

December 11, 2014

Ms. Molly Otto
Legislative Librarian
Colorado Legislative Council
Room 029, State Capitol
Denver, CO 80203

Dear Ms. Otto:

Pursuant to §23-41-210 C.R.S., I respectfully submit the following annual report on the Colorado Geological Survey to the Colorado General Assembly.

Please let me know if you have any questions on the report or would like additional information.

Best regards,

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2014 Report to Colorado General Assembly on the Transfer of the Colorado Geological Survey

I. Overview and Update

Colorado School of Mines executed a memorandum of understanding with the Colorado Department of Natural Resources prior to December 31, 2012 pursuant to §23-41-201 C.R.S. As a result the Colorado Geological Survey officially transferred to Colorado School of Mines on January 31, 2013.

The Colorado Geological Survey reports to the Dean of the College of Earth Resource Sciences and Engineering at Mines. This organizational structure allows CGS to collaborate with key departments of Geology & Geological Engineering, Geophysics, and Mining Engineering, which all report to the same college.

Mines purchased a building located at 1801 19th Street in Golden from Jefferson County as the home of the Colorado Geological Survey. This location provides the Survey with a location on the Mines campus, while allowing for easy public access. Karen Berry was appointed as State Geologist and Director of the Survey. She served as Interim Director for the last several years.

During the 2013 flooding disaster, hundreds of debris flows and landslides were triggered along the Front Range. Emergency response surveys done by CGS indicated that buildings, roads, and other infrastructure may be impacted by catastrophic slope failure during or following rainstorms and snowmelt for many years. To help local communities avoid or mitigate hazards, CGS evaluated the susceptibility of several counties to landslides and debris flows using new mapping and modeling techniques.

In 2014, a very large, extremely rapid, landslide occurred in Mesa County killing three local residents. CGS quickly responded to the emergency and helped Mesa County determine if it was safe to conduct immediate rescue and recovery operations. Ongoing potential threats to residents include additional landsliding and flooding. CGS is providing ongoing mapping, monitoring, and hazard evaluation to the county.

II. Functions and Objectives of Colorado Geological Survey

In the executed memorandum of understanding between Colorado School of Mines and the State of Colorado's Department of Natural Resources, the State provided funding, from the Operational Severance Tax Trust Fund, for the following public safety functions:

- Review of schools for geologic hazards
- Review of preliminary development plans for geologic hazards.
- HB1041 Areas/Activities of State Interest – Geologic hazard technical assistance to state and local governments.
- Create Guidelines for land use in natural hazard areas.
- Designate suitable areas for hazardous waste disposal.
- Define and map geological hazards for city/county master plans.
- Determine areas of natural geologic hazards that could affect the safety of or economic loss to the citizens of Colorado.
- Assist and advise state and local governments on geologic problems.

- Collect and preserve geologic information related to geologic hazards.
- Evaluate the physical features of Colorado, related to natural hazards, for human and animal use.
- Prepare, public and distribute reports, maps and bulletins when necessary to meet statutory mission related to land use and geologic hazards.

In addition, the SB13-230 provided funding (General Fund) for the Geological Survey to perform the following functions related to mineral, energy, and water resources:

- Provide technical assistance to state and local governments on mineral and energy resources including geothermal.
- Assist and advise state and local governments on geologic problems related to mineral and energy resources.
- Prepare, publish and distribute reports, maps and bulletins when necessary to meet statutory mission related to mineral and energy resources.
- Provide advice and assistance to the Oil and Gas Conversation Commission as necessary.
- Collect and preserve geologic information related to mineral and energy resources.
- Update maps of commercial mineral deposits.
- Inventory and analyze the State's mineral and energy resources as to quantity, chemical composition, physical properties, location and possible use.
- To conduct scientific studies of how geology affects and controls water resources, especially within Colorado.

It is anticipated that these functions will remain the priority of the Colorado Geological Survey for FY 15-16 pending continued funding levels from the Operational Severance Tax Trust Fund and the General Fund.

However, efforts to provide these statutory functions, at the same service levels prior to the transfer, are limited by budget and staffing constraints. As part of the transfer, overall appropriations from the Operational Severance Tax Trust Fund to CGS were reduced by 42% and STAX appropriations to the mineral, energy, and water resources functions were eliminated.

As noted above, SB13-230 restored some funding to the non-public safety functions but total funding and FTE was reduced by 70%. In FY 2012-13, total appropriations for the mineral resource, ground water and energy functions were \$1,336,333. Of this amount, \$924,121 was from the Operational Severance Tax Trust Fund.

III. Funding

State Funding. For fiscal year 2014-15, \$1,342,243 has been appropriated from the Operational Severance Tax Trust Fund. In addition, \$306,000 has been appropriated from the General Fund.

The support from the General Fund is greatly appreciated. Without this funding, the Colorado Geological Survey would not have sufficient funding to continue to provide services related to mineral, ground water and energy resources listed in Section II of this report.

Major funding sources outside of severance tax or general fund include:

- Colorado Department of Emergency Management
- Colorado Department of Transportation

- Colorado Water Conservation Board
- USGS
- Fees for Services to Local Governments
- US Department of Energy

IV. FTE

14.5 positions are budgeted to fulfill the prioritized functions of the Survey.

V. Collaborations and funding sources

Below is a chart identifying collaborations and partners by functional areas.

Statutory Objective	Partner	Partner	Partner	Partner	Partner
Geologic Hazards					
Review of schools, development plans, and land-use plans for geologic hazards. Provide technical assistance to local governments.	49 cities, towns, counties and school districts	Colorado Department of Emergency Management			
Prepare, publish, and distribute reports, maps and bulletins when necessary to meet statutory mission	United States Geological Survey	Colorado Department of Emergency Management	Colorado School of Mines Geology Department	Mesa County	
Determine areas of natural geologic hazards that could affect the safety of or economic loss to the citizens of Colorado	Colorado Department of Emergency Management, Mesa County	Colorado School of Mines Geology Department	Colorado Department of Transportation	Governor's Office-Colorado Recovery Office	Colorado Water Conservation Board
Mineral and Energy Resources					
Identify areas with commercial mineral deposits	15 different counties				
Promote economic development of mineral and energy resources	United States Geological Survey	American Association of State Geologists	8 cities, towns, counties and school districts		
Prepare, publish, and distribute reports, maps and bulletins when necessary to meet statutory mission	United States Geological Survey	University of Arizona	American Association of State Geologists	Colorado School of Mines Geophysics Department	
Inventory and analyze the state's mineral and energy resources as to quantity, chemical composition, physical properties, and possible use	US Department of Energy	Chaffee, Alamosa, Archuleta, Gunnison, and Clear Creek Counties	Colorado School of Mines Geophysics Department	NASA	University of Arizona
Water Resources					
To conduct scientific studies of how geology affects and controls water resources	Colorado Water Conservation Board	Coalition for the Upper South Platte	Douglas and Park Counties	Office of the State Engineer	United States Geological Survey
Prepare, publish, and distribute reports, maps and bulletins when necessary to meet statutory mission	Colorado Water Conservation Board	Coalition for the Upper South Platte	Douglas and Park Counties	Office of the State Engineer	