Wyoming State Geological Survey FY2015 Annual Report

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Year Established

1933

Statutory References

W.S. 9-2-801 Definitions (amended by Chap. 170, Session Laws of Wyoming 1997)
W.S. 9-2-803 State Geologist, duties and powers
W.S. 9-2-804 Geological Survey, location and headquarters
W.S. 9-2-805 Geological Survey, duties and disposition of materials and specimens
W.S. 9-2-806 State Geologist as chief administrative officer; appointment of employees
W.S. 9-2-807 Geological Survey Board and operation
W.S. 9-2-808 Authority to cooperate and exchange information
W.S. 9-2-809 Use of University of Wyoming students
W.S. 9-2-810 Cooperation with the U.S. Geological Survey
W.S. 30-5-103 State Geologist participation on the Oil and Gas Commission
W.S. 33-41-107 State Geologist participation on the Board of Professional Geologists (as amended by Chap. 170, Session Laws of Wyoming)
W.S. 36-6-102 Submission, custody and confidentiality of subsurface log reports
W.S. 36-6-105 Inspection reports for State Lands

Organizational Structure

The Wyoming State Geological Survey (WSGS) has 23 full-time benefited staff positions (see chart for details). The WSGS has an Advisory Board. The board consists of the Governor, a University of Wyoming member appointed by the university president, the State Oil and Gas Supervisor, the State Geologist, and five appointed members.

In addition, the State Geologist serves as a commissioner on the Wyoming Oil and Gas Conservation Commission (W.S. 30-5-103), as a board member of the Wyoming Board of Professional Geologists (W.S. 33-41-107), as a commissioner for the Enhanced Oil Recovery Institute, and as a member of the Wyoming Consensus Revenue Estimating Group (CREG).

Clients Served

Other local, state and federal government agencies, the Wyoming Legislature, industry, non-governmental organizations, the public, news media and education community.

Budget Information (FY2015)	
General Funds (Expenditures)	2,255,481.00
Federal Grant Funds	93,914.00
State Grant Funds	73,082.00
Other Funds*	23,446.00
	$2,445,923.00
*Sales Reverted to State General Fund	

Basic Facts
The WSGS has 23 employees and operated with a biennium budget of $4,968.810 (2015-2016), not including exception requests or adjustments. The funding sources for the budget include general funds as well as state and federal grants. Research programs and divisions include the following:

- Energy and Mineral Resources
- Water Resources, Mapping, and Hazards
- Geographic Information Systems and Information Technology
- Publications and Communications
- Administration
- Human Resources

Mission
The mission of the WSGS 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 WSGS contributes to the economic growth of the state and improves the quality of life of Wyoming's residents.

The WSGS works to (1) study, examine, and understand the geology, mineral resources, and physical features of the state; (2) prepare, publish, and distribute (free or for sale) reports and maps of the state's geology, mineral resources, and physical features; and (3) provide information, advice, and services related to the geology, energy and mineral resources, hazards, and physical features of the state.

Wyoming Quality of Life Result
Wyoming natural resources are managed to maximize the economic, environmental, and social prosperity of current and future generations.

Contribution to Wyoming Quality of Life
The WSGS strives to provide decision makers with the best science possible to ensure that responsible resource development occurs to benefit Wyoming residents, promote economic prosperity and protect state resources. In addition to ensuring that Wyoming has the geologic, and geohydrologic information necessary to solve existing problems and anticipate future challenges, the WSGS collaborates closely with other state and federal agencies, various organizations, and stakeholders to solve multidisciplinary problems. The WSGS also supplies the geologic knowledge necessary for the beneficial and responsible development of Wyoming’s unconventional energy resources.

While working to increase public awareness, the WSGS endeavors to provide Wyoming residents with the most accurate, up-to-date information on geologic hazards, natural resource and energy issues, water issues, and other geology-related topics so they can make informed decisions about issues that affect them. The WSGS aims to reduce risks associated with geologic hazards such as landslides, volcanism, earthquakes, avalanches, and floods, and also works in collaboration with the Yellowstone Volcano Observatory.

Report Narrative – FY2015 Projects Completed
(Reporting Period: July 1, 2014 – June 30, 2015)

Groundwater Study on Snake/Salt River Basin
The WSGS completed its latest groundwater study (July 2014) on the Snake and Salt River basins in northwest Wyoming, as commissioned by the Wyoming Water Development Office. Hydrogeologists rated aquifers in the Snake and Salt River basins as fair to very good in terms of the potential to meet expected groundwater resource demands in the next 20 years and well beyond. The "Snake/Salt River Basin Water Plan, Available Groundwater Determination (2011-2014)" – 424 pages with color graphics and foldouts – is available on the WSGS website.

Wyoming Geologic Map
The WSGS published (August 2014) an improved version of the "Geologic Map of Wyoming," an important visual tool displaying a variety of geologic features, from different ages of rocks and faults to the state's river basins and mountain ranges. The 1:500,000-scale wall map includes a separate legend sheet and references. The Geologic Map of Wyoming is available for purchase or free download via the agency's website.

Earthquakes and Injection Wells Report
The WSGS completed a study (Open File Report 2014-05 and plates) on reported earthquakes and injection and disposal well activities in Wyoming, from 1984 to 2013. Using computer subsurface modeling software WSGS hazards geologists were able to map the wells operating during those years along with recorded earthquake events during the same time period/s. The report is available to download via the agency's website.

New Geologic Maps
The WSGS, under its STATEMAP program, published (September 2014) one surficial and two bedrock geology maps available in digital formats or to order via the WSGS website.
• 1:24,000 scale Bedrock Geology of the Mc Intosh Meadows Quadrangle, OFR 14-2, Fremont and Natrona counties (including explanatory text of the study area).
• 1:24,000 scale Bedrock Geology Map of the North Ridge Quadrangle, OFR 14-3, Johnson County (including explanatory text of the study area).
• 1:24,000 scale Surficial Geology Map of the Chicken Spring Area, OFR 14-4, Sweetwater County.

Public Information Circular – Stromatolites
The WSGS published (October 2014) a new field guide, "Self-guided Walking Tour of the Paleoproterozoic Stromatolites in the Medicine Bow Mountains, Wyoming." This project also includes a stromatolites web page containing the downloadable report, an interactive Google Earth map of the tour stop locations (with photos), and a video with additional photos of each stromatolite outcrop addressed in the guide.

Coalbed Natural Gas Groundwater Monitoring Report
The WSGS published a report (December 2014) entitled "Coalbed Natural Gas Regional Groundwater Monitoring Report Update: Powder River Basin (PRB), Wyoming" (Open-File Report 2014-01: 2013). This project was in collaboration with the Bureau of Land Management's (BLM) Buffalo Field Office. This report presents data from BLM's deep monitoring well network in the Wyoming PRB along with initial interpretations. This data was collected from the monitor system through 2013. The report is available as a pdf download on the agency's website.

WSGS Summary Reports
The WSGS completed a series of summary reports (2015) on the state's energy and mineral resources. These energy reports were provided to the Wyoming Legislature during the 2015 session. All reports are available as free pdf downloads from the agency's website. The energy reports include coal, oil and gas, and uranium. Other 4-page Summary Reports by the agency include bentonite and trona resources of Wyoming, construction aggregates, as well as groundwater and geologic hazards in the state.

Groundwater Recovery from Coalbed Natural Gas Development Report
WSGS published a study (February 2015) on the recovery of groundwater after coalbed natural gas development. This study examined the Upper Wyodak coal zone of the Powder River Basin in Wyoming. This report is available on the agency's website.

National Coal Resource Data System (NCRDS)
The WSGS completed the final year of a 5-year federal grant study on the coal geology of Wyoming's producing coal basins, led by coal geologist Chris Carroll. This USGS cooperative program is intended to gather stratigraphic coal data from coal exploration and coalbed methane wells in each basin with active coal mining. WSGS is concentrating on the coals and associated uranium occurrences for the Greater Green River Basin, while documenting and characterizing coal quality. Stratigraphic data will be correlated from existing regional stratigraphic nomenclature and compiled into the USGS real-time NCRDS database.

Legacy Maps
The WSGS launched (April 2015) Wyoming Legacy Maps, a program for the release of newly published maps based on the agency's past geologic mapping efforts. The WSGS recently completed two maps under Wyoming Legacy Maps:

1. Geologic Map of the Tallon Spring Quadrangle, Washakie and Johnson Counties, Wyoming, at a scale of 1:24,000-scale (24K).
2. Preliminary Surficial Geologic Map of the Laramie Peak 30' x 60' Quadrangle, Albany, Platte, and Converse Counties, Wyoming, at a scale of 1:100,000, (100k).

See next page for WSGS Organizational Chart.

WSGS Organizational Chart