

Wyoming State Geological Survey

Strategic Plan *2012-2016*

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STRATEGIC PLAN
FOR THE
WYOMING STATE GEOLOGICAL SURVEY

Planning Period

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*Cover Photograph: Lake Yellowstone, Carrington Island, South Rim Yellowstone Volcano Caldera, & Mt. Sheridan, 10,298'
Latitude 44° 27' 35.59" N. Longitude 110° 33' 22.19" W. Elevation: 7777', Site: WLU302016 June 17, 2011, 0506 hrs. by: W.L. Ulrich*

Mission

The Wyoming State 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 Geological Survey contributes to economic growth and improvement in the quality of life for Wyoming's residents.

Philosophy

As a service agency for the people of Wyoming, the Wyoming State Geological Survey personnel will seek to provide the most efficient, courteous, and helpful service.

We shall maintain a high level of scientific and professional credibility, pure objectivity and common sense approach in all phases of our work.

We are proud of the tradition of quality service to the people of Wyoming and the world, who seek our geologic information and have since our humble beginnings in 1877 and restructuring in 1933.

We are committed to finding and utilizing the best practices in every element of our agency duties, from obtaining and monitoring funding, through exploration, analysis, map and product creation into publications, deliverables, sales; on location and web-based, and now multi-media, digitally based distributions, and collaborations for on-demand printing of maps and publications.

Personnel of the Wyoming State Geological Survey will strive to envision new ways to create opportunity for fellow residents, from Wyoming's vast wealth, our endowment—natural resources.

We commit to common sense use of the funds provided by the people of Wyoming through our Legislature. We shall create transparent accountings of all funds, grants, contracts, and expenditures, mindful that unused funds, created through positive efficient labors, returned to the State Treasury, remain beneficial to Wyoming.

All of Wyoming is a spectacular high elevation landscape, with surface beauty and resources and subsurface resources profoundly rich. We pledge to strive to identify the endowments—natural resources; so crucial to Wyoming's future. We shall explore the depths of the structural geology, understanding its origins and components, geothermal elements, extruded materials, labeling and studying the laminations of eroded and deposited materials that now fill our vast basins and harbor fuel and energy, fossils and clues to ancient life workings, water and products, many yet to be discovered, all the while conscious that vigorous protection of our environments, both surface and subsurface ensures our species health, safety, welfare and survival.

Applied geology, outreach, education and mentoring are unique responsibilities of the Wyoming State Geological Survey personnel, who know by education and experience the complexity of the geosystems and that the biosystems rely on its myriad components and processes, creating more complexity and combining to establish the vibrant ecosystem of a planet, racing around a roiling star in one of uncountable galaxies in an infinite and expanding universe---We pledge to discover, share and find opportunities to fulfill our mission with vigorous application of sound science, common sense, and caring for our fellow residents of this remarkable State.

STRATEGIC PLAN

Quality of Life Result

Wyoming natural resources are managed to maximize economic, social prosperity and our environmental health for current and future generations.

Contribution to Wyoming Quality of Life

Wyoming's endowment is our natural resources and the Wyoming State Geological Survey has accelerated its ability to produce product and service, as an applied, nimble, science driven entity.

The WSGS provides State policy-makers, industry and citizens with the best science. The health-welfare-safety icons of government responsibility ensures science based decisions will be made as we develop energy producing resources, minerals, and protect our habitat. The WSGS provides objective information, science-based, in multi-mediums and platforms, for existing and future challenges, including education and public awareness, water issues, known energy and product resources, new geothermal resources, geologic hazards, real-time data and useful information to our citizens and leaders so they can make informed decisions.

WSGS personnel seek to operate and grow the agency as a foundational organization dedicated to applied geologic, geophysical, and geohydrologic research, such as investigating geological basin-wide resource components (including CO2 transitional sequestration sites), developing new exploration strategies and techniques designed for Wyoming's natural resources; creating strategies to prevent or minimize waste of natural resources including promoting ways to advance use of CO2 and other techniques in Enhanced Oil Recovery; constructing integrated geohydrologic models; searching for and evaluating the potential for commercial rare earth element (REE) development in Wyoming; developing visualization techniques for a variety of geologic, geophysical, and geohydrologic processes including coal-to-gas/liquids and coal-to-materials, Uranium fuel cycle control studies, and investigations of new geothermal resources.

Basic Facts

The WSGS has 27 benefitted employees and operated a budget for 2010-11 of \$5,537,390.00. This figure includes the 5 percent reduction in the 2010 budget that resulted from the state revenue directive.

Performance Measures

The WSGS developed evaluation protocols in 2009 using new metrics, which identified and depicted the agency's contribution to Wyoming and its residents. In 2011 the metrics have been internally and externally evaluated and changed.

Additionally, personnel performance reviews have been expanded and are now conducted every 6 months including A.W.E.C. employees. Accountability for projects and timeline-based production has been implemented as real metrics, easily defined, immediately reviewable and simply tested. Data are now gathered as projects progress and final reviews of every project, every deliverable, every work produced, follows an accountable trail, web-based, and transparent.

The new strategic plan identifies the following keystone concepts;

1. Need to identify specific and measureable needs of consumers of WSGS products, newly targeting county -based governance and their needs. Basic geological bedrock and structural information, surficial geology including hazards, trace elements, and flooding as well as groundwater and natural resource elements present are vital information for local decision-makers.
2. Working to develop an internal attitude that the WSGS is for and of the people of Wyoming, to ensure that the needs of myriad users are being met and that applied science is this agency's guiding reality.
3. The new outreach plan is based on public education, beginning in K-12 schools and public interest arenas. It also is based on review of WSGS roles in economic stimulation and participation.
4. Performance efforts need to be expanded into projects related to conventional energy resources. The talents of geoscientists will be redirected into Wyoming's rich natural resources within our immense basins in order to apply geologic knowledge to conventional energy development issues and facilitate responsible development of natural resources vital to our nation. 35-38% of the energy America consumes comes from Wyoming (0.18% of the American population).
5. Collaborative projects shall be reviewed with priority placed on projects with other agencies in Wyoming, allowing focusing of staff and timely delivery of products. Analysis of the activity load for 2010-2011 illustrated special grants and projects created impossible delivery of work product and fiscal disorder in management requiring further reorganization and staff adjustment.
6. Effort will be exercised to expand the WSGS's capabilities in geothermal, oil, and natural gas resources to aid the enlarging role these resources will play in Wyoming's economic future based on new discoveries in all three natural resource endowments.

Performance

The WSGS and others evaluated the performance metrics used in its 2007-2011 plans, and found that not all metrics were accurately identifying contributions to Wyoming and its residents. Not all metrics designed were measurable in progress, and few data were collected. WSGS has begun a new evaluation protocol to quantify the agency's contribution to quality of life in Wyoming.

Effort shall be devoted to determining the product and productivity of personnel dedicated to both scientific and support/ production relative to time/project/deliverables as protocol of the new work-flow/timeline/production record process. This metric is taking data in real-time from every employee, the project(s) they are working, the deliverables and tasks they are performing on a daily timeline, which allows for a realistic delivery of product and a constant review of performance. Data collection now monitors the daily progression of this effort.

Effort shall be devoted to projects that apply geologic knowledge and research to natural resource, conventional energy resources and non-conventional energy issues in Wyoming. This metric will have two components: percentage of WSGS projects that involve applied geologic research and address natural resource/energy issues; and percentage of WSGS employees involved in applied research/natural resource/energy projects. Including both measurements will allow us to capture both overall agency effort and collaboration between employees with different areas of expertise. Data collection now monitors the daily progression of this effort.

Effort shall be devoted to collaborative projects. This metric will have two components: percentage of projects that involve collaboration with other agencies and organizations; and percentage of employees involved in collaborative projects. Including both measurements will allow us to capture overall agency effort and collaboration between employees with different areas of expertise. Data collection now monitors the daily progression of this effort.

Effort shall be devoted to projects and activities that directly benefit the public. This metric will have two components: percentage of projects that directly benefit the public; and percentage and type of personnel involved in public outreach/educational activities, hazards-related projects, and water-related projects including special request projects from other agencies, or the Governor. Data collection now monitors the progression of this effort.

Effort shall be devoted to clearing projects, activities, grants or contracts that are directly reducing the effectiveness of the WSGS in its role as a service agency to the people of Wyoming. This metric will involve the continual review of every project and grant/contract element within the WSGS analyzing the affect on efficiency of the agency and how they either hinder or advance service to the people of Wyoming.

Effort shall be devoted to the Assessment of Yellowstone Volcano through vigorous collaborative work with state and federal agencies, organizations, business and industry, and individuals for health, safety, and welfare of the people of Wyoming. This metric will establish and monitor the level and success of WSGS involvement in establishing understanding of the Yellowstone Volcano and communication of all information in a timely manner to leadership and the public.

IMPROVING PERFORMANCE

Essential to improved performance is clarity of work. Personnel at the WSGS have begun a workflow protocol that identifies and sets standards for every element of a project from conception through delivery and review of performance.

Additionally, 6-month personnel performances for every employee designed not only to monitor performance but also to aid career skill development is in place and will be measured over time. A system of reporting

These elements alone have increased the production of personnel, lead to better morale, increased new project ideas and more effective teamwork.

Opportunities for personnel to gain advanced training, skill and experience is encouraged and programs that will improve writing skills, communication, safety, leadership, and other essentials of field and office personnel are part of the WSGS operations. A course per semester per employee is now part of the benefits and a policy change is monitoring the course choice for appropriateness to job description.

Additionally, identifying the new needs of the communities, individuals and businesses/industry that we serve is helping bond dedicated Wyoming personnel to those entities and creating a greater sense of essential productivity. Noticeable changes in production, creativity, new ideas and team building are already part of the measures illustrating an upward trend in performance. Only application of data collected in the period of this plan will verify a trend.

Analyzing twice yearly performance reviews and reviews of performance on each deliverable and adding that information into personnel records is the first step to illustrating for the Wyoming Legislature that we have a quantitative methodology to begin incentive pay programs. Performance of contract workers is highly efficient and known programs that could be applied in the agency for incentives for personnel would improve work performance.

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Comment

For many years, State Geologists of Wyoming have identified the Yellowstone Super Volcano as Wyoming's most significant geologic hazard—often adding, it is also the Nation's.

It is easily argued, given the volcano is our #1 geologic hazard, that our first priority is to provide the best science, continually, and the best communication/education system possible, to fulfill the last portion of our Mission; "...helping protect the public from geologic hazards", for, if we little understand or care about its true workings, all else will little matter. The event most captivating to the public and media is the full on Yellowstone explosion. That will be cataclysmic for our civilization, but in between the massive events, geohistory shows us thousands of significant but far less apocalyptic events.

When the lava flows, hydrothermal explosions, small volcanic eruptions, swarms of earthquakes and other events occur in future, our residents and our economy will be impacted, not destroyed. Knowing all we can and preparing is a realistic role for this agency. A recent earthquake swarm below Lake Yellowstone during December 2008-January 2009 caused damage only to a fragile winter economy in the resort towns around the volcano and real fear and angst among families, largely because only sensational academic based press releases were offered up from outside Wyoming. Vigorous new involvement in northwestern Wyoming is a major effort of the Survey and has paid dividends. The press are routinely supplied with useful information. Wyoming has a voice to the press that can counter sensationalism with fact.

Schools, businesses and organizations are taught how to respond to the small events, and how to provide data to the Survey and the USGS as well as understand where data is available so they know the extent and cause of any event. Fear is lessened by knowledge.

County governance is the most public focused and the Survey is building a new level of cooperation and collaboration with county EMS and Planning divisions.

More comforting is to know our mission lists first "... promote the beneficial and environmentally sound use of Wyoming's vast geologic, mineral, and energy resources...".

The challenge is to guide the Survey so that we are prepared, that we not frighten people with hyperbole and speculation, and we provide opportunities for preparedness based on fact. Importantly the Survey must apply its strengths in being at the visionary point of the expansion of the economy of Wyoming. This next strategic cycle will provide the WSGS with new opportunity to focus its myriad skills and regain a productive niche in Wyoming's economy.

However realistic we think we should be, our species history, most recently and long past, illustrates we ignore geologic hazards, large ones particularly, with terrible results in loss of precious lives and our materials.

From our Wyoming homes, to community halls, legislative chambers, and high offices, it is commonly heard, that either nothing will happened in our lifetime, or, it is someone/some other governance's responsibility—or "... it just will not matter anyway".

Of all agencies in Wyoming and state geological surveys on the continent, we must place firmly before us, the responsibility of gathering visionary leadership and practical understanding of probably the single most powerful volcano on the planet and that we are the bulls-eye for massive energy resources.

In 2011, after a decade of consistent pressure and communications by Advisory Board members and Directors, with a cooperative agreement with the United States Geological Survey, we opened the door to the volcano and are now literally and virtually inside the volcano looking out. The historic agreement allowed our personnel team the opportunity to create the official website of all that is Yellowstone Volcano. It now handles existing data and access to live data, photo feeds and information. In an emergency it will disperse official information. Accompanying the digital super website we created W.A.Y., Wyoming's Assessment of Yellowstone, a superior team of agency and collaborative scientists gathering data and planning future studies.

We humans are easily led astray into fear, hysteria, inactivity, misdirection, and wasteful ponderings based on fear of the unknown, so, implementing the full mission statement is the priority of the Wyoming State Geological Survey, to create and vigorously maintain a foundationally realistic strategic plan, measureable, and obtainable.