched various methods for generating the core geospatial data. These data were next compiled into data layers covering the 48 States. These layers were a key prerequisite to producing national ecosystem coverage at a 30-meter spatial resolution. These core layers are now available to scientists and to resource or land managers who may be responsible for developing science-based conservation strategies.

### **Parking Lot Sealcoat: A Major Source of Polycyclic Aromatic Hydrocarbons in Urban and Suburban Environments**

Collaborative studies by the City of Austin, Texas and the USGS have identified coal-tar-based sealcoat—the black, shiny emulsion painted or sprayed on asphalt pavement, such as parking lots—as a major and previously unrecognized source of polycyclic aromatic hydrocarbon (PAH) contamination. Several PAHs are suspected human carcinogens and are toxic to aquatic life. Studies in Austin, Texas, showed that particles in runoff from coal-tar based sealcoated parking lots had concentrations of PAHs that were about 65 times higher than concentrations in particles washed off parking lots that had not been sealcoated. Studies by USGS scientists demonstrated possible connections between PAHs in particles washed off sealed parking lots and PAHs in suspended sediment in four streams in Austin and Fort Worth, Texas. Currently, the use of coal-tar-based sealcoat is not federally regulated; however, as a result of the work conducted by the USGS and the City of Austin, Texas to address PAH contamination in streams, the City of Austin, Texas Council banned the use of coal-tar-based sealcoat, effective January 2006.

### **USGS Science for the National Park Service**

Since 1998, the USGS/NPS water-quality assessment and monitoring partnership program has provided a unique and seamless mechanism for collaboration with other DOI bureaus and has ensured that appropriate science is made available to park managers for defensible decisionmaking to address a range of water-quality issues in national parks. Data and information from more than 100 partnership projects are being, or will be, used to address water-quality issues in 90

national park units across the United States. The scope of individual projects varies in accordance with the objectives of individual park managers; all new projects are selected annually by a panel of USGS and NPS personnel through a competitive proposal process. Activities range from data collection of targeted baseline water-quality constituents to longer term intensive investigations of potential human impacts on water quality and associated aquatic resources. Results of the first completed projects were already being used during the first half of FY2006 to make decisions on a variety of issues, such as (1) determining when and where background water quality is degraded by human sources of contamination, and (2) determining the best management practices within and outside park boundaries that can affect the biological health of water resources within park units.

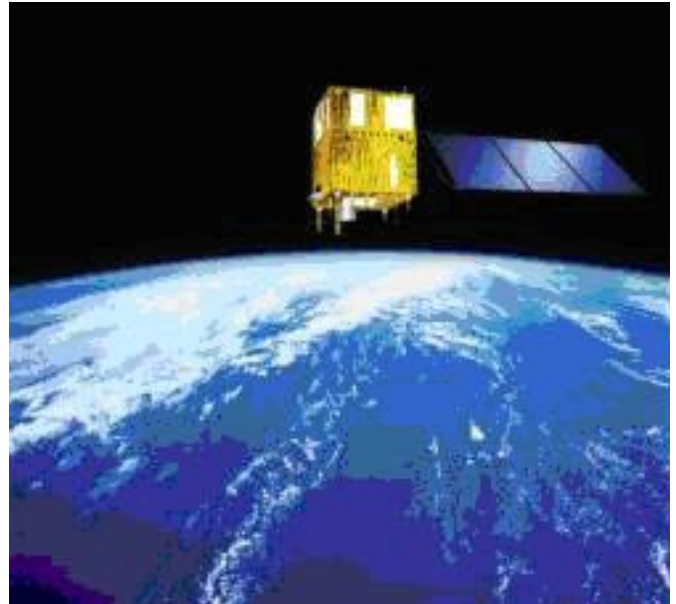
### Developmental Research Outputs and Outcomes

#### Helping to Fill a “Data Gap”

The USGS EROS Center is working with scientists from the Brazilian National Institute for Space Research (INPE) as part of an international effort to conduct a test downlink of satellite imagery from the China-Brazil Earth Resources Satellite (CBERS-2). The CBERS-2 was launched in October 2003 as a joint effort between the INPE and the Chinese Academy of Space Technology. On March 30 and again on March 31, 2006, USGS and INPE received and processed data from CBERS-2. This downlink marked the first time that CBERS-2 data were collected outside of Brazil and China.

With the successful downlink of CBERS-2 data to EROS, the USGS has been able to evaluate the usability of the data for science and operational programs. This activity is part of an ongoing effort at USGS to assess the utility and value of alternative and complimentary Landsat-like satellite data sources.

The USGS is also working directly with the India Space Research Organization to assess data from its ResourceSat-1 satellite and with other national and international satellite data providers to understand the quality and potential for data from existing and future systems.



The first China-Brazil Earth Resources Satellite (CBERS-2) data downlink at EROS in support of the Landsat Data Gap Study.

#### Landsat 5 Flight Operations Anomaly Team Wins AIAA Award

The USGS Landsat 5 Flight Operations Anomaly Team was selected by the American Institute of Aeronautics and Astronautics (AIAA) to receive the International Space Operations Award for Outstanding Achievement for 2006. The team received the award at the 9th International Conference on Space Operations in Rome on June 19 to 23, 2006. Quoting the citation, the USGS team received the award, “for dedicated efforts in recovering Landsat 5 from two potentially mission-ending hardware anomalies and restoring the mission to full operations.” In November 2005, the solar array that generates power for Landsat 5 stopped working properly; in March 2006, the downlink transmitter that sends image data to ground stations tripped a circuit breaker and stopped transmitting data. In each case, the Flight Operations Anomaly Team was able to devise corrective procedures and restore the 22-year-old Landsat 5 spacecraft to full operations.

As a result of the team’s efforts, image data from Landsat 5 continues to be available to scientists around the world.

With more than 31,000 members, AIAA (<http://www.aiaa.org/>) is the world's largest professional society devoted to the progress of engineering and science in aviation, space, and defense.



AIAA Award.

### Improving Access to Historical Film Archive

Digitization of the USGS Historical Aerial Film Archives using high-performance digital cameras continues to make significant progress toward making this important historical data set readily accessible to the public. The project, which began in October 2004, reached another milestone in 2006 by achieving over 3 million frames converted to low- and medium- resolution images that are now accessible through Earth Explorer (<http://earthexplorer.usgs.gov>).

An additional benefit of digitizing the aerial film archives is the number of "orphan" images recovered and made available to the public. These images were originally acquired by the USGS from the flight contractors, but subsequently not included in the database because of various issues related to mapping standards. The image examples demonstrate the degree of quality and view of these images.



Historical Film Archive.



### Landsat Data in a Robotic Silo Tape Storage

Migrating data from one storage medium to another is a routine stewardship activity that must be addressed every five years or so in order to avoid technology obsolescence and degradation of media. In FY 2005, USGS began migrating the Landsat 1-5 data from aging media stored on shelves to more modern media in a robotic tape storage silo. During FY 2006, USGS completed the laborious task of converting more than 3,500 tapes (170 terabytes) of Landsat 5 Thematic Mapper (TM) data to the robotic silo. The conversion will provide not only easier access to the data but it will make the data more readily available in a compatible format for trend analysis. USGS also began conversion of the Landsat's (1-5) Multispectral Scanner (MSS) data to the robotic silo; that task will be completed in FY2007. When completed, all Landsat 1-5 data will be in the robotic silo, which will mark the first time in Landsat history that the entire archive can be accessed without human intervention. This effort moves the entire Landsat data from older, less stable media to a newer technology and safer media that already exists. With the entire Landsat archive in a robotic silo, the next media migration (which probably will occur around 2012) will be accomplished in a matter of months instead of years.



Robotic Tape Storage Silo.

### USGS EROS Launches New "Virtual" LIDAR Center

Demand for research using all data generated from Light Detection and Ranging (LIDAR) remote-sensing equipment has increased. This technology has been a proven mapping tool and has been most effective for generating bare-earth Digital Elevation Models (DEMs); however, research on using the entire capability of the data for scientific applications has been hampered by the high cost of collecting LIDAR and by a steep learning curve on using the complexities of LIDAR data.

EROS launched a new Web portal designed to assist users in accessing LIDAR remote-sensing data. The Center for LIDAR Information Coordination and Knowledge (CLICK) is designed to facilitate innovation in the scientific community by providing a place for all LIDAR users—inside and outside the USGS—to visit, ask and answer questions, and coordinate with others who are either seeking or have data in their study area. By having ready access to LIDAR data and information, scientists have the opportunity to incorporate that data into their applications. CLICK's main mission is to invite people in the LIDAR community to exchange ideas, information, and even raw point-cloud data for scientific needs. The importance of this idea came from LIDAR users at the 2002 USGS LIDAR workshop in St. Petersburg, Florida. The activity is supported by the USGS Land Remote Sensing Program. To learn more about CLICK, visit <http://lidar.cr.usgs.gov>.

CLICK currently holds and is disseminating over 2 terabytes of LIDAR data, has 143 registered members from 23 countries, and has had over 12,000 topic views on its bulletin board since it went public in February 2006.

USGS scientist collecting biological samples.



# Section IV

## Appendix

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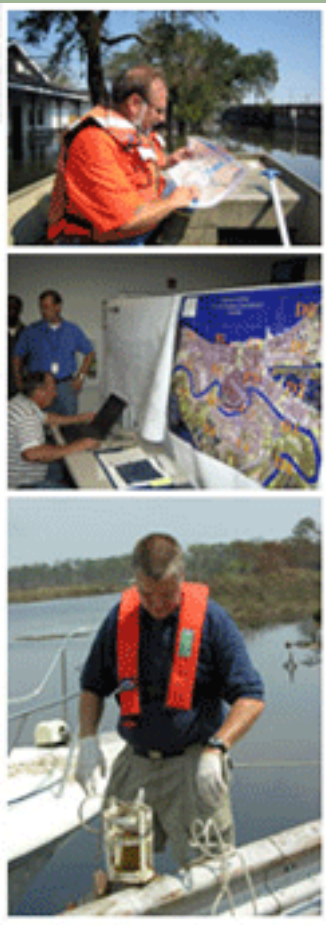
AAG	American Association of Geographers	EFT	Electronic Funds Transfer
ABC/M	Activity-Based Costing/Management	EHP	Earthquake Hazards Program
ACWI	Advisory Committee on Water Council	EPA	U.S. Environmental Protection Agency
ANSS	Advanced National Seismic System	EPCA	Energy Policy and Conservation Act
APA	American Planning Association	EROS	Earth Resources Observation and Science Center
APS	Administrative Policy and Services	ERP	Energy Resources Program
A/R	Accounts Receivable	ESN	Enterprise Services Network
BASIS+	Budget and Science Information System	ETM+	Enhanced Thematic Mapper Plus
BBS	Biology Breeding Survey	FAIR	Federal Activities Inventory Reform
BFC	Big File Cabinet	FASAB	Federal Accounting Standards Advisory Board
BIA	U.S. Bureau of Indian Affairs	FBMS	Financial Business Management System
BOR	U.S. Bureau of Reclamation	FBWT	Fund Balance with Treasury
BLM	U.S. Bureau of Land Management	FCI	Facilities Condition Index
BMP	Best Management Practices	FECA	Federal Employee Compensation Act
BRD	Biological Resources Discipline	FEGLI	Federal Employees Group Life Insurance
CA	Condition Assessment	FEHB	Federal Employees Health Benefit
CAP	Cooperative Agreements Program	FEMA	Federal Emergency Management Agency
CBP	Chesapeake Bay Program	FERC	Federal Energy Regulatory Commission
CD	Compact Disc	FERS	Federal Employees Retirement System
CERP	Comprehensive Everglades Restoration Plan	FFMIA	Federal Financial Management Improvement Act of 1996
CINDI	Center for Integration of Natural Disaster Information	FGDC	Federal Geographic Data Committee
CISN	California Integrated Seismic Network	FICA	Federal Insurance Contributions Act
CLICK	Center for LIDAR Information Coordination & Knowledge	FISC	Florida Integrated Science Center
CMGP	Coastal and Marine Geology Program	FISMA	Federal Information Security Management Act
COTS	Commercial Off-the-Shelf	FMFIA	Federal Managers' Financial Integrity Act of 1982
CPIC	Capital Planning and Investment Control	FMMS	Facilities Maintenance Management System
CREW	Cascadia Regional Earthquake Workgroup	FMS	U.S. Treasury's Financial Management Service
CSRS	Civil Service Retirement System	FTE	Full-Time Equivalent
CTM	Cooperative Topographic Mapping	FTP	File Transfer Protocol
DCIA	Debt Collection Improvement Act	FWS	U.S. Fish and Wildlife Service
DHS	U.S. Department of Homeland Security	FY	Fiscal Year
DOD	Department of Defense	GAAP	Generally Accepted Accounting Principles
DOI	U.S. Department of the Interior	GAM	Geographic Analysis and Monitoring Program
DOL	U.S. Department of Labor	GAO	Government Accountability Office
DOT	U.S. Department of Transportation	Gb	Gigabyte
DSS	Decision Support System	GCP	Global Change Program

GIO	Geospatial Information Office	NGA	National Geospatial Intelligence Agency
GIS	Geographic Information System	NGIC	National Geomagnetic Information Center
GOS	Geospatial One Stop	NHSS	Natural Hazards Support System
GPRA	Government Performance and Results Act	NHWC	National Hydrologic Warning Council
GPS	Global Positioning Satellite	NOAA	National Oceanic and Atmospheric Administration
GSA	General Services Administration	NPS	U.S. National Park Service
GSN	Global Seismographic Network	NRC	National Research Council
HHS	U.S. Department of Health and Human Services	NRCS	National Resources Conservation Council
HPAI	Highly Pathogenic Avian Influenza	NSDI	National Spatial Data Infrastructure
IP	Investment Plan	NSF	National Science Foundation
IRIS	Incorporated Research Institutions for Seismology	NSIP	National Streamflow Information Program
InSAR	Interferometric Synthetic Aperture Radar	NWIS	National Water Information System
JWP	John W. Powell	NWQL	National Water Quality Laboratory
KSAs	Knowledge, Skills, and Abilities	NWQLC	National Water Quality Monitoring Council
IT	Information Technology	NWS	National Weather Service
LIDAR	Light Detecting and Ranging	OAFM	USGS Office of Accounting and Financial Management
LHP	Landslide Hazard Program	OBP	USGS Office of Budget and Performance
LMV	Lower Mississippi Valley	OIG	Office of the Inspector General
LRS	Land Remote Sensing	OMB	Office of Management and Budget
LTRMP	Long-Term Resource Monitoring Program	OMS	Office of Management Services
LUPM	Land Use Portfolio Model	OPM	Office of Personnel Management
M	Million	PAR	Performance and Accountability Report
MD&A	Management's Discussion and Analysis	PART	Program Assessment Rating Tool
MITS	Management Initiatives Tracking System	PB	President's Budget
MMS	Minerals Management Service	PGV	Peak Ground Velocity
MRERP	Mineral Resources External Research Program	P.L.	Public Law
MRP	Mineral Resources Program	PMA	President's Management Agenda
NAIP	National Agriculture Imagery Program	PP&E	Property, Plant, and Equipment
NARA	National Archives and Records Administration	PTWC	Pacific Tsunami Warning Center
NASA	National Aeronautics and Space Administration	R&D	Research and Development
NAWQA	National Water Quality Assessment	REX	Regional Executive
NBC	Dept. of Interior - National Business Center	RMGSC	Rocky Mountain Geographic Science Center
NBII	National Biological Information Infrastructure	RLA	Resource Lands Assessment
NCGMP	National Cooperative Geologic Mapping Program	RSSI	Required Supplementary Stewardship Information
NEIC	National Earthquake Information Center	RTS	Reports Tracking System (Water Resources)
NEHRP	National Earthquake Hazards Reduction Program	SAFOD	San Andreas Fault Observatory at Depth

SAIN	Southern Appalachian Information Node	WPA	World Petroleum Assessment 2000
SBR	Statement of Budgetary Resources	WRIR	Water Resources Investigation Report
SCEC	Southern California Earthquake Center	WSC	Water Science Center
SES	Senior Executive Service		
SETAC	Society of Environmental Toxicology and Chemistry		
SFFAS	Statement of Federal Financial Accounting Standards		
SFMP	Strategic Facilities Master Plan		
SFWMD	South Florida Water Management District		
SLC	Scan Line Corrector		
SGL	Standard General Ledger		
SIR	Surveys, Investigations, and Research		
Sparrow	Spatially Referenced Regressions on Watershed Attributes		
SPRESO	South Pole Remote Earth Science Observatory		
SRTM	Shuttle Radar Topographic Mission		
STEP	Short-Term Earthquake Probability		
TBLM	The Biotic Ligand Model		
TCUs	Tribal Colleges and Universities		
TES	Threatened and Endangered Species		
TLSA	Teshekpuk Lake Special Area		
TNM	The National Map		
TRIP	The Road Indicator Project		
TROR	Treasury Report on Receivables		
TRPA	Tahoe Regional Planning Agency		
TSP	Thrift Savings Plan		
TWRA	Tennessee Wildlife Resources Agency		
USCOE	U.S. Army Corp. of Engineers		
USDA	U.S. Department of Agriculture		
USFS	U.S. Forest Service		
USGCRP	U.S. Global Change Research Program		
USGS	U.S. Geological Survey		
VHP	Volcano Hazards Program		
VPN	Virtual Private Network		
V&V	Validation and Verification		
WAN	Wide Area Network		
WCF	Working Capital Fund		
WNV	West Nile Virus		
WRD	Water Resources Discipline		

## Hurricane Hazards—A National Threat

Hurricanes bring destructive winds, storm surge, torrential rain, flooding, and tornadoes. A single storm can wreak havoc on coastal and inland communities and on natural areas over thousands of square miles. In 2005, Hurricanes Katrina, Rita, and Wilma demonstrated the devastation that hurricanes can inflict and the importance of hurricane hazards research and preparedness. More than half of the U.S. population lives within 50 miles of a coast, and this number is increasing. Many of these areas, especially the Atlantic and Gulf coasts, will be in the direct path of future hurricanes. Hawaii is also vulnerable to hurricanes.



### USGS Personnel Responded— Hurricanes Katrina, Rita, and Wilma

“During last hurricane season we all watched as several massive disasters swept across Florida and the Gulf Coast states. At the USGS, it is our goal to provide scientific research and analysis to help citizens, emergency managers, and policy makers decide how to react to hazards and safeguard society. But we also strive to help and inform our employees, by providing the resources and information about our hurricane response. Amid the challenges of the season, the USGS served as a model of coordination and operation for other DOI bureaus. We accomplished a great deal during the last storm season and we learned a great deal not only about large, destructive storms, but our ability to respond. Again I applaud the efforts of everyone that contributed in last season.”

Pat Leahy  
Acting Director, May 2006



## We Welcome Your Comments!

Thank you for your interest in the U.S. Geological Survey's FY2006 Performance and Accountability Report. We welcome your comments on how we can make this report a more informative document for our readers. We are particularly interested in your comments on the usefulness of the information and the manner in which it is presented. Please send your comments to:

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