

WYOMING STATE GEOLOGICAL SURVEY
Gary B. Glass, State Geologist

SIXTY-THIRD ANNUAL REPORT

of the

WYOMING STATE GEOLOGICAL SURVEY

For Fiscal Year 1996
July 1, 1995 to June 30, 1996

by

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Laramie, Wyoming
February, 1997

WYOMING STATE GEOLOGICAL SURVEY

Gary B. Glass, *State Geologist*

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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 to 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 residency.

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 FY96, the geologic staff of the Geological Survey conducted 11 field and laboratory studies; prepared 50 in-house articles, reports and maps on those and other investigations; gave 47 talks or briefings; wrote 27 invited technical papers for outside entities; and responded to at least 11,247 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 4,540 inquiries; published 24 new titles (13,800 individual copies); and sold 18,551 reports and maps, returning \$82,471 to the General Fund from the sale of these publications.

The Geological Survey's assistance to existing mineral and energy industries was varied. The survey continued its participation in a joint industry/government study that is seeking safe ways to concurrently develop trona and the natural gas that underlies the trona patch in southwestern Wyoming; proposed new seismic design standards for reclaimed uranium mill tailings, which would result in significant reductions in reclamation costs; 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 the development of limestone for uses other than aggregate; identified several new products for the consideration of decorative stone producers in the state; continued to provide geologic information for incorporation into the Oil and Gas Conservation Commission's on-line petroleum database; 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; and the Survey organized and hosted the 32nd Annual Forum on the Geology of Industrial Minerals, an international organization. And the State Geologist served on the Gas Research Committee, which is tasked with helping promote research that will lead to expanded production or processing of natural gas.

As an indication of its success in helping the existing mineral and energy industries, the Geological Survey uses the state's assessed value of mineral production. Overall, this value increased again in FY96.

General Information

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Year Established

1933

Statutory References

W.S. 9-2-801 through 9-2-809 in Title 9, Ch. 2, Art. 8

Authorized Personnel

15 full-time; 4 part-time

Organization Structure

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

Clients Served

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

Budget Information

| | |
|------------------------|------------------|
| General Funds | \$864,642 |
| Federal Funds | 26,996 |
| Trust and Agency Funds | .0 |
| Total | \$891,638 |

In addition to supporting the existing mineral and energy industries in the state, the Geological Survey also strove to attract the development of a number of undeveloped or under-developed mineral resources occurring in Wyoming. To this end, the 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), and silica sand, the survey also strove to maintain industry's interest in zeolites, other gemstones (rubies, sapphires, and chromian diopside), zirconium, mineral pigments, abrasives (garnet), dimensional limestone and marble, and industrial iron. As a result, exploration for diamond, gold and nickel remained very high, and industry interest in silica sand, zeolites and other commodities continued.

To help prevent decisions or actions that might adversely affect Wyoming's geologic, mineral and energy resources, the Geological Survey continued to alert or provide assistance to a number of other agencies and entities. The survey assisted the State Land and Farm Loan Office by alerting it to new oil and gas wells offsetting state leases; with estimates of the potential for mineral, energy and paleontological resources to underlie 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 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 71 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 Survey assisted state and federal agencies in the investigation of two alleged gold scams. In addition, the State Geologist helped regulate the oil and gas industry as a commissioner on the Oil and Gas Conservation Commission.

In its role of protecting Wyoming's residency, property and natural resources from harm or damage from geologic hazards, the Geological Survey maintained and revised its statewide coverage of surficial geology, landslides and other potential geologic hazards, 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. Survey geologists remained involved with many interdisciplinary projects or programs to include: Aquifer Vulnerability to Agricultural Contamination, Wellhead Protection, Underground Injection Control, Cumulative Hydrologic Impact Assessments, Abandoned Mined Land Research, and Wyoming Geographic Information Systems. In addition, the State Geologist helped regulate the profession of geology

through his position on the Wyoming licensing board for professional geologists.

In regard to earthquakes and seismic-risk, the Geological Survey actively supported continuation of the U.S. Bureau of Reclamation's Jackson Hole Seismic Network; indirectly helped to bring about a new seismic station in Yellowstone National Park, as well as a more responsive station near Boulder, Wyo.; strove to add new National Seismic Network Stations in the Star Valley, as well as in southwestern Wyoming; worked with the State Land and Farm Loan Board on ways to assess the vulnerability of schools to seismic events; and provided assistance to the Wyoming Emergency Management Agency in regard to seismic and other geologic hazards.

Problem Areas

The Geological Survey has a relatively serious problem related to a recent decision by the state, which prevents the upgrading of the Macintosh-based platform that the survey has developed and used to operate its current computer network. This decision may force the abandonment of a workable network, which is already interfaced with DOS-based systems, and it could require the redistribution of more than \$10,000 in limited operating funds needed to accomplish the survey's objectives. This problem is particularly critical because six of the Geological Survey's seven objectives were to be supported by enhanced transfer of information via computers and internet. Emphasis will now have to shift to selection, acquisition and configuration of a new platform. This will of necessity delay the design and implementation of interactive databases and enhanced delivery systems as well as forcing a number of personnel, who are only experienced in the Macintosh environment, to learn a new operating system. This decision, incidentally, was made after the FY97-98 biennial budget was approved by the legislature.

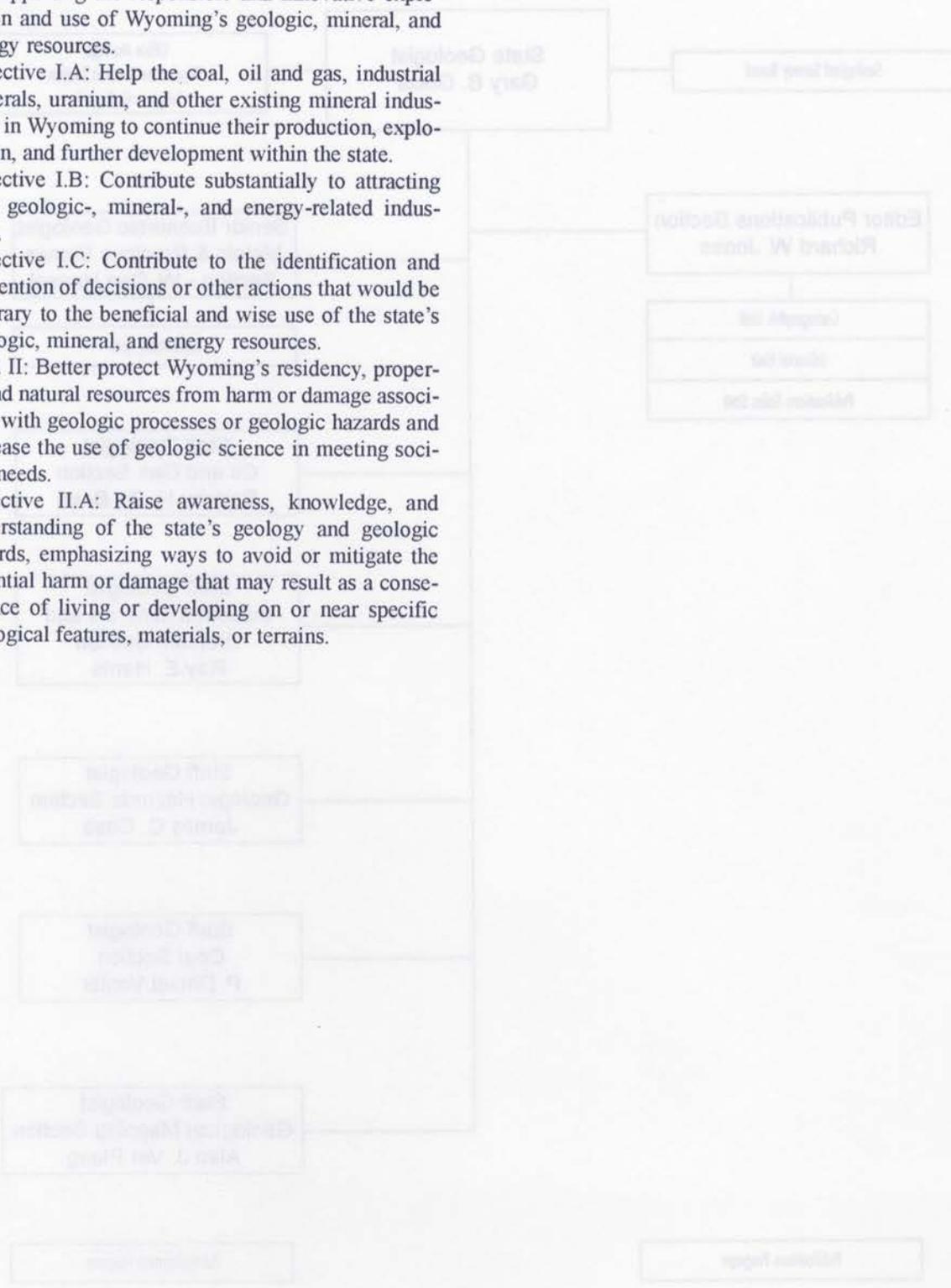
As a result, the Geological Survey has approached the Information Technology Division of the Department of Administration and Information in two different ways. It is lobbying appropriate committees to change the standards to allow the use of Macintosh-based platforms. It is also working with Information Technology to identify possible outside sources that might help to pay for a new platform. All the alternatives are especially expensive for a small agency.

Strategic Plan Changes for Next Year

After the Auditor's Office provided its January review of the Geological Survey's strategic plan, the Survey drafted some revisions to the plan. These revisions eliminated the third goal and its objective, eliminated the fourth objective in the first goal, and combined the two objectives in the second goal. Although it might seem extreme to eliminate an entire goal and several objectives, it became obvious that they were actually parts of the remaining two goals and four objectives. This also reduced the survey's strategies to 15, rather than

the earlier 23. These changes were approved by the Geological Survey Board on June 13, 1996, and submitted to the governor and legislature on Aug. 26, 1996. The new goals and objectives are:

- 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 I.A: 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 I.B: Contribute substantially to attracting new geologic-, mineral-, and energy-related industries.
 - Objective I.C: 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 residency, 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 II.A: 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

