



December 8, 2021

Draft List of Critical Minerals, MS-102  
U.S. Geological Survey  
12201 Sunrise Valley Drive  
Reston, VA 20192

Re: 2021 Draft List of Critical Minerals (GX22GS00EMMA900)

Dear Mr. Applegate,

Thank you for the opportunity to review and provide comments on the 2021 Draft List of Critical Minerals (CML) and associated Methodology Report (Federal Register, Vol. 86, No. 214, 62199-62203). The following comments represent the consolidated comments of the State of Alaska Department of Natural Resources (the State). As described more fully below, the State requests that the United States Geological Survey (USGS) re-evaluate the CML listing determinations using current available data from 2019, 2020, and 2021 prior to finalizing the CML. The State also specifically requests that the United States Geological Survey (USGS) reconsider the listing of copper and other minerals included on the Canadian Critical Minerals List to ensure the success of the agreement between the United States (U.S.) and Canada to improve the future competitiveness of mineral industries in both the U.S. and Canada and improve critical mineral security for both countries.

Pursuant to the Energy Act of 2020, “critical minerals” are defined as “the minerals, elements, substances, or materials that “(i) are essential to the economic or national security of the United States; (ii) the supply chain of which is vulnerable to disruptions (including restrictions associated with foreign political risk, abrupt demand growth, military conflict, violent unrest, anti-competitive or protectionist behaviors, and other risks throughout the supply chain); and (iii) serve an essential function in the manufacturing of a product (including energy technology-, defense-, currency-, agriculture-, consumer electronics-, and healthcare-related applications), the absence of which would have significant consequences for the economic or national security of the United States.”<sup>1</sup>

The 2021 Methodology Report states that the Report “documents the updated evaluation methodology” used to establish the draft list of minerals recommended for inclusion in the CML. The updated evaluation methodology is described as an “enhancement of the methodology used to develop the initial CML.” This description is misleading because the analyses undertaken in 2021 appear to have evaluated the same data that was examined in 2018, but with a different methodology and failed to consider more current commodity data from 2019 through 2021. It is

---

<sup>1</sup> Energy Act of 2020. Public Law 116-260, section 7002(c)(4)(A).

perplexing that, despite the availability of USGS Mineral Commodity Summaries for 2019,<sup>2</sup> 2020,<sup>3</sup> and 2021<sup>4</sup> before the draft CML and Methodology Report were published, this information was not used in the analyses completed to make listing determinations. The failure to use the most current data available is problematic because the results of the analyses used to make listing determinations are outmoded and do not accurately represent the present-day supply risk of each mineral commodity.

According to the 2021 Methodology Report, the 2021 CML listing determinations were based on the quantitative assessment “for each commodity for 2007 through 2018.”<sup>5</sup> Our review finds that, the 2018 Methodology Report<sup>6</sup> was mainly based on commodity data from 2016 through 2018. We question why data from 2016 through 2018 was used to develop the 2018 CML while data from 2007 through 2018 was used for the 2021 draft CML. This approach of using differing time intervals seems inconsistent and potentially could skew the results of the analyses.

The Methodology Report defines supply risk as “the confluence of the following three factors: the likelihood of a foreign supply disruption, the dependency of the U.S. manufacturing sector on foreign supplies, and the vulnerability of the U.S. manufacturing sector to a supply disruption.” The disruption potential, trade exposure, and economic vulnerability (to supply disruption) of each mineral commodity were quantitatively calculated to determine the supply risk of each mineral commodity. Each supply risk component was weighted and any mineral commodity with a supply risk recency-weighted mean of less than 0.40 was not included on the CML. While this analysis adequately evaluates mineral commodities from a data standpoint, it fails to consider the importance (or criticality) of mineral commodities from a policy standpoint.

Overall, the State was pleased to see the addition of zinc and nickel to the CML but questions the exclusion of several other mineral commodities.

According to the USGS 2021 Mineral Commodities Summaries, zinc mining in the United States produced 670,000 tons of zinc in 2020, making the U.S. the fifth largest zinc producer in the world.<sup>7</sup> In 2020, the Red Dog Mine in northwest Alaska produced 490,700 tons of zinc which amounts to approximately 73% of the zinc produced in the U.S. and 4.1% of the zinc produced in the world.<sup>8</sup> Despite significant domestic zinc production, the U.S. imported approximately 83%

---

<sup>2</sup> U.S. Geological Survey. 2019. *Mineral Commodity Summaries 2019*. Accessed December 1, 2021. <https://doi.org/10.3133/70202434>.

<sup>3</sup> U.S. Geological Survey. 2020. *Mineral Commodity Summaries 2020*. Accessed December 1, 2021. <https://doi.org/10.3133/mcs2020>.

<sup>4</sup> U.S. Geological Survey. 2021. *Mineral Commodity Summaries 2021*. Accessed December 1, 2021. <https://doi.org/10.3133/mcs2021>.

<sup>5</sup> Nassar, N.T., and Fortier, S.M. 2021. *Methodology and technical input for the 2021 review and revision of the U.S. Critical Minerals List: U.S. Geological Survey Open-File Report 2021–1045*. Accessed December 1, 2021. <https://doi.org/10.3133/ofr20211045>.

<sup>6</sup> Fortier, S.M., Nassar, N.T., Lederer, G.W., Brainard, Jamie, Gambogi, Joseph, and McCullough, E.A. 2018. *Draft critical mineral list—Summary of methodology and background information—U.S. Geological Survey technical input document in response to Secretarial Order No. 3359: U.S. Geological Survey Open-File Report 2018–1021*. Accessed December 1, 2021. <https://doi.org/10.3133/ofr20181021>.

<sup>7</sup> U.S. Geological Survey 2021, 190.

<sup>8</sup> Teck Resources. 2020. “2020 Annual Report.” Accessed December 1, 2021. <https://www.teck.com/media/2020-Annual-Report.pdf>.

of the zinc consumed domestically in 2020.<sup>9</sup> Due to the high import dependence and increased supply risk of zinc resulting from the concentrated supply of zinc in China, zinc is a welcomed addition to the CML.

According to the definition in the Energy Act of 2020, critical minerals “serve an essential function in the manufacturing of a product (including energy technology-, defense-, currency-, agriculture-, consumer electronics-, and healthcare-related applications).”<sup>10</sup> The State is concerned that, for the second time, copper was not recommended for inclusion on the CML. Copper is an essential component of many aspects of modern society including electronics, building materials, green energy infrastructure, industrial machinery and equipment, and healthcare products.

As the world continues to transition away from fossil fuels and utilize more green technologies, critical minerals are becoming more important, and demand is increasing dramatically. One of the most popular uses for critical minerals, such as nickel and copper, is for electric vehicles. According to the International Energy Agency, if the electric vehicle market continues growing at the rate it has been, there will be an estimated 145 million to 230 million electric vehicles on roads around the world by 2030.<sup>11</sup> If this estimate holds true, an estimated 26.5 billion pounds (1.2 million metric tons) to 42.1 billion pounds (1.9 million metric tons) of copper will be needed.

Although based on the USGS’s analysis and from a historical perspective copper has a low disruption potential and low trade exposure and falls below the 0.40 recency-weighted mean requirement used to justify inclusion on the CML, copper should be re-evaluated for listing because it has a consistently high economic vulnerability score. As emphasized in the 2021 Methodology Report, high economic vulnerability scores indicate a persistent reliance on foreign import and increased susceptibility to supply disruptions. The supply risk for copper has grown steadily throughout the research period, which as mentioned previously, does not include the latest three years – arguably the highest period of demand. This is concerning because commodities with high supply risk are less flexible and more susceptible to supply disruptions. Exposing the US to needless supply risk is not prudent, especially considering Alaska hosts the world’s largest undeveloped porphyry copper deposit, which can be responsibly developed as a primary commodity rather than byproduct.

Considering the high economic vulnerability of copper and the USGS’s use of commodity data from 2007 through 2018, we recommend that the USGS conduct a thorough quantitative and qualitative analysis using available data from 2019, 2020, and 2021 to re-evaluate the listing determinations before the CML is finalized. If such an analysis cannot be completed before the CML is finalized, we recommend that the USGS re-evaluate copper’s listing during interagency processes using the available data from 2019 through 2021.

---

<sup>9</sup> Home, Andy. 2021. “Column: United States adds nickel, zinc to critical minerals list.” Reuters, November 15. Accessed December 2, 2021. <https://www.reuters.com/business/energy/united-states-adds-nickel-zinc-critical-minerals-list-andy-home-2021-11-15/#:~:text=Out%20of%20the%20major%20industrial,mining%2C%20smelting%20and%20recycling%20industry.>

<sup>10</sup> Energy Act of 2020. Public Law 116-260, section 7002(c)(4)(A).

<sup>11</sup> International Energy Agency. 2021. “Global Electric Vehicle Outlook 2021 Overview.” Accessed December 1, 2021. [https://www.iea.org/reports/global-ev-outlook-2021?mode=overview.](https://www.iea.org/reports/global-ev-outlook-2021?mode=overview)

In January 2020, the United States and Canada finalized a Joint Action Plan on Critical Minerals Collaboration in order to mutually improve critical mineral security and ensure the future competitiveness of Canadian and U.S. minerals industries. According to a January 9, 2020 News Release from the Government of Canada, the Joint Action Plan “will guide cooperation in areas such as industry engagement; efforts to secure critical minerals supply chains for strategic industries and defense; improving information sharing on mineral resources and potential; and cooperation in multilateral fora and with other countries” and “will promote joint initiative, including research and development cooperation, supply chain modelling and increased support for industry.”<sup>12</sup>

Like the U.S., Canada has also developed a Critical Minerals List. The updated Canadian CML, released in March 2021, includes 31 mineral commodities,<sup>13</sup> many of which are also included on the U.S. CML. The most notable differences between the two CMLs, is the exclusion of copper, molybdenum, helium, cesium, and uranium from the U.S. CML. The U.S. CML also excludes a number of the minerals lumped together as “rare earth elements” on the Canadian CML. The exclusion of certain minerals, especially copper, is both concerning and counterproductive considering the joint critical minerals agreement between the U.S. and Canada. In order to ensure the success of the Joint Action Plan, both countries must be in agreement on which minerals are critical and which are not.

Considering the ever-increasing global importance of critical minerals and the Joint Action Plan between the U.S. and Canada, we request that the USGS re-evaluate the listing determinations using current available data from 2019, 2020, and 2021 before the CML is finalized. Furthermore, as part of this re-evaluation, we respectfully request that the USGS reconsider the listing of copper and other minerals included on the Canadian CML but excluded from the U.S. CML to ensure consistency between the two lists and promote the success of the U.S.-Canada Joint Action Plan.

Finally, while not directly within the scope of the USGS’s responsibilities in developing the CML, the agency should acknowledge the connection between the “dependency of the U.S. manufacturing sector on foreign supplies”<sup>14</sup> – one of the three main factors of supply risk – is directly related to the inefficiencies in the U.S. permitting process. Unlike many other developed nations, the U.S. has abundant identified domestic deposits of almost all minerals on the CML but remains dependent on imports for many commodities. This is driven, at least in part, by the long federal permitting timelines that push development to offshore localities which increases the likelihood of supply chain disruptions and adverse impacts on the U.S. manufacturing sector. Considering the ever-increasing global importance of critical minerals and the Joint Action Plan between the U.S. and Canada, we request that the USGS re-evaluate the listing determinations using current available data from 2019, 2020, and 2021 prior to finalizing the CML. Further, we respectfully request that the USGS reconsider the listing of copper and other minerals included

---

<sup>12</sup> Government of Canada. 2020. “Canada and U.S. Finalize Joint Action Plan on Critical Minerals Collaboration.” News Release, January 9, 2020. Accessed December 1, 2021. <https://www.canada.ca/en/natural-resources-canada/news/2020/01/canada-and-us-finalize-joint-action-plan-on-critical-minerals-collaboration.html>.

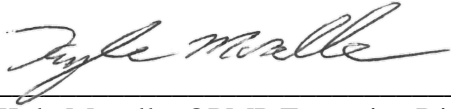
<sup>13</sup> Government of Canada. 2021. “Critical Minerals.” Accessed December 1, 2021. <https://www.nrcan.gc.ca/our-natural-resources/minerals-mining/critical-minerals/23414>.

<sup>14</sup> Nassar and Fortier 2021, 3.

on the Canadian CML but excluded from the U.S. CML to ensure consistency between the two lists and promote the success of the U.S.-Canada Joint Action Plan.

On behalf of the State of Alaska Department of Natural Resources, I'd like to thank you for taking the time to review and consider our comments. Please do not hesitate to contact me if you have any questions or need additional information or clarification.

Sincerely,

A handwritten signature in cursive script, appearing to read "Kyle Moselle".

---

Kyle Moselle, OPMP Executive Director  
Alaska Department of Natural Resources

*cc: Kip Knudson, Director, Office of the Governor  
Corri Feige, Commissioner, DNR  
Jason Brune, Commissioner, DEC  
Doug Vincent-Lang, Commissioner, ADF&G*