



# U.S. GEOLOGICAL SURVEY

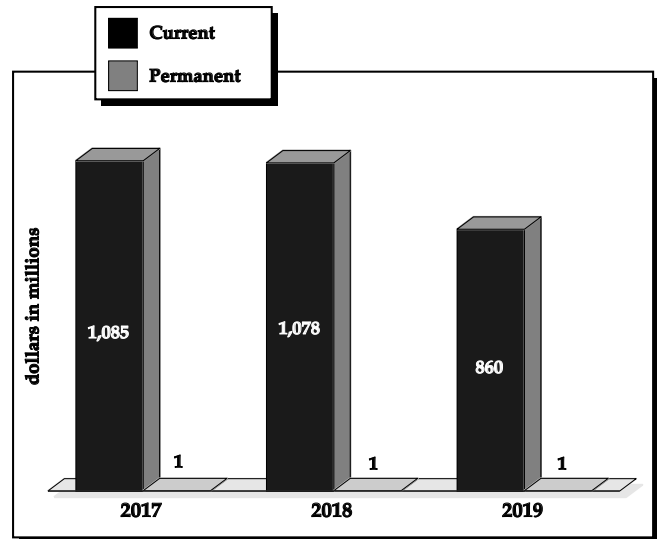
**Mission** – The U.S. Geological Survey delivers integrated scientific understanding and forecasts of natural systems to improve the Nation’s economic well-being, reduce societal risks to hazards, and support and inform natural resource stewardship.

**Budget Overview** – The 2019 current budget is \$859.7 million. The request emphasizes science supporting energy and mineral independence and security, hazard monitoring, and support of decision making by resource managers and policy makers. The budget invests in science to understand the distribution of domestic critical minerals essential to American prosperity and security. The budget supports nationwide networks of more than 8,200 streamgages and nearly 3,000 earthquake sensors. It also funds Landsat 9 ground systems development, supporting a fiscal year 2021 launch to replace the Landsat 7 satellite and improve upon the Landsat 8 satellite data products. The USGS estimates staffing of 6,835 full time equivalents.

**Program Overview** – The USGS delivers information to identify energy and mineral resources, find and protect groundwater, predict earthquake damage, identify hazards, guide transportation planning, inform managers of natural resources, and improve quality of life and economic vitality. The Bureau is responsible for monitoring and notification of earthquakes, volcanic activity, and landslides in the United States and collaborates with partners to improve hazard monitoring, explore vulnerable interdependencies, enhance emergency response, and speed disaster recovery.

Science developed by USGS informs decisions related to domestic and foreign energy resources, as well as information about the occurrence, quality, supply, and use of national and global resources to facilitate strategic resource management decisions. Research conducted by USGS on minerals, energy resources, and global mineral commodity reports support national security and inform the understanding of international trade issues. The USGS provides essential information for management of the Nation’s lands and species and protection from new biological threats. Through remote sensing and land

### USGS Funding



resources science, USGS provides information to support adaptation and development activities, including those related to infrastructure and energy supply. The Bureau provides digital land-surface images for research, monitoring, and management of forest health, water supply, agricultural production, and benchmarking commercial geospatial products and services. The 32 USGS Water Science Centers, covering 50 States and Puerto Rico, as well as three major research centers, characterize the Nation’s water resources, develop tools to improve water management, and provide information to minimize loss from natural or man-made hazards.

**Prioritization of Science Needs** – The 2019 budget prioritizes funding for critical responsibilities and core mission activities and does not request funding for programs more appropriately funded by USGS partners and those having reached milestones allowing research to continue without further USGS support.

The investments in the 2019 budget, highlighted below, reflect the alignment of science and tools needed to address complex challenges and deliver critical services, while reducing overall program costs.

## U.S. GEOLOGICAL SURVEY FACTS

- **Founded by an Act of Congress in 1879.**
- **Is the Nation's largest water, earth, and biological science and civilian mapping agency.**
- **Employs over 8,000 scientists, technicians, and support staff working in more than 400 locations throughout the United States.**
- **With over 2,000 strategic partnerships, USGS is a primary Federal source of science-based information on ecosystem science, land resources, energy and mineral resources, natural hazards, water use and availability, and updated maps and images for the Earth's features available to the public.**
- **Generates and maintains data from over 8,200 streamgages and nearly 3,000 earthquake sensors that are available to the public.**
- **In 2017, the public downloaded over 22.2 million Landsat satellite scenes; an increase of 25 percent over 2016 downloads.**
- **The USGS archives provide direct access to air photos dating to 1939 and over 100 other satellite, cartographic, and topographic datasets characterizing the Earth's surface at no cost to the user**

**Ecosystems Programs** – The 2019 budget includes \$96.1 million for Ecosystems programs. The budget focuses on nationally significant priorities, including detecting and responding to invasive species and wildlife disease, research supporting the conservation and recovery of species at-risk or protected by law, and science supporting biological resource management. The request includes \$33.4 million for Wildlife programs, including support for migratory bird monitoring to inform Flyway Council harvest allocations, reducing conflict between wildlife and energy development, and science to support species recovery with savings identified in species research, including amphibians and whooping cranes. It includes \$9.7 million for Fisheries, supporting deep-water monitoring to understand fisheries stocks in the Great Lakes, as well as risk assessments and advanced tool development for surveillance and control of wild fish diseases, and \$24.6 million for Environments programs to support Interior and other land managers' understanding and management of species and habitats.

**Land Resources Programs** – The 2019 budget provides a total of \$103.2 million for the Land Resources programs. These programs provide science for adaptation, resource allocation, and planning to address drought, flooding, wildfires, and changes in land use. The budget proposes to organize the program structure into three subactivities: the National Land Imaging program, the Land Change Science Program, and the National and Regional Climate Adaptation Science Centers.

The budget provides \$75.5 million for the National Land Imaging program, including resources needed to develop the Landsat 9 ground and flight systems. Within the National Land Imaging program, the budget includes \$72.9 million for satellite operations, which includes

\$31.9 million to continue development of the Landsat 9 ground system component. The 2019 request builds on the 2018 President's budget request for Landsat 9 to keep pace with the fiscal year 2021 launch date. The 2021 launch will maintain an eight-day revisit cycle for imaging, a valuable tool in agriculture, forestry, land use, water resources, and natural resource exploration. The budgets of both USGS and the National Aeronautics and Space Administration provide funding for Landsat 9 development. Satellite funding also will continue to support Landsat 7 and 8 operations, data collection management, and related operations.

The budget includes \$13.0 million for the National and Regional Climate Adaptation Science Centers to support three of the eight existing regional centers. The budget also includes \$14.7 million for Land Change Science research which supports land use decisions with application to natural resource management, community safety, and economic development.

**Energy and Mineral Resources and Environmental Health Programs** – The 2019 budget includes \$84.1 million for Energy and Mineral Resources. This is an increase of \$11.5 million above 2018. Energy and Mineral Resources programs conduct research and assessments on the occurrence, quality, supply, and use of national and global mineral and energy resources.

The budget provides \$58.2 million in Mineral Resources to collect data and conduct research on a wide variety of non-fuel mineral resources, focusing on critical minerals important to the economic stability and national security of the United States. Critical mineral commodities are those minerals with important uses particularly in technology, and no viable substitutes, yet face potential disruption

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in supply. The budget includes \$19.1 million to support an Administration initiative to help spur critical mineral resource development in the United States. The funding will provide the advanced topographic, geologic, and geophysical data needed to locate U.S. critical mineral resources to inform private-sector domestic development, reduce dependence on foreign sources, and support job creation and technological innovation. The budget also includes \$25.9 million for Energy Resources.

**Natural Hazards Programs** – The 2019 budget provides \$117.3 million for Natural Hazards. The Natural Hazards programs provide scientific information and tools to help understand and respond to hazards such as volcanoes, earthquakes, tsunamis, and landslides with a goal of reducing potential fatalities, injuries, property damage, and other social and economic effects. The budget includes \$51.0 million for Earthquake Hazards and prioritizes funding to maintain robust national earthquake monitoring and reporting capabilities.

The budget includes \$22.3 million for the Volcano Hazards program. Funding will be used to monitor the Nation's volcanoes to issue alerts and information about eruptions, supporting decisions about evacuations and aircraft diversions for volcanic ash. The budget provides \$4.9 million to operate the Global Seismic Network and \$3.5 million for the Landslide Hazards program, which supports post-fire debris-flow hazard assessments for major wildfires, landslide research, and expanded prototype debris-flow early warning. The budget proposes \$35.5 million for the Coastal/Marine Hazards and Resources program to improve assessments of hazard sources, such as submarine landslides, and potential impacts on offshore operations, coastal communities, and infrastructure.

**Water Resources Programs** – The 2019 budget includes \$164.9 million for Water Resources. These programs collect and deliver hydrologic data, model and analyze hydrologic systems, and conduct research and development leading to new understandings of and methods for gathering water data. The request provides capacity to research water use and conduct water availability studies, maintains support for Federal priority streamgages, and regional-scale water quality models and model-based decision support tools. The budget includes \$69.7 million for National Water Quality Program activities including the monitoring and analysis of water quality samples from the Nation's streams and rivers, and modeling of water quality and nutrients, pesticides sediments, and other water constituents. The Groundwater and Streamflow Information Program is funded at \$64.9 million which will maintain the national streamgage networks to provide long-term data, and continue to develop and improve data collection and analysis tools. The budget also includes \$30.4 million to assess water availability and use, in

support of the National Water Census, with applications for activities related to drought and the use of water. The budget funds the cooperative matching program, within the Water Resources programs, at \$57.2 million.

**Core Science Systems Programs** – The 2019 budget provides \$92.3 million for Core Science Systems. The budget includes \$50.9 million for the National Geospatial Program which provides high-quality topographic, geologic, and hydrographic data. This allows for precise planning for energy development, transportation and other infrastructure projects, urban planning, flood prediction, emergency response, and hazard mitigation. The request provides for continued collection of high-resolution elevation and hydrography data for the Nation, including modernizing maps for Alaska and complete national lidar coverage by 2033. The budget also includes \$22.4 million for leveraged geologic mapping activities in coordination with States, which are important for infrastructure, resource development, and mitigation of hazards.

**Science Support Programs** – The 2019 budget request includes \$89.3 million for Science Support. Funding supports USGS' executive, managerial, and accounting activities, information management and technology, and support services. Funding includes \$69.5 million for administration and management and \$19.7 million for information services.

**Facilities** – The 2019 budget provides \$112.5 million for Facilities. The budget provides funds to meet General Services Administration rent requirements, primarily for the Menlo Park, California, campus, reflected in the 2018 President's budget. The funding will enable USGS to relocate some or all of the Menlo Park activities to Moffett Field, a part of the NASA Ames Research Center. Relocation will facilitate collaborative work with NASA and other tenants at Moffett Field, as well as mitigate or avoid similar rent increases in the future. The budget also includes \$500,000 to support Department-wide efforts to establish common regional borders.

**Budget Structure and Technical Changes** – The budget proposes to rename and restructure the current Climate and Land Use programs to create three new Land Resources subactivities. The National Land Imaging subactivity will consist of the existing Land Remote Sensing program element. The Land Change Science subactivity combines the Carbon Sequestration, Climate Research and Development, and Land Change Science program elements. The National and Regional Climate Adaptation Science Centers consists of the National Climate Change and Wildlife Science Center/Department of the Interior Climate Science Centers program element. These changes reflect a stakeholder-focused realignment of program priorities.

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The budget also proposes renaming the current Coastal and Marine Geology program. The proposed name is the Coastal / Marine Hazards and Resources program, reflecting the program's role of protecting lives and property from hazards and improving resource understanding to contribute to economic vitality.

**Organizational Restructure** – The budget includes \$500,000 within Facilities to support the Department's common regional boundaries to improve service and efficiency. Organizing bureaus along common geographic areas will allow for more integrated and better-coordinated decision making across the Department.

Complementing the Departmental effort underway to improve operations, the USGS budget proposes changes to the USGS operating structure to improve the efficiency and use of resources and expertise. The realignment will shift the management focus to the field by creating a direct line of authority between the regional centers and programmatic leadership. The USGS proposes

to reorganize the existing seven-region management structure and organize line authority for field personnel and programmatic functions under six existing Associate Directors, organized by mission area. The proposal would also establish an Associate Director for Alaska, formerly the Alaska Regional Director position. As Interior's common regions become established, USGS will designate a liaison to each of Interior's Regional Directors to better understand and share the science needs of the region as a whole.

**Administrative Savings** – The request assumes \$8.3 million as part of the Department-wide effort to achieve cost savings from administrative efficiencies including the more aggressive use of shared services and multi-agency procurement vehicles. These savings will take effort to achieve, however, identifying administrative efficiencies provides the best opportunity to meet broader fiscal objectives and maintain programmatic funding.

**Fixed Costs** – Fixed costs of \$5.0 million are fully funded.

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

*Comparison of 2019 Request with 2018 CR*

	2018 CR		2019 Request		Change	
	FTE	Amount	FTE	Amount	FTE	Amount
Current						
Surveys, Investigations, and Research .....	4,876	1,077,798	3,667	859,680	-1,209	-218,118
Subtotal, Current .....	4,876	1,077,798	3,667	859,680	-1,209	-218,118
Permanent						
Surveys, Investigations, and Research .....	0	52	0	52	0	0
Contributed Funds .....	6	644	6	644	0	0
Subtotal, Permanent .....	6	696	6	696	0	0
Allocation and Reimbursable						
Allocation .....	36	0	36	0	0	0
Reimbursable .....	3,126	0	3,126	0	0	0
Subtotal, Allocation and Reimbursable .....	3,162	0	3,162	0	0	0
<b>TOTAL, U.S. GEOLOGICAL SURVEY .....</b>	<b>8,044</b>	<b>1,078,494</b>	<b>6,835</b>	<b>860,376</b>	<b>-1,209</b>	<b>-218,118</b>

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## HIGHLIGHTS OF BUDGET CHANGES

*By Appropriation Activity/Subactivity*

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

	2017 Actual	2018 CR	2019 Request	Change
Ecosystems				
Status and Trends .....	20,473	20,334	11,325	-9,009
Fisheries Program.....	21,136	20,992	9,701	-11,291
Wildlife Program .....	46,007	45,695	33,440	-12,255
Environments Program .....	37,415	37,161	24,569	-12,592
Invasive Species.....	17,330	17,212	17,096	-116
Cooperative Research Units.....	17,371	17,253	0	-17,253
Subtotal, Ecosystems.....	159,732	158,647	96,131	-62,516
Land Resources ( <i>new structure</i> )				
National Land Imaging .....	[85,794]	[85,211]	75,514	+75,514
Land Change Science.....	[38,146]	[37,887]	14,739	+14,739
National and Regional Climate				
Adaptation Science Centers .....	[25,335]	[25,163]	12,989	+12,989
Subtotal, Land Resources .....	[149,275]	[148,261]	103,242	+103,242
Climate and Land Use Change ( <i>old structure</i> )				
Climate Variability .....	53,589	53,225	0	-53,225
Land Use Change .....	95,686	95,036	0	-95,036
Subtotal, Climate and Land Use Change .....	149,275	148,261	0	-148,261
Energy and Mineral Resources, and Environmental Health				
Mineral and Energy Resources.....	73,066	72,570	84,105	+11,535
Environmental Health .....	21,245	21,101	0	-21,101
Subtotal, Energy and Mineral Resources, and Environ Health .....	94,311	93,671	84,105	-9,566
Natural Hazards				
Earthquake Hazards .....	64,303	63,866	50,999	-12,867
Volcano Hazards.....	28,121	27,930	22,306	-5,624
Landslide Hazards .....	3,538	3,514	3,511	-3
Global Seismographic Network.....	6,653	6,608	4,937	-1,671
Geomagnetism .....	1,888	1,875	0	-1,875
Coastal/Marine Hazards and Resources ( <i>new name</i> ).....	40,510	40,235	35,549	-4,686
Subtotal, Natural Hazards.....	145,013	144,028	117,302	-26,726
Water Resources				
Water Availability and Use Science .....	45,052	44,746	30,351	-14,395
Groundwater and Streamflow Information .....	72,673	72,179	64,915	-7,264
National Water Quality .....	90,529	89,915	69,656	-20,259
Water Resources Research Act Program ..	6,500	6,456	0	-6,456
Subtotal, Water Resources .....	214,754	213,296	164,922	-48,374
Core Science Systems				
Science Synthesis, Analysis, and Research Program.....	24,299	24,134	19,010	-5,124

**APPROPRIATION: Surveys, Investigations, and Research** (continued)

	2017 Actual	2018 CR	2019 Request	Change
National Cooperative Geological Mapping Program .....	24,397	24,231	22,390	-1,841
National Geospatial Program .....	67,354	66,897	50,878	-16,019
Subtotal, Core Science Systems .....	116,050	115,262	92,278	-22,984
Science Support				
Administration and Management .....	81,981	81,424	69,534	-11,890
Information Services .....	23,630	23,470	19,716	-3,754
Subtotal, Science Support .....	105,611	104,894	89,250	-15,644
Facilities				
Rental Payments and Operations				
Maintenance .....	93,141	92,508	105,219	+12,711
Deferred Maintenance and Capital Improvements .....	7,280	7,231	7,231	0
Subtotal, Facilities .....	100,421	99,739	112,450	+12,711
TOTAL APPROPRIATION .....	1,085,167	1,077,798	859,680	-218,118

**Detail of Budget Changes**

	2019 Change from 2018 CR	2019 Change from 2018 CR	
TOTAL APPROPRIATION .....	-218,118		
Ecosystems .....	-62,516	Environments Program .....	-12,592
Status and Trends .....	-9,009	California Bay-Delta .....	-800
Land and Water		Chesapeake Bay .....	-3,700
Management Research .....	-4,333	Ecosystem Services .....	-1,000
Museum Collections .....	-1,600	Greater Everglades .....	-5,850
Species-Specific Wildlife Research .....	-2,889	Landscapes of Forest, Mountains, and Rivers .....	-689
Administrative Savings .....	-279	Southwest Desert Ecosystem .....	-450
Fixed Costs .....	+92	Administrative Savings .....	-279
Fisheries Program .....	-11,291	Fixed Costs .....	+176
Contaminants Research .....	-500	Invasive Species .....	-116
Great Lakes Fisheries Assessments .....	-250	Administrative Savings .....	-172
Land and Water		Fixed Costs .....	+56
Management Research .....	-5,989	Cooperative Research Units .....	-17,253
Species-Specific Fisheries Research .....	-3,386	Land Resources (new structure) .....	+103,242
Unconventional Oil and Gas Research .....	-1,000	National Land Imaging (new structure) .....	+75,514
Administrative Savings .....	-279	Transfer from Land Use Change .....	+85,211
Fixed Costs .....	+113	Landsat 9 Ground Systems .....	+14,100
Wildlife Program .....	-12,255	Remote Sensing Grants .....	-1,207
Amphibian Research and Monitoring .....	-1,754	National Civil Applications Center .....	-4,814
Arctic .....	-1,600	Science Research and Investigations .....	-5,351
Contaminants Research .....	-500	Satellite Operations .....	-11,905
Species-Specific Wildlife Research .....	-6,599	Administrative Savings .....	-673
White-nose Syndrome .....	-250	Fixed Costs .....	+153
Whooping Crane			
Propagation Program .....	-1,500		
Administrative Savings .....	-279		
Fixed Costs .....	+227		

**Detail of Budget Changes**  
**Surveys, Investigations, and Research** (continued)

	<u>2019 Change from 2018 CR</u>		<u>2019 Change from 2018 CR</u>
Land Change Science ( <i>new structure</i> ).....	+14,739	Volcano Hazards.....	-5,624
Transfer from Climate Variability .....	+28,062	Implementation of the National	
Transfer from Land Change Science .....	+9,825	Volcano Early Warning System .....	-1,500
Carbon Sequestration.....	-8,898	Monitoring in the Commonwealth of	
Climate Research and Development ...	-9,818	the N. Mariana Islands.....	-500
Ecosystem Modelling		Next-Generation Lahar Detection.....	-1,000
and Decision Support.....	-1,154	Repair and Upgrade of Analog	
Remote Sensing of Vegetation		Instruments on High-Threat	
and Water.....	-993	Volcanoes .....	-1,000
Landscape Science.....	-2,339	Volcano Hazard Assessments .....	-1,498
Fixed Costs .....	+54	Administrative Savings .....	-279
National and Regional Climate		Fixed Costs .....	+153
Adaptation Science Centers		Landslide Hazards .....	-3
( <i>new structure</i> ) .....	+12,989	Administrative Savings .....	-27
Transfer from Climate Variability .....	+25,163	Fixed Costs .....	+24
Arctic .....	-500	Global Seismographic Network .....	-1,671
Realign National and Regional		Seismic Station Upgrades	
Climate Adaptation Science Centers ..	-10,728	and Deployment .....	-1,622
Tribal Climate Adaptation Science.....	-500	Administrative Savings .....	-62
Administrative Savings .....	-673	Fixed Costs .....	+13
Fixed Costs .....	+227	Geomagnetism.....	-1,875
Climate and Land Use Change ( <i>old structure</i> )	-148,261	Coastal/Marine Hazards and Resources.	-4,686
Climate Variability ( <i>old structure</i> ).....	-53,225	Elevation Models and Coastal	
Transfer to National and		Resource Assessments .....	-2,344
Regional Climate Adaptation		Marine Habitat and Resource Mapping	
Science Centers .....	-25,163	and Ocean and Glacier Studies.....	-1,600
Transfer to Land Change Science .....	-28,062	Regional Coastal Management,	
Land Use Change ( <i>old structure</i> ) .....	-95,036	Restoration, and Risk Reduction.....	-500
Transfer to National Land Imaging .....	-85,211	Administrative Savings .....	-462
Transfer to Land Change Science .....	-9,825	Fixed Costs .....	+220
Energy and Mineral Resources, and		Water Resources .....	-48,374
Environmental Health.....	-9,566	Water Availability and Use Science .....	-14,395
Mineral and Energy Resources.....	+11,535	Aquifer Assessments	
Critical Minerals .....	+10,598	Mississippi Alluvial Plain.....	-3,000
Energy Research and Assessments .....	+1,598	U.S.-Mexico Transboundary.....	-1,000
Administrative Savings .....	-1,103	Focus Area Studies .....	-1,600
Fixed Costs .....	+442	Groundwater Models.....	-869
Environmental Health .....	-21,101	Regional Groundwater Evaluations ....	-789
Transfer to National Water Quality.....	-200	Water Science Research and	
Contaminant Biology .....	-10,128	Development.....	-4,325
Toxic Substances Hydrology.....	-10,773	Water Use	
Natural Hazards.....	-26,726	Cooperative Matching Funds .....	-1,000
Earthquake Hazards .....	-12,867	Data and Research .....	-1,500
Earthquake Early Warning System .....	-10,200	Unconventional Oil and	
Hazard and Risk Assessments in		Gas Research.....	-250
Low-to-Moderate Risk Areas.....	-478	Administrative Savings .....	-349
Regional Seismic Networks .....	-1,800	Fixed Costs .....	+287
Administrative Savings .....	-640		
Fixed Costs .....	+251		



*Detail of Budget Changes*  
*Surveys, Investigations, and Research (continued)*

	<u>2019 Change from 2018 CR</u>		<u>2019 Change from 2018 CR</u>
Groundwater and Streamflow Info .....	-7,264	National Cooperative	
Cooperative Matching Funds		Geological Mapping Program .....	-1,841
Technical Support for Tribes .....	-1,000	National Cooperative	
Groundwater Activities .....	-3,752	Geologic Mapping .....	-1,950
Water Tools .....	-363	Fixed Costs .....	+109
U.S.-Canada Transboundary		National Geospatial Program .....	-16,019
Streamgages.....	-160	3D Elevation	
Water Science Research and		Data.....	-7,329
Development.....	-1,540	Technical Support .....	-2,757
Administrative Savings .....	-781	Federal Geographic Data Committee ...	-2,700
Fixed Costs .....	+332	Geospatial Research .....	-2,343
National Water Quality Program .....	-20,259	Administrative Savings .....	-1,147
Transfer from Environmental Health ...	+200	Fixed Costs .....	+257
Atmospheric Deposition.....	-1,565	Science Support .....	-15,644
Enhanced Cooperative		Administration and Management .....	-11,890
Activities and Urban Waters .....	-717	Support for Science Enterprise .....	-13,206
National Park Service		Fixed Costs .....	+1,316
Cooperative Water Partnership .....	-1,743	Information Services .....	-3,754
National Water Quality Assessment		Enterprise Information .....	-3,816
Lower Mississippi Stream Quality ...	-4,000	Fixed Costs .....	+62
Trends .....	-5,600	Facilities .....	+12,711
Water Science Research		Rental Payments and	
and Development .....	-6,549	Operations Maintenance .....	+12,711
Administrative Savings .....	-854	GSA Rent Adjustment and Support	
Fixed Costs .....	+569	for Relocation of Menlo Park .....	+12,454
Water Resources Research Act Program ..	-6,456	Support for Interior Reorganization .....	+500
Core Science Systems.....	-22,984	Fixed Costs .....	-243
Science Synthesis, Analysis,		Subtotals for Changes Across	
and Research .....	-5,124	Multiple Subactivities	
Biogeographic Science .....	-2,357	Fixed Costs .....	[+4,980]
USGS Libraries.....	-2,857	Administrative Savings .....	[-8,338]
Fixed Costs .....	+90		