

**WYOMING STATE GEOLOGICAL SURVEY**  
**Gary B. Glass, State Geologist**

**SIXTY-FOURTH ANNUAL REPORT**  
**of the**  
**WYOMING STATE GEOLOGICAL SURVEY**

**For Fiscal Year 1997**  
**July 1, 1996 to June 30, 1997**

**by**

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**Laramie, Wyoming**



# Geological Survey

## Agency Mission and Philosophy

The Geological Survey's mission is to promote the beneficial and environmentally sound use of Wyoming's vast geologic, mineral, and energy resources while helping protect the public from geologic hazards. By providing accurate information and expanding knowledge through the application of geologic principles, the Survey contributes to economic growth and improvement in the quality of life for Wyoming's citizenry.

The Geological Survey believes in professional, responsive, accountable and dedicated service to the public, to other government entities, and to its own employees. It takes pride in providing information that is timely, objective, accurate, and complete. Because of its limited resources, the Geological Survey strives for continued innovation, creativity, and efficiency.

## Major Accomplishments and Efficiencies

In FY97, the geologic staff of the Geological Survey conducted eight field or laboratory studies; prepared 53 in-house articles, reports, and maps on those and other investigations; gave 45 talks or briefings; wrote 17 invited technical papers for outside entities; and responded to at least 9,344 inquiries, all related to mineral and energy resources, geology, and/or geologic hazards in Wyoming. In addition, the staff of the Publications Section responded to at least 4,274 inquiries; published 27 new titles (13,485 individual copies); and sold 13,735 reports and maps, returning \$104,709 to the General Fund from the sale of these publications.

To help existing mineral and energy industries, the Geological Survey continued its participation in a joint industry/government study that is seeking to identify safe ways to concurrently develop the trona and natural gas that underlies the trona patch in southwestern Wyoming; promoted the manufacture of glass within Wyoming, so as to provide a value-added use for some of the soda ash that is already produced within the State; promoted value-added uses for limestone and other stone produced in Wyoming; continued to provide geologic information for incorporation into the Oil and Gas Conservation Commission's on-line petroleum database; published a new oil and gas map of Wyoming as well as four subsurface cross sections in the Greater Green River Basin; continued to encode stratigraphic and chemical data on Wyoming coals for incorporation into the Survey's database as well as the U.S. Geological Survey's National Coal Resource Data System; co-hosted the First International Soda Ash Conference; participated in the United States Uranium and Nuclear Conference; prepared seismic hazard analyses for a proposed in-situ uranium operation and for an existing uranium mill and tailings site; and published reports on the uranium occurrences in both Laramie and Sublette Counties.

To attract the development of undeveloped or under-developed mineral resources occurring in Wyoming, the Geological Survey continued its investigations of the geology and mineralization in the old mining districts as well as other areas of the State. While some of the more notable of these undeveloped mineral commodities are diamond, gold, other precious metals (platinum-palladium), base metals (copper, nickel, titanium, and cobalt),

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## Year Established and Reorganized

1901; reorganized in 1933 and in 1969

## Statutory References

W.S. 9-2-801, 9-2-803 through 9-2-810

## Number of Authorized Personnel

15 full-time; 4 part-time

## Organization Structure

Organized as Sections and Units: Coal, Geologic Hazards, Geologic Mapping, Industrial Minerals and Uranium, Metals and Precious Stones, Oil and Gas, and Publications Sections; Supportive Services, Computer Support, and Laboratory Units.

## Clients Served

General public, business and industry, state and local agencies, universities, federal agencies, agencies in other states, and foreign.

## Budget Information

General Funds	\$885,349	
Federal Funds	22,558	
Objective IA	\$269,002	30 percent
Objective IB	216,014	24 percent
Objective IC	176,762	19 percent
Objective IIA	246,129	27 percent
<b>Total</b>	<b>\$907,907</b>	

dimension stone, zeolites, and silica sand, the Survey also strove to maintain active interest in other gemstones (rubies, sapphires, and chromian diopside), zirconium, mineral pigments, abrasives (garnet), limestone, marble, and industrial iron. The Survey published new reports on copper, lead, zinc, molybdenum, and associated metals in Wyoming; gold in the Rattlesnake Hills; jade, jasper, rubies, and sapphires in the Tin Cup district of the western Granite Mountains; diamonds in the Colorado-Wyoming State-Line district; and other exploration targets for diamonds in Wyoming.

As a result, some production of zeolite began; exploration for diamond, gold, and base metals remained high; and industry interest in silica sand and dimension stone continued.

To help prevent decisions or actions that might adversely affect Wyoming's geologic, mineral, and energy resources, the Geological Survey continued to assist the Office of State Lands and Investments by alerting it to new oil and gas wells offsetting State leases; with assessments of the mineral, energy, and paleontological resources underlying proposed land sales and exchanges; and with the review of applications for fossil-removal permits as well as inspections of permitted fossil-removal quarries.

The State Geologist, mineral, and energy sections of the Geological Survey provided estimates of production and prices for use by the Consensus Revenue Estimating Group. In response to the Governor's State Clearinghouse, the Survey also reviewed more than 172 scoping statements, environmental assessments, environmental impact statements, siting applications, management plans and other documents for their effects on the State's geologic or mineral interests and revenues, or for any adverse effects that potential geologic hazards might have on proposed activities or facilities. The Geological Survey continued to assist in the investigation of an alleged gold scam, and working with the Institute for Energy Research at the University of Wyoming, the Survey's index maps to geologic mapping were digitized as part of a new online database called the "Wyoming Geologic Database."

In its role of protecting Wyoming's citizenry, property, and natural resources from harm or damage from geologic hazards, the Geological Survey (with some financial help from the Wyoming Emergency Management Agency) purchased a new seismic network station for installation in the Star Valley area of western Wyoming in FY98 (this station will be installed and maintained by the U.S. Geological Survey as part of its national network); maintained and revised its statewide coverage of surficial geology, landslides, and other potential geologic hazards; provided assistance to the Wyoming Emergency Management Agency in regard to its Emergency Response Plan to earthquakes and other natural disasters; and continued with its ongoing initiative to map the geology (both 1:100,000- and 1:24,000-scale) of the more populated areas of the State.

The State Geologist or other Survey geologists remained involved with many interdisciplinary projects, programs, or groups to include: Aquifer Vulnerability to Agricultural Contamination, Wellhead Protection, Underground Injection Control, Cumulative Hydrologic Impact Assessment, Abandoned Mined Land Research, Wyoming Geographic Information Systems, Subcabinet for Natural Resources, and Subcabinet for Economic Development.

In addition, the State Geologist assisted in protecting correlative rights and preventing waste of oil and natural gas resources as a Commissioner on the Wyoming Oil and Gas Conservation Commission. As a member of the Wyoming Board of Professional Geologists, the State Geologist helped protect the public through licensure of professional geologists.

## Problem Areas

The Geological Survey is requesting funds to create a high-tech computer laboratory for shared usage within the agency. The lab is needed to expedite development of the Survey's Web site and provide some efficiencies, to include a reduction in the need to upgrade numerous personal computers.

In an effort to expedite the exploration and eventual development of a diamond industry in Wyoming, the Survey has requested special funds to accelerate its current program. If these funds are made available in the FY99-2000 biennial appropriation, an intensive investigation of the State's diamond potential could be completed by 2002.

The low salaries paid the agency's geologists make it very hard to recruit for vacancies. For example, it took a year to recruit a new coal geologist. Many qualified applicants opted not to apply or refused the agency's salary offer because it was not competitive.

## Strategic Plan Changes for Next Year

The Geological Survey did not make any substantial changes to its Strategic Plan in FY98.

Goal I: Diversify and strengthen the State's economy by supporting the responsible and innovative exploration and use of Wyoming's geologic, mineral, and energy resources.

Objective IA: Help the coal, oil and gas, industrial minerals, uranium, and other existing mineral industries in Wyoming to continue their production, exploration, and further development within the State.

Objective IB: Contribute substantially to attracting new geologic-, mineral-, and energy-related industries.

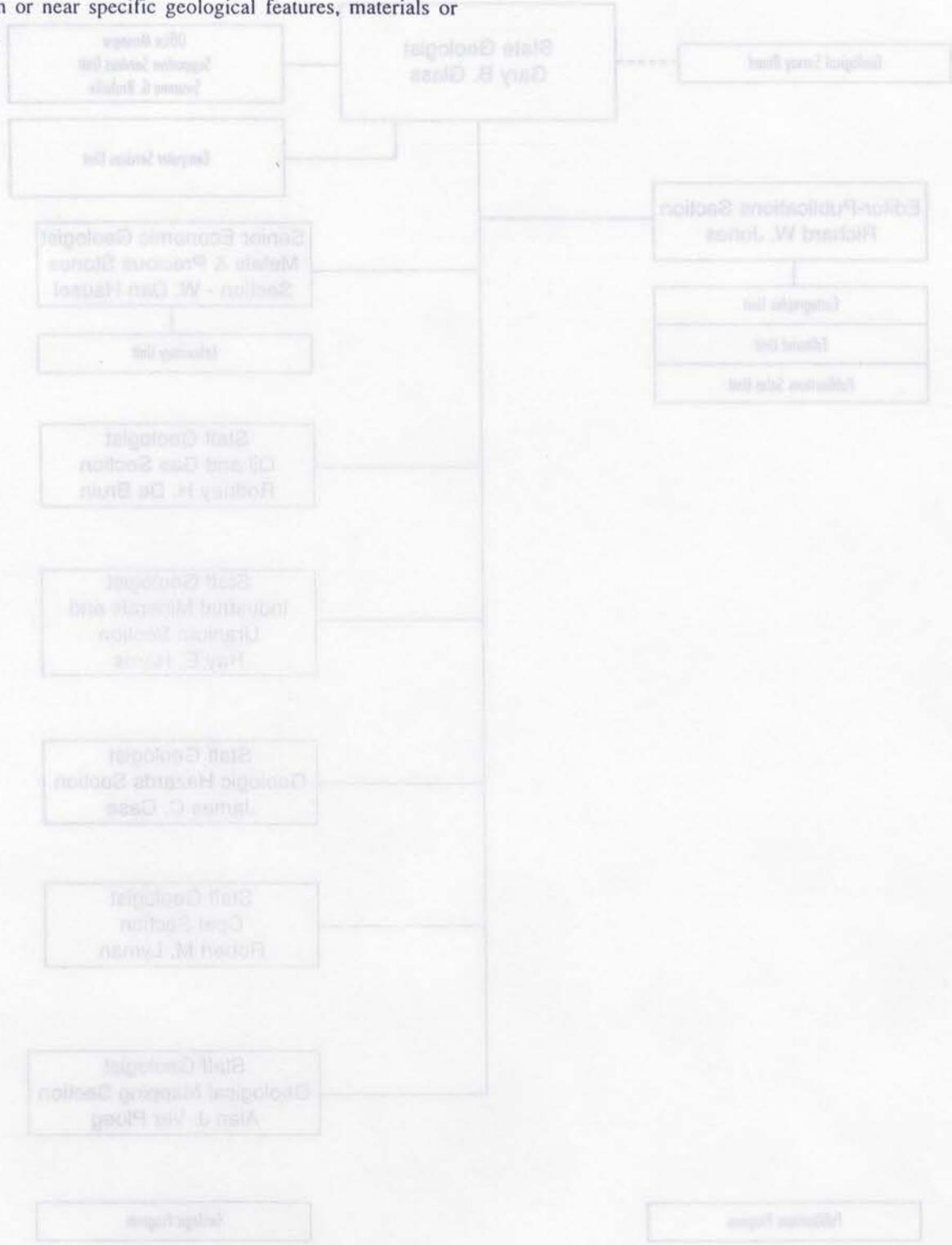
Objective IC: Contribute to the identification and prevention of decisions or other actions that would be contrary to the beneficial and wise use of the State's geologic, mineral, and energy resources.

Goal II: Better protect Wyoming's citizenry, property, and natural resources from harm or damage associated with

geologic processes or geologic hazards and increase the use of geologic science in meeting societal needs.

Objective IIA: Raise awareness, knowledge, and understanding of the State's geology and geologic hazards, emphasizing ways to avoid or mitigate the potential harm or damage that may result as a consequence of living or developing on or near specific geological features, materials or terrains.

Geological Survey Organization Chart



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