



# U.S. GEOLOGICAL SURVEY

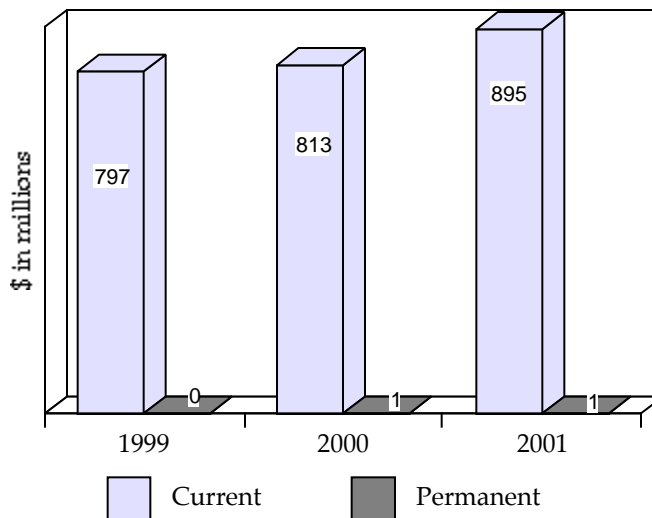
**Mission** - In 1879, an act of Congress established the U.S. Geological Survey. Its initial charge was for the "classification of public lands, and the examination of the geological structure, mineral resources, and products of the national domain." In the following 120 years, USGS has changed its programs to respond to the Nation's need for timely and unbiased scientific information, and USGS continues to evolve in order to address increasingly complex resource, natural hazard, and earth science issues.

The USGS is the Nation's primary provider of earth and life science information related to natural hazards; the environment; and energy, mineral, water, and biological resources. It is the Federal government's principal civilian mapping agency and a primary source of data on the quality and quantity of the Nation's water resources. The information produced by USGS helps others manage, develop, and protect America's water, energy, mineral, land, and biological resources. The USGS supplies the scientific information needed to make sound decisions to minimize or mitigate the effects of natural hazards.

**Program Overview** - USGS provides scientific information to Federal, State, and local managers to assist them in managing lands and resources and to mitigate the impact of natural disasters. Over the years, USGS has adapted its programs to respond to emergency needs brought on by natural disasters and the changing priorities of its customers. In addition to the work accomplished through direct appropriations, USGS is able to leverage more than \$79 million per year in matching funds from State and local governments for mapping, water, geological, and biological information studies. This is an affirmation of the importance of USGS research, data, and service to the American people. As further evidence of the caliber and value of USGS research and scientific information, the Survey conducts over \$268 million of reimbursable work per year. This is work USGS performs for other Interior bureaus, other Federal agencies, foreign governments, States and others that is critical to their ability to fulfill their own responsibilities and missions.

In 2001, USGS will continue to build upon the programmatic and organizational changes begun in 2000 to make

### USGS Funding



USGS a sleeker, stronger, and more flexible agency in the new century. USGS will expand its discipline-based integrated science programs; increase collaboration across disciplines to enhance integrated science; streamline business practices; enhance regional leadership; and renew its commitment to the expanding customer base.

The USGS stands on the threshold of becoming an even more vibrant, more robust, and more important earth and life science agency. USGS enters the new century with a renewed vigor and a clarified sense of purpose and mission to provide the quality objective science our Nation needs.

**Budget Request Overview** - The 2001 budget request for USGS is \$895.4 million, a net increase of \$82.0 million over 2000. The budget request includes \$18.1 million for uncontrollable costs and program increases totaling \$86.1 million. The budget also identifies \$22.2 million in reductions derived from project completions and reductions to lower priority projects.

**Interior Science Priorities** - The USGS budget request proposes increases for integrated science aimed at ad-

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addressing the highest priority science needs of Interior bureaus and their significant resource and wildlife management challenges. The Department recently instituted a Department-wide consultative process to assess the status of current science support for Interior bureaus, identify gaps and cross-bureau applications (both topical and geographic similarities), and formulate priorities for unmet science needs. The review of current science support and existing science programs through this collaborative process has revealed opportunities for strengthening science support for other bureaus and the need for additional science funding. However, exploiting opportunities for redirections of base funding and adapting existing science support projects to improve their applicability to bureau needs does not close the gap between bureaus science needs and the availability of USGS resources to perform the science. Increased funding for these efforts is critically needed.

The budget request includes a \$15.0 million increase for Interior Science Priorities, the same level of funding proposed in 2000. The 2001 request expands the program to address the science needs for seven Interior resource bureaus. This increased funding will be used by USGS to provide science support on a diverse number of issues. BLM has identified science needs to support operations in arid and semi-arid rangelands such as the Great Basin ecosystem, including controlling wild horse populations, controlling invasive species such as cheat grass, and protecting and recovering species at risk, such as sage grouse. USGS will conduct integrated science investigations in the Monongahela River Basin to gain a better understanding of the impact of acid mine drainage on water quality and fish and wildlife habitats on lands regulated by OSM. In the desert southwest, USGS will conduct work for the NPS related to water rights issues. USGS will also work in the Gulf of Mexico to identify gas hydrates and the effect of their development on sensitive marine communities. Other studies will focus on invasive species and declining species and species at risk in the Columbia Basin and California's Central Valley.

**Area-Specific Projects on a Regional Scale** - The 2001 budget proposes an increase of \$1.3 million to expand integrated science studies in three key ecosystems: the Great Lakes, Greater Yellowstone, and the Mojave Desert. The USGS science programs are an important component of the Department's ecosystem and watershed-wide approach to natural resource management, and result in a deeper understanding of ecosystem vulnerability, dynamics, and stresses that are used to develop effective management approaches. USGS conducts integrated studies in ecosystems that are threatened by a variety of stressors including suburban encroachment, resource development, and intense recreational use.

**Aquatic Resources Studies** - The 2001 budget proposes a \$4.0 million increase to undertake a multi-disciplinary, integrated study of the Columbia River. This river system is a major transportation artery, source of hydroelectric power, and a major spawning ground for endangered Pacific salmon species. A comprehensive scientific investigation of the Columbia River will evaluate the status of resources, analyze and assess factors influencing the dramatic decline in salmon runs, and provide Federal, State, and local decisionmakers with the information needed to develop salmon recovery plans and other resource management strategies to more effectively balance the competing uses of this key river system.

**Secretarial Priorities** - The Secretary co-chairs Presidentially-appointed task forces that are charged with developing effective management plans to protect and restore coral reefs and control and eradicate invasive species, and mobilizing resources to implement these plans. Science is integral to the success of both interagency efforts mandated by Executive Orders. The 2001 budget includes a \$2.0 million increase for coral reef mapping, characterization, and research, and a \$2.0 million increase for invasive species. The budget also includes an increase of \$2.0 million to more fully implement the National Plan for Amphibian Monitoring and Research, including conducting a more geographically dispersed inventory and monitoring program and undertaking the research component of the plan. USGS will extend amphibian population monitoring from the current five biogeographic regions to seven, enabling USGS to complete population monitoring in 60 percent of the coterminous U.S. and to begin monitoring in an additional 30 percent.

Recent wildlife disease outbreaks and inexplicable species die-offs, as well as the potential threat to humans from wildlife diseases, point to the need to increase research efforts in the area of microbial pollution. Single disease outbreaks have killed 300,000 or more waterfowl, and outbreaks resulting in 10,000 or more deaths occur every year. The budget request includes an increase of \$1.0 million to target newly discovered wildlife diseases. USGS will document dispersal, develop diagnostic techniques, and assess population impacts and human interactions on diseases including avian vacuolar myelinopathy in eagles, West Nile virus in crows, and emerging viral diseases such as infectious salmon anemia.

The budget also proposes a \$700,000 increase to fill vacancies in the Cooperative Research Unit program. Full staffing will increase the breadth of technical expertise available to State and Federal resource managers to collaboratively address contemporary and emerging natural resource issues and will provide the program the resources it needs to train future resource managers.

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**Science for Lands Legacy – Strengthening Communities** - A major focus of the 2001 budget is the Lands Legacy Initiative that includes increased funding to provide assistance to State and local decisionmakers to enhance their ability to plan for future development, protect resources from overuse, sustain economic growth, and protect the public from various natural hazards.

**Lands Legacy** - As discussed in the Departmental Highlights, the 2001 budget request includes a \$50.0 million increase for a State planning partnerships effort in support of the Lands Legacy goals of open space and sustainable growth. This includes \$30.0 million for the Community/Federal Information Partnership, a cooperative effort for Federal, State and local governments to jointly expand access to geospatial data that is integral to effective resource management. This initiative will also enhance the ability of local governments to use data for improved land use planning and other functions. This initiative will be pursued through traditional USGS programs that have long-standing and successful relationships with State and local governments. The State planning partnerships proposal also includes \$10.0 million to expand urban dynamic studies to areas experiencing tremendous growth and development pressures and provide them with information and decision support tools to plan and manage these changes. The State planning partnerships package also includes \$10.0 million to provide natural resource managers with predictive modeling tools and decision support systems for natural resource management strategies that will assist communities to protect open space, manage natural resources, and advance the goals of livability and sustainable growth.

**Ohio View to National View (Accessible Data Transfer)** - The USGS seeks to enhance the benefits of the Lands Legacy State planning partnerships proposal to States and communities by expanding and modernizing information management and transmission infrastructure to more efficiently and expeditiously disseminate this scientific information to those who need it. The Ohio View pilot has proven remarkably successful in delivering earth sciences data in real-time to the Ohio university consortium. In 2001, USGS proposes to expand this model to other areas with a redirection of \$2.0 million from the Ohio View project.

**Real Time Hazards Warnings** - American citizens want safe communities, safe from the effects of earthquakes, floods, volcanoes, and other natural disasters that cause loss of life, injuries, and personal suffering. These threats to public safety represent billions of dollars in lost property and other economic costs. The economic toll has skyrocketed in recent decades. This trend is likely to continue because the population in hazard-prone areas,

such as along our Nation's coastlines, is growing rapidly. In addition, the Nation's economy is increasingly reliant on complex and interconnected infrastructure. USGS is requesting an increase of \$7.1 million for the Real Time Hazards Warning System. Funding will be used to modernize instruments, add telemetry for real time data transmission, and expand sensor networks. Approximately \$5 million was appropriated in 2000 for this multi-year modernization effort. The 2001 increase will accelerate the process of modernizing the sensors and monitors that form the backbone for monitoring earthquake and volcanic activity, streamflow, and the issuance of timely warnings of natural disasters. Modernizing the instruments and sensors will also improve the quality of hazards research and the understanding of the physical properties and causes of natural disasters.

**Deferred Maintenance** - USGS operates an extensive system of streamgages and cableways, scientific laboratories, equipment, and ocean-going vessels that require maintenance. USGS has developed a five-year plan to ensure that the highest priority deferred maintenance and capital improvement needs are addressed. The 2001 request includes \$3.0 million for the deferred maintenance program, a \$1.0 million increase over the 2000 enacted level through a redirection of base funds. Projects will be selected in accordance with USGS's five-year deferred maintenance and capital improvement plan.

**Landsat-7 Operations** - The budget includes an increase of \$5.0 million for the USGS to assume long-term management responsibility for Landsat-7 operations beginning in 2001. This transition will allow USGS to conduct an aggressive data collection effort in support of its key mission responsibility of ensuring comprehensive geospatial data coverage and maintenance of permanent archives. The cloud-free and global nature of the data sets serve the needs of national and international land management and earth science agencies and State and local government planning agencies.

**Government Performance and Results Act** - USGS has combined GPRA reporting requirements into a single document to accompany the 2001 budget. In this consolidated document, which includes the Annual Performance Plan and Report, USGS presents an overview of what it accomplished in 1999, what it plans to accomplish in 2000, and what it proposes to accomplish in 2001 with the requested budget resources. The 2001 real time hazards warnings request will accelerate achievement of the Hazards long-term goal. Similarly, the initiatives that address issues related to people, wildlife, and the land and resources that support them and with which they must live in harmony will contribute to the performance targets for the environment and natural resources goal.

**SUMMARY OF BUREAU APPROPRIATIONS**  
(all dollar amounts in thousands)

*Comparison of 2001 Request with 2000 Enacted:*

	2000 Enacted		2001 Request		Change From 2000	
	<u>FTE</u>	<u>Amount</u>	<u>FTE</u>	<u>Amount</u>	<u>FTE</u>	<u>Amount</u>
Appropriations						
Surveys, Investigations, & Research .....	6,438	813,376	6,464	895,379	+26	+82,003
Proposed Emergency Supplemental (non-add) .....	0	[+1,800]	0	0	0	0
Permanents and Others						
Operations & Maintenance of Quarters .....	0	95	0	95	0	0
Contributed Funds .....	0	739	0	550	0	-189
Working Capital Fund .....	241	0	241	0	0	0
Subtotal, Permanents, Trust Funds, & Others...	241	834	241	645	0	-189
Transfers & Reimbursables .....	2,797	0	2,797	0	0	0
TOTAL, U. S. GEOLOGICAL SURVEY .....	9,476	814,210	9,502	896,024	+26	+81,814

**HIGHLIGHTS OF BUDGET CHANGES**  
By Appropriation Activity/Subactivity

**APPROPRIATION: Surveys, Investigations, and Research**

	<u>1999 Actual</u>	<u>2000 Enacted</u>	<u>2001 Request</u>	<u>Change from 2000 Enacted</u>
National Mapping Program				
Mapping Data Collect/Integration .....	63,691	56,330	67,327	+10,997
Earth Science Info Mgmt/Delivery.....	36,388	34,270	36,911	+2,641
Geographic Research/Applications ...	38,069	36,117	51,044	+14,927
Subtotal, Mapping .....	138,148	126,717	155,282	+28,565
Geologic Hazards, Resource, & Processes				
Geologic Hazards Assessments.....	76,237	69,111	73,236	+4,125
Geologic Landscape/Coastal Assess ..	73,935	65,435	77,189	+11,754
Geologic Resource Assessments.....	88,487	76,676	74,384	-2,292
Subtotal, Geologic Hazards.....	238,659	211,222	224,809	+13,587
Water Resources Investigations				
Water Resources Assessment/Rsch....	103,991	91,037	90,355	-682
Water Data Collection/Mgmt.....	30,218	29,167	39,275	+10,108
Federal / State Coop Water Program.	70,137	60,553	62,879	+2,326
Water Resources Rsch Act Program ...	5,055	5,062	5,067	+5
Subtotal, Water Resources.....	209,401	185,819	197,576	+11,757
Biological Research				
Biological Research/Monitoring .....	138,388	113,232	123,430	+10,198
Biological Info Mgmt/Delivery.....	11,443	10,484	21,243	+10,759
Cooperative Research Units.....	12,497	13,180	14,108	+928
Subtotal, Biological Research .....	162,328	136,896	158,781	+21,885
Science Support.....	27,204	67,104	70,895	+3,791
Facilities .....	21,501	85,618	88,036	+2,418
TOTAL APPROPRIATION .....	797,241	813,376	895,379	+82,003

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## Highlights of Budget Changes

	<u>Amount</u>
Uncontrollable Cost Net Increase (non-add)	[+18,070]
National Mapping Program	
Mapping Data Collection & Integration	+10,997
The proposed increase (+\$10,000) for Community/Federal Information Partnerships will provide matching grants and other cooperative activities to work with State and local governments to collect and increase access to spatial data and maps. The proposed increase (+\$400) for Resource Management Decision Support will support the production and integration of maps and data sets to support USGS rivers and trails science activities. The proposed increase (+\$5,000) will fund USGS management responsibility for the Landsat 7 mission as cited in a 1999 agreement signed by NASA, NOAA, and Interior. Proposed decreases include (-\$2,631) in cost-share mapping activities; and (-\$2,000) for the Ohio View pilot project. There is also an increase (+\$728) for uncontrollable costs, and a technical adjustment (-\$500) for moving funds associated with the Great Lakes Mapping Coalition to the Geologic Landscape and Coastal Assessments subactivity.	
Earth Science Information Management & Delivery	+2,641
The proposed increase (+\$2,000) for C/FIP will provide improved Internet access (hardware and software) to USGS holdings of regional and State-based geographic, cartographic, and remote sensing information. There is also an increase (+\$641) for uncontrollable costs.	
Geographic Research & Applications	+14,927
The proposed increase (+\$10,000) for Urban Dynamics Decision Support will fund the integrated studies of historical trends in land use change and development of models of future changes for use in assessing consequences of alternative growth scenarios. The proposed increase (+\$2,000) for Resource Management Decision Support will allow the USGS to strengthen predictive modeling capabilities that address resource management decisions in the Lower Mississippi Delta region and Lewis and Clark corridor. The proposed increase (+\$500) for Columbia River Aquatic Resources will be used to design a decision support system to support scientific goals and community and planning efforts. The proposed increase (+\$100) for Amphibian Research and Monitoring will enhance analysis of habitat changes and amphibian declines. The proposed increase (+\$1,300) for Interior Science Priorities will provide sound and effective scientific support to the Interior bureaus. The proposed increase (+\$400) for California Desert will allow USGS to produce practical protocols for monitoring and assessing the condition of both hydrologic and ecological resources. There is also an increase (+\$727) for uncontrollable costs. The proposed decrease (-\$100) eliminates funding for hyperspectral remote sensing.	
Geologic Hazards, Resources, & Processes	
Geologic Hazard Assessments	+4,125
The proposed increase (+\$2,600) in Earthquake Hazards will be used to purchase approximately 150 modern seismographs and strong motion detectors for installation in San Francisco, Seattle, Salt Lake City, Anchorage, Reno, and Memphis. The amount of time required to report the occurrence of an earthquake in these locations will be reduced significantly. The proposed increase (+\$500) in Volcano Hazards will be used to improve volcano monitoring in the Aleutian islands to enhance aircraft safety. These increases are partially offset by savings (-\$250) from not extending a cooperative agreement with the University of Hawaii in the Volcano Hazards program, a lower priority activity. There is also an increase (+\$1,275) for uncontrollable costs.	
Geologic Landscape & Coastal Assessments	+11,754
The proposed increase (+\$500) for Earth Surface Dynamics will allow USGS to expand integrated science on the Great Lakes watershed and surficial processes and glacial framework of the Great Lakes region, including water-quality sampling, geologic mapping, habitat data inventory, including effects of land use change and habitat loss, shoreline mapping, land use change, and urban dynamics. An increase (+\$1,950) for Interior Science Priorities is included in Earth Surface Dynamics. The proposed increase (+\$7,500) in Geologic Mapping for C/FIP will expand, in cooperation with State Geological Surveys, the development of the Internet-based National Geologic Map Database and the production of National Spatial Data Infrastructure-compliant digital geologic map data that meet community needs to address hazards, resources, and	

environmental management issues. The proposed increase (+\$500) in Coastal and Marine Geology will be used to investigate the influences of geomorphic change and sedimentation on the quality of salmon habitat in the Columbia Basin. The proposed decrease (-\$500) in Coastal and Marine Geology results from the completion of a pilot project using Light Distance and Ranging technology on habitat for Chinook Salmon and Summer Chum Salmon under the Endangered Species Act. The data produced by this pilot project will be used by Kitsap County, Washington, and by USGS. There is also an increase (+\$1,304) for uncontrollable costs, and a technical adjustment (+\$500) for moving funds associated with the Great Lakes Mapping Coalition from the Mapping Data Collection and Integration subactivity.

#### Geologic Resource Assessments

-2,292

The proposed increase (+\$1,200) in Mineral Resources for Resource Management Decision Support will be used to develop decision support systems needed by land managers dealing with issues related to resources (such as sand and gravel) and the historical impact of mining. The proposed increase in Energy Resources (+\$500) for C/FIP will support State and local government efforts to collect and make available local digital data regarding project-level information for use in the Energy Resources Program GEO-Data Explorer Internet information distribution system. The proposed decrease in Mineral Resources will conclude a 3-year effort that has improved access to mineral information in Alaska (-\$2,000) and information regarding gold deposits in the Great Basin in Nevada (-\$1,200). The proposed decrease (-\$2,509) in Energy Resources will terminate lower priority coal availability/recoverability studies. There is also an increase (+\$1,717) for uncontrollable costs.

#### Water Resources Investigations

##### Water Resources Assessments & Research

-682

The proposed increase (+\$500) in Toxic Substances Hydrology for Amphibian Research and Monitoring will enable hydrologic and water-quality characterizations, and causal-factors research to be conducted in the Mississippi River Basin and support a more comprehensive evaluation of the range of environmental contaminants that may influence amphibian declines across the Nation. The proposed increase (+\$1,000) in Hydrologic Research and Development will allow USGS to examine river reaches in the Columbia River basin to compare and contrast habitats that are essential to salmon spawning and migration and to human uses of the river. It will also allow USGS to couple different kinds of scientific information on the Columbia River that can be used to maintain and enhance the River's overall biological productivity and ecological health. The proposed decrease (-\$1,740) in Toxic Substances Hydrology is possible due to the completion of a Minnesota study of crude oil contamination and a New Hampshire study of contamination in fractured rock, and the discontinuation of lower priority projects. The proposed decrease in Hydrologic Research and Development (-\$2,454) will reduce funding for lower priority research. There is also an increase (+\$2,012) for uncontrollable costs.

##### Water Data Collection & Management

+10,108

The proposed increase (+\$4,000) in Hydrologic Networks and Analysis for Real-Time Hazards will enhance USGS's ability to provide real-time streamflow data for flood forecasting and provide information for flood hazard mitigation by adding streamgages, upgrading instruments, and adding telemetry. The proposed increase (+\$3,250) in Hydrologic Networks and Analysis for Interior Science Priorities will provide sound and effective scientific support to each of the Interior bureaus. The proposed increase (+\$2,000) in Water Information Delivery for C/FIP will accelerate the process of providing more detailed stream and watershed "addresses" to facilitate data sharing. The proposed increase (+\$2,700) in Water Information Delivery for Decision Support for Resource Management will enable USGS to develop improved simulation tools for predicting outcomes of water management decisions. The proposed decrease (-\$2,791) eliminates funding for lower priority projects. There is also an increase (+\$949) for uncontrollable costs.

#### Biological Research

##### Biological Research & Monitoring

+10,198

The proposed increase (+\$1,200) for Resource Management Decision Support will fund development of decision support tools for Habitat Conservation Planning in the southwestern and western U.S., for riverine and wetlands management in the Lower Mississippi Valley and the Pacific Northwest, and for management and monitoring for broader resource issues such as migratory birds and sensitive fish populations. The proposed increase (+\$2,000) for Aquatic

Systems is for biological research that will be closely linked to studies of temperature, flow, and characteristics to support aquatic resources management of the Columbia River basin in a basin-wide, integrated framework. The proposed increase (+\$400) for the Greater Yellowstone Area will expand integrated interdisciplinary scientific analyses and development of decision support tools that will allow decision makers to examine and evaluate factors pertinent to land and resource management and determine human impacts on wildlife and habitat. The proposed increase (+\$6,500) for Interior Science Priorities will provide sound and effective scientific support to each of the Interior bureaus. The proposed increase (+\$1,400) for Amphibian Research and Monitoring will allow USGS to conduct monitoring surveys in the Mississippi River and to increase research on disease, parasite, and contaminant effects on amphibians. An increase (+\$1,000) for Fish and Wildlife Disease will expand research on the West Nile encephalitis virus, Avian vacular myelinopathy, fungal diseases in Chesapeake Bay fish, and provide for the development of immunologic detection systems for Infectious Salmon Anemia. The proposed decrease (-\$3,812) represents funding from projects completed at the end of FY 2000 or termination of lower priority work. The proposed decrease (-\$180) will eliminate funding for research that was expanded in FY 2000 on Yukon River salmon. There is also an increase (+\$2,690) for uncontrollable costs, and a technical adjustment (-\$1,000) which transfers funds to the Facilities activity for completing repairs to the Fish Health Laboratory at Leetown Science Center and retrofitting a research vessel located on the Great Lakes.

Biological Information Management & Delivery

+10,759

The proposed increase (+\$8,000) for C/FIP will fund matching grants and other cooperative activities for States, local communities, academic institutions, and others to more easily integrate and overlay spatial, biological data sets, such as data on invasive species distributions or data from Gap Analysis projects, with data from the vast, multi-disciplinary holdings of the USGS and many other agencies. The proposed increase (+\$2,500) for Decision Support for Resource Management will provide new biological, physical, cultural, and historic data, information products, and analytical tools to State and Federal land managers and others along the Lewis and Clark corridor. There is also an increase (+\$259) for uncontrollable costs.

Cooperative Research Units

+928

The proposed increase (+\$700) will complete a multi-year effort to fill all science vacancies in the Cooperative Research Units Program. There is also an increase (+\$228) for uncontrollable costs.

Science Support

+3,791

Based on the lessons learned under the "Ohio View" project, this increase (+\$2,000) will provide the infrastructure for USGS to more efficiently and expeditiously disseminate scientific information to its customers. There is also an increase (+\$1,791) for uncontrollable costs.

Facilities

+2,418

There is also an increase (+\$1,418) for uncontrollable costs, and a technical adjustment (+\$1,000) which transfers funds from the Biological Research and Monitoring subactivity associated with facility repairs.