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Re: Northern Minnesota Federal Minerals Withdrawal EA

Thank you for this opportunity to comment on the proposed withdrawal of certain federal lands in the Superior National Forest from the federal minerals program. My colleagues and I have examined questions related to the lease withdrawal from an economic perspective, and with this letter we are sharing some of our key findings. Namely, we find that proceeding with the withdrawal of these lands would support significant economic benefits to the Arrowhead region comprising St. Louis, Lake, and Cook Counties, Minnesota. These benefits come in the form of avoiding damages that sulfide-ore copper mining could do to the region's existing diverse and stable economy. To put it the other way around, the mineral withdrawal would support the continued development of an economy based on sound stewardship of the Boundary Waters.

In contrast, estimates of the cost of the withdrawal, in terms of local employment and income in mining, are, at best, exaggerated. Technological and other changes in mining would blunt gains in local employment associated with sulfide-ore copper mining. And based on the track record of analyses purporting to measure future economic impacts of the mining industry, mining proponent's arguments to the effect that the region needs to keep these lands open to more mining in order to have sufficient jobs, income, or tax revenue in the future are not credible.

Economic benefits of the proposed withdrawal would be significant.

Under the National Environmental Policy Act (NEPA), the USDA Forest Service must consider the economic effects of the proposed withdraw of land from the mineral leasing program alongside ecological, aesthetic, historical, social, and health effects (40 CFR 1508.8). The salient economic effects of this action would include, as a benefit to society, the avoidance of costs associated with actual and potential sulfide-ore copper mining that, absent the proposed federal mineral withdrawal, could proceed in the watershed of the Boundary Waters. In our report dated October 2017 and attached to this letter, we presented evidence regarding those avoided costs, including conservative quantitative estimates of a small subset of them. These include

- A decline in spending as potential visitors choose alternative destinations with high quality scenic and recreational amenities undiminished by nearby mining activity. We estimate an annual loss of $288 million in spending that would otherwise support 4,490 local jobs, $76 million in residents' income, $31 million in state and local taxes, and $181 million in proprietor's income and business-to-business transactions
- 5,066 to 22,791 lost jobs, and between $402 million and $1.6 billion in lost annual income in the rest of the three-county Arrowhead economy if sulfide-ore copper mining suppresses or reverses growth in the amenity-based economy that has been the backbone of the region's recovery since the early 1980s

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- $509 million in lost property value. This is a one-time drop in asset value that will spawn annual reductions in local property tax revenue throughout the three-county Arrowhead region.

By implementing the mining withdrawal, as proposed, these and other costs would be avoided, thus delivering a benefit to the American people and Minnesotans equivalent to a one-time payment of more than $6.1 billion.[1] In addition, the mining withdrawal could save between 9,556 and 27,281 jobs. (Please the full copy of the report, attached, for details on the methods and results.)

Clearly the economic costs of sulfide-ore copper mining (or the economic benefits of withdrawing lands from the mineral leasing program) are significant and worthy of consideration as part of the NEPA review.

Costs of the withdrawal are overstated.

Just as the external costs of sulfide-ore copper mining count among the benefits of withdrawing land from the mining program, the benefits in terms of prospective regional jobs and income stemming from mining activity that might otherwise ensue should be considered among the costs of the proposed withdrawal. Mining proponents (or withdrawal opponents) have made three claims about the possible jobs and other economic effects of mining:

1. Mining and will, on net, do more for the regional economy than tourism.
2. Mining will increase employment opportunities for existing residents of the Arrowhead region.
3. Every mining job will be a good one, at least in terms of average wages.

These contentions are dubious for several reasons. First, comparing the number of jobs in mining to jobs in recreation and tourism is spurious. The study summarized above and numerous previous studies demonstrate that many sectors, not just recreation and tourism, thrive when a region takes care of its quality of life, including its scenic, aesthetic and recreational amenities.

Visitors do flock to the Boundary Waters, and those visitors do spend more than a billion dollars per year in the Arrowhead region. But as importantly, if not more so, the Boundary Waters attracts long-term residents, including retirees, entrepreneurs, and workers in many industries. These people choose to live in areas with year-round opportunities to enjoy the same amenities that visitors experience for a week, or a season each year, or once in a lifetime. The Boundary Waters is a major attraction for new residents of many industries who choose quality of life as a determining factor on place to live. (See, for example, Ronnader, Wente, and Hove (2014), Florida (2000), and Niemi and Whitelaw (1999).)

A better comparison, therefore, would be between mining jobs that might accompany expansion of mining and all of the jobs—in manufacturing, in professional, health, and other services, as well as in recreation and tourism—that would leave the region or never arrive if sulfide-ore copper mining were to begin.

Decision makers including the Forest Service, should also recognize that mining represents a small minority (2.5% of jobs and 6.9% of income in 2015, down from 10% of employment and 20% of income in 1980) of the Arrowhead region's natural-resource-based economy. Other uses by visitors, amenity migrants, and long-term residents who might quit the region over concerns about the negative consequences of sulfide mining

[1] This is the present discounted value of the stream of future benefits (costs avoided) over the proposed withdrawal period of 20 years, and using the 0.2% discount rate recommended by the Office of Management and Budget for such analyses (2017).

(Ronnader and Wente, 2014), are equally or more important to the future of the region from an economic perspective.

In spite of these facts, a small minority of comments submitted to the Forest Service[2] do claim that mining should be permitted to proceed because, the commenters contend, mining contributes more to the Arrowhead region economy than the many industries that rely on the region's economy. These comments often include false or misleading statistics. For example, a resident of Ely Minnesota claims that a single mining company's annual payroll of $205 million is "4 times the amount" for tourism (Cole 2017). The writer, however, is comparing the mining company's payroll to a very narrowly drawn estimate of earnings associated with visits to the Boundary Waters Canoe Area Wilderness itself, not to the tourism across the region that could be adversely affected by new mining activity. In fact, visitor spending in the Arrowhead tops $1.1 billion per year (in 2015 dollars), a figure that includes almost $300 million in wages and salaries of that industry's workers, and millions more earned by recreation/tourism business owners (Phillips and Alkire, 2017, p. 15).

Second, the claims of increased mining employment must be viewed in light of an accelerating trend of decreasing labor-intensity in the mining industry. Mining is becoming more capital-intensive due to a new wave of innovation in which autonomous and remotely controlled machinery is operated by a few individuals who may be located far from the mining site (MacLean Engineering, 2017). Rio Tinto, BHP Billiton, and Suncor, to name a few examples, use autonomous, driverless ore trucks. Robotic drills and other automated equipment are also becoming more prevalent. In the case of Rio Tinto, its fleet of robotic trucks and robotic trains is monitored from a control center 750 miles away from the mine. The company correctly sees automation as a way to increase efficiency and reduce mining staff (Simonite, 2017

One mining company, Anglo American Plc., notes that automation will make the future mining industry "unrecognizable" to people who know it now. In the company's view, "the 'employee of the future' will only need to focus on managing the company's relations with governments and communities that live near its ("Robots will run mines within the next decade, Anglo says" 2017)". While this may be good news for corporate lobbyists and PR practitioners (and for those who design and manufacture mining robots), the replacement of humans with automation in the operation of trucks, crushers, and drills does not augur well for of rank-and-file miners who will see the number of their jobs dwindle even as mining continues.

This leads to the final claim commonly made by mining proponents: that any and all new local mining jobs that come with sulfide-ore copper mining will be high paying. Especially given the trend toward automation and the increasing capital-intensity of mining, not only are the absolute number of jobs per mine and jobs per ton of ore processed likely to decline, but also the higher paying jobs of the future are likely to skew more and more toward professional, engineering, and managerial positions and away from less skilled positions. Those jobs will also be less likely to be needed in or near the communities where mines are located. The reality is that mining jobs in the future will become increasingly scarce and less and less available to local people.

Because of the changes affecting mining employment, estimates made today are simply not reliable as indicators of what mining may have to offer 20, 10 or even 5 years from now. This is especially true when the estimates are derived from outmoded empirical models whose concepts, assumptions, and underlying data preclude consideration of the sort of changes just described. The attached report by Phillips and Alkire (2017), especially the section titled "Beyond Folk Economics" (pp. 2-4), includes a review of the shortcomings of the use of input-output models such as IMPLAN to predict future employment and income in a dynamic economy. In

[2] Based on our computer-assisted review of more than 81,032 comment letters (does not count postcards and petitions), 1.5% of commenters opposed the withdrawal and cited economic reasons for their opposition. An additional 0.3% opposed the withdrawal for other reasons. The remaining 98.2% of comments favored the withdrawal.. O

brief, while input-output models may have some value in describing current relationships among industries, they are practically useless for predicting outcomes more than a year or so into the future.

This is an important consideration, because several mining proponents cite IMPLAN-driven estimates from a University of Minnesota at Duluth (UMD) report on the economic impact of mining in their comment letters (Skurla et al., 2012). We reviewed that the report soon after its publication and found that, in addition to the general problems associated with using IMPLAN to predict future economic effects, the study had several technical errors that render its results suspect as part of an analysis of the costs and benefits of the proposed mineral lease withdrawal. For example, the UMD study defines a study region that is much larger than the region for which the lease withdrawal is proposed. Larger geographic regions naturally have more "local" spending, and that causes computed input-output multipliers to be larger than would be expected for the region of interest here—that is, St. Louis, Lake, and Cook Counties. (See Hjerpe and Phillips, 2013, attached, for the complete review.)

Further, and to the previous point regarding the inability of input-output models to forecast future effects, an earlier, 2009 version of the UMD study had predicted an increase of more than 2,000 direct non-ferrous mining jobs between 2007 and 2013 due to then-proposed non-ferrous mining expansions (Skurla et al. 2009, p. 48). What actually happened during that time period, however, was a large decrease in the number of those jobs. Baseline employment in non-ferrous mining fell from 531 jobs in 2007 to 175 jobs in 2013—a 67% decrease and a stunning contrast to the 298% increase predicted by the IMPLAN model and the authors back in 2009 (Skurla et al., 2009, p. 48; Skurla et al., 2012, p. 33). This precipitous decline demonstrates that new mining projects may not deliver new employment as mining proponents claim. Moreover, this result is emblematic of the lack of accuracy in UMD's projected economic impacts.

In summary, we urge that the Forest Service carefully consider the true potential economic effects of the minerals withdrawal proposal. The evidence shows that the region has built a vibrant and diverse economy based on quality of life and quality of the environment. That economy would be put at significant risk if the withdrawal is rejected and sulfide-ore copper mining proceeds. There is, meanwhile, little reason to believe that mining will provide long-term gains sufficient to justify the sacrifice of the existing and future sustainable economy.

Sincerely,

Spencer Phillips, Ph.D.

Enclosures:

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Skurla, James A. et al. (2012). *The Economic Impact of Ferrous and Non-Ferrous Mining on the State of Minnesota and the Arrowhead Region, Including Douglas County, Wisconsin.* Duluth, MN: University of Minnesota, Duluth, Labovitz School of Business and Economics. November. 69pp. http://www.d.umn.edu/lsbe/bber.php.