

WYOMING STATE GEOLOGICAL SURVEY

Gary B. Glass, State Geologist

SIXTY-FIFTH ANNUAL REPORT
of the
WYOMING STATE GEOLOGICAL SURVEY

For Fiscal Year 1998
July 1, 1997, to June 30, 1998

by

Gary B. Glass and Susanne G. Bruhnke

Laramie, Wyoming
October, 1998

Geological Survey

Agency Mission

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.

Results of outcomes

In FY98, the geologic staff of the Geological Survey conducted 10 field or laboratory studies; prepared 47 in-house articles, reports, and maps on those and other investigations; gave 41 talks or briefings; wrote 15 invited technical papers for outside entities; and responded to at least 9,795 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 4,820 inquiries; published or distributed 21 new titles (9,650 individual copies); and sold 13,095 reports and maps, returning \$98,976 to the General Fund from the sale of these publications.

As a measure of the Survey's success in helping existing mineral industries continue their production, exploration, and further their development (Objective I.A.), the total mineral valuation for FY98 continued to increase, reaching \$4,017,611,483. While none of the four Survey-promoted, value-added or alternative uses for currently extracted minerals came to fruition in FY98 (Objective I.A.), there was continued interest in the manufacture of glass in Wyoming, as well as in expanded uses for carbon dioxide, low-Btu natural gas, and limestone. These four uses were actively promoted by the Survey in FY98.

To help meet its objective of helping Wyoming's existing mineral industries, the Geological Survey co-hosted the First Wyoming Natural Gas Fair; participated in the Wyoming Crude Oil Task Force; continued its participation in a joint industry/government study that is seeking to identify safe ways to concurrently develop trona and natural gas, which both underlie the trona patch in southwestern Wyoming; continued to provide geologic information for incorporation into the Oil and Gas Conservation Commission's on-line petroleum database and its Underground Injection Control Program; added data on additional oil and gas fields into the Survey's database of petroleum reservoirs; published two subsurface cross sections for the Powder River Basin; published a report on industrial minerals as well as one on trona and soda ash; 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; began work on a joint government and industry

General Information

Gary B. Glass, State Geologist

Agency Contact

Gary B. Glass
307/766-2286; fax: 307/766-2605
P.O. Box 3008
Laramie, WY 82071-3008
e-mail: gglass@wsgs.uwyo.edu
WEB site address:
<http://www.wsgsweb.uwyo.edu>

Other Locations

None

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

16 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 Services, 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	\$ 879,267
Federal Funds	\$ 26,357
Total	\$ 905,624

assessment of the trace element content of Wyoming coals; and prepared a seismic hazard analysis for the Shirley Basin uranium mill and tailings site for Pathfinder Mines Corporation.

As a measure of the Survey's success in attracting new geologic-, mineral-, and energy-related industries to Wyoming (Objective I.B.), Wyoming's first zeolite mine produced 2,000 short tons in 1997; dimension stone production has increased from 84 tons in 1992 to 264 tons in 1997; and coal-bed methane production has increased from 0.8 billion cubic feet in 1992 to 11.7 billion cubic feet in 1997. The Survey has been involved in the promotion of all three of these industries.

To help meet its objective of attracting development of undeveloped or under-developed mineral resources occurring in Wyoming (Objective I.B), the Geological Survey continued its exploration for and investigations of diamond, gold, silver, platinum, palladium, base metals (copper, iron, nickel, titanium, and cobalt), dimension stone, zeolites, silica sand, other gemstones (rubies, sapphires, pyrope garnet, peridot, jade, cordierite, and chromian diopside), zirconium, mineral pigments, abrasives (garnet), limestone, ballast, marble, and industrial iron. The Survey also published a new report on exploration targets for diamonds, as well as reports on gold, corundum-kyanite-cordierite, and peridot occurrences.

As a result, exploration for diamond, gold, and base metals remained high; and industry interest in gemstones, silica sand, and dimension stone continued.

As a measure of the Survey's success in identifying and preventing decisions or actions that might adversely affect Wyoming's geologic, mineral, and energy resources (Objective I.C.), the Survey's information, advice, or concerns in regard to wise management or beneficial uses of these resources were heeded 72 percent of the time in FY98. Although there was still no production of natural gas from beneath the trona patch (Objective I.C.), industry and government efforts to find a safe way to concurrently develop the two resources continued.

To help meet the objective of identifying and preventing adverse decisions related to the State's geologic, mineral, and energy resources, the Geological Survey reviewed 228 scoping statements, environmental assessments, environmental impact statements, sit-

ing applications, management plans, proposed rules and regulations of other agencies, and other documents brought to its attention; 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 sales and exchanges of State lands, and with the review of applications for fossil-removal permits as well as inspections of permitted fossil-removal quarries; continued to assist the Wyoming Oil and Gas Conservation Commission by providing it with subsurface geologic information; and continued to provide estimates of production and prices for use by the Consensus Revenue Estimating Group.

As a measure of its success in raising the awareness, knowledge, and understanding of the State's geology and geologic hazards and their relevance to the protection of Wyoming's citizenry, property, and natural resources from harm or damage (Objective II.A.), the Geological Survey's information, advice, or concerns were addressed and used 88 percent of the time.

To help meet the objective of raising awareness of the effects that geology and geologic hazards might have on the protection of Wyoming's citizenry, property, and natural resources (Objective II.A.), the Geological Survey reviewed 228 scoping statements, environmental assessments, environmental impact statements, siting applications, management plans, proposed rules and regulations of other agencies, and other documents brought to its attention; in a joint effort with the Wyoming Emergency Management Agency, the U.S. Geological Survey, the University of Utah, and the Game and Fish Department, the Geological Survey orchestrated the installation of the new seismic network station in the Star Valley area of western Wyoming (this station was installed and will be maintained by the U.S. Geological Survey as part of its national network); worked with other agencies in the protection of ground water to include the preparation of subsurface geologic information for the Little Snake River Drainage Basin; 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; and published four geologic maps, a map of earthquake epicenters, and a report on earthquakes and active faults.

The State Geologist or other Survey geologists remained involved with many interdisciplinary projects, programs, or groups to include: the Abandoned Mined Land Technical Review Committee, Aquifer Vulnerability to Agricultural Contamination Team, Governor's Multi-hazard Mitigation Task Force, Interstate Oil and Gas Compact Commission, Policy and Technical Committees for the Concurrent Development of Trona/Oil and Gas Group, Subcabinet for Economic Development, Subcabinet for Natural Resources, Wellhead Protection Plan Advisory Committee and Delineation Work Group, Western States Seismic Policy Council, Wyoming Crude Oil Task Force, Wyoming Emergency Management Agency's Design Exercise Team; Wyoming Geographic Information Advisory Committee, Wyoming Source Water Protection Advisory Council, and Wyoming Water Plan Scoping Team.

In addition, the State Geologist assisted in protecting correlative rights and preventing waste of oil and natural gas resources as a Commissioner and Acting Chairman 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. And as a member of the Consensus Revenue Estimating Group, the State Geologist helped provide the Governor and Legislature with realistic estimates of future mineral and other revenue sources.

Strategic Plan Changes for Next Year

The Geological Survey did not make any changes to its Strategic Plan in FY99.

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 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 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 Organizational Chart

