american geosciences institute
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Prepared Testimony of
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Senate Committee on Energy and Natural Resources
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Chairman Murkowski, Ranking Member Cantwell, and Members of the Committee:

Thank you for the opportunity to provide remarks on behalf of the American Geosciences Institute (AGI) on the role and importance of the U.S. Geological Survey (USGS) to the geoscience community and to the nation. My name is Pat Leahy and I am the Executive Director of the American Geosciences Institute.

AGI is a nonprofit federation of 51 geoscientific and professional associations that represent approximately 250,000 geologists, geophysicists, and other Earth scientists. Our member societies represent the full breadth of the geosciences. Geoscientists study all aspects of the Earth system, including resource exploration and development, environmental geology, and natural hazards, and they work at all levels in industry, academia, government, and K-12 education. Founded in 1948, AGI provides information services to geoscientists, serves as a voice of shared interests in our profession, plays a major role in strengthening geoscience education, and strives to increase public awareness of the vital role the geosciences play in society's use of resources, resilience to natural hazards, and the health of the environment.

The USGS is the premier federal geoscience agency and it is recognized across the world as a leader in geoscience research and data collection. It has unique responsibility within the federal system for understanding the planet on which we live. It is impossible to overstate the importance of understanding the nature and behavior of the Earth, which provides the mineral, water, and energy resources on which life and the economy depend. The Earth also determines the substrate on which all living things exist, and it can threaten lives and infrastructure through natural hazards.

Since its inception in 1879, USGS has provided reliable, impartial, timely, and consistent geoscience information in service to the nation. Federal agencies fill a unique role in collecting, preserving, analyzing, and providing access to information of national importance and extent. USGS has fulfilled this role for the geosciences in the face of severe budget constraints. The data that USGS collects is used not only by governments at the federal, state, and local levels, but also by industry and business, non-governmental organizations, academia, and perhaps most importantly, the general public. USGS data and information underpin decision making and investment in both the public and private sectors.

USGS information is notable for its spatial extent – it covers the nation; for its temporal extent – in long-term collection of such things as stream flow, water quality, and mineral production

information; its high standards of quality control that ensure accurate and reliable information; and its continuity of effort – trends in the Earth system can only be identified through constant and stable monitoring and analysis, and must be based on long-term, consistent, accurate datasets.

USGS strives to be aware of how its information can best serve the nation, whether that be in the arena of national security, economic prosperity, environmental quality, or health and safety, and to ensure that its products meet the greatest needs. Taking water as an example, USGS monitors and critically assesses the quantity, distribution, and quality of the nation's surface water and groundwater resources. To ensure that the information is relevant to end users, USGS must critically assess this information in the context of agriculture, energy, environment, ecosystem, and other uses for water. In a similar way, USGS is the world's leading source of information on earthquake activity. The agency collects fundamental data on earthquakes, but to ensure that these data are useful, accessible, and understandable to the communities that most need the information, USGS has developed products and programs that put earthquake information in a broader context and thus the information is likely to provide much greater societal benefit and return on investment.

USGS is a repository of irreplaceable geoscience information that does not go out of date and cannot be replicated. Its store of more than a century of geoscience records, including field notes and maps, geological samples, drillcore, publications, geochemical and geophysical datasets, topographic and satellite data, is used constantly by academics and businesses large and small. These records are an important part of the geoscience infrastructure and are often of particular interest to the environmental and exploration sectors. Preserving these records and making them publically accessible saves needless expense in duplicating studies and makes historical information available for reinterpretation. The USGS Library serves as the foundational library for the geosciences in the country. Its extensive collections, which are shared through inter-library loans, make the global wealth of geoscience research available to a much wider audience than just USGS personnel. Maintaining the USGS Library and other USGS data repositories is an extremely valuable service to the geoscience community.

USGS's functions have evolved as the needs of the nation have changed and in response to our improved understanding of the complex and interconnected elements of the Earth system. The initial charge to the USGS, as listed in the Organic Act, relates to "classification of the public lands, and examination of the geological structure, mineral resources, and products of the national domain." USGS has primary responsibility for understanding the geological structure of the nation, which includes all facets of the subsurface and the geoscientific aspects of interactions between the Earth and human systems. These discipline-specific tasks are, and should be, at the core of the USGS's geoscience activities. Nevertheless, the solid earth, oceans, and atmosphere are all intimately linked to each other and to human existence and human activities. A firm understanding of each element in this complex system, plus a clear understanding of the interactions between each element, is the cornerstone of informed decision making. USGS must be prepared to address the key issues in its jurisdiction, both from the perspective of the geosciences and also from the perspective of the role of the geosciences in Earth-human interactions.

In 2015, AGI in collaboration with its 51 member societies, published *"Geoscience for America's Critical Needs: Invitation to a National Policy Dialogue,"* which outlines the major geoscience issues facing the nation. This document reflects, to the extent possible, a consensus community view on priorities for the geosciences. I will highlight the important contribution that USGS makes to addressing national priorities identified for just two of the nine major headings in the booklet, Mineral Resources and Natural Hazards, both of which are under the jurisdiction of this Committee.

For Mineral Resources, the main goal is to support a secure supply of minerals and the community identified these priorities (shown in bold):

1. **Assess the nature and distribution of domestic mineral resources.** This is one of USGS's longest established functions, going back to its establishment in 1879, and the Survey continues to study our mineral resources. Just last week, on April 1, USGS announced that it will be carrying out an airborne geophysical survey of part of the Upper Peninsula of Michigan. This investment in providing publicly available information will support informed decision making by industry, regulators, and the public.
2. **Quantify domestic and global supply of, demand for, and flow of minerals.** The USGS National Minerals Information Center is the sole source of this information, which is used widely, including by the Central Intelligence Agency, the U.S. Treasury, the Departments of State, Defense, and Commerce, and the financial, insurance, and investment sectors, in addition to manufacturers and the minerals industry.
3. **Support socially, economically, and environmentally responsible domestic mineral production.** Extensive geochemical, geophysical, and geological studies by USGS provide information that helps to identify prospective areas and the environmental challenges and solutions that may be associated with developing mineral resources.
4. **Foster innovative solutions to lessen the environmental impact of mining and mineral use.** USGS brings unique expertise to full life-cycle studies of mineral products, from exploration to extraction to disposal of the final products, enabling industry and regulators to minimize the impacts of development and disposal.

Under the heading of Natural Hazards, the community identified four priorities:

1. **Encourage basic and applied research to strengthen community resilience.** USGS carries out topographic and geologic mapping and monitoring, undertakes fundamental research, and develops methodologies for assessing a wide range of natural hazards. This research and data collection provides the essential information needed to identify hazards and risk to communities and infrastructure, and to formulate plans to strengthen community resilience. USGS works closely with state agencies, particularly state geological surveys, to compile geological information under the National Cooperative Geologic Mapping Act, and to share specialized expertise with those working closest to the sites of natural hazards.
2. **Prioritize natural hazard monitoring.** Earthquake monitoring is one of USGS's best-known monitoring programs. The National Earthquake Information Center determines the location and size of all significant earthquakes worldwide and immediately shares this information with national and international agencies, scientists, critical facilities, and the public. USGS has many other monitoring programs related to flooding, landslides, volcanic eruptions, and other hazards. First responders, planners, and the public all rely on this information and on USGS analysis and research on natural hazards.

3. **Support communication of the risks and vulnerabilities associated with natural hazards to the public.** The SAFRR (Science Applications for Risk Reductions) Project in the Natural Hazards Mission Area is one example of how USGS is addressing the need to communicate risk. SAFRR focuses on building partnerships to improve the use of USGS natural hazards information and on developing products that meet the needs of users. USGS supports Great ShakeOut Drills throughout the country, which are an effective and popular way to teach people how to react in case of a major earthquake.
4. **Mitigate hazard impacts on people, buildings, and infrastructure.** USGS works with other agencies including the Federal Emergency Management Agency, the National Institute of Standards and Technology, and state and local emergency managers to link scientific understanding of hazards to actions that reduce the potential impact of those hazards.

USGS's critical mass of geoscience expertise, skills, and technical infrastructure makes it the most important geoscience institution in the country. It has a long and well deserved reputation for scientific excellence and the highest standards of data collection and preservation. It is the one federal agency charged with the study of the Earth, its resources, and its complex system. Unfortunately, funding for geoscience activities in USGS has not kept pace with the costs of maintaining its skilled workforce and the laboratory, information technology, and data curation facilities that are essential parts of the nation's research infrastructure.

We are at a point where it is more important than ever to understand the interactions between Earth's natural system and human activities, where land-use decision should be based on sound information, and where the availability and flow of domestic and global mineral, energy, and water resources can have significant effects on national security and prosperity. USGS is a key agency that provides geoscience information that is not duplicated in any other part of the federal government.

On behalf of the geoscience community, I urge you to support the critical work of the USGS and to strengthen its capability to carry out geoscience research, monitoring, data collection, and analysis, and to expand the distribution of its information in formats that meet the needs of the users of USGS information.

Thank you for the opportunity to testify today and I would be pleased to answer any questions you may have.

Please visit the AGI website at www.americangeosciences.org, or contact Maeve Boland, Director of Geoscience Policy, at 703-379-2480, mboland@agiweb.org, if you would like further information.

Geoscience for America's Critical Needs: Invitation to a National Policy Dialogue can be accessed at www.americangeosciences.org/policy/critical-needs.