THE GEOLOGICAL SOCIETY OF AMERICA®

GSA Position Statement

Adopted November 2003; Revised October 2005;
Revised November 2008; Revised April 2012

The Value of Geologic Mapping

Position Statement. To improve the scientific basis for public and private natural resource, environmental, and land-use decisions, The Geological Society of America (GSA) supports comprehensive geologic mapping on local, state, and national scales and advocates increased public investments for current state and national geologic mapping programs.
Purpose.

Purpose. This position statement (1) summarizes the consensus views of GSA regarding the importance of geological mapping for natural-resource and land-use decision making; (2) encourages partnerships among government, academia, and industry to share mapping expertise and technology; (3) promotes the development of digital data and maps in a readily accessible and useable form; and (4) encourages educational institutions to value and reward the teaching of geologic mapping skills.

RATIONALE

Geologic maps are tools portraying interpretive, three-dimensional views of rock, sediment, and soil units that depict their distribution and age relationships. Geologic maps provide a context for testing scientific theories, hypotheses, and models. They stimulate scientific thinking, questions, and ideas and promote further development of geologic methods and techniques. Geologic mapping at appropriate scales creates a framework within which biologic, climatologic, and other scientific data can be considered in the context of geologic information, yielding increased understanding and encouraging further multidisciplinary scientific investigations. Geologic maps are also valuable teaching tools in earth-science classrooms. The preparation of geologic maps is a fundamental skill unique to the science of geology.

Geologic maps and their subsequent derivative products have immense economic and societal value, and when these maps are current, digital, and Internet accessible, they are particularly useful. They support our ability to locate and develop mineral and water resources; assess and protect groundwater quality; safely site solid and hazardous waste disposal facilities; construct, restore, maintain, and protect sensitive ecosystems; and identify and prepare for such natural hazards as earthquakes, volcanic eruptions, landslides, and land subsidence. Geologic maps can also show how the physical environment has been impacted by human activity. Geologic maps enhance our ability to identify health hazards; to site and build the nation's infrastructure of roads and highways, railroads, pipelines, utilities, dams and locks, buildings, and foundations; and to make more informed land-use and planning decisions. . Geologic maps are fundamental elements for informing the policy decisions of federal, state, and local agencies.

RECOMMENDATIONS

GSA adopts this statement as a reflection of its institutional commitment to the following actions:

- Within the priorities of local, state, and national government, increased programmatic and financial investments are needed to adequately support the development, publication, and use of geologic maps. Increased programmatic emphasis for mapping can be enhanced through developing partnerships among state and federal agencies, educators, and scientists in the public and private sectors. Enhanced overall public investments in the geosciences should include geologic mapping as a critical component. For example, funding for the National Cooperative Geologic Mapping Program should be increased, with outputs expanded to include 3-dimensional

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visualizations. This USGS administered program has been a productive and cost-effective partnership with States and universities to produce geologic maps and train students in geologic mapping.

- It is essential to produce geologic maps and related geologic publications in digital formats so that information can be readily available to planners and decision makers. This should include (1) development of digital protocols for encoding geologic map information and progressive harmonization of map data with mapping standards so that maps and data are compatible; (2) taking advantage of digital technology with geologic mapping and geologic map publication , including publishing digital and scientifically attributed map databases; and (3) optimum Internet accessibility and delivery of geologic map data.

- Teaching geologic mapping skills and methodology is important and deserves the full support and recognition by academic institutions and departments. Geoscientists should engage students in geologic mapping activity to the maximum extent practicable and should strongly support teaching of geologic mapping. They should also support the offering and funding of geologic field mapping courses and other educational initiatives that provide financial resources to equip and engage students in geologic mapping as well as to publish the resulting geologic maps. Academic institutions should fully recognize the scholarship and scientific merit, as well as the economic and societal value, inherent in the development of geologic maps as they evaluate individuals for tenure and promotion.

About The Geological Society of America

The Geological Society of America, founded in 1888, is a scientific society with more than 25,000 members from academia, government, and industry in more than 100 countries. Through its meetings, publications, and programs, GSA enhances the professional growth of its members and promotes the geosciences in the service of humankind. GSA encourages cooperative research among earth, life, planetary, and social scientists, fosters public dialogue on geoscience issues, and supports all levels of earth science education. Inquiries about the GSA or this position statement should be directed to GSA's Director for Geoscience Policy, Kasey S. White, at +1-202-669-0466 or kwhite@geosociety.org.

OPPORTUNITIES FOR GSA AND ITS MEMBERS TO HELP IMPLEMENT RECOMMENDATIONS

To facilitate implementation of the goals of this Position Statement, GSA recommends the following actions:

- We should seek opportunities to communicate the value of geologic mapping to international, national, state, and local legislative bodies and government agencies, private developers, economic development corporations, professional land-use planners, chambers of commerce, and other local decision makers..

- We should seek opportunities to engage representatives of industry, colleges and universities, and public decision–making entities in order to foster financial support for geologic mapping partnerships. If possible, it is beneficial to provide potential industry, academic, and public decision makers with local examples of how geological mapping has contributed vital information to a resource or land-use planning or decision-making effort. We should emphasize how geoscientific information can prevent or lessen the effect of costly, adverse, land-use activities or reduce devastating consequences of natural disasters.

- We should seek opportunities to communicate the value of geologic mapping and science-based approaches to community groups through print, broadcast, and Internet-based media, as well as via professional forums and town hall meetings.. The public must be able to respond in an informed manner to resource and land-use decision making that may directly affect their community and personal health, safety, and welfare. .

- Our discussions should emphasize the value of geoscientific information as decision support for matters such as water and mineral resource evaluations, land-use planning, natural hazard mitigation, and infrastructure protection.

- GSA should provide members with readily accessible print, electronic,, and personnel resources to support geoscientists' communications with decision makers regarding the value of geologic mapping. Considerable expertise and resources are available to members through GSA's Geology and Public Policy Committee, GSA's Geology and Society Division, and GSA's Director for Geoscience Policy in Washington, D.C.

- GSA can raise awareness of the value of geological mapping by publishing geologic maps and associated articles and by encouraging members to propose geologic mapping sessions, workshops, short courses, and field trips at Annual and Sectional GSA meetings.