

WYOMING STATE GEOLOGICAL SURVEY'S PERFORMANCE REPORT FOR FY1996

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.

OUTCOME MEASURES:

I.A.01: The coal, oil and gas, industrial minerals, uranium, and other existing mineral industries in the State will continue to profitably operate and develop properties in Wyoming, as evidenced by stability or growth in their mineral valuation.

TARGET: Collectively, the mineral valuation of these existing industries will remain stable or increase between FY1996 and FY2000.

The baseline for assessing the agency's success or failure in this measure is the total mineral valuation for FY1996 as reported by the Department of Revenue. Future years will be compared against this baseline valuation of \$3,298,317,781.

I.A.02: The economic health of the coal, oil and gas, industrial minerals, uranium, and other existing mineral industries in the State will be supported by the identification and development of additional value-added or alternative uses for their extracted resources or the products derived from them.

TARGET: At least one value-added or alternative use, promoted by the agency, will come to fruition between FY1996 and FY2000.

Strategy I.A.1.02 lists the value-added or alternative uses that the agency promoted in FY1996. None of these came to fruition in FY1996.

GOAL I/OBJ I.A. Cont'd

Strategy I.A.1. Assist companies and other entities both in the recognition and understanding of geologic, chemical, physical, and other variations in coal, oil, gas, industrial minerals, uranium, and other currently developed mineral resources, and in the identification and promotion of value-added or alternative uses for extracted mineral and energy resources and(or) products derived from them.

Output Measures:

I.A.1.01: The number of ongoing or completed field and laboratory studies or special projects related to the geologic, chemical, physical, and other variations of coal, oil, gas, industrial minerals, uranium, and other currently developed mineral resources.

TARGET: Twenty or more of these studies or special projects will be underway or completed between FY1996 and FY2000 (an average of four each fiscal year).

The agency's annual target of four studies or projects was met in FY1996. The four projects, which represent 20% of the agency's overall target, were:

1. Added stratigraphic picks to the Wyoming Subsurface Stratigraphic Database for 2,168 selected oil and gas wells in the Greater Green River Basin.
2. Continued statewide field sampling and analysis of limestone resources.
3. Added stratigraphic and(or) analytical data to the Wyoming Coal Database and the National Coal Resources Database.
4. Organized and hosted the 32nd Annual Forum on the Geology of Industrial Minerals, an international conference.

I.A.1.02: The number of value-added or alternative uses for extracted mineral and energy resources and(or) products that are promoted by the agency.

TARGET: Promote four or more value-added or alternative uses for extracted mineral and energy resources and(or) products each fiscal year.

The agency's target of four or more promoted uses was met. The four uses promoted in FY1996 were:

1. An in-state glass plant that uses soda ash and other raw materials found in Wyoming.
2. The production of lime, sugar rock, and chemical-grade limestone, as well as limestone fines as a construction material.
3. The production of more specialized decorative rock products, such as dimensional limestone, and more types of decorative rock, such as sandstone and marble.
4. The increased use of naturally occurring carbon dioxide gas in enhanced oil recovery, as well as in new industrial applications.

GOAL I/OBJ I.A. Cont'd

Strategy I.A.2. Maintain or improve the accuracy of forecasting future trends, prices, and production in the mineral and energy industries of Wyoming.

Output Measure:

I.A.2.01: Acceptable accuracy in the Consensus Revenue Estimating Group's (CREG's) forecast of mineral revenues to the General Fund.

TARGET: CREG's forecast of mineral revenues to the General Fund will be within 5% of the actual revenues received each year.

The agency's target of 95% or greater accuracy was met. The January CREG estimate of mineral severance tax revenues for FY96 was 2.7% below the revenues actually collected by the Department of Revenue (DOR). This was an accuracy of 97.3%. CREG estimated \$60,000,000. The actual value reported by the DOR was \$61,649,241.

Strategy I.A.3. Enhance and(or) increase the transfer of geologic information or technologies important to existing mineral and energy industries.

Output Measures:

I.A.3.01: The sale of reports and maps prepared by the agency in support of the existing mineral and energy industries in Wyoming.

TARGET: 17,500 copies of the agency's reports and maps that are designed to assist the existing mineral and energy industries will be sold between FY1996 and FY2000 (an average of 3,520 each fiscal year). [This is about 10% more than were sold in the last 5-year period (FY1991-FY1995)].

The agency's annual target of selling 3,520 copies was not met. The 2,681 copies in FY1996 represent 15% of the agency's overall target. The agency's sale of these kinds of publications is tabulated by the Publications Section.

I.A.3.02: The number of inquiries from and informative contacts with the existing mineral and energy industries in Wyoming.

TARGET: Between FY1996 and FY2000, the agency will address or respond to 8,500 contacts from existing mineral and energy industries in Wyoming (an average of 1,700 each fiscal year). [This is about a 15% increase over contacts made in the last 5-year period (FY1991-FY1995)].

The agency's annual target of 1,700 responses was exceeded. The 2,068 responses in FY1996 represent 24% of the agency's overall target. In regard to existing mineral industries, tabulated responses included all of the industry, business, and consultant inquiries documented by the Coal and Oil and Gas Sections. In addition, for simplicity, these kinds of inquiries reported by the State Geologist and the Industrial Minerals and Uranium Section were equally divided between this strategy and Strategy I.B.2.02. In regard to the Geologic Hazards and Geologic Mapping Sections, all "industry" inquiries were divided equally between these same two strategies. Inquiries regarding the forum on industrial minerals, which was organized and hosted by the Geological Survey, contributed to the rather marked increase in inquiries in FY96.

GOAL I Cont'd

OBJECTIVE I.B: Contribute substantially to attracting new geologic-, mineral-, and energy-related industries.

OUTCOME MEASURE:

I.B.01: New geologic and mineral industries will start up in Wyoming.

TARGET: At least one new geologic or mineral industry, promoted by the agency, will be developed before the end of FY2000. [This refers to a new mineral industry, not new companies within existing industries].

Strategy I.B.1.02 lists the mineral resources the agency promoted in FY1996. None of these industries started up in FY1996.

Strategy I.B.1. Focus on promoting exploration, development, and value-added uses of the State's undeveloped and under-developed energy, metallic and nonmetallic, and precious stone resources that offer the greatest potential for development, but not to the exclusion of higher risk ventures where the potential payoff is substantial.

Output Measures:

I.B.1.01: The number of ongoing or completed field and laboratory studies or special projects related to undeveloped or under-developed energy, metallic and nonmetallic, and precious stone resources.

TARGET: Twenty or more of these studies or special projects will be underway or completed between FY1996 and FY2000 (an average of four each fiscal year).

The agency's annual target of four studies or special projects was exceeded. The five projects in FY1996, which represent 25% of the agency's overall target, were:

1. Continued systematic studies of the geology and mineralization of Wyoming's mining districts.
2. Continued geophysical, geochemical, and geologic studies of diamond and diamond-bearing rock occurrences in Wyoming.
3. Continued studies of other gemstone deposits in Wyoming.
4. Continued statewide field sampling of limestone resources.
5. Organized and hosted the 32nd Annual Forum on the Geology of Industrial Minerals, an international conference.

GOAL I/OBJ I.B. Cont'd

I.B.1.02: The number of undeveloped or under-developed geologic, mineral, or energy resources that are being promoted by the agency.

TARGET: Actively promote ten or more undeveloped or under-developed geologic, mineral, or energy resources each fiscal year.

The agency's target of 10 or more promoted resources was exceeded. The 15 promoted in FY96 were (1) Diamond-chromian diopside-pyrope garnet, (2) gold-silver-platinum-palladium, (3) copper-nickel-cobalt, (4) rubies-sapphires, (5) titanium-zirconium-iron-rare earth elements, (6) copper-gold-silver, (7) lapidary minerals and rocks, (8) lead-zinc-molybdenum, (9) garnet as an abrasive, (10) silica sand, (11) asbestos and serpentine, (12) zeolites, (13) feldspar, (14) mineral pigments, and (15) industrial iron.

Strategy I.B.2. Enhance and(or) increase the transfer of geologic information or technologies important to attracting the development of undeveloped or under-developed geologic, mineral, and energy resources.

Output Measures:

I.B.2.01: The sale of reports and maps prepared by the agency in support of attracting the development of undeveloped or under-developed geologic, mineral, and energy resources in Wyoming.

TARGET: 13,750 copies of the agency's reports and maps that are designed to attract undeveloped or under-developed geologic, mineral, or energy industries will be sold between FY1996 and FY2000 (an average of 2,750 each fiscal year). [This is about 10% more than were sold in the last 5-year period (FY1991-FY1995)].

The agency's annual target of 2,750 copies was not met. The 2,559 copies sold in FY1996 represent 18.5% of the agency's overall target. The sale of these kinds of publications is tabulated by the Publications Section.

I.B.2.02: The number of inquiries from and contacts with exploration companies or others looking for undeveloped or under-developed geologic, mineral, and energy resources in Wyoming.

TARGET: Between FY1996 and FY2000, the agency will address or respond to 4,600 contacts from exploration companies, consultants, or others looking for undeveloped or under-developed geologic, mineral, or energy resources (an average of 920 contacts each fiscal year). [This is about a 15% increase over contacts made in the last 5-year period (FY1991-FY1995)].

The agency's annual target of 920 responses was exceeded. The 1,858 responses in FY1996 represent 40% of the agency's overall target. In regard to undeveloped or under-developed mineral industries, tabulated responses included all of the industry, business, and consultant inquiries documented by the Metals and Precious Stones Section. In addition, for simplicity, these kinds of inquiries reported by the State Geologist and the Industrial Minerals and Uranium Section were equally divided between this strategy and Strategy I.A.3.02. In regard to the Geologic Hazards and Geologic Mapping Sections, all "industry" inquiries were divided equally between these same two strategies. The forum on industrial minerals, which was organized and hosted by the Geological Survey, contributed to the rather marked increase in inquiries in FY96.

Goal I Cont'd

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.

OUTCOME MEASURES:

I.C.01: The percentage of times that the agency's information, advice, or concerns about unwise or wasteful uses of the State's geologic, mineral, and energy resources is used and(or) heeded.

TARGET: By FY2000, the agency's information, advice, and concerns about unwise or wasteful uses of the State's geologic, mineral, and energy resources will be used and(or) heeded more frequently than in FY95, but no less than 75% of the time. [This percentage recognizes that there can be other considerations that would outweigh scientific or technical considerations].

This was the baseline year for assessing the agency's future success or failure in this target. In FY96, only nine management or decision documents that it commented on regarding the wise use of geologic, mineral, or energy resources, were resolved. Of these, the agency's concerns were addressed in eight of the nine documents or 89% of the time.

Those documents in which the agency's concerns were addressed or heeded were (1) Stagecoach Draw Gas Pipeline (#93-083) FONSI, (2) Fontenelle Infill Gas Drilling (#91-054) Final EIS, (3) Jackpot Uranium Mine (#93-101) Final EIS, (4) UPRC Greater Wamsutter Gas Drilling (#92-059) Record of Decision, (5) Texaco's Stagecoach Draw Gas Unit (#93-083) Record of Decision, (6) Antelope Coal Lease (#94-013) Final EA, (7) Enron Burley Gas Drilling (#93-073) FONSI, and (8) North American Resources Gas Drilling (#95-094) EA. The one in which the agency's concerns were not adequately addressed was the Express Pipeline (#93-080) Final EIS.

I.C.02: Safe, concurrent development of trona and natural gas in southwestern Wyoming will begin in this decade.

TARGET: The exploration for and production of natural gas from beneath the trona patch will begin in this decade and increase annually. [Currently, there is no drilling for gas beneath the trona beds because of safety concerns].

The agency continued its participation in a joint industry/government project to determine methodologies for the safe concurrent development of these two mineral resources. While there has not yet been any production of natural gas from beneath the trona patch, the test holes were making enough natural gas from above the trona beds that some commercial production of that gas is expected by next fiscal year.

GOAL I./OBJ I.C. Cont'd

Strategy I.C.1. Help develop methodologies and(or) policies that will assure the safe, concurrent development of trona and natural gas in southwestern Wyoming.

Output Measure:

I.C.1.01: Completion of a technical study on methodologies for safe concurrent development of trona and natural gas and the drafting of policy recommendations in regard to concurrent development.

TARGET: The technical report will be completed in FY97 and the draft policies in FY98. [This is a joint industry and government study].

The agency continued its participation in the joint industry/government project, which is studying methodologies for the safe, concurrent development of natural gas from beneath trona beds. The study remains on schedule for completion of a technical report in FY97.

Strategy I.C.2. Evaluate and alert the State to decisions or other actions that could adversely affect the State's mineral interests or its revenues from geologic, mineral, and energy resources.

Output Measure:

I.C.2.01: The percentage of scoping statements, environmental assessments, environmental impact statements, siting applications, management plans, or other documents that the agency evaluates for their effects on the State's mineral interests or its revenues.

TARGET: The agency will review all documents submitted by the Wyoming State Clearing House, Federal agencies, or other Wyoming state and local entities for their effects on the State's mineral interests or its revenues.

The agency's target of reviewing all documents was met. Of the seventy-one documents reviewed, comments were made on 27.

Strategy I.C.3. Assist in preventing waste of oil and(or) natural gas through the State Geologist's participation on the Oil and Gas Conservation Commission.

Output Measure:

I.C.3.01: The percentage of times that the State Geologist is present and voting at Oil and Gas Conservation Commission hearings dealing with alleged waste of oil and(or) gas.

TARGET: The State Geologist will attend and vote on all hearings of this nature.

The agency's target was met. The State Geologist attended all the regular monthly hearings and special meetings of the Oil and Gas Conservation Commission in FY96.

GOAL I/OBJ I.C. Cont'd

Strategy I.C.4. Help protect the public from mineral- and energy-related scams.

Output Measure:

I.C.4.01: The percentage of alleged mineral- or energy-related scams that the agency investigates.

TARGET: The agency will investigate all alleged mineral- and energy-related scams that it identifies or that are brought to its attention. [The agency will also provide expert testimony where warranted].

The agency's target of assisting in the investigation of alleged scams was met. Two alleged scams were brought to its attention in FY1996: the "Ghost Rider" and "Orion" gold properties, near Casper. The agency was or is involved in these investigations.

Strategy I.C.5. Improve protection of the State's paleontologic resources.

Output Measures:

I.C.5.01: The percentage of the State's fossil removal permits that are reviewed and inspected each year.

TARGET: All of the State's fossil removal permits will be reviewed and inspected each year.

The agency's target was not met. Although all seven state-issued removal permits were reviewed, only six of the quarry sites were inspected in FY96. Consequently, only 93% of the planned reviews and inspections were completed in FY96.

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, especially 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.

OUTCOME MEASURES:

II.A.01: The percentage of times that information, advice, or concerns, which the agency provides on the geology or geologic hazards of a project or area, is utilized in planning, siting, preparedness, or mitigation documents.

TARGET: By FY2000, the agency's information, advice, or concerns about geology or geologic hazards will be addressed or incorporated in planning or siting documents more frequently than in FY95, but no less than 75% of the time. [This percentage recognizes that there can be other factors that would outweigh scientific or technical considerations].

This was the baseline year for assessing the agency's future success or failure in this target. In FY96, only ten planning or siting documents that the agency commented on regarding concerns about the geology or geologic hazards, were resolved. Of these, the agency's concerns were addressed in eight of the nine documents or 89% of the time.

Those documents in which the agency's concerns were addressed or heeded were the (1) Indian Trail Unit #1 Well (EA), (2) Twin Lakes Reservoir (#91-018) Final EA, (3) Tie Hack Dam (#93-013) Final EIS, (4) WYOLAND Exchange (#96-047) Draft EA, (5) Fontenelle Gas Infill Drilling (#91-054) Final EIS, (6) Guidance Document for Wyoming's Wellhead Protection Program, (7) Kennecott's Revised Environmental Report and Addendum on Regional Seismicity, and (8) Aquifer Vulnerability to Contamination documents and maps. The agency's concerns were not adequately addressed in the Express Pipeline (#93-080) Final EIS.

GOAL II/OBJ II.A. Cont'd

Strategy II.A.1. Define the geology and geologic hazards in Wyoming and explain the geologic processes and materials that can have or have had an effect on the State's citizenry, property, and natural resources.

Output Measure:

II.A.1.01: The number of new maps and reports completed and made available.

TARGET: Twenty-five new maps and(or) reports will be completed by FY2000 (an average of five new titles each fiscal year).

The agency's annual target of five new titles was met. The five titles in FY1996, which represent 20% of the agency's overall target, were:

1. Preliminary Geologic Map of the Laramie Quadrangle (PGM-95-1)
2. Preliminary Geologic Map of the Red Buttes Quadrangle (PGM-95-2)
3. Geologic Map of the Cheyenne 30'X60' Quadrangle (MS-46)
4. Recommendations Regarding Seismic Design Standards for Uranium Mill Tailings Sites in Wyoming (HR-96-1)
5. Selenium-induced "Blind Staggers" and Related Myths (Veterinary Pathology, v. 33, no. 1)

Strategy II.A.2. Improve seismic monitoring in Wyoming.

Output Measures:

II.A.2.01: Continuation of the existing seismic networks and the establishment of new stations.

TARGET: Maintain an effective seismic network in Jackson Hole and establish two additional National Seismic Network Stations in western Wyoming by FY2000.

The agency's target is to help assure that the Jackson Seismic Network remains in place and to have two new seismic stations in place by FY2000. The Jackson Network remained in place; a new station was put in Yellowstone National Park mostly through efforts of the University of Utah; and the U.S. Air Force and U.S. Geological Survey's site at Boulder, Wyoming, was upgraded. While the agency supported these two actions, it had no active part. However, the agency continued working on funding sources for a new station in the Afton area as well as one in southwestern Wyoming.

GOAL II/OBJ. II.A Cont'd

Strategy II.A.3. Work to incorporate a consideration of geology, geologic hazards, geohydrology, economic geology, and geologic processes in land management, land-use planning, preparedness, and mitigation documents, and in the siting and design of facilities.

Output Measure:

II.A.3.01: The number of committee meetings, workshops, and briefings dealing with land management, land-use planning, preparedness, mitigation, or the siting and design of facilities that the staff actively participates in.

TARGET: Active participation in at least 75 committee meetings, workshops, and briefings between FY1996 and FY2000 (an average of 15 each fiscal year).

The agency's annual target of participating in 15 such activities was met. The 15 in FY1996, which represent 20% of the agency's overall target, were (1) Briefing for Albany County/Laramie City planners; (2) Briefing for Laramie County/Cheyenne City planners; (3) WGIAC Basemap Committee; (4) Annual Workshop Committee, Geologists of Jackson Hole; (5) Technical Review Committee, AML Research Program; (6) Briefing for Nuclear Regulatory Commission and uranium industry; (7) State Work Group on ICI's planned destruction of explosives; (8) Wellhead Protection Advisory Committee; (9) Design Exercise Team, Wyoming Emergency Management Agency; (10) Review Team on the Seismic Evaluation of Schools; (11) Aquifer Vulnerability to Contamination Work Group; (12) Workshop, Wyoming Water Development Association; (13) Representative to Western States Seismic Policy Council; (14) Talk to Wyoming Association of Rural Water Systems; and (15) Talk to Laramie Engineers Club.

Strategy II.A.4. Evaluate and alert the State and others to development activities where there are geologic or topographic aspects that may adversely affect people, property, and natural resources.

Output Measures:

II.A.4.01: The percentage of scoping statements, environmental assessments, environmental impact statements, siting applications, management plans, or other documents that the agency evaluates for any adverse effects they may have on people, property, and natural resources in Wyoming.

TARGET: The agency will review all documents submitted by the Wyoming State Clearinghouse, Federal agencies, or other Wyoming state and local entities for any adverse effects they may have on people, property, or natural resources.

The agency's target of reviewing all documents for these purposes was not met. Of the 71 documents that were submitted, 69 or 97% were reviewed. The two unreviewed documents were the Scoping Notice for the Ferris-Haggarty Mine Reclamation Project and the Scoping Notice for the Ottema Gold Mining Claim. These two were not reviewed because of the short time given for their review.

GOAL II/OBJ. II.A Cont'd

Strategy II.A.5. Enhance and(or) increase the transfer of information and technologies related to geology, geologic hazards, protection of the environment, land management, land-use planning, and the siting and design of facilities.

Output Measures:

II.A.5.01: The number of inquiries or contacts with citizens, government entities, industry, and others looking for information and advice on geology, geologic hazards, or geologic processes in Wyoming.

TARGET: Between FY1996 and FY2000, the agency will address or respond to 9,200 contacts from entities or individuals seeking information on geology, geologic hazards, or geologic processes (an average of 1,840 contacts each fiscal year). [This is about a 15% increase over contacts made in the last 5-year period (FY1991-FY1995)].

The agency's annual target of 1,840 responses was exceeded. The 3,478 responses in FY1996 represent 38% of the agency's overall target. In regard to the effects of geology, geologic hazards, and geologic processes in land-use planning, siting, and health and safety, tabulated responses included all of the inquiries documented by the Geologic Mapping and Geologic Hazards Sections, excluding those from other states and foreign countries as well as from out-of-state universities.

II.A.5.02: The sale and distribution of the agency's geologic reports or maps dealing with areal geology, geologic hazards, geologic processes, or geology in land-use planning and management.

TARGET: Between FY1996 and FY2000, 12,000 copies of these geologic reports and maps will be sold or otherwise distributed upon request (an average of 2,400 copies each fiscal year). [This is about 10% more than were sold or distributed in the last 5-year period (FY1991-FY1995)].

The agency's annual target of 2,400 copies was not met. The 2,313 copies sold or distributed in FY1996 represent 19% of the agency's overall target. This tabulation includes those reports and maps sold by the Publications Section as well as those distributed by the Geologic Hazards Section in response to inquiries.