HOUSE COMMITTEE ON
NATURAL RESOURCES
CHAIRMAN BRUCE WESTERMAN

To:	Subcommittee on Energy and Mineral Resources Republican Members
From:	Subcommittee on Energy and Mineral Resources Staff: Murray Miller (Murray.Miller@mail.house.gov), Ray Phillips (Ray.Phillips@mail.house.gov), Kenna Cline (Kenna.Cline@mail.house.gov), and Jace McNaught (Jace.McNaught@mail.house.gov); x5-9297
Date:	Monday, June 22, 2026
Subject:	Oversight Hearing titled *"Beneath the Surface: Earth MRI and America's Resource Potential"*

The Subcommittee on Energy and Mineral Resources will hold an oversight hearing titled *"Beneath the Surface: Earth MRI and America's Resource Potential"* on **Thursday, June 25, 2026, at 10:00 a.m., in room 1324 Longworth House Office Building**.

Member offices are requested to notify Zach Affeldt (Zach.Affeldt@mail.house.gov) by 4:30 p.m. on Wednesday, June 24, 2026, if their Member intends to participate in the hearing.

I. KEY MESSAGES

- The U.S. Geological Survey's (USGS) Earth Mapping Resources Initiative (Earth MRI) modernizes mapping of America's surface and subsurface resources.[1] Earth MRI collects geologic, geophysical, geochemical, topographic, and related data for, among other uses, identifying resources, hazards, mine waste, and abandoned wells.[2]
- Conceptualized during the first Trump administration, in 2021, Congress authorized the Earth MRI program for five years.[3] The program expires in 2026, and stakeholders have encouraged Congress to consider its reauthorization.
- Minerals, particularly critical minerals, are essential to modern life. House Committee on Natural Resources (Committee) Republicans and the Trump administration recognize the importance of developing America's critical minerals supply chains to ensure national and economic security and industrial competitiveness. Earth MRI plays a key role in that effort by incentivizing private investment in mineral exploration.
- Earth MRI works with state geological surveys, universities, and other public and private organizations for data collection efforts that span field work, laboratory analyses, and remote sensing across the country.
- Geologic mapping is one of the first steps in mineral exploration and discovery, and Earth MRI is poised to make vital contributions to future mineral discoveries.

[1] Linda Rowan, "The USGS Earth Mapping Resources Initiative," Congressional Research Service, December 4, 2025, https://www.crs.gov/Reports/IF13058?source=search&index=0&searchGUID=c4c820e4e4b64f48a5603ba33331490e.
[2] *Id.*
[3] *Id.*

II. WITNESSES

Panel I (Administration Witness)

- **Dr. Colin Williams**, Program Coordinator, Mineral Resources Program, U.S. Geological Survey, U.S. Department of the Interior, Moffett Field, CA

Panel II (Outside Experts)

- **Dr. Nicholas Hayman**, President, Association of American State Geologists, Norman, OK
- **Dr. Graham Lederer**, Principal Scientist, Jataware, Ashburn, VA
- **Mr. Jeff Lovin**, Senior Vice President of Woolpert, MAPPS Board Member, Port Charlotte, FL
- **Dr. Elizabeth Holley**, Professor, Mining Engineering, Colorado School of Mines, Golden, CO *[Minority Witness]*

III. BACKGROUND

Program Overview

The U.S. Geological Survey's (USGS) Earth Mapping Resources Initiative (Earth MRI) is part of the USGS Mineral Resources Program (MRP) that focuses on mapping the nation's surface and subsurface resources.[4] Earth MRI collects geologic, geophysical, geochemical, topographic, and related data for, among other uses, identifying mineral, energy, and groundwater resources and natural hazards.[5] Our understanding of America's resources, including potential critical mineral resources, is underpinned by mapping initiatives like Earth MRI.

Earth MRI was conceptualized during the first Trump administration, in response to Executive Order (E.O.) 13817, "A Federal Strategy to Ensure Secure and Reliable Supplies of Critical Minerals," which instituted a federal policy of identifying new sources of critical minerals and pursuing related actions to reduce the nation's critical mineral vulnerabilities.[6] Subsequently, the U.S. Department of the Interior (DOI) issued Secretarial Order 3359, which highlighted America's reliance on certain mineral commodities and directed USGS to undertake the efforts outlined in E.O. 13817, including identifying new sources of critical minerals and ensuring that domestic miners and producers have electronic access to the most advanced topographic, geologic, and geophysical data.[7] Congress authorized Earth MRI in 2021,[8] requiring "an initial comprehensive national modern surface and subsurface map and data integration by November 15, 2031," and providing $320 million in funding for Earth MRI.[9]

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[4] *Id.*
[5] *Id.*
[6] Executive Order 13817, "A Federal Strategy To Ensure Secure and Reliable Supplies of Critical Minerals," Federal Register, December 20, 2017, https://www.federalregister.gov/documents/2017/12/26/2017-27899/a-federal-strategy-to-ensure-secure-and-reliable-supplies-of-critical-minerals.
[7] Secretarial Order 3359, "Critical Mineral Independence and Security," U.S. Department of the Interior, December 21, 2017, https://www.doi.gov/document-library/secretary-order/so-3359-critical-mineral-independence-and-security.
[8] Pub. L. No. 117-58.
[9] Linda Rowan, "The USGS Earth Mapping Resources Initiative," Congressional Research Service, December 4, 2025, https://www.crs.gov/Reports/IF13058?source=search&index=0&searchGUID=c4c820e4e4b64f48a5603ba33331490e.

Through the Earth MRI program, USGS partners with state geological surveys, federal agencies, private industry, tribes, and universities to achieve the program goals. From 2019 to 2023, Earth MRI partnered with 40 states and territories, tripling the area of the nation covered by high-quality geophysical surveys.[10] During this period, Earth MRI provided $21.5 million in funding to states for geological and geochemical mapping and spent $129 million on data acquisition.[11] Additionally, Earth MRI has developed a national map of areas with critical mineral potential to prioritize the discovery of critical mineral resources.[12]

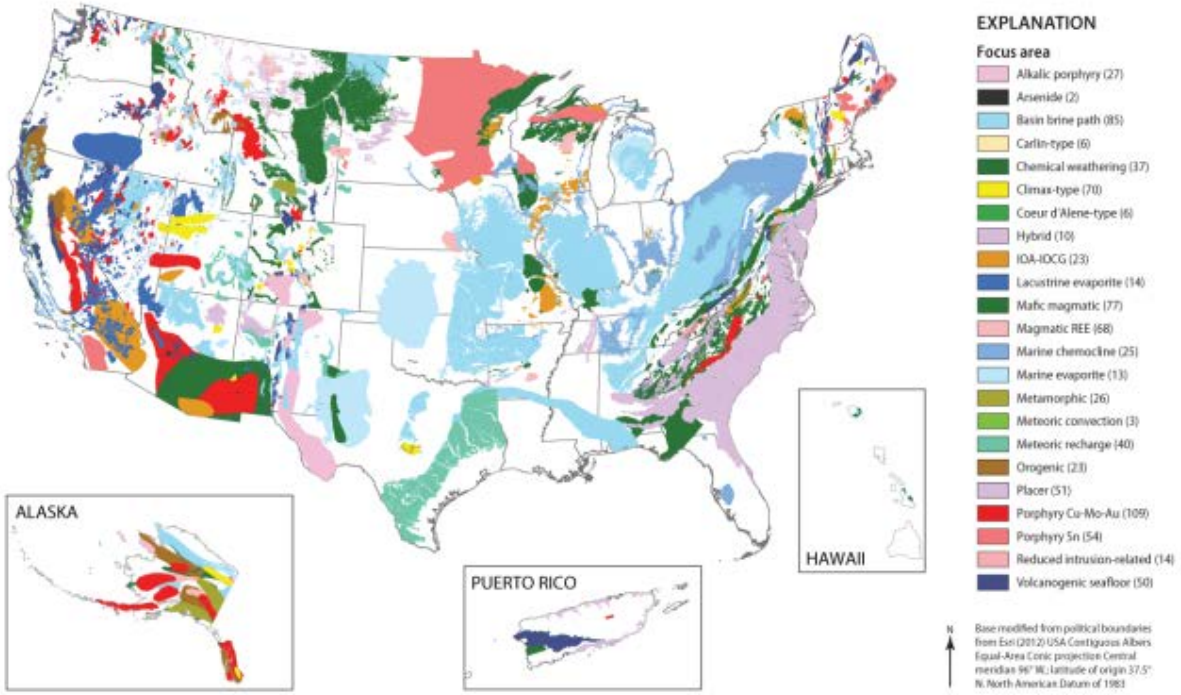

Figure 1: National Map of Focus Areas for Potential Critical Mineral Resources. Source: USGS, 2023.

USGS utilizes cooperative agreements, a type of federal award, to distribute Earth MRI funding to state geological surveys for geological mapping, geochemical mapping, and mine waste inventories. These agreements are distinct from grants, as USGS serves as an active partner during the projects, instead of simply awarding funding. As of June 2024, USGS had awarded 51 cooperative agreements, totaling over $24 million in funding, for FYs 2022 and 2023.[13] In addition to cooperative agreements, USGS contracts with private-sector contractors to conduct geophysical surveys in all 50 states.[14]

[10] "Earth MRI First Five Years Accomplishments," U.S. Geological Survey, July 2024, https://www.usgs.gov/media/images/earth-mri-first-five-years-accomplishments.
[11] *Id.*
[12] Jane Hammarstrom, et al., "National Map of Focus Areas for Potential Critical Mineral Resources in the United States," U.S. Geological Survey, February 2023, https://pubs.usgs.gov/publication/fs20233007.
[13] "Audit: USGS Can Improve Oversight and Substantial Involvement for IIJA Earth Mapping Resources Initiative Agreements," Office of Inspector General, U.S. Department of the Interior, March 2026, https://www.doioig.gov/sites/default/files/2021-migration/USGS-Can-Improve-Oversight-and-Substantial-Involvement-for-IIJA-Earth-Mapping-Resources-Initiative-Agreements.pdf.
[14] *Id.*

In authorizing Earth MRI, Congress mandated that Earth MRI integrate data from other USGS programs, such as the Mineral Deposit Database, the National Cooperative Geologic Mapping Program (NCGMP), the National Geological and Geophysical Data Preservation Program (NGGDPP), and the 3D Elevation Program (3DEP).[15]

Notably, Congress directed USGS to make the geospatial data and metadata collected and integrated by Earth MRI "electronically publicly accessible."[16] This means that private-sector geologists and mining companies can use Earth MRI data to identify favorable targets where mineral deposits may be located, thereby informing their mineral exploration efforts. Additionally, the public availability of this data helps to stimulate private-sector investment in exploration.

The Importance of Mapping

Earth MRI utilizes "modern and emerging technology to collect high-resolution data over small-to-large areas" to create maps of energy, mineral, and water resources, hazards, mine waste, and abandoned wells, as well as other natural or anthropogenic geological features.[17] The kind of mapping done by Earth MRI is somewhat analogous to doctors conducting an MRI (magnetic resonance imaging) at a hospital: magnetic (and other) data is gathered to create a detailed, three-dimensional (3D) image of the subject that is not otherwise visible to the human eye.[18] For Earth MRI, the data reveals hidden structures and subsurface resources that are not visible from the surface.[19] Accessing the maps generated from this data is critical for accurate mineral exploration planning and responsible resource development.[20] Although undiscovered deposits of critical minerals are spread across the U.S., mineral exploration is often hampered by the lack of modern geological, geophysical, and topographic data.[21]

The data collected by Earth MRI identify how rocks and minerals form, their geochemical composition, geophysical properties, and geologic structure.[22] This data and the maps derived from it are valuable assets in the exploration and evaluation stages of mineral production.[23] Exploration and evaluation —the first phase of a mining project—is a lengthy and complex process that takes an average of two to ten years to complete.[24] Exploration and evaluation include locating potential deposits, early-stage prospecting, surface exploration, core drilling, resource modeling, de-risking, and production decisions. These processes become much more efficient with access to thorough datasets, which, in turn, reduces the timelines and capital

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[15] Pub. L. No. 117-58.
[16] *Id.*
[17] Linda Rowan, "The USGS Earth Mapping Resources Initiative," Congressional Research Service, December 4, 2025, https://www.crs.gov/Reports/IF13058?source=search&index=0&searchGUID=c4c820e4e4b64f48a5603ba33331490e.
[18] June Breneman, "Geologic mapping below the surface," Natural Resources Research Institute, University of Minnesota, December 1, 2023, https://nrri.umn.edu/news/earth-mri.
[19] *Id.*
[20] "The Earth Mapping Resources Initiative (Earth MRI): Mapping the Nation's Critical Mineral Resources," U.S. Geological Survey, September 2019, https://pubs.usgs.gov/fs/2019/3007/fs20193007.pdf.
[21] *Id.*
[22] Linda Rowan, "The USGS Earth Mapping Resources Initiative," Congressional Research Service, December 4, 2025, https://www.crs.gov/Reports/IF13058?source=search&index=0&searchGUID=c4c820e4e4b64f48a5603ba33331490e.
[23] "Why is Earth MRI Needed?," U.S. Geological Survey, June 19, 2019, https://www.usgs.gov/special-topics/earth-mri/science/why-earth-mri-needed.
[24] "Examining the Mining Industry Value Chain," SAP SE, https://learning.sap.com/courses/introducing-the-mining-industry/examining-the-mining-industry-value-chain.

expenditure needed for projects.[25] This data (often labeled as precompetitive data) is utilized to derisk exploration.[26]

The data obtained through Earth MRI furthers understanding of U.S. resource assets and their economic viability, while also locating previously undiscovered lode deposits that could open opportunities for the development of new mining projects.[27] In addition, Earth MRI provides valuable, necessary data for the responsible management and development of our surface, subsurface, and mineral estate. Secretary Burgum often discusses "America's Balance Sheet," stating that "Our natural resources are national assets that should be responsibly developed to grow our economy and generate revenue for American taxpayers."[28] Earth MRI strengthens our nation's balance sheet by improving our understanding of our own mineral resources.

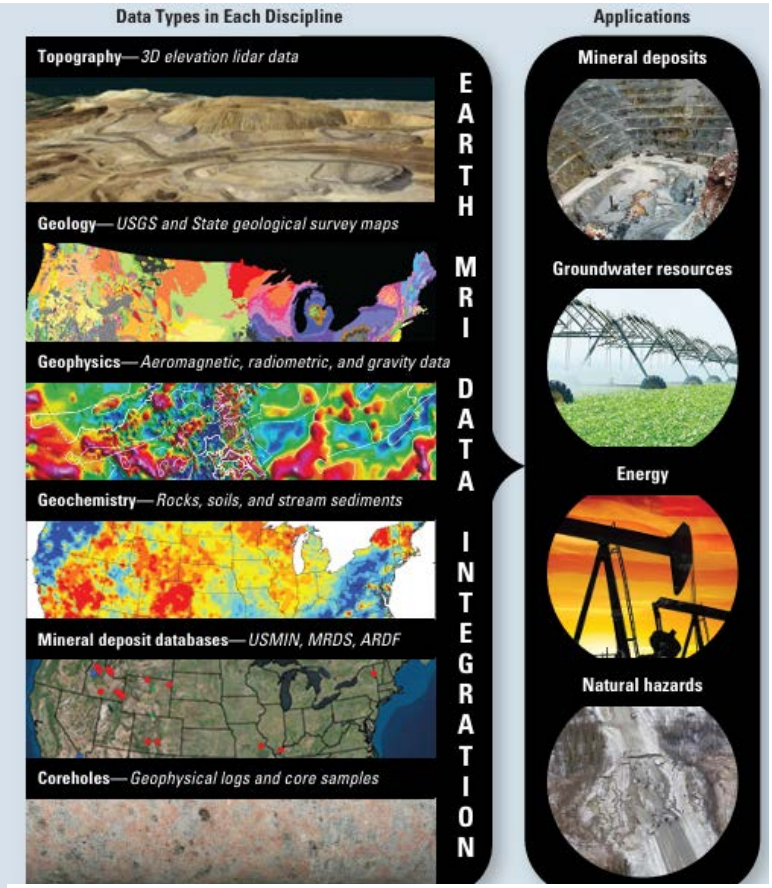

Figure 2. Planned applications for data acquired during Earth MRI. Source: USGS, 2019.

The same geologic and geophysical information used to map energy and mineral resources also reveals much about aquifers, groundwater flow paths, and water's interaction with rock formations.[29] Earth MRI differs significantly from previous mapping programs by going beyond describing the Earth's surface to characterizing the 3D volume from which mineral resources can be produced.[30] Mineral potential has historically been identified by surface signatures, such as from geological mapping or geochemical characteristics of outcrops of soil.[31] The datasets obtained from Earth MRI are published on a rolling basis and support a wide range of activities outside of just mineral exploration.[32] These include, but are not limited to, the following:

[25] Brian Goss, "8 Steps of Mineral Exploration," Rangefront Mining Services, March 9, 2022, https://rangefront.com/blog/8-steps-mineral-exploration/.
[26] Simon Jowitt & Travis D. Fisher, "Nevada Precompetitive Data Survey 2025," Nevada Bureau of Mines and Geology, 2025, https://pubs.nbmg.unr.edu/Nevada-Precompetitive-Data-Survey-2025-p/pds-2025.htm.
[27] *Id.*
[28] Secretary of the Interior Doug Burgum, Written Testimony before the Subcommittee on Energy and Mineral Resources, May 13, 2026, 20260513-doi-fy27-budget-hnr-burgum.pdf.
[29] Linda Rowan, "The USGS Earth Mapping Resources Initiative," Congressional Research Service, December 4, 2025, https://www.crs.gov/Reports/IF13058?source=search&index=0&searchGUID=c4c820e4e4b64f48a5603ba33331490e.
[30] "Meeting Future U.S. Mineral Resource Needs: The Role of the U.S. Geological Survey Mineral Resources Program," National Academies Press, 2025, https://www.nationalacademies.org/read/29068/chapter/6#37.
[31] *Id.*
[32] *Id.*

studying water resources, identifying sand and gravel deposits for infrastructure development, locating geothermal reservoirs, mapping natural hazards, and planning the development of energy infrastructure (specifically, pipelines and buried transmission lines).[33]

Earth MRI Success Stories and Impacts

The following examples illustrate the many ways in which Earth MRI users rely on its data for mineral exploration, research, economic development, and other important functions:

- In partnership with Virginia Energy, Earth MRI is creating maps that will stimulate exploration of domestic mineral resources that are crucial to economic and national security.[34] Additionally, Earth MRI data supports exploration of feedstock for an existing heavy mineral processing facility, which is directly linked to current industry needs.[35]
- Earth MRI is providing valuable new information about a historic powerhouse of iron production. In partnership with the Minnesota Geological Survey, the University of Minnesota, and the Minnesota Department of Natural Resources, Earth MRI has collected airborne magnetic and radiometric data over the Cuyuna Iron Range, which has historically been mined for iron and manganese. These data will also reveal whether the area may also contain key critical minerals.[36]
- Across Alaska's vast, remote, and rugged landscape, Earth MRI has used advanced technology to fill in gaps in geologic knowledge, equipping the state with necessary tools like comprehensive geophysical, geochemical, and mapping data for land use, infrastructure, and mineral exploration. In the Yukon-Tanana Uplands Region, over 27,000 square miles of new airborne magnetic and radiometric data were collected to support critical mineral exploration.[37]
- In Idaho, Earth MRI data aids in identifying active fault lines and landslide risks, improving natural hazard awareness and preparedness. Additionally, data supports locating critical minerals in the state's cobalt belt, which are vital for modern technology manufacturing.[38]
- In Montana, Earth MRI is working with the Montana Bureau of Mines and Geology to make historic mining data digital and accessible.[39] This has been a common theme across the program, with Earth MRI funds helping revitalize state geological surveys throughout the country.
- The Nevada Bureau of Mines and Geology is analyzing the Rhyolite Ridge/Clayton Valley lithium focus area to better understand the link between lithium enrichment and basin formation, faulting, and volcanism. This research will provide a valuable analysis

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[33] *Id.*
[34] "Earth MRI," Virginia Department of Energy, https://energy.virginia.gov/geology/EarthMRI.shtml.
[35] Association of State Geological Surveys, "National Impacts of State Geological Surveys through Federal Geoscience Partnerships," 2026.
[36] "Earth MRI: in the Midwest and Great Plains," U.S. Geological Survey, March 2025, https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/s3fs-public/media/files/EarthMRI_MidwestandGreatPlains_Handout_1.pdf.
[37] "Earth MRI: Building a stronger and smarter Alaska with high-quality geological data," U.S. Geological Survey, March 11, 2026, https://www.usgs.gov/media/videos/earth-mri-building-a-stronger-and-smarter-alaska-high-quality-geological-data.
[38] "Earth MRI: Revealing critical resources across the western United States," U.S. Geological Survey, April 21, 2026, https://www.usgs.gov/media/videos/earth-mri-revealing-critical-resources-across-western-united-states.
[39] "Earth MRI: in the Rocky Mountains and Northwest," U.S. Geological Survey, March 2025, https://d9-wret.s3.us-west-2.amazonaws.com/assets/palladium/production/s3fs-public/media/files/EarthMRI_RockyMountainandNorthwest_Handout_2.pdf.

of the region and possibly lead to the identification of undiscovered sediment-hosted lithium resources. Importantly, this research methodology can be applied to other U.S. regions.[40]

- Earth MRI is helping to develop the first-ever National Mine Waste Inventory. The inventory will help identify mine waste that could contain critical minerals and track mine waste remediation.[41]

Executive and Legislative Actions

From day one of his second term, President Trump has acted swiftly to unleash domestic resources and shore up key supply chain vulnerabilities. On January 20, 2025, the President signed E.O. 14154, "Unleashing American Energy," which directs federal agencies to revise and rescind actions that impose undue burdens on domestic mining and instructs the Secretary of the Interior to accelerate ongoing geologic mapping efforts.[42] Section 9 of this E.O., "Restoring America's Mineral Dominance," directs the USGS to accelerate geologic mapping, with a "focus on locating previously unknown critical minerals."[43] President Trump's FY 2026 budget request similarly orders the USGS to "focus on achieving dominance in energy and critical minerals."[44]

In February 2025, Secretary of the Interior Doug Burgum notably remarked, "So we're going to map, baby, map. And then we're also going to mine, baby, mine."[45] This emphasizes DOI's focus on spurring the development of American energy, securing supply chains that are currently susceptible to foreign suppliers, and shrinking the national debt. It also highlights that to effectively "mine, baby, mine," we must first "map, baby, map." Earth MRI is critical to achieving U.S. energy dominance.

On March 20, 2025, President Trump issued E.O. 14241, "Immediate Measures to Increase Mineral Production."[46] This directive further supports domestic mining by requiring federal agencies to prioritize mineral development and related activities on suitable federal lands, including land known to hold valuable deposits and reserves.[47] E.O. 14241 also directs agencies to identify and expedite priority mineral production projects "that can be immediately approved or for which permits can be immediately issued."[48] In response to these directives, DOI has moved expeditiously to bring new production online by streamlining mine permitting and issuing approvals for key projects.

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[40] "Earth Mapping Resources Initiative (Earth MRI)," Nevada Bureau of Mines and Geology, University of Nevada, Reno, https://nbmg.unr.edu/Maps&Data/EarthMRI.html.
[41] "Earth MRI in Action," U.S. Geological Survey, October 31, 2024, https://www.usgs.gov/special-topics/earth-mri/science/earth-mri-action#overview.
[42] Executive Order 14154, "Unleashing American Energy," The White House, January 20, 2025, https://www.whitehouse.gov/presidential-actions/2025/01/unleashing-american-energy/.
[43] *Id.*
[44] "FY 2026 Presidential Budget Request," The White House, May 2, 2025, https://www.whitehouse.gov/wp-content/uploads/2025/05/Fiscal-Year-2026-Discretionary-Budget-Request.pdf#page=32.
[45] Jennifer Dlouhy, "Trump's Energy Czar Has Plan to 'Map, Baby, Map' US Oil Bounty," EnergyNow Media, February 26, 2025, https://energynow.com/2025/02/trumps-energy-czar-has-plan-to-map-baby-map-us-oil-bounty/.
[46] Executive Order 14241, "Immediate Measures to Increase American Mineral Production," The White House, March 20, 2025, https://www.whitehouse.gov/presidential-actions/2025/03/immediate-measures-to-increase-american-mineral-production/.
[47] *Id.*
[48] *Id.*

Additionally, on April 15, 2025, President Trump signed E.O. 14272, "Ensuring National Security and Economic Resilience Through Section 232 Actions on Processed Critical Minerals and Derivative Products."[49] This E.O. directs the Secretary of Commerce to investigate the economic and national security impacts of importing processed critical minerals, including by estimating the dollar value of processed imports.[50]

The Earth MRI program sets the foundation for America's domestic mining efforts. This program works in tandem with the bills listed below to increase U.S. mining. In furtherance of President Trump's agenda, Committee Republicans have advanced critical legislative reforms in the 119th Congress to cut red tape and expand access to domestic mineral resources. These include the following measures:

- H.R. 4090, the "Critical Mineral Dominance Act," introduced by Representative Pete Stauber (R-MN-08), codifies provisions of three of President Trump's E.O.s by directing DOI to revise or rescind agency actions that inhibit domestic mining, identify and expedite the permitting of existing mines on public lands, identify public lands with mineral potential, increase geological mapping on public lands, and submit a report to Congress detailing the barriers to U.S. mining along with recommended changes to law.[51]
- H.R. 4776, the "Standardizing Permitting and Expediting Economic Development (SPEED) Act," introduced by Chairman Bruce Westerman (R-AR-04) and Representative Jared Golden (D-ME-02), modernizes the National Environmental Policy Act of 1969 to reduce lengthy permitting timelines and frivolous litigation.
- H.J. Res 140, a Congressional Review Act resolution introduced by Representative Pete Stauber (R-MN-08), permanently rescinds the Biden administration's irresponsible withdrawal of over 225,000 acres of federal land in Minnesota's Superior National Forest, which hosts 34 percent of America's total copper reserves.[52]
- H.R. 1366, the "Mining Regulatory Clarity Act," introduced by Representative Mark Amodei (R-NV-02), restores regulatory certainty for ancillary operations vital to copper mining, which were threatened by the Ninth Circuit's misguided "Rosemont Decision" in 2022. The bill also creates an "Abandoned Hardrock Mine Fund" to support the reclamation program by using claim maintenance fees to inventory, assess, and remediate abandoned hardrock mine lands.[53]
- H.R. 1501, the "Protecting Domestic Mining Act of 2025," introduced by Representative Jefferson Shreve (R-IN-06), codifies mining and mineral processing as covered sectors under the Fixing America's Surface Transportation (FAST) Act. The bill also prohibits implementation of a Biden-era proposed rule that would have narrowed FAST-41 coverage for mining projects, severely impeding domestic mineral investment and resource independence.[54]

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[49] Executive Order 14272, "Ensuring National Security and Economic Resilience Through Section 232 Actions on Processed Critical Minerals and Derivative Products," The White House, April 15, 2025, https://www.whitehouse.gov/presidential-actions/2025/04/ensuring-national-security-and-economic-resilience-through-section-232-actions-on-processed-critical-minerals-and-derivative-products/.
[50] *Id.*
[51] *Id.*
[52] "Press Release: House Votes to Unleash American Mineral Wealth," House Natural Resources Committee, January 21, 2026, https://naturalresources.house.gov/news/documentsingle.aspx?DocumentID=418567.
[53] "Press Release: Legislation to Unleash American Mineral Resources Passes House," House Natural Resources Committee, December 18, 2025, https://naturalresources.house.gov/news/documentsingle.aspx?DocumentID=418525.
[54] "Press Release: Committee Advances Legislation to Unleash Resources, Suppress Illegal Fishing and Protect Battlefields," House Natural Resources Committee, April 21, 2026, https://naturalresources.house.gov/news/documentsingle.aspx?DocumentID=418714.