STATE OF MINNESOTA

DISTRICT COURT

COUNTY OF RAMSEY

SECOND JUDICIAL DISTRICT
Case Type: Civil Other/Misc.
Court File No. 62-CV-20-3838
The Honorable Patrick Diamond

Northeastern Minnesotans for Wilderness,

Plaintiff,

vs.

Minnesota Department of Natural Resources and Sarah Strommen, in her capacity as Commissioner of the Minnesota Department of Natural Resources,

Defendants,

Twin Metals Minnesota LLC,

Intervenor.

FINDINGS OF FACT, CONCLUSIONS OF LAW, AND ORDER ON REMAND

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FINDINGS OF FACT

I. INTRODUCTION

1. Northeastern Minnesotans for Wilderness ("NEMW") filed suit against the Minnesota Department of Natural Resources ("DNR") and Commissioner Sarah Strommen on June 24, 2020, in Ramsey County District Court, pursuant to the Minnesota Environmental Rights Act ("MERA"). NEMW alleges in its suit that the DNR nonferrous metallic mineral mine siting rule is inadequate to protect the Boundary Waters Canoe Area Wilderness ("BWCAW") from pollution, impairment, or destruction.

2. The rule challenged in the suit, Minn. R. 6132.2000, prohibits nonferrous metallic mineral mining in the BWCAW. Minn. R. 6132.2000, subp. 2(A). The rule also prohibits nonferrous metallic mineral mining that disturbs the surface in an area described as the BWCAW Mineral Management Corridor as depicted on the map attached as Exhibit A. Minn. R. 6132.2000, subp. 3(A).

3. A nonferrous metallic mineral is defined as a "metallic mineral from which iron is not the predominant metal extracted." Minn. R. 6132.0100, subp. 22. Examples of nonferrous metallic minerals are copper and nickel.

4. NEMW alleges that the siting rule is inadequate because it fails to prohibit nonferrous metallic mineral mining in the entire Rainy River Headwaters watershed (HUC-8 09030001), which flows into the BWCAW.

5. NEMW alleges that nonferrous metallic mineral mining upstream of the BWCAW poses an unacceptably high risk of polluting the waters of the BWCAW. NEMW further alleges that current scientific knowledge of the Rainy River Headwaters watershed and the potential effects of nonferrous metallic mineral mining demonstrate that DNR's siting rule is inadequate to protect the BWCAW.

6. NEMW filed its lawsuit pursuant to section 10 of MERA, Minn. Stat. § 116B.10, which authorizes an organization with employees in the state to bring a civil action against the state challenging a rule for which the appeals period has expired. Minn. Stat. § 116B.10, subd. 1. The plaintiff has the burden of proving that the rule is inadequate to protect natural resources within the state from pollution, impairment, or destruction. Once the plaintiff provides prima facie evidence of such inadequacy, the matter is remitted to the agency to make findings and issue an order on whether the rule is adequate to protect natural resources from pollution, impairment, or destruction. Minn. Stat. § 116B.10, subd. 3.

7. Due to the low initial bar a plaintiff faces in a MERA section 10 lawsuit, DNR and NEMW stipulated to a remand in this matter.

8. On September 30, 2020, Twin Metals Minnesota LLC ("Twin Metals"), a company that has proposed a nonferrous metallic mineral mine in the Rainy River Headwaters watershed, filed a notice of intervention.

9. The District Court ordered a remand on September 13, 2021, requiring the DNR to issue findings and an order as to whether Rule 6132.2000 is adequate to protect the BWCAW from pollution, impairment, or destruction.

10. The District Court initially set a one-year deadline for the DNR's order pursuant to the stipulation with NEMW, but the Court has granted DNR an extension until May 31, 2023.

11. DNR issued a Procedural Order on Remand on October 4, 2021, establishing a public comment period.

12. DNR accepted public comments from November 9, 2021, through December 8, 2021, on the following question:

> With express consideration of how Minn. R. 6132.2000, subp. 2A and 3A fit within the broader context of all applicable environmental protection in state and federal law regulating nonferrous mining, are
>
> i. The exclusion of mining in the BWCAW set forth in Minn. R. 6132.2000 subp. 2A, and

ii. The prohibition of surface disturbance in the BWCAW Mineral Management Corridor as set forth in Minn. R. 6132.2000, subp. 3A adequate to protect the BWCAW from pollution, impairment or destruction or should further restrictions on mining be extended to all or part of the Rainy River-Headwaters defined as HUC 09030001?

13. DNR published notice about its public comment period on its website, in the State Register, and through its GovDelivery service. DNR received over 4,000 comments during its public comment period.

14. During the public comment period, Lands and Minerals Division Director Joseph Henderson informed tribal governments of the comment period and solicited comments at a recurring State and tribal meeting on mining issues.

15. DNR has reviewed the public comments, including attachments, reviewed journal articles listed in the Complaint, and reviewed other relevant information in the administrative record, such as the federal Environmental Assessment on the mineral withdrawal of the Superior National Forest and scientific literature not included in the public comments.

II. RAINY RIVER HEADWATERS WATERSHED AND THE BWCAW

16. The question addressed in this remand order is whether Minn. R. 6132.2000 adequately protects the BWCAW, or whether its prohibition on nonferrous metallic mineral mining in the BWCAW should be extended to the entire Rainy River Headwaters watershed. The Rainy River Headwaters watershed contains 1.6 million acres (excluding the portion located in Canada). Large portions of the Rainy River Headwaters watershed are located within the BWCAW, Voyageurs National Park, or the Superior National Forest. Minnesota Pollution Control Agency ("MPCA"), *Rainy River Headwaters Watershed Restoration and Protection Strategy (WRAPS) Report* at 1 (June 2022). Most of the watershed is forested and under public ownership. The watershed generally has excellent water quality. *Id.* at vii.

17. Large areas of the Rainy River Headwaters watershed are mapped as areas of high or outstanding biodiversity by the Minnesota Biological Survey.

18. Most rivers in the Rainy River Headwaters watershed flow north toward the Canadian border. The South Kawishiwi River initially flows south from the BWCAW through Birch Lake, and then continues north to reenter the BWCAW. *Id.* at 5.

19. Most land in the Rainy River Headwaters watershed is owned by the federal or state governments, with the federal government owning 75 percent of the land and the State of Minnesota ("State") owning 13 percent of the land. *Id.* at 4. One percent of the land is owned by counties and eleven percent is privately owned. *Id.* The State holds large tracts of school trust land, as well as school trust mineral interests, throughout the watershed. Minnesota Department of Natural Resources, *Public Land and Mineral Ownership in Minnesota*, at 3 & 24 (2005); Supplemental Affidavit of Dr. William C. Brice dated August 15, 2017, Ex. F. Within the BWCAW, land ownership is a patchwork of federal and State ownership. (Comment Letter from Teck American Incorporated dated December 8, 2021, Fig. B.)

20. Currently there is one taconite mine, the Cliffs Natural Resources' Peter Mitchell Mine, operating in the watershed. MPCA, *Rainy River Headwaters Watershed Restoration and Protection Strategy (WRAPS) Report* at 25 (June 2022). LTV Steel Mining Company had operated the Dunka Mine in the watershed, but it is now closed. The Dunka Mine was an open pit taconite mine east of the City of Babbitt. Both the Peter Mitchell Pit and the Dunka Mine are more than ten miles from the BWCAW. Copper-nickel deposits are also located in the watershed. *Id.*

21. The Minnesota Legislature has recognized that the BWCAW is "an area of hundreds of thousands of acres of land and water containing myriad lakes and streams, wooded shores, virgin forests, and other natural attractions of surpassing scenic beauty and solitude, free from substantially all commercial activities and artificial development . . . ." Minn. Stat. § 84.523, subd. 2.

22. As described in the Congressional Record, the BWCAW:

> "runs for 110 miles along the Minnesota-Canada border. At 1,030,000 acres, it is the largest unit of the National Wilderness Preservation System east of the Rocky Mountains . . . It is the nation's only lakeland canoe wilderness—a network of more than 1,000 lakes linked by hundreds of miles of streams and short portages which served as the highway of fur traders who followed water routes pioneered by Sioux and Chippewa Indians. It is the most heavily visited unit of the entire wilderness system, drawing people from throughout the country. Despite extensive logging, the BWCA still contains 540,000 acres of [old growth] forests, by far the largest such area in the eastern United States. It is the home of a remarkable variety of wildlife, including moose, deer, beaver, snowshoe hare, porcupine, [gray] wolf, pine marten, fisher, lynx, and bald eagle. The area is a valuable educational and scientific resource; it has been the focal point of research in wildlife behavior, forest ecology, nutrient cycles, lake systems, and vegetation history."

H.R. Rep. No. 95-1117, at 2 (1978).

23. The BWCAW includes 1,200 miles of canoe routes. (U.S. Forest Service, Application for Withdrawal, at 13 (2021).)

24. Many rare species of animals are found in the BWCAW including moose (State species of special concern), Canada lynx (federal threatened species), northern long-eared bat (federal endangered species), gray wolf (federal threatened in Minnesota), northern goshawk (State species of special concern), boreal owl (State species of special concern), and common loon (State species in greatest conservation need). Rare plants such as Ram's head orchid (State threatened species) are also found in the BWCAW.

25. The BWCAW is sensitive to pollution due to its unique geological setting. Between about 30,000 and 10,000 years ago, glaciers scraped the ground surface exposing the bedrock and leaving few glacial deposits behind. Glacial sediments in the region typically are thin or absent, and therefore, are not significant as aquifers. The bedrock near the surface is crystalline and competent with a low porosity and hydraulic conductivity, and groundwater mostly occurs in smaller fractures that generally yield little water. Without a layer of thick glacial deposits, also known as till, and thus without significant aquifers for water storage, any polluted water will move faster across land surface over the bedrock and enter streams or lakes.

26. The BWCAW also has little acid buffering capacity. First, the bedrock geology lacks a meaningful amount of carbonate minerals that react to neutralize acid. Second, the streams and lakes are uniquely "soft water", meaning the water has relatively small amounts of dissolved chemicals. In particular, the streams and lakes have very low alkalinity, which is a primary reactant to neutralize acid and subsequently decrease dissolved metal concentrations.

27. The majority of the Rainy River Headwaters watershed also is within the 1854 ceded territory. These lands were ceded to the United States in the 1854 Treaty of La Pointe (1854 Treaty) between the United States and the Chippewas of Lake Superior. The 1854 Treaty reserved to the Grand Portage Band of Lake Superior Chippewa, the Bois Forte Band of Chippewa, and the Fond du Lac Band of Lake Superior Chippewa usufructuary treaty rights across the entirety of the ceded territories including lands within the BWCAW. The term "usufructuary treaty right" refers to the rights reserved by tribes in treaties to hunt, fish, and gather on lands ceded by the tribes to the U.S. Government.

III. HISTORY OF THE BWCAW ACT

28. In 1964, Congress passed the Wilderness Act to "establish[] a National Wilderness Preservation System" and to ensure that wilderness areas established under the Wilderness Act are "administered for the use and enjoyment of the American people in such manner as will leave them unimpaired for future use and enjoyment as wilderness." Wilderness Act, Pub. L. No. 88-577, § 2(a), 78 Stat. 890 (1964).

29. The Act defines wilderness as an area where "the earth and its community of life are untrammeled by man, where man himself is a visitor who does not remain." Wilderness Act, Pub. L. No. 88-577, § 2(c), 78 Stat. 890, 891 (1964). Further, wilderness areas are "affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable." *Id.*

30. The Boundary Waters Canoe Area Wilderness ("BWCAW") was established in the Wilderness Act. Wilderness Act, Pub. L. No. 88-577, § 4(d)(5), 78 Stat. 890, 895 (1964).

31. Specifically, the Act provides as follows as to the management of the BWCAW:

> "Other provisions of this Act to the contrary notwithstanding, the management of the Boundary Waters Canoe Area, formerly designated as the Superior, Little Indian Sioux and Caribou Roadless Areas, in the Superior National Forest, Minnesota, shall be in accordance with regulations established by the Secretary of Agriculture in accordance with the general purpose of maintaining, without unnecessary restrictions on other uses, including that of timber, the primitive character of the area, particularly in the vicinity of lakes, streams and portages; *Provided,* that nothing in this Act shall preclude the continuance within the area of any already established use of motorboats."

Id.

32. The Wilderness Act was unclear as to what restrictions applied to mineral exploration and mining in the BWCAW, and this ambiguity led to litigation. The Boundary Waters Wilderness Act, H.R. 14576, 94 Cong. H6916 (1976).

33. This situation, together with questions relating to motorboat use in the BWCAW, led Congress to pass additional legislation to protect the BWCAW – the Boundary Waters Canoe Area Wilderness Act ("BWCAW Act"). One of the primary purposes of the BWCAW Act was to better protect the BWCAW from mining. Boundary Waters Canoe Area Wilderness Act, S. 3242, 95 Cong. 9637 (1978). Senator Wendell Anderson testified, "There is agreement that those uses most destructive to the BWCA – mining and logging – have no place there." *Id.*

34. Commenters specifically recognized the possible impact of nonferrous metallic mineral mining on the BWCAW prior to passage of the BWCAW Act and noted the existence of these minerals in the Kawishiwi River and Birch Lake areas. Crisis in Canoe Country, H.R. 2820, 95 Cong. H3615 (1977).

35. By the time Congress began debating the BWCAW Act in the late 1970s, the fact that any bill passed would prohibit mining in the BWCAW was a settled question. Boundary Waters Canoe Area Wilderness Act, S. 3242, 95 Cong. 9637-38 (1978). The public comment and debate centered on the extent to which motorized forms of recreation should be permitted in the BWCAW. *Id.*

36. The State of Minnesota's leadership on the issue of mining in the BWCAW was part of the reason that there was general agreement on the prohibition of mining in the BWCAW. Boundary Waters Canoe Area Wilderness Act, S. 3242, 95 Cong. 9637-38 (1978); Boundary Waters Canoe Area Wilderness, H.R. 12250, Conference Rep., 95 Cong. 13439

(1978) (noting that the State of Minnesota had been able to successfully prevent mining in the BWCAW).

37. The Minnesota Legislature prohibited mining in the BWCAW prior to Congress adopting the BWCAW Act. Minn. Stat. § 84.523, subd. 3 (prohibiting the issuance of state mineral leases and permits for mining in the BWCAW except in the case of a national emergency); 1976 Minn. Laws ch. 322, sec. 1, subd. 3 (adoption of same). Moreover, this State prohibition on mining in the BWCAW represented the codification of a long-standing State administrative policy of not issuing mineral leases in the BWCAW. The Boundary Waters Wilderness Act, H.R. 2820, 95 Cong. H622 (1977).

38. Adopted in 1976, Minnesota Statutes section 84.523 provides as follows with respect to mining in the BWCAW:

> "Except with the prior approval of the legislature in those cases of national emergency which have been declared by the Congress and which direct the need for exploration and mining of federal lands within the Boundary Waters Canoe Area, and after an investigation and determination by the commissioner of natural resources pursuant to subdivision 5 no state-owned or administered land may be leased for exploration or mining of minerals, and no state permits, licenses or leases shall be issued to use any other state natural resources for any mineral exploration or mining operations in the Boundary Waters Canoe Area."

Minn. Stat. § 84.523, subd. 3.

39. In 1978, Congress adopted the BWCAW Act, which enlarged the BWCAW and imposed restrictions on mining in the BWCAW. Boundary Waters Canoe Area Wilderness, Pub. L. 95-495, 92 Stat. 1649 (1978). One of the stated goals of the Act is to "minimize to the maximum extent possible, the environmental impacts associated with mineral development." Boundary Waters Canoe Area Wilderness, Pub. L. 95-495, § 2(4), 92 Stat. 1649 (1978).

40. The BWCAW Act prohibits exploration or mining of minerals owned by the U.S. in the BWCAW. Boundary Waters Canoe Area Wilderness, Pub. L. 95-495, § 11(a)(1), 92 Stat. 1649, 1655 (1978). It also prohibits the federal government from issuing permits or leases for exploration or mining in the BWCAW that may affect navigable waters. Boundary Waters

Canoe Area Wilderness, Pub. L. 95-495, § 11(a)(2), 92 Stat. 1649, 1655 (1978). Moreover, the BWCAW Act prohibits the use of United States property in the BWCAW for mining or exploration if it may impair the wilderness qualities of the area. Boundary Waters Canoe Area Wilderness, Pub. L. 95-495, § 11(a)(3), 92 Stat. 1649, 1655 (1978). The BWCAW Act's prohibitions on mining apply in the BWCAW and in the BWCA Mining Protection Area. Boundary Waters Canoe Area Wilderness, Pub. L. 95-495, § 11(a), 92 Stat. 1649, 1655 (1978). The Mining Protection Area is a 222,000 acre area that links together the three separate units of the BWCAW. Boundary Waters Canoe Area Wilderness, H.R. 12250, Report 95-1274, at 14 (1978).

41. Similar to Minnesota Statutes section 84.523, the BWCAW Act contains an exception that would allow mining in the BWCAW or Mining Protection Area in the event of a national emergency declared by the President. Boundary Waters Canoe Area Wilderness, Pub. L. 95-495, § 11(a), 92 Stat. 1649, 1655 (1978).

42. The prohibitions on mining in the BWCAW Act do not apply in the Superior National Forest outside of the BWCAW and Mining Protection Area, or in the portion of the Rainy River Headwaters watershed that is outside of the BWCAW and Mining Protection Area.

IV. HISTORY OF RULE 6132.2000

43. Following the passage of the BWCAW Act, DNR adopted its nonferrous metallic mineral rules, including the siting rule at issue in this litigation. DNR must consider the scope of its rulemaking authority and the history of its siting rule, Minn. R. 6132.2000, to make its remand decision.

44. DNR has broad authority to regulate mining and to issue rules governing mining, including nonferrous metallic mineral mining. *See, e.g.,* Minn. Stat. § 93.47, 93.481. DNR has the authority to adopt new rules regulating nonferrous metallic mineral mining. *See id.*

45. DNR is tasked with both the protection of natural resources and the promotion of mining. For example, Minnesota Statutes section 93.44 provides:

> "In recognition of the effects of mining upon the environment, it is hereby declared to be the policy of this state to provide for the reclamation of certain lands hereafter subjected to the mining of metallic minerals or peat where such reclamation is necessary, both in the interest of the general welfare and as an exercise of the police power

> of the state, to control possible adverse environmental effects of mining, to preserve the natural resources, and to encourage the planning of future land utilization, while at the same time promoting the orderly development of mining, the encouragement of good mining practices, and the recognition and identification of the beneficial aspects of mining."

46. The Legislature requires DNR to consider many different impacts when adopting mining regulations:

> (a) In determining the extent and type of regulation required, the commissioner shall give due consideration to the effects of mining upon the following:
> (1) environment;
> (2) the future utilization of the land upon completion of mining; and
> (3) the wise utilization and protection of the natural resources including but not limited to the control of erosion, the prevention of land or rock slides, and air and water pollution.
> (b) The commissioner shall also give due consideration to:
> (1) the future and economic effect of such regulations upon the mine operators and landowners, the surrounding communities, and the state of Minnesota;
> (2) the effect upon employment in the state;
> (3) the effect upon the future mining and development of metallic minerals owned by the state of Minnesota and others, and the revenues received therefrom; and
> (4) the practical problems of the mine operators and mineral owners including, but not limited to, slope gradients as achieved by good mining or soil stabilization practices.

Minn. Stat. § 93.47 subd. 2.

47. The Legislature also directs the DNR to ensure that mining will only occur in areas that can be reclaimed: "the commissioner shall develop procedures that will identify areas or types of areas which, if mined, cannot be reclaimed with existing techniques to satisfy the rules promulgated under this subdivision, and the commissioner will not issue permits to mine such areas until the commissioner determines technology is available to satisfy the rules so promulgated." Minn. Stat. § 93.47, subd. 3.

48. DNR adopted its rules governing nonferrous metallic mining in 1993. Minn. R. ch. 6132 (1993).

49. Minn. R. 6132.2000 on mine siting has not changed since the original adoption of the rules. *Id.*

50. Minn. R. 6132.2000 provides as follows:

> "Subp. 2. Mining excluded. Except as allowed under state and federal laws, no mining shall be conducted within the following:
>
> A. The Boundary Waters Canoe Area Wilderness, as legally described in the Federal Register, volume 45, number 67 (April 4, 1980), with state restrictions specified in Minnesota Statutes, section 84.523, subdivision 3;
>
> . . . .
>
> Subp. 3. Surface disturbance prohibited. No mining activities that disturb the surface shall be allowed within or on the following:
>
> A. Within the Boundary Waters Canoe Area Wilderness Mineral Management Corridor, identified on the Department of Natural Resources map entitled "Minnesota Department of Natural Resources B.W.C.A.W. Mineral Management Corridor," dated February 1991, which map is hereby incorporated by reference, is not subject to frequent change, and is available through the State Law Library;"

51. The goal of mine siting is to reduce land use conflicts and environmental nuisance conditions, and to identify locations where mine land cannot be satisfactorily reclaimed. *In the Matter of the Proposed Permanent Rules Relating to Nonferrous Metallic Mineral Mineland Reclamation*, Hearing Transcript at 38-39 (Dec. 7, 1992). In testifying on the nonferrous rules, former Lands and Minerals Director Bill Brice explained that the location of the mineral resource cannot be changed, but there is some flexibility as to siting of the access and other facilities. *Id.* at 38. The goal of the rule is to reduce the impact of these facilities. *Id.*

52. The Statement of Need and Reasonableness ("SONAR") for Chapter 6132 explains that Minn. R. 6132.2000 prohibits nonferrous metallic mineral mining in the BWCAW for three reasons: 1) State and federal law prohibit mining in the BWCAW, 2) federally designated wilderness areas are managed in a manner that is incompatible with mining, and 3) Minnesota Statutes chapter 93 prohibits the issuance of permits in areas that cannot be satisfactorily reclaimed. *In the Matter of the Proposed Permanent Rules Relating to Nonferrous Metallic Mineral Mineland Reclamation*, SONAR at 19 (Oct. 30, 1992).

53. The SONAR further explains that the primary purpose of prohibiting surface disturbance in the Mineral Management Corridor is to allow the Corridor to "serv[e] as a buffer

between inconsistent land uses, and reduc[e] the intrusive effects of mining onto adjacent lands." SONAR at 20.

54. The Mineral Management Corridor was also designed to prevent the direct overland flow of runoff water into the BWCAW and protect recreational accesses to the BWCAW. SONAR at 20. The map of the Mineral Management Corridor, which is referenced in the rule, notes that the Corridor includes a quarter-mile buffer around the BWCAW, small watersheds that flow directly into the BWCAW, and principal recreational entrances to the BWCAW.

55. DNR acknowledged in the rulemaking record that the setback provided by the Mineral Management Corridor was not designed to meet water quality, air quality or noise standards:

> "[W]e did not try to establish zones that would protect those areas, to meet any kind of standards like noise standards or water quality standards or air quality standards. What we wanted to do is just establish a separation, and we felt that was reasonable because of the high use of those areas."

In the Matter of the Proposed Permanent Rules Relating to Nonferrous Metallic Mineral Mineland Reclamation, Hearing Transcript at 126 (Dec. 7, 1992).

56. When some commenters argued the setback was insufficient to meet water quality, air quality, and noise standards, DNR deferred to the MPCA, noting it did not enforce these standards:

> "Some commenters on the draft of the proposed rules have alleged that the distances required by the proposed rules would not be sufficient to meet air, water, and noise standards. Those standards, which are regulated by others, are beyond the authority of the commissioner. However, if it can be demonstrated that the only means of achieving such standards is by the use of separations greater than are proposed by this subpart, then the commissioner would support the separations required by such other regulators."

In the Matter of the Proposed Permanent Rules Relating to Nonferrous Metallic Mineral Mineland Reclamation, SONAR at 20 (1993).

57. One commenter argued, similar to the plaintiff here, that nonferrous metallic mineral mining that disturbs the surface should be prohibited in the entire watershed of the BWCAW. The Administrative Law Judge who presided over the rulemaking proceeding disagreed, concluding that the commenter did not provide evidence to demonstrate that it was necessary to protect the entire watershed from surface disturbance. The ALJ further concluded that the setback in the rule is reasonable to prevent disruption caused by mining and screen mining operations from other land uses. *In the Matter of the Proposed Permanent Rules Relating to Nonferrous Metallic Mineral Mineland Reclamation*, Report of Administrative Law Judge at 12 (February 5, 1993).

V. THE BWCAW AND PUBLIC COMMENTS IN THIS MATTER

58. The people of the State of Minnesota have a strong regard for the BWCAW, which is shown by the high number (over 4,000) of public comments DNR received on the nonferrous mine siting rule during the public comment period in late 2021.

59. A summary of issues raised in comments for and against a rule change follows.

A. Comments For a Rule Change

60. Commenters express their appreciation for the BWCAW, sometimes in poetic language. As one commenter notes about the BWCAW, "It's a place where I've been lullabied to sleep by distant wolves howling under Northern Lights dancing eerily across the starlit sky." (Participant: 78, online comments.)

61. Another commenter states, "The intrinsic value of wilderness is infinite. Here is the adventure, paddling a canoe, making new friends, peace and solitude, and learning about God's creation. It is where you are immersed in the sounds of nature: raindrops falling on the water and in the forest, water tumbling over rocks of a stream or river, birds singing, the howling of wolves, animals scampering through the brush, and foot falls in the snow-covered forest. It is a place where life carries on with or without humans." (Participant: 3831, online comments.)

62. Commenters supporting a rule change argue that the risks to the BWCAW posed by nonferrous metallic mineral mining are too high. Commenters state that acid mine drainage could cause damage to the BWCAW that endures for centuries.

63. Commenters argue that though the water quality standards for the BWCAW are protective, violations of these standards may occur if infrastructure failures result in the release polluted water and the exceedance of water quality standards. Commenters argue that the mine

siting rule is not stringent enough to achieve the "no measurable change" water quality standard in the BWCAW.

64. Commenters state that nonferrous metallic mineral mining will inevitably lead to violation of water quality standards, especially after closure of mines, which will affect water quality in the BWCAW. Commenters indicate that all mines pollute to some degree. Commenters claim that some areas of the watershed currently exceed water quality standards due to taconite mining in the Peter Mitchell Pit.

65. Commenters argue that the Rainy River Headwaters Watershed Restoration and Protection Strategies report issued by MPCA (discussed in more detail below) is inadequate to protect the BWCAW because it does not contain strategies to reduce mercury and sulfates in the watershed.

66. With respect to groundwater, commenters raised concerns about the lack of site-specific knowledge of mine site geology and issues with the long-term maintenance and effectiveness of groundwater barrier systems. The failure of groundwater barrier systems could endanger groundwater quality.

67. Commenters note that recreational use of the BWCAW depends upon excellent water quality. Commenters state that paddlers drink surface water in the BWCAW; it would not be possible to portage sufficient drinking water. (Of course, most visitors to the BWCAW properly filter surface water with a hand-held filter prior to drinking due to potential health hazards unrelated to mining activities.)

68. Commenters express concern with how mining may increase mercury levels in the BWCAW. Commenters note that lakes in the BWCAW already exceed water quality standards for mercury in fish tissue due to atmospheric deposition of mercury.

69. Commenters are also concerned about the effect of sulfate water pollution on wild rice. Sulfate affects sediment chemistry which can harm the health and long-term growth of wild rice. Commenters opine that the existing water quality standard of 10 milligrams per liter of sulfate applicable to wild rice waters is not protective because this limit is several times the current water quality of many BWCAW lakes.

70. Commenters have stated that the BWCAW is uniquely vulnerable to pollution due to its geology and its water-centric ecosystem. Bedrock in the area is fractured, and interconnections between groundwater and surface water are common. They also assert that

remediation would be difficult to accomplish in the BWCAW due to restrictions on motorized access.

71. Commenters argue that the Clean Air Act is not sufficient to protect the BWCAW from air pollution. Air pollutants can settle into water and onto forests and disrupt ecosystems. Commenters note that impacts are unpredictable due to shifting wind directions and that any air pollution of the BWCAW is unacceptable.

72. Commenters argue that water and air pollution would cause consequential impacts to forests and to aquatic and terrestrial wildlife. For example, water quality may impact fish species and thereby reduce the food supply for birds and other wildlife. Commenters also note that industrialization of the Rainy River Headwaters watershed would disrupt wildlife corridors through the area and fragment habitat. Further, mineral development could impact critical habitat for federal or State threatened or endangered species or State species of special concern such as the Canada lynx, moose, gray wolf, and northern long-eared bat.

73. Commenters note that boreal forests like those found in the BWCAW, including old growth forests, offer important ecosystem benefits by acting as carbon sinks, creating habitat that fosters biodiversity, and filtering and recharging groundwater and surface waters. Commenters argue that these qualities could not be adequately restored if they were degraded by mining pollution.

74. Commenters state that mineral development in the Rainy River Headwaters watershed is likely to result in light and noise pollution in the BWCAW. According to commenters, there are no regulations that protect the BWCAW from light pollution, and noise regulations are inadequate to protect recreational use of wilderness areas or to protect wildlife.

75. Commenters argue that environmental review and permitting are unlikely to protect the BWCAW from pollution. According to commenters, environmental review often underestimates the environmental impacts of a project. Though permits are designed to ensure compliance with environmental quality standards, over time, engineering controls may experience either ongoing maintenance problems or catastrophic failures. Further, permits are intended to minimize a mining facility's impacts, not to ensure a facility has no impact, and therefore, according to commenters, permits cannot ensure compliance with the water quality standards for the BWCAW.

76. Commenters state that DNR must consider the cumulative impacts that would result to the BWCAW if a mining district with multiple mines were developed in the Rainy River

Headwaters watershed, as Twin Metals, Encampment Minerals, Inc., and Teck American Incorporated have all explored minerals in the watershed.

77. Commenters argue that nonferrous metallic mineral mining in the Rainy River Headwaters watershed is inconsistent with Minnesota Rules chapter 6132 because a mine in the watershed could not have a setback that would ensure compliance with water quality standards, as provided in Minn. R. 6132.2000, subp. 1. Further, commenters argue that the goal in Minn. R. 6132.2000, subp. 1 of minimizing impacts caused by nonferrous metallic mineral mining is inconsistent with the water quality standard for the BWCAW requiring "no measurable change."

78. Commenters argue that the current mine siting rule is not consistent with the United States' obligations to prevent transborder pollution, as set forth in the Boundary Waters Treaty of 1909.

79. Commenters argue that the mine siting rule does not adequately protect the usufructuary rights to hunt, fish and gather reserved by the Ojibwe in the 1854 Treaty.

80. Commenters indicate that failure to prohibit nonferrous metallic mineral mining in the entire watershed would destroy the recreation/tourism-based economy of the region.

81. Commenters argue that the mine siting rule violates MERA because the rule is inadequate to prevent violations of environmental quality standards, such as the water quality standards applicable to the BWCAW. They also argue that the rule is inadequate to prevent material adverse effects to the BWCAW. Commenters argue that the BWCAW is a rare and unique resource, that nonferrous metallic mineral mining in the Rainy River Headwaters watershed would cause severe and long-term impacts to natural resources, that water and air pollution would cause consequential impacts to other resources such as wildlife habitat, and that undisturbed wilderness areas such as the BWCAW are decreasing in number in the U.S. and worldwide.

B. Comments Against a Rule Change

82. Commenters against a rule change argue that the existing environmental quality standards (including standards described in section VII below) are adequate to protect the BWCAW. These standards include the "no measurable change" requirement for water quality in the BWCAW.

83. Commenters argue that taconite mining has occurred in the Peter Mitchell Pit located within the Rainy River Headwaters watershed, and this mining has not polluted the

BWCAW. Further, some modern nonferrous metallic mineral mines have successfully operated without causing pollution. Pollutants that could potentially be discharged by a mine in the watershed would be adequately diluted before reaching the BWCAW.

84. Commenters note that the nonferrous metallic mineral mining rules, Minnesota Rules chapter 6132, were adopted based on decades of research on nonferrous mining.

85. Commenters argue that Minnesota Rules chapter 6132 is designed to be flexible. This flexibility allows regulators to consider how particular mining designs can best protect the environment and to evaluate each project on its own merits. This flexibility also allows regulators to accommodate changing technology that can improve environmental protection. Chapter 6132 has been challenged based on this flexibility, and it has been upheld by the courts. (See paragraph 132 below.)

86. Commenters state that the BWCAW Act permits mining outside of the BWCAW and Mining Protection Area, and the Superior National Forest Plan lists mining as a permitted, and desired, activity in the Superior National Forest outside of the BWCAW and Mining Protection Area.

87. Commenters argue that the United States needs nonferrous metallic minerals such as gold, copper, and nickel for green energy development, and therefore these resources should be mined.

88. Commenters argue that DNR must consider its obligations to the school trust in evaluating any potential rule change. Minn. Stat. § 93.47, subd. 2. DNR is required to maximize returns to the Permanent School Fund. Mining Minnesota indicates that there are 95,000 acres of school trust minerals in the Rainy River Headwaters watershed, 13,321 acres of which are currently under lease. Supplemental Affidavit of Dr. William C. Brice dated January 11, 2017, Ex. F. at 7. Mining Minnesota estimates (based on a 2011 DNR analysis) that the Permanent School Fund could earn as much as $2.4 billion on minerals located in the Rainy River Headwaters watershed. Supplemental Affidavit of Dr. William C. Brice dated January 11, 2017, Ex. F. at 3.

89. Commenters argue that MERA does not alter DNR's rulemaking authority. Minn. Stat. § 93.44 requires that the DNR promote mining. Minn. Stat. § 93.47, subd. 2(b) requires DNR to consider the impact of its rules on the development of private mineral rights. According to commenters, prohibiting mining in the entire Rainy River Headwaters watershed would be inconsistent with the Legislature's mandate to DNR.

90. Commenters argue that this lawsuit upsets the settled expectations of the mining industry. Twin Metals estimates that mining companies have spent $500 million on mineral exploration in northern Minnesota. (Letter from Twin Metals dated December 8, 2021, at 7 n. 15.) Some commenters argue that prohibiting mining in the Rainy River Headwaters watershed would constitute an unconstitutional taking of the mineral rights of mining companies.

91. Commenters argue that prohibiting mining in the Rainy River Headwaters watershed would deprive the local area of much needed mining industry jobs and associated jobs, damaging the local economy.

VI. CURRENT STATUS OF FEDERAL DECISIONS AFFECTING RAINY RIVER HEADWATERS WATERSHED

A. The Status of Twin Metals Federal Mineral Leases

92. The federal government has made some significant decisions that affect the future of nonferrous metallic mineral mining in the Rainy River Headwaters watershed for the next 20 years. And while DNR is not bound by any federal decisions on mining and may make its own decision on the regulation of mining in the Rainy River Headwaters watershed, the federal action does provide relevant information for DNR consideration. Specifically, DNR must consider the scientific evidence set forth in the federal Environmental Assessment described below and in other documents.

93. On December 14, 2016, the U.S. Forest Service ("USFS") withheld its consent to renewal of two mineral leases in the Superior National Forest held by Twin Metals. One of the leases is located adjacent to the BWCAW, and the other lease is located within three miles of the BWCAW. Both are located within the Rainy River Headwaters watershed. (USFS Decision, Dec. 14, 2016, at 1).

94. The USFS concluded that the risks that these leases posed to the BWCAW outweighed the benefits of mining to the local economy. (USFS Decision, Dec. 14, 2016, at 21). The USFS noted that mining of the leases by Twin Metals could result in significant damage to the BWCAW:

> "Based on information provided by [Twin Metals Minnesota] to date . . ., existing science, and examination of similar proposals, there is no reason to doubt that the mining operations TMM hopes to eventually conduct could result in [acid mine drainage] and concomitant metal leaching both during and after mineral development given the sought

> after copper-nickel ore is sulfidic. This fact is very significant given TMM's two leases are adjacent or proximate to the BWCAW and within the same watershed as the wilderness. It might be possible for TMM to develop a mine which employs mitigation and containment strategies that reduce the mine's potential to cause [acid mine drainage] and leached metals that could harm the wilderness. However, at the very least it is equally possible that available water treatment technologies would be unable to prevent the spread of any [acid mine drainage] and leached metals in the watershed. Further, there appears to be even less likelihood that any contamination of the BWCAW resulting from TMM's mining operations could later be remediated, especially not in a manner compatible with the BWCAW's wilderness character. Moreover, any degree of contamination of the BWCAW by [acid mine drainage] and leached metals has the potential to seriously degrade the wilderness area's character and quality. Thus, even if the probability that TMM's mining operations might generate and release [acid mine drainage] and leached metals was very low, which the [US]FS does not believe to be the case, the environmental harm to the BWCAW that could result from any contamination of the area with [acid mine drainage] and leached metals might be extreme."

(USFS Decision, Dec. 14, 2016, at 20-21).

95. On December 15, 2016, the Bureau of Land Management ("BLM") rejected Twin Metals' renewal application for the leases based upon USFS's withholding of consent.

96. On May 15, 2019, BLM renewed Twin Metals' leases based upon a legal opinion from the Department of the Interior Solicitor's Office dated December 22, 2017, which concluded that Twin Metals had a non-discretionary right to renewal.

97. On January 25, 2022, the Department of the Interior Solicitor's Office rescinded the 2017 legal opinion. (Memorandum from Principal Deputy Solicitor dated January 25, 2022, at 2.). On January 24, 2022, USFS confirmed that its 2016 withdrawal of consent still represented the agency's position. (Letter from Randy Moore dated January 24, 2022, at 1.) On January 26, 2022, BLM again cancelled Twin Metals' mineral leases, noting that the non-discretionary renewal terms contained in the renewed leases were contrary to law and that USFS did not consent to renewal as required by law.

B. Application for Mineral Withdrawal and Associated Environmental Review

98. In January 2017, USFS applied to the BLM for withdrawal of the Superior National Forest from disposition under mineral leasing laws for twenty (20) years. On September 16, 2018, USFS cancelled this application.

99. On October 21, 2021, BLM published notice that USFS had again filed an application for withdrawal of the Superior National Forest from disposition under mineral leasing laws for a period of twenty (20) years, subject to valid existing rights. USFS explained in its application that it sought withdrawal of the entire Superior National Forest except for the BWCAW and the Mining Protection Area. (USFS Application for Withdrawal at 2.) USFS explained that water quality is a "focal point" for the BWCAW, and that hardrock mining could alter the BWCAW's water quality and degrade the wilderness ecosystem, including wildlife and fish habitat and wild rice. (USFS Withdrawal Application at 3.) USFS noted that it would be difficult to ensure perpetual maintenance of storage facilities or perpetual treatment of water, and increased noise and light and emissions could change the character of the wilderness experience in the BWCAW. (USFS Withdrawal Application at 3.) USFS concluded that permanently stored waste from hardrock mining could "lead to irreversible degradation of this key water-based wilderness resource and jeopardize the purposes for the designation of the BWCAW and the MPA specified by Sec. 2 of the BWCAW Act." (*Id.*)

100. USFS undertook environmental review to support its mineral withdrawal application, issuing an Environmental Assessment ("EA") in June 2022. The agency accepted public comments on the EA through August 12, 2022.

101. The EA considered the two alternatives of implementing the mineral withdrawal and no action. (EA at 6.) Comparing these alternatives, the EA notes, "existing literature suggests that hardrock minerals mining of sulfide-bearing rock, no matter how it is conducted, poses a risk of environmental contamination due to the potential failure over time of engineered mitigation technology." (EA at 27.) The EA indicates that the risk of accidental release of pollutants is greater after mine closure because there is more uncertainty about the availability of resources for monitoring and corrective action. (EA at 37).

102. When addressing possible effects of hardrock mining in the withdrawal area, the EA notes that the possible failure of a tailings basin dam is one of the most significant risks for wild rice due to both release of pollutants and impacts to water elevation. (EA at 34.)

103. The EA notes that the two most significant risks to water quality posed by hardrock mining are tailings basin dam failures, and failures of water collection, treatment, and discharge systems. (EA at 38.)

104. The EA opines that if mining would cause impacts to the BWCAW, it is most likely that those impacts would relate to water quality. (EA at 42.) The EA concludes that the

greatest potential risk is the potential catastrophic failure of a wet basin tailings storage dam because dam failures have the most potential to travel downstream in a volume that could impact wilderness areas. (*Id.*) The EA analyzed a potential wet tailings basin near Birch Lake, and the document concluded that failure of a tailings dam would result in exceedances of water quality standards and impacts to aquatic biota and habitat in Birch Lake, with impacts lessening downstream. (*Id.*)

105. The EA notes that wastewater and leaks also pose risks to the BWCAW. (*Id.*) These risks are addressed through permitting but they increase as facilities age. (*Id.*)

106. The EA states that hardrock mining could cause minimal to severe air quality impacts to the BWCAW, but these impacts are difficult to predict. (EA at 43.)

107. The EA concludes that hardrock mining in the Superior National Forest would negatively impact opportunities for solitude in the BWCAW due to noise, light and visual impacts. (EA at 43-44.)

108. The EA concludes that recreational use of certain areas of the BWCAW adjacent to potential mining areas, such as Gabbro and Little Gabbro Lakes, is likely to decrease if mining is permitted in the Superior National Forest. (EA at 43.)

C. Prospecting Permit and Preference Right Lease Applications

109. On October 21, 2021, BLM rejected Twin Metals' prospecting permit and preference right lease applications. BLM noted that USFS' application for withdrawal of the Superior National Forest from disposition under mineral leasing laws initiated a two-year segregation of these lands. (Letter from BLM to Twin Metals dated October 21, 2021, at 1.) BLM explained that its regulations require that discretionary applications are denied during the segregation, and for that reason, BLM rejected the prospecting permit and preference right lease applications. (*Id.*)

110. BLM also notified Encampment Minerals, Inc. on October 21, 2021, that its prospecting permit applications in the Superior National Forest were rejected for the same reasons.

111. On December 8, 2021, BLM rejected Twin Metals' mine plan of operation because it included land subject to a rejected preference right lease application.

112. On August 22, 2022, Twin Metals filed suit against the United States in the D.C. District Court challenging the cancellation of the leases and the preference right lease applications, and rejection of the mine plan of operations. Twin Metals alleges that several

federal agencies and officials engaged in a coordinated campaign to undermine its project. Twin Metals seeks a declaratory judgment that the lease cancellations, rejection of its preference right lease applications, and rejection of its mine plan of operations were arbitrary, capricious, and contrary to law. Twin Metals seeks declaratory judgment that its leases and preference rights lease applications are still valid and in effect and its mine plan of operations is still pending. Twin Metals' lawsuit is currently pending in the D.C. District Court.

D. Final Decision on Mineral Withdrawal

113. On January 26, 2023, the Secretary of the Department of the Interior issued an order withdrawing over 200,000 acres of the Superior National Forest from disposition under mineral leasing laws for twenty years. (Dept. of the Interior, Public Land Order No. 7917.) The mineral withdrawal is subject to existing rights, and it does not apply to non-federal lands. *Id.* The purpose of the withdrawal is to protect the natural resources, ecological integrity, and wilderness values of the Rainy River Headwaters watershed, the BWCAW, the Mining Protection Area, and the 1854 ceded territory. *Id.*

VII. CURRENT ENVIRONMENTAL PROTECTIONS

114. To determine whether the nonferrous metallic mineral siting rule is adequate to protect the BWCAW from pollution, impairment, or destruction, DNR must consider the existing environmental protection framework that is in place. DNR accepted public comments in this matter on the adequacy of the rule "with express consideration of how Minn. R. 6132.2000, subp. 2A and 3A fit within the broader context of all applicable environmental protection in state and federal law regulating nonferrous mining." If the siting rule, operating in conjunction with this environmental protection framework, is sufficient to protect the BWCAW, then the siting rule complies with MERA. If the siting rule, operating in conjunction with this environmental protection framework, is not sufficient, then the siting rule violates MERA, and DNR must undertake rulemaking to revise the rule. The adequacy of the siting rule cannot be considered in a regulatory vacuum.

115. In this case, DNR is tasked by the District Court with determining whether the siting rule is adequate to protect air, water, land, or other natural resources located within the state from pollution, impairment, or destruction. Minn. Stat. § 116B.10, subd. 2 & 3. "Pollution, impairment or destruction" is defined as "any conduct by any person which violates, or is likely to violate, any environmental quality standard, limitation, rule, order, license, stipulation agreement or permit of the state or any instrumentality, agency or political subdivision thereof

which was issued prior to the date the alleged violation occurred or is likely to occur or any conduct which materially adversely affects or is likely to materially adversely affect the environment." Minn. Stat. § 116B.02, subd. 5. With respect to the first part of this definition of pollution, impairment, or destruction, DNR must consider whether mining in the Rainy River Headwaters watershed is likely to violate existing environmental quality standards that protect the BWCAW.

116. Thus, understanding the existing environmental quality standards that are in place to protect the BWCAW is a key step in DNR's analysis of the adequacy of the siting rule.

A. DNR's Reclamation Rules

117. Rule 6132.2000 is part of a larger chapter governing nonferrous metallic mineral mining and should be considered in conjunction with these rules.

118. To start, Rule 6132.2000 contains general siting criteria in addition to the prohibitions on mining and surface disturbance in specific areas such as the BWCAW and the Mineral Management Corridor. Rule 6132.2000 provides as follows with respect to general siting criteria:

> "Subpart 1. Goals. Mining shall be conducted on sites that minimize adverse impacts on natural resources and the public. Separations shall be maintained between mining areas and adjacent conflicting land uses. All sites shall incorporate setbacks or separations that are needed to comply with air, water, and noise pollution standards; local land use regulations; and the requirements of other appropriate authorities.
>
> Subp. 5. General siting criteria. Portions of a mining operation for which there is flexibility in site selections, such as storage piles, tailings basins, water reservoirs, processing plants, offices, interconnecting roadways, and auxiliary facilities, shall be sited to the extent practicable so that:
>
> A. Impacts on the public and natural resources due to wind erosion, noise, and air emissions are minimized;
>
> B. Potential injury to life due to floods, caving, or slope failure is minimized;
>
> C. Potential damage to property and natural resources due to floods, caving, or slope failure is minimized;
>
> D. Major modifications of watersheds, including diversions of surface water and alterations of groundwater levels, are minimized;
>
> E. Runoff and seepage can be managed to minimize water impacts on surface water and groundwater;

F. Conflicts with natural and historical heritage sites, identified during environmental review, are minimized; and

G. Former mining areas are used in preference to areas undisturbed by mining."

119. Subpart 5 of section 6132.2000 provides additional tools to DNR to require the siting of storage and processing facilities in areas that are already disturbed or have less potential to cause environmental impacts.

120. Chapter 6132 contains many other provisions designed to reduce the environmental impacts of mining and ensure land is successfully reclaimed.

121. Rule 6132.1200 requires adequate financial assurance to ensure DNR can complete reclamation if the permittee fails to perform closure maintenance, post-closure maintenance, or corrective actions required by the commissioner.

122. Rule 6132.2200 requires that a mine operator characterize the chemical and physical properties of mine waste prior to filing an application for a permit to mine and continuously thereafter until the mine ceases operations. Minn. R. 6132.2200, subp. 2(A); *see also* Minn. R. 6132.1000. An operator must design a storage facility for reactive mine waste to meet requirements intended to ensure there is no release of substances that result in adverse impacts to natural resources, and provide for monitoring and inspection of the facility. Minn. R. 6132.2200, subp. 2 (B) & (C).

123. Rule 6132.2300 sets forth requirements for the construction of lifts and benches of the overburden portions of mine pit walls to ensure that they are structurally sound.

124. Rule 6132.2400 sets forth requirements for the design and construction of waste storage facilities that are intended to minimize hydrologic impacts, encourage the growth of vegetation, and control erosion at the storage facility.

125. Rule 6132.2500 requires that tailings basins are designed by professional engineers proficient in tailings basin design. Tailings basin designs must incorporate several factors, including a rationale for site selection, operating performance specifications needed for environmental protection, and plans for monitoring construction, operations, and reclamation.

126. Rule 6132.2700 sets forth specific requirements as to the establishment of vegetation in mining areas to control erosion, screen mining areas from incompatible uses, and provide for subsequent land uses. This includes regulation of the establishment and maintenance of the vegetation in mining areas after they are no longer scheduled to be used for mining.

127. Rule 6132.2800 requires dust suppression in a manner approved by the commissioner.

128. Rule 6132.2900 restricts air overpressure and ground vibrations caused by blasting to certain designated levels that are not injurious to human health or welfare. This rule also requires operators to monitor blasts and keep a blasting log.

129. Rule 6132.3000 requires mine operators to conduct mining in a manner that will minimize hazardous conditions that result from ground subsidence.

130. Rule 6132.3200 governs closure of mining facilities to ensure that they are stable and free of hazards, and to minimize hydrologic impacts and the release of substance that adversely impact natural resources. For example, the rule requires that operators seal accesses to underground mines, construct fences for safety, remove facilities and equipment, and drain basins. If closure cannot be achieved without continued maintenance, the permittee must implement a plan for post-closure maintenance and provide financial assurance.

131. DNR's reclamation rules are designed to be flexible to allow the agency to tailor permits to particular site conditions. *In the Matter of the Proposed Permanent Rules Relating to Nonferrous Metallic Mineral Mineland Reclamation*, Hearing Transcript at 22 (Dec. 7, 1992).

132. Minnesota's appellate courts have upheld the validity of the reclamation rules when they have been challenged based on the discretion given the agency to apply the rules based on site conditions of individual mining projects. Following the issuance of a Permit to Mine to PolyMet Mining, Inc., the Minnesota Center for Environmental Advocacy ("MCEA") filed suit against DNR seeking a judgment that Minnesota Rules Chapter 6132 is invalid because it exceeds DNR's statutory authority. MCEA argued that Minnesota Statutes section 93.47 requires DNR to adopt rules with prescriptive standards, and that the standards in Chapter 6132 are so general that they fail to comply with this statutory mandate. *Minn. Ctr. for Envtl. Advocacy v. Minn. Dep't of Natural Res.*, 2019 WL 354839, at *7 (Minn. Ct. App. 2019). DNR argued that flexible reclamation standards accommodate widely varying conditions at mine sites and changing technology. *Id.* at *8. The court upheld the rules as complying with DNR's statutory authority. *Id.* The court concluded that section 93.47 requires DNR to establish reclamation standards, adopt procedures for determining when those standards cannot be met, and deny permits when standards cannot be met, and Chapter 6132 complies with this mandate. *Id.*

133. The siting rule, Minn. R. 6132.2000, is not the only provision of Chapter 6132 that protects the BWCAW from pollution, impairment, or destruction. Chapter 6132 as a whole provides a robust and flexible framework for DNR permitting of nonferrous metallic mineral mining. The rule allows DNR to create project-specific special conditions that may be necessary to protect the BWCAW and surrounding environment.

B. Water Quality Standards, NPDES and SDS Permitting, and WRAPS Reports

134. Many environmental quality standards protect the BWCAW. One of the most significant is the water quality standards for the BWCAW.

135. MPCA implements the Clean Water Act in the State of Minnesota. MPCA is responsible for establishing water quality standards, which set forth the desired condition of a body of water. *In Re Cities of Annandale and Maple Lake NPDES/SDS Permit Issuance,* 731 N.W.2d 502, 510 (Minn. 2007).

136. Water quality standards consist of three components – beneficial uses of the water body, narrative or numeric standards designed to protect those uses, and anti-degradation standards. *See, e.g., In re 401 Water Quality Certification*, 822 N.W.2d 676, 679 (Minn. Ct. App. 2012).

137. MPCA can authorize the discharge of pollutants to surface waters through the issuance of a National Pollutant Discharge Elimination System ("NPDES") permit but must ensure that the discharge will not cause or contribute to the violation of water quality standards. 33 U.S.C. § 1342; 40 C.F.R. § 122.4(i). MPCA can include effluent limitations in its permits designed to ensure compliance with applicable water quality standards. 33 U.S.C. § 1312. Effluent limitations restrict the quantities or concentrations of substances that are discharged by "point sources", such as pipes conveying pollutants. *In Re Cities of Annandale and Maple Lake NPDES/SDS Permit Issuance,* 731 N.W.2d at 509-10.

138. Each of the surface water bodies in the Rainy River Headwaters watershed has associated numeric and narrative water quality standards designed to protect the beneficial uses of those waters.

139. In addition, MPCA must ensure compliance with anti-degradation standards applicable to those waters. In most cases, anti-degradation standards ensure that existing uses of surface waters are protected, and that degradation of waters with high water quality is minimized and only allowed to the extent necessary to accommodate important economic or

social development. Minn. R. 7050.0250 (A) & (B); *see also* Minn. R. 7050.0265, subp. 1-5. In contrast, for some very high quality waters like the BWCAW, the anti-degradation standards protect the water quality necessary to preserve the exceptional characteristics of these waters. Minn. R. 7050.0250 (C).

140. The surface waters within the BWCAW receive the highest possible protection under Minnesota law. Waters within the BWCAW are designated as "prohibited outstanding resource value waters." Minn. R. 7050.0335, subp. 3(A).

141. Activities that cause a "net increase in loading or other causes of degradation" within the BWCAW are prohibited. Minn. R. 7050.0265, subp. 7. MPCA rules define the phrase "net increase in loading or other causes of degradation" to mean: "when applied to an activity that is not regulated by an existing control document, *any* loading or other cause of degradation resulting from the proposed activity." Minn. R. 7050.0255, subp. 26(A) (emphasis added). Control documents include NPDES permits. Minn. R. 7050.0255, subp. 10.

142. "Loading" is defined as "the quantity of pollutants, expressed as mass, resulting from a discharge or a proposed discharge to a surface water." Minn. R. 7050.0255, subp. 22. A "discharge" is the "addition of pollutants to surface waters." Minn. R. 7050.0255, subp. 12. "Degradation" is defined as "a *measurable change* to existing water quality made or induced by human activity resulting in diminished chemical, physical, biological, or radiological qualities of surface waters." Minn. R. 7050.0255, subp. 11 (emphasis added).

143. In other words, for activities that are not governed by existing permits, any new NPDES permit that is issued within the Rainy Rivers Headwaters watershed must ensure that there is no measurable change in water quality at the boundary of the BWCAW.

144. Groundwater is also protected by water quality standards adopted by the MPCA. Minn. R. 7050.0221.

145. MPCA authorizes the discharge of pollutants to groundwater through its State Disposal System ("SDS") permits. Minn. Stat. §115.03, subd. 1(e); Minn. Stat. § 115.07, subd. 1. SDS permits are designed to prevent water pollution and ensure compliance with water quality standards. *Id.* If a discharge to groundwater is the "functional equivalent" of a discharge to surface waters, then a NPDES permit is also required for the discharge. *In Re Reissuance of an NPDES/SDS Permit to U.S. Steel Corp.*, 954 N.W.2d 572, 574 n. 1 (Minn. 2021).

146. To meet the surface water quality standards within the BWCAW, any pollutants discharged in the Rainy River Headwaters watershed upstream from the BWCAW must be

sufficiently diluted by the time they reach the BWCAW that they will not cause any "measurable change" in the BWCAW. MPCA can include effluent limitations in NPDES and SDS permits in the Rainy River Headwaters watershed designed to meet this standard.

147. The Legislature requires MPCA to develop and update watershed restoration and protection strategies ("WRAPS") for each major watershed in the State. Minn. Stat. § 114D.26, subd. 1 & 3. WRAPS reports must identify threats to water quality in the watershed and strategies capable of achieving pollutant reductions necessary to meet water quality standards. Minn. Stat. § 114D.26, subd. 1(b). MPCA adopted a WRAPS report for the Rainy River Headwaters watershed in June 2022. The goal of the WRAPS report is to ensure that waters that are not impaired (i.e., they meet water quality standards) do not become impaired. While the Rainy River Headwaters watershed WRAPS report identifies several strategies for improving water quality in the watershed, none of them are specifically focused on water quality effects relating to nonferrous metallic mineral mining. MPCA acknowledges in the report that nonferrous metallic mineral mining in the watershed has the potential to "adversely affect the unique and sensitive water resources in the BWCAW." MPCA, *Rainy River Headwaters Watershed Restoration and Protection Strategy (WRAPS) Report* at 25 (June 2022).

C. Wild Rice

148. Waters in the Rainy River Headwaters that are used for the production of wild rice are subject to a water quality standard of ten milligrams per Liter of sulfate during those times during the growing season that wild rice is susceptible to damage by high sulfate levels. Minn. R. 7050.0224, subp. 2; Minn. R. 7050.0470, subp. 2(A)(1).

149. The Legislature ordered the MPCA to replace the wild rice rule by January 15, 2019. 2017 Minn. Laws ch. 93, art. 2, § 149. MPCA drafted a new rule, but the Administrative Law Judge disapproved the rule in the rulemaking proceeding and MPCA withdrew it. *In Re Reissuance of NPDES/SDS Permit to U.S. Steel Corp.*, 937 N.W.2d 770, 789 (Minn. Ct. App. 2019), *rev'd in part on other grounds by In Re Reissuance of NPDES/SDS Permit to U.S. Steel Corp.*, 954 N.W.2d 572 (Minn. 2021). Thus, the wild rice rule is still in effect.

150. The Legislature has also ordered that MPCA may not require NPDES/SDS permittees to "expend money for design or implementation of sulfate treatment technologies or other forms of sulfate mitigation." 2015 Minn. Laws 1st Spec. Sess. ch. 4, art. 4, § 136. The Court of Appeals has concluded that the Legislature is only empowered to impose this

restriction on SDS permits, which are State permits, and may not impose this restriction on NPDES permits, which must be issued in accordance with the federal Clean Water Act. *In Re Reissuance of NPDES/SDS Permit to U.S. Steel Corp.*, 937 N.W.2d at 789; and Minn. Stat. § 115.07, subd. 1.

151. MPCA must include effluent limitations for sulfate in NPDES permits issued to mine operators in the Rainy River Headwaters watershed, as necessary to ensure that the permits will not cause or contribute to exceedances of the wild rice water quality standard. MPCA can also require mine operators to expend funds for sulfate treatment technologies necessary to comply with these limitations.

D. Air Quality

152. The BWCAW is designated as a Class I area under the federal Clean Air Act. 42 U.S.C. § 7472(a)(2) (designating all wilderness areas over 5,000 acres in size existing on August 1, 1977, as Class I areas). Class I areas are entitled to additional protection under the Clean Air Act.

153. The USFS, as the manager of the BWCAW, in consultation with the U.S. Environmental Protection Agency ("EPA"), must ensure that any proposed major emitting facility in proximity to the BWCAW would not have an adverse impact on the air quality-related values of the BWCAW, including visibility. 42 U.S.C. § 7475(d). MPCA may not issue a Clean Air Act permit to a mining company unless the company can satisfy this requirement. 42 U.S.C. § 7475(a)(5).

154. The definition of major emitting facility includes any facility that emits more than two hundred fifty tons of air pollutants annually. 42 U.S.C. § 7479 (1).

155. Additionally, and in accordance with the regional haze rule, states must adopt an implementation plan that provides for reasonable progress toward achieving natural visibility in Class I airsheds. 40 C.F.R. § 51.308(d). The plan must provide for improvement in visibility on the most impaired days and no degradation in visibility on the least impaired days. *Id.* The state implementation plan must address the imposition of emissions limitations on permittees. *Id.* The plan must also address requirements for best available retrofit technology for sources that cause or contribute to the impairment of visibility in Class I areas. 40 C.F.R. § 51.308(e).

156. In its Clean Air Act permits, MPCA must impose emissions limitations necessary to protect the air quality-related values of the BWCAW and comply with the regional haze rule. Mines located in the Rainy River Headwaters must comply with standard Clean Air Act

requirements, such as a new source review, in addition to restrictions specific to Class I airsheds.

157. MPCA also regulates fugitive dust emissions. MPCA rules require that parties take reasonable measures to prevent fugitive dust from becoming airborne. Minn. R. 7011.0150. Moreover, as discussed above, DNR's reclamation rules address dust suppression. Minn. R. 6132.2800.

E. Noise, Light and Visibility

158. MPCA regulates noise pollution, and any mine in the Rainy River Headwaters watershed would have to comply with the MPCA noise regulations. Minn. Stat. § 116.07, subd. 4(e); Minn. R. ch. 7030. Noise is regulated based on the land use where the receiver, or listener, is located. Mining areas are designated as receivers as land use classification 3, which allows for a higher noise volume than other designations. Minn. R. 7030.0040, subp. 2; Minn. R. 7030.0050, subp. 2. Camping or recreational areas are designated as receivers as classification 1, which requires the lowest volume. *Id.*

159. MPCA's noise regulations do not prohibit all audible noise. The regulations also do not limit the maximum volume of a facility provided that maximum volume is only reached a certain percentage of the time. That is, the regulations allow exceedances of a certain volume a certain percentage of the time. For example, a facility can exceed a certain volume 50 percent of the time, and can exceed another volume ten percent of the time. Minn. R. 7030.0040, subp. 2; Minn. R. 7030.0020, subp. 7 & 8 (defining L10 and L50).

160. Thus, as discussed further below, compliance with the State noise rules may not ensure that a mine would not negatively impact the wilderness experience in parts of the BWCAW. The State noise rules are inconsistent with the federal wilderness designation which indicates that wilderness areas are "affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable." Wilderness Act, Pub. L. No. 88-577, § 2(c), 78 Stat. 890, 891 (1964).

161. The International Dark-Sky Association has designated the BWCAW as a dark sky sanctuary. The International Dark-Sky Association is not a regulatory agency.

162. Local zoning ordinances may contain restrictions on outdoor lighting designed to prevent light pollution. The Department of Administration is required to adopt a model ordinance for local governments to use in reducing light pollution. Minn. Stat. § 16B.328.

163. DNR is not aware of any federal or State laws or regulations that directly regulate the visual impact that mining facilities may have on the BWCAW. Local zoning regulations may set forth height restrictions that are protective of scenic views in the BWCAW.

F. Water Appropriation and Work-in-Public Waters

164. Appropriation of surface waters and groundwater is regulated by the DNR. Minn. Stat. §§ 103G.255-.299; Minn. R. 6115.0600-.0810. Mine operators often need appropriation permits for water used in processing and for construction dewatering.

165. A water appropriation permit is required for the use of 10,000 or more gallons per day or more than one million gallons per year. Minn. Stat. § 103G.271, subd. 1 & 4.

166. Use of groundwater must be sustainable to supply the needs of future generations and must not harm ecosystems. Minn. Stat. § 103G.287, subd. 5.

167. Appropriation of surface water is prohibited if the level of the surface water falls below low flow or protective elevation levels. Minn. Stat. § 103G.285, subd. 2 & 3. Only temporary appropriations are permitted from trout streams. Minn. Stat. § 103G.285, subd. 5. Groundwater appropriations that have negative impacts on surface waters are also subject to the restrictions on surface water appropriation. Minn. Stat. § 103G.287, subd. 2.

168. Mine operators are required to use available surplus waters from mining operations – rather than appropriate surface water or groundwater – whenever feasible. Minn. R. 6115.0720, subp. 2(A).

169. Mine operators often need to re-direct streams or drain public waters wetlands located in mining facilities. State law requires a work-in-public waters permit for activities that change the course, current or cross-section of public waters, including lakes, rivers, streams, and public waters wetlands, unless an exception is provided by statute. Minn. Stat. § 103G.245, subd. 1; *see also* Minn. Stat. § 103G.005, subd. 15 (defining public waters); Minn. R. 6115.0150-.0280.

170. To divert or drain public waters, a mining company must demonstrate that the proposed action is necessary for the mining of substantial deposits of ore, that no other method of mining is feasible or economical, that the proposed action will not substantially impair the interests of the public in the waters or endanger public health or safety, and that the proposed action will be in the public interest. Minn. Stat. § 103G.297, subd. 3 (addressing work-in-public waters requirements for taconite and copper-nickel mining); *see also* Minn. R. 6115.0280. If permitted activities would cause detrimental effects on the physical or biological character of

public waters at the site or downstream public waters, DNR requires mitigation in its permits, such as augmentation of water volumes reduced by mining, creation of in-pit aquatic habitat, or restoration of stream reaches in other locations. Minn. Stat. § 103G.245, subd. 7; Minn. R. 6115.0280, subp. 5.

G. Clean Water Act Section 404 Permits and the Minnesota Wetland Conservation Act

171. Wetlands receive both federal and State protections, and mine operators must replace jurisdictional wetlands that are drained or filled as a result of mining activities.

172. The Clean Water Act requires that a mine operator obtain a permit before discharging dredge or fill materials into navigable waters. 33 U.S.C. § 1344. This type of Clean Water Act permit is commonly referred to as a section 404 permit. Section 404 permits typically require mitigation, such as wetland replacement, for wetlands impacted by mining projects. 33 C.F.R. part 332.

173. The U.S. Army Corps of Engineers ("Corps") will only grant a section 404 permit if the MPCA certifies that the discharge will not violate State water quality standards. 33 U.S.C. § 1341(a)(1).

174. The Minnesota Wetland Conservation Act ("WCA"), Minn. Stat. §§ 103G.222-.2372, requires replacement of wetlands that are drained or filled by mining companies unless an exception applies. Minn. Stat. § 103G.222, subd. 1. WCA only permits drainage or filling of wetlands to the extent those impacts cannot be avoided or minimized. Minn. R. 8420.0520. subp. 1. WCA further requires that impacted wetlands are replaced, either through project-specific replacement or the purchase of wetland banking credits. Minn. R. 8420.0522. At a minimum, wetlands must be replaced at a ratio of 1:1, but higher ratios are often required depending on the location of the impacts and the replacement wetland or wetland bank. Minn. R. 8420.0522, subp. 4. DNR administers WCA for projects for which a Permit to Mine is required. Minn. Stat. § 103G.222, subd. 1.

175. Public waters wetlands are not addressed by WCA but instead are governed by the work in public waters rules addressed above. Minn. R. 8420.0111, subp. 72(C) (defining wetland); Minn. Stat. § 103G.005, subd. 15a (defining public waters wetland).

H. Federal and State Endangered Species Acts

176. The federal Endangered Species Act ("ESA") governs federally listed threatened and endangered species. The Secretary of the Interior designates species as endangered or threatened and designates critical habitat for such species.

177. The ESA generally prohibits the taking of federally listed endangered species. 16 U.S.C. § 1538. The term "taking" includes the taking of a listed species' critical habitat. 50 C.F.R. § 17.3. The Secretary of the Interior may in some situations issue permits for the taking of endangered species. The Secretary may issue takings permits for scientific purposes or to enhance the propagation or survival of the species. 16 U.S.C. § 1539(a)(1)(A). Takings permits may also be issued when the take is incidental to an otherwise lawful activity. 16 U.S.C. § 1539(a)(1)(B). Applicants for a takings permit must submit a conservation plan that explains how the applicant will minimize and mitigate the impact of the taking, and why the taking will not appreciably reduce the likelihood of survival or reestablishment of the species in the wild. 16 U.S.C. § 1539(a)(2).

178. Federal agencies must ensure that actions they undertake, approve or fund are not likely to jeopardize the continued existence of a threatened or endangered species or result in the destruction of critical habitat for such species. 16 U.S.C. § 1536(a)(2). Federal Agencies must consult with the Secretary of the Interior in making this determination. 16 U.S.C. § 1536(a)(4).

179. The Minnesota Endangered Species Act ("MESA") governs State-listed endangered, threatened and special concern species. Minn. Stat. § 84.0895; Minn. R. ch. 6134 (listing species). The MESA requires a DNR permit for the taking of a State-listed threatened or endangered species. Minn. Stat. § 84.0895, subd. 1 (requiring a permit for the taking of endangered species); Minn. R. 6212.1800, subp. 1 (requiring a permit for the taking of threatened species). DNR will only grant a takings permit if the permittee provides mitigation ensuring that the "social and economic benefits of the act outweigh the harm caused by it" and "the permitted act will not be detrimental to the species." Minn. Stat. § 84.0895, subd. 7(a)(4); Minn. R. 6212.1800, subp. 2. DNR cannot issue a takings permit unless "all alternatives, including live trapping and transplantation, have been evaluated and rejected." Minn. Stat. § 84.0895, subd. 7(c). In other words, regulated parties have a legal obligation to avoid takings where possible, and to mitigate for takings that cannot be avoided if the taking is otherwise permittable.

180. The federal and State endangered species acts will reduce the environmental impacts of mining by requiring companies to avoid takings where feasible, mitigate for the impacts of takings that cannot be avoided, and avoid impacts to critical habitat.

I. Dam Safety Regulations

181. DNR has statutory authority to inspect dams and ensure their safe operation. Minn. Stat. § 103G.515. DNR is authorized to perform regular inspections of dams and order the dam owners to take corrective actions if necessary. Minn. R. 6115.0360 (dam inspections); Minn. R. 6115.0340 (classification of class I, II, and III dams).

182. A mining company that is proposing to construct a new tailings basin dam or expand an existing tailings basin dam must apply to the DNR for a dam safety permit. Minn. R. 6115.0410, subp. 2-7. The application must contain detailed engineering information such as construction plans; boring logs; geological, hydrological and geotechnical information; operational plans; and dam stability studies. *Id.* Approval or denial of the permit will be based on "the potential hazards to the health, safety and welfare of the public and the environment including probable future development of the area downstream or upstream." Minn. R. 6115.0410, subp. 8.

J. Treaty-reserved Rights in Ceded Territories

183. Mining in the Rainy River Headwaters watershed may affect usufructuary rights of members of the Grand Portage Band of Lake Superior Chippewa, the Bois Forte Band of Chippewa, and the Fond du Lac Band of Lake Superior Chippewa ("Bands") that were reserved in the 1854 Treaty of La Pointe ("1854 Treaty").

184. DNR acknowledges that the Bands reserved hunting, fishing and gathering rights in lands ceded to the U.S. government in the 1854 Treaty. The BWCAW is located within the 1854 ceded territory.

185. DNR further acknowledges that it has a fiduciary obligation to manage treaty resources for the benefit of future users and may not deprive the Bands of their treaty rights to hunt, fish and gather off reservation. *Mille Lacs Band of Chippewa v. State of Minn.*, 952 F. Supp. 1362, 1369-75 (D. Minn. 1997)(generally discussing the roles and responsibilities of the Bands and the State in setting harvestable surplus, leaving open the question of the scope of the state's resource management authority), see also *U.S. v. State of Wash.*, 520 F.2d 676, 685 (9th Cir. 1975) (holding neither the Bands nor the State the state may exercise their harvest rights in a manner that allows the treaty resource to be destroyed.)

186. The Eighth Circuit has not ruled, however, that the 1854 Treaty entitles the Bands to habitat protection for species subject to treaty rights. *See, e.g., Cohen's Handbook on Federal Indian Law* § 18.04[2][g] (2012). Few courts have concluded that usufructuary rights

require States to manage lands in a manner that protects habitat for treaty-reserved species, but there are some examples. *See, e.g., U.S. v. State of Washington*, 853 F.3d 946 (9th Cir. 2017) (upholding injunction requiring the State to alter culverts that impede salmon runs).

187. DNR concludes that the 1854 Treaty does not provide any specific environmental quality standards that would control the environmental effects of nonferrous metallic mineral mining in the Rainy River Headwaters watershed. Nonetheless, in making its decision, DNR gives significant consideration to the protection of treaty-reserved resources.

K. Boundary Waters Treaty

188. The Boundary Waters Treaty, also known as the Root-Bryce Treaty, was adopted in 1909 to prevent disputes about the use of the boundary waters between the U.S. and Canada. This treaty seeks to ensure free navigation across the boundary waters and prevent obstruction of such waters. Article IV of the treaty provides that "boundary waters and waters flowing across the boundary shall not be polluted on either side to the injury of health or property on the other." 36 Stat. 2448 (May 13, 1910).

189. No caselaw addresses the pollution provision in the Boundary Waters Treaty. Pollution-related disputes have sometimes been referred by both parties to the International Joint Commission established by the treaty for non-binding resolution. Noah D. Hall, *The Centennial of the Boundary Waters Treaty: A Century of United States-Canadian Transboundary Water Management*, 54 Wayn. L. R. 1417, 1437 (2008).

190. The Boundary Waters Treaty does not provide any specific environmental quality standards that would control the environmental effects of nonferrous metallic mineral mining in the Rainy River Headwaters watershed.

L. Federal Regulation Outside the BWCAW: The Property Clause and the Superior National Forest Plan

191. Congress has the power to impose use restrictions on private and State lands within the boundaries of wilderness areas, and sometimes even outside the boundaries of wilderness areas.

192. Under the property clause of the U.S. Constitution, Congress has the power to "regulat[e] conduct on or off public land that would threaten the designated purpose of federal lands." *State of Minn. by Alexander v. Block*, 660 F.2d 1240, 1249 (8th Cir. 1981); U.S. Const., art. IV, sec. 3, cl. 2. Courts uphold regulations under the property clause if they protect the fundamental purpose for which the lands were designated and are reasonably related to that

end. *Id.* at 1250. For example, Congress may regulate the use of motorboats on navigable lakes in the BWCAW even though the State owns the bed of the lakes, and may regulate the use of motorized vehicles on State-owned lands in the BWCAW. *Id.* at 1251. Congress' powers under the property clause may extend even to regulations that affect private lands outside the boundaries of a wilderness area or national park. *Stupak-Thrall v. U.S.*, 70 F.3d 881, 886 (6th Cir. 1995) (upholding regulations that affected use of adjacent private property on a lake partly within a wilderness area).

193. Here, Congress has not exercised its authority to regulate mining on State and private lands outside of the BWCAW. The BWCAW Act regulates mining on federal lands and mining affecting navigable waters in the BWCAW and the Mining Protection Area. Boundary Waters Canoe Area Wilderness, Pub. L. 95-495, § 11(a), 92 Stat. 1649, 1655 (1978). Within the boundaries of the BWCAW and Mining Protection Area, federal agencies cannot issue permits for mining on State and private lands if mining would affect navigable waters. This same prohibition does not apply to lands adjacent to the BWCAW and Mining Protection Area.

194. USFS currently allows mining in the Superior National Forest outside of the BWCAW and Mining Protection Area. The Superior National Forest Plan provides that "exploration and development of mineral and mineral material resources is allowed on National Forest System land, except for federal owned minerals in designated wilderness (BWCAW) and the Mining Protection Area (MPA)." *Land and Resource Management Plan Superior National Forest*, at 2-9 (July 2004). BLM has, however, withdrawn all federal minerals in the Superior National Forest from disposition under mineral leasing laws for twenty years. Thus, mining can only occur on federal lands in the Superior National Forest if the mine operator has pre-existing rights.

VIII. MERA REQUIREMENTS

195. Section 10 of MERA, Minn. Stat. § 116B.10, authorizes a natural person residing in the state, the state or its subdivisions, or a legal entity with partners, members or employees residing in the state to bring an action against the state in district court for declaratory or equitable relief to challenge an environmental quality standard, rule, order, stipulation agreement or permit issued by the state for which the appeals period has elapsed. Minn. Stat. § 116B.10, subd. 1.

196. NEMW has the burden to prove that DNR's nonferrous mine siting rule, Minn. R. 6132.2000, is inadequate to protect the BWCAW from pollution, impairment, or destruction. Minn. Stat. § 116B.10, subd. 2.

197. Because this matter has been remitted to the DNR, DNR must make findings and issue an order on whether Minn. R. 6132.2000 is adequate to protect natural resources in the state from pollution, impairment, or destruction. Minn. Stat. § 116B.10, subd. 3.

198. "Natural resources" are defined to include "all mineral, animal, botanical, air, water, land, timber, soil, quietude, recreational and historical resources." Minn. Stat. § 116B.02, subd. 4. "Natural resources" also includes scenic and aesthetic resources owned by a government entity. *Id.* In this case, the resource at issue is the BWCAW, which encompasses each part of that definition.

199. "Pollution, impairment or destruction" is defined as "any conduct by any person which violates, or is likely to violate, any environmental quality standard, limitation, rule, order license, stipulation agreement or permit of the state or any instrumentality, agency, or political subdivision thereof which was issued prior to the date the alleged violation occurred or is likely to occur or any conduct which materially adversely affects or is likely to materially adversely affect the environment." Minn. Stat. § 116B.02, subd. 5.

200. "Person" is broadly defined to include government entities, natural persons, and corporate entities. Minn. Stat. § 116B.02, subd. 2.

201. Courts have broadly defined the term "conduct." *See, e.g., State by Smart Growth Minneapolis v. City of Minneapolis*, 954 N.W.2d 584, 594 n. 15 (Minn. 2021) (concluding that the adoption of a comprehensive plan is "conduct" under MERA). In this case, "conduct by any person" would include nonferrous metallic mineral mining activities in which mining companies may engage in the Rainy River Headwaters watershed in the future.

202. The two prongs of a MERA case are a protectable natural resource and conduct that is likely to cause pollution, impairment, or destruction of that resource. *State ex rel. Wacouta Twp. v. Brunkow Hardwood Corp.*, 510 N.W.2d 27, 29 (Minn. Ct. App. 1993).

203. Minnesota courts have concluded that the BWCAW is a protectable natural resource. *See, e.g., State by Drabik v. Martz,* 451 N.W.2d 893, 897 (Minn. Ct. App. 1990).

204. As to the first prong of the definition of pollution, impairment, or destruction, DNR must consider whether, under MERA section 10, the mine siting rule is adequate to protect the BWCAW from conduct that is likely to violate environmental quality standards. Many

applicable environmental quality standards are described in Section VII above, some of which are within DNR's jurisdictional authority and some of which are not. In other words, DNR must consider whether nonferrous metallic mineral mining in the Rainy River Headwaters watershed is likely to result in violations of environmental quality standards in the BWCAW.

205. As to the second prong of the definition of pollution, impairment, or destruction, courts decide whether conduct materially adversely affects the environment by considering five factors known as the Schaller factors:

> "1) The quality and severity of any adverse effects of the proposed action on the natural resources affected;
> 2) Whether the natural resources affected are rare, unique, endangered, or have historical significance;
> 3) Whether the proposed action will have long-term effects on natural resources, including whether the affected resources are easily replaceable (for example, by replanting trees or restocking fish);
> 4) Whether the proposed action will have significant consequential effects on other natural resources (for example, if wildlife will be lost if its habitat is impaired or destroyed);
> 5) Whether the affected natural resources are significantly increasing or decreasing in number, considering the direct and consequential impact of the proposed action."

State by Schaller v. County of Blue Earth, 563 N.W.2d 260, 267 (Minn. 1997). These five factors are a "flexible guideline." *Id.* The factors are not exclusive, and it is not necessary for each factor to be met to find a MERA violation. *Id.*

206. There is probably little question that the BWCAW contains natural resources that are rare, unique, or endangered in accordance with the second Schaller factor. The Court of Appeals concluded that the plaintiffs had met this factor in a case challenging a communications tower near the BWCAW, even though the court found construction of the tower would not violate MERA. *State by Friends of the Boundary Waters Wilderness v. AT&T Mobility, LLC*, 2012 WL 2202984, at *6 (Minn. Ct. App. 2012). As described above, the BWCAW is unique because it is the largest wilderness area east of the Rocky Mountains.

207. The fifth Schaller factor looks to whether the natural resource at issue is increasing or decreasing in number. MCEA asserts that the U.S. has lost 24 million acres of natural areas since 2001. (MCEA's Comments on DNR Review of Siting Rule dated December 8, 2021, at 18.) Other commenters note that thirty percent of the world's boreal forests are slated for development. DNR acknowledges that natural resources like those found in the BWCAW may be decreasing in number. DNR also recognizes that regardless of any trend in the number of

wilderness areas in the U.S., wilderness areas and other areas with resources characteristic of the BWCAW are subject to increasing pressures due to climate change and other factors. DNR does not have sufficient evidence, however, to reach any conclusion as to whether wilderness areas are significantly decreasing in number. Because it is not necessary to meet all five Schaller factors to find a MERA violation, the fifth Schaller factor is not determinative of the outcome of this case.

208. Thus, the question of whether nonferrous metallic mineral mining in the Rainy River Headwaters watershed would materially adversely affect the BWCAW rests upon the application of the other three *Schaller* factors.

209. Below the agency addresses several types of potential impacts to the BWCAW in the context of the requirements of Minn. Stat. 116B.10, subd. 3, which poses the question: Are the applicable environmental quality standards adequate to protect the BWCAW from pollution, impairment, or destruction? To answer this requires an analysis of those environmental quality standards intended to protect the BWCAW from pollution, impairment, or destruction.

210. The agency was ordered to decide whether Rule 6132.2000 is "inadequate to *protect*" the BWCAW from pollution, impairment, or destruction. Minn. Stat. § 116B.10, subd. 2. The agency recognizes that mining is a heavily regulated activity and that this question must be addressed in the context of that regulation. DNR has carefully considered whether the mine siting rule, in conjunction with the existing environmental protection framework (i.e., environmental quality standards), is protective of the BWCAW.

211. The mine siting rule is protective if the rule, along with the existing environmental protection framework, can ensure that no violations of environmental quality standards in the BWCAW are likely to result from nonferrous metallic mineral mining in the Rainy River Headwaters watershed, during operations or closure. Similarly, the mine siting rule is protective if the rule, along with the existing environmental protection framework, can ensure that no material adverse effects to the BWCAW are likely to result from nonferrous metallic mineral mining in the Rainy River Headwaters watershed, during operations or closure.

IX. NOISE

212. DNR recognizes that in the areas of noise and light pollution, the existing environmental protection framework may not be sufficient to protect the BWCAW from

pollution, impairment, or destruction. A mine operating in full compliance with MPCA's noise rule, Minn. R. ch. 7030, may still negatively impact the wilderness experience for users of the BWCAW.

213. As discussed above, DNR's siting rule was not designed to ensure compliance with MPCA's noise rule, much less to ensure that mining does not interfere with the wilderness experience of BWCAW users. DNR has concluded that the buffer provided by the Mineral Management Corridor may not be sufficient to protect the BWCAW from noise disturbance.

214. The BWCAW has been designated as an International Quiet Park by the organization Quiet Parks International because it has a noise-free interval of 15 minutes or more, meaning that 15 minutes or more passes between human-made noise intrusions.

215. The federal EA states that the BWCAW has a "predominantly natural soundscape." (EA at 21.) The EA concludes that noise relating to mining would likely be more constant and frequent than existing motorized noise near the BWCAW and negatively affect parts of the BWCAW near mining areas. (EA at 52.)

216. The federal EA concluded that noise from diesel mining equipment may be audible up to 14 miles away from a mine, and plant operations may be audible up to two miles away from a mine, in very quiet conditions. (EA Soundscape Report at 13.) Blasting may be audible at further distances, but noise from blasting gradually becomes inaudible in underground mines as the depth increases. (EA Soundscape Report at 11-13.) Commenters also provided information demonstrating that mine noise can sometimes be heard miles away from a mine.

217. DNR's consultant on noise opined, "Intrusion of anthropogenic noise into the natural wilderness soundscape could erode a person's 'wilderness experience.' However, it's conceivable that people will be more tolerable to such noise when they are closer to BWCA boundaries than when they are farther away from them, in the interior of BWCA." (Memo from Tim Casey, HDR, Inc, dated January 20, 2023, at 1.)

218. Mining noise that is "louder, more constant, more frequent, or of a different quality than existing noise is more likely to degrade the wilderness character from its present condition." *Izaak Walton League of America, Inc. v. Kimbell*, 516 F. Supp. 2d 982, 990 (D. Minn. 2007).

219. Minnesota's existing noise rules prohibit exceedances of certain volumes during certain percentages of time. Minn. R. 7030.0040. These rules are not designed to protect the natural soundscape of the BWCAW, which is of high value to BWCAW users.

220. The National Park Service ("NPS") has adopted *Director's Order #47: Soundscape Preservation and Noise Management*. Though this order has now expired, the order addresses the importance of, and methods for, preserving and restoring natural soundscapes in national parks.

221. USFS considered noise impacts to the BWCAW from mineral exploration in its Federal Hardrock Minerals Prospecting Permits Environmental Impact Statement ("EIS"). In its Record of Decision ("ROD"), USFS determined that Minnesota's noise rules were not sufficient to preserve the wilderness character of the BWCAW. Instead, the USFS limited sound levels in the BWCAW to 30 decibels 50 percent of the time, and 35 decibels 10 percent of the time. This sound level is considered to be equivalent to a quiet woods. (ROD at 10-11.)

222. Current average ambient noise levels in the BWCAW are about 34 decibels during the day and 25 decibels at night. (EA Soundscape Report at 10.)

223. Minnesota's existing noise rules allow noise at a volume that some studies have shown is disruptive to wildlife. In camping areas, Minnesota's noise rules allow noise in excess of 50 decibels up to 50 percent of the time even at night, but some studies have found that noise in excess of 40 decibels disrupts wildlife. Minn. R. 7030.0400 (noise standard); Minn. R. 7030.0200, subp. 7 (defining L50); Minn. R. 7030.0050, subp. 2 (designating camping areas as noise area classification 1); Memo from Tim Casey, HDR, Inc, dated January 20, 2023.

224. Noise can affect wildlife by interfering with verbal communication, masking the sounds of predators, or interfering with breeding. Noise can then cause animals to relocate, which can expose them to new hazards such as predators or interactions with humans. (Memo from Tim Casey, HDR, Inc, dated January 20, 2023, at 2.)

225. Noise alone can directly alter wildlife behavior, reduce habitat quality, and cause physiological impacts. (*Id.* at 3.)

226. As described above, the federal EA on the mineral withdrawal in the Superior National Forest concluded that noise impacts caused by nonferrous metallic mineral mining would negatively impact the wilderness experience of BWCAW users in parts of the BWCAW near mining districts. (EA at 43-44.)

227. Open pit mining causes more significant noise issues than underground mining. For example, blasting gradually becomes inaudible in underground mines as mining progresses to greater depth. (EA Soundscape Report at 11.)

228. DNR concludes that nonferrous metallic mineral mining in the Rainy River Headwaters watershed is not likely to violate the applicable environmental quality standard, which is Minn. R. ch. 7030. Because Minnesota's noise rules simply prohibit noise exceedances during certain percentages of time, nonferrous metallic mineral mines could likely operate in compliance with these standards, particularly due to the existence of the Mineral Management Corridor which provides a setback of above-ground operations from the edge of the BWCAW. But that is not the same as saying that the state's noise standards are protective of the BWCAW even when that noise is outside the Mineral Management Corridor.

229. DNR must, therefore, address the issue of noise pursuant to the *Schaller* factors.

230. Applying the *Schaller* factors to noise, nonferrous metallic mineral mining near the BWCAW would likely disrupt the wilderness experience of BWCAW users even if state noise standards were met. If a mine were located near the BWCAW, noise impacts could be severe. Noise caused by mining, such as blasting and heavy equipment operation, is likely to be of a different quality than existing noise.

231. Noise impacts would be long-term, as mining operations may operate around the clock for decades. Though blasting is not continual, the use of heavy equipment does occur continually during operations.

232. Noise impacts in the BWCAW would have consequential impacts to wildlife whose activities are disrupted by noise levels that are permitted under Minnesota law.

233. Thus, noise from nonferrous metallic mineral mining in parts of the Rainy River Headwaters watershed near the BWCAW is likely to materially adversely affect the BWCAW.

234. The mine siting rule – in conjunction with MPCA's noise regulation – is not adequate to protect the BWCAW from pollution, impairment, or destruction caused by noise. For this reason, as discussed more fully below, DNR is proposing an amendment of the mine siting rule that expands the Mineral Management Corridor to establish a greater setback to help mitigate the impact of noise on the BWCAW.

X. LIGHT

235. Commenters note that the BWCAW is one of fifteen places in the world designated as an international dark sky sanctuary.

236. Dark skies attract many visitors to the BWCAW and are part of the wilderness experience valued by visitors.

237. Light from mining operations could potentially be seen miles away from the facility.

238. In the past, DNR has conducted some analysis regarding the visibility of cell towers from the BWCAW and found under certain conditions, 200- to 300-foot cell towers could be seen at campsites up to five miles away. (James Olson, *Proposed Crystal Bay Viewshed Analysis*.)

239. Twin Metals proposed a 130-foot high tailings storage facility, and tailings basins of approximately 200 feet in height have been permitted in Minnesota.

240. The federal EA for the mineral withdrawal conducted modeling of night sky effects of mining and found that mining would brighten the night sky in mine development areas and in neighboring sections of the wilderness. (EA at 50.) The EA concluded that mineral development in the Superior National Forest could threaten the dark sky sanctuary status of the BWCAW. (EA at 50-51.)

241. The EA also concluded that this impact could be mitigated but not eliminated through permitting. (EA Dark Skies Report at 11.)

242. For example, the Permit to Mine could include provisions designed to reduce light impacts.

243. Expanding the Mineral Management Corridor would reduce light disturbance from nonferrous metallic mineral mining because heavily lit operations such as mine pits, tailings basins and processing plants would be set back further from the BWCAW.

244. As described above, DNR is not aware of any regulations that would protect the dark skies of the BWCAW in the event that mining operations would locate nearby the BWCAW. Thus, there is no "per se" MERA violation of an applicable environmental quality standard.

245. As to the *Schaller* factors, DNR has concluded that light impacts to the BWCAW could be severe in that these impacts interfere with the wilderness experience of BWCAW

users. As described in the federal EA for the mineral withdrawal, light impacts could cause BWCAW visitors to avoid areas near mining operations.

246. Lights impacts would be long-term in that mining operations typically operate for decades, and lighting is critical to safe operation of the mine.

247. Light pollution has consequential impacts on wildlife by disrupting natural light and dark cycles. (EA Dark Skies Report at 4.) For example, light pollution has been shown to negatively impact bat behavior and communication. Emma Louise Stone, Stephen Harris, Gareth Jones, *Impacts of artificial lighting on bats: a review of challenges and solutions*, Mammalian Biology, Volume 80, Issue 3, 2015, Pages 213-219.

248. Thus, light from nonferrous metallic mineral mining near the BWCAW is likely to materially adversely affect the BWCAW.

249. DNR concludes that the mine siting rule is not adequate to protect the BWCAW from pollution, impairment, or destruction relating to light impacts. For this reason, as discussed more fully below, DNR is proposing an amendment of the mine siting rule that expands the Mineral Management Corridor to establish a greater setback to help mitigate the impact of light on the BWCAW.

XI. WATER QUALITY

250. Commenters had more concern about water quality impacts from nonferrous metallic mineral mining than about any other issue. As the name suggests, the BWCAW was established as much for its waterways as for the lands within the BWCAW. Water is central to its wilderness designation. DNR must weigh these concerns about water quality against the robust legal protection provided by the prohibited outstanding resource value water designation for the BWCAW.

251. As commenters note, clean water is important for recreational use of the BWCAW. People on multi-day visits rely on water in lakes and streams to drink (after filtering with a hand-held filter) and cannot easily carry sufficient drinking water for their travels.

252. Clean water is also critical to the entire water-rich ecosystem of the BWCAW including its wildlife.

253. Commenters state leaks into groundwater could go undetected for long periods of time, and then surface into lakes and rivers. This is particularly true if the hydrogeology of the area is not well known.

254. Commenters are also concerned with the possibility of acid mine drainage and leaching of toxic metals.

255. Commenters note that mining impacts in the watershed may be exacerbated by climate change, and that climate change (especially increases in intense precipitation events) may make mining disasters such as tailings basin failures more likely.

256. DNR acknowledges that the issue of water quality is central to this litigation, but the DNR concludes that there is no MERA violation as to water quality due to the extensive protection provided by the existing water quality standards for the BWCAW and associated permitting standards.

Per Se Violation

257. DNR concludes there is no "per se" violation of MERA because nonferrous metallic mineral mining in the Rainy River Headwaters watershed is regulated by federal and State law and, therefore, is not likely to violate the water quality standards for the BWCAW.

258. Surface waters within the BWCAW are prohibited outstanding resource value waters. Minn. R. 7050.0335, subp. 3(A). For these waters, no measurable change in existing water quality is permitted. Minn. R. 7050.0265, subp. 7 (prohibiting any net increase in loading or other "degradation"); Minn. R. 7050.0255, subp. 11 (defining degradation as any "measurable change" in existing water quality).

259. Some commenters argue that DNR and MPCA have failed to protect natural resources through environmental review and permitting of mines and suggest that the agency cannot rely on permitting to protect the BWCAW. The prohibited outstanding resource value water designation for the BWCAW, however, provides robust protection, and as described below, may restrict MPCA's ability to issue NPDES permits for mines and/or specific mine designs in the watershed. DNR also recognizes that Minnesota Rules Chapter 6132 provides the agency with the flexibility to require all necessary additional permit conditions when mines are proposed in more environmentally sensitive or otherwise challenging areas.

260. Some commenters argue that the DNR must assume that any nonferrous metallic mineral mine in the Rainy River Headwaters watershed will be unable to comply with the water quality standards for the BWCAW. MERA does not require this kind of assumption of noncompliance but instead asks whether a violation of an environmental quality standard is likely.

261. Further, concerns about the enforcement of the Clean Water Act are beyond the scope of this case and do not compel the finding of a MERA violation. DNR notes that this lawsuit involves a challenge to the adequacy of the mine siting rule, in the context of the environmental protection framework including water quality standards. This lawsuit does not involve a challenge to the implementation or enforcement of water quality standards. DNR also notes that it has not been granted the jurisdictional authority to set water quality standards or to regulate parties to compel compliance with NPDES/SDS permits. That authority rests with its sister agency the MPCA.

262. DNR recognizes that proponents and opponents of a rule change have different views about the risks associated with nonferrous metallic mineral mining and, in particular, about how acceptable those risks are in the watershed upstream from the BWCAW. MERA tasks the agency, however, to determine whether nonferrous metallic mineral mining in the Rainy River Headwaters watershed is *likely* to cause violations of environmental quality standards. Minn. Stat. § 116B.02, subd. 5. The Plaintiff and many commenters in this case ask the agency to apply a zero-risk standard, but such a standard is not dictated by MERA. As discussed below, DNR has concluded that this case raises legitimate policy issues that extend beyond the scope of MERA.

263. DNR does not deny that nonferrous metallic mineral mining could pose risks to the BWCAW if a facility does not comply with its permits and existing laws and that certain design features may carry greater potential risk.

264. In addition to the voluminous information provided by commenters in this case, DNR has also reviewed the federal EA for the mineral withdrawal of the Superior National Forest. The EA concludes nonferrous metallic mineral mining poses risks to the BWCAW, and tailings basins and water collection, treatment and discharge facilities pose higher risks than some other facilities. (EA at 38.) The federal EA also found that changes in water quality associated with mining could affect the wilderness quality of the BWCAW. (EA at 42.)

265. The Department of the Interior ultimately decided these risks were too high in this watershed and approved a mineral withdrawal of the Superior National Forest. The federal government was not tasked, however, with deciding whether nonferrous metallic mineral mining is *likely* to cause pollution, impairment, or destruction of the BWCAW. The federal government made a policy decision, while DNR is tasked with responding to a legal question.

266. While DNR recognizes the potential risks posed by nonferrous metallic mineral mining to the BWCAW, in some cases DNR questions whether proponents of a rule change correctly characterize the nature and scope of such risks.

267. DNR notes that some articles relied on by commenters may exaggerate the risks to the BWCAW posed by nonferrous metallic mineral mining. For example, Plaintiff and some commenters rely heavily on a 2016 article by Tom Myers entitled *Acid mine drainage risks – A modeling approach to siting mine facilities in Northern Minnesota USA* to argue that mining in the Rainy River Headwaters watershed is likely to cause violations of water quality standards. Some of the hydrological and geochemical inputs for the model discussed in this article are not representative of reasonably anticipated values for the watershed. In fact, the model uses sulfate concentrations that are about 10 times greater than that observed from testing of sulfide-rich rocks. See, e.g., The AMAX Field Study in Lapakko, K., *Field Dissolution of Test Piles of Duluth Complex Rock* (1993). In addition, combining this high sulfate concentration with a large drainage volume -- simulated as an injection well directly forcing about 5.8 million gallons of highly polluted water into the groundwater -- is an unrealistic scenario.

268. DNR doubts that catastrophic failures, such as failures of tailings basin dams, could be termed "likely." *See* EA at 34 (noting that there is a low probability of tailings basin dam failure).

269. DNR doubts that climate change would significantly increase the likelihood of a tailing basin breach because DNR accounts for climate change impacts on flood frequency and magnitude when it considers the floods that dams should be designed to withstand.

270. DNR doubts that acid mine drainage or leaching of heavy metals into the BWCAW is "likely." DNR acknowledges that, if it occurred, acid mine drainage or leaching of toxic metals could result in metal contamination and acidification of waters, with resulting impacts to flora and fauna. DNR does not deny that if this kind of pollution were to occur in the BWCAW, it could be devastating. DNR notes, however, that due to safeguards installed at modern mines, acid mine drainage or leaching of toxic metals affecting the BWCAW is not likely absent a grievous scientific oversight or a catastrophic failure of a management facility.

271. DNR also notes that the Rainy River Headwaters watershed is large, and localized water quality impacts from mining are naturally diluted. For example, sulfide-bearing Duluth Complex rock stockpiled near the Dunka Pit is currently impacting water quality in Birch Lake, but that impact becomes unmeasurable about two miles downstream from the stockpile. As

described above, the Dunka Mine was a taconite mine, but it disturbed sulfide-bearing rock during its operation. Based on the geographic extent of impacts from the Dunka Pit, DNR doubts that siting a mine *anywhere* in the watershed is *likely* to cause water pollution in the BWCAW although it admits that the risks become greater the closer a mining facility is located to the BWCAW in terms of flowpath distance.

272. DNR also rejects the conclusion that the outcome of any potential future mining in the Rainy River Headwaters watershed can be foreseen based on the history of other mines. Both proponents and opponents of a rule change have pointed to multiple examples of mines that they uphold as successes or failures. None of these comparisons are particularly helpful to resolving this case.

273. For example, commenters supporting a rule change note that water quality exceedances are present downstream of Minnesota's existing taconite mines. These mines were sited and constructed prior to modern environmental regulation, and many have legacy water pollution issues. These legacy water pollution issues do not mean that the current nonferrous metallic mineral siting rule is inadequate.

274. Commenters supporting a rule change also note the history of copper-nickel mines in the southwestern United States, but these mines have different geology than is found in Minnesota which makes the comparison difficult. Further, these southwestern United States copper mines generate much greater volumes of reactive waste rock than would be the case for the deposits being explored in the Rainy River Headwaters watershed. (EOR, *Nonferrous Mining Review – Water Quality Comments* dated Mar. 31, 2023, at 2-3.)

275. Similarly, commenters opposing a rule change note that the Eagle Mine in Michigan and Flambeau Mine in Wisconsin have a successful track record, but these mines are of a smaller scale than potential mines in the Rainy Rivers Headwaters watershed – given the ore bodies in the Rainy River Headwaters watershed.

276. Kuipers et al. (2006) evaluated Environmental Impact Statement ("EIS") predictions made for 25 case-study mines that operated between 1975 and 2006 and compared the predictions to actual water quality at the mine sites. The mines that were chosen for the analysis represent a general cross-section of different types of hard-rock mines in the U.S. Many of the mines included in the analysis are not directly representative of mines that have been proposed for the Rainy River Headwaters in Minnesota. Also, the methods that were used to predict impacts vary considerably among the mines. As a result, it is not possible to

extrapolate the findings from the report to proposed mines in the Rainy River Headwaters watershed except in the most general sense. Overall, the report provides a thorough review of past calculation or model prediction failures and identifies failure modes and root causes of the failures. However, the EISs that were reviewed are dated and no mines from the State of Minnesota were included in the case study mines. Mining regulations, predictive methods and mining best practices have substantially improved since many of the environmental reviews were conducted.

277. For all of the above reasons, DNR concludes that the nonferrous metallic mineral mine siting rule and the applicable State and federal water regulatory scheme in the Rainy River Headwaters watershed and in the BWCAW is protective of the BWCAW.

Schaller Factors

278. DNR now analyzes the issue of water quality under the *Schaller* factors. DNR finds no MERA violation based on the quality and severity of the potential adverse effects of nonferrous metallic mineral mining in the Rainy River Headwaters watershed on water quality in the BWCAW, in the context of the existing regulatory scheme.

279. This conclusion rests upon the extraordinary protection already provided to the waters of the BWCAW by Minnesota law and federal law. The EPA has delegated Clean Water Act authority to the MPCA. The Clean Water Act requires that the States adopt water quality standards that maintain and protect outstanding national resource waters such as waters of national and state parks and other waters of exceptional recreational or ecological significance. 40 C.F.R. § 131.12 (a)(3). EPA interprets this mandate as requiring "no new or increased discharges to [outstanding national resource waters -- including the BWCAW] and no new or increased discharge to tributaries to [outstanding national resource waters] that would result in lower water quality in the [outstanding national resource waters]." EPA, *Water Quality Standards Handbook: Chapter 4: Antidegradation*, at 12 (2012).

280. DNR cannot find a MERA violation as to water quality in light of that standard. While the mine siting rule was admittedly not specifically designed to protect the water quality of the BWCAW, the MPCA's water quality standards provide the greatest possible protection to this resource.

281. Some commenters expressed concern that the BWCAW is not protected because water quality standards upstream of the BWCAW are not as stringent; these waters are not

designated as prohibited outstanding resource value waters. To the contrary, the Clean Water Act requires that any upstream discharges are regulated such that they comply with downstream water quality standards. 40 C.F.R. § 122.4(i) (providing that a new source cannot cause or contribute to a violation of applicable water quality standards). MPCA could not permit a facility that complies with the upstream water quality standards in the Rainy River Headwaters watershed but degrades water quality in the BWCAW.

282. Some commenters expressed concern that surface waters upstream from the BWCAW – which are also high quality public waters – do not have the same protection as the BWCAW. Though these waters are not designated as prohibited outstanding resource value waters, these waters do in fact receive additional protection from the waters in the BWCAW being designated as prohibited outstanding resource value waters. Due to that designation, MPCA must of necessity limit new or increased discharges to upstream waters in order to ensure compliance with the BWCAW water quality standards.

283. Some commenters expressed concern about cumulative impacts to the BWCAW caused by the development of a mining district in the Rainy River Headwaters watershed. They indicate that permitting standards are not designed to address these types of cumulative impacts. To the contrary, the Clean Water Act does address cumulative impacts by requiring that no additional facilities may be permitted if they cannot comply with downstream water quality standards. Indeed, the protective water quality standards for the BWCAW raise questions as to whether development of the mining district in the watershed feared by some commenters would even be feasible.

284. Some commenters argue that NPDES permits issued by MPCA often use the property boundary as a compliance point and that MPCA should require compliance within the property boundary. This legal issue related to the issuance of NPDES permits by another agency is outside the scope of this lawsuit. DNR does note, however, that regardless of the compliance point incorporated into various NPDES permits, all NPDES permits that would be issued in the Rainy River Headwaters watershed would be required to ensure compliance with the "no measurable change" standard at the BWCAW boundary.

285. Commenters argue that the mine siting rule, which has the goal of "minimiz[ing] adverse impacts on natural resources", is not consistent with the water quality standards for the BWCAW. The purpose of the mine siting rule is to minimize adverse impacts on natural resources. The rule is consistent with the requirements of Minn. Stat. § 93.44, which recognizes

both the benefits and the environmental impacts of mining and directs the DNR to control the adverse impacts of mining through its reclamation program. But there are other provisions of State and federal law outside of the DNR's jurisdiction that also protect water quality. DNR's reclamation rule does not somehow weaken the federal Clean Water Act or the MPCA's regulations adopted thereunder.

286. Commenters argue that the mine siting rule is inconsistent with the water quality standards for the BWCAW because it would not be possible to incorporate a setback for a mine in the watershed that would ensure compliance with the BWCAW water quality standards, as required by subpart 1 of Minn. R. 6132.2000. The agencies would have to address this issue in permitting a particular mine. No evidence in the record suggests that it would be impossible to site a mine anywhere in the watershed without violating the water quality standards for the BWCAW, although DNR acknowledges that certain locations would be more difficult than others.

287. Commenters expressed concerns about impacts to groundwater, but groundwater that daylights to surface waters and is the "functional equivalent" of a surface water discharge must also satisfy this "no measurable change" water quality standard. *In Re Reissuance of an NPDES/SDS Permit to U.S. Steel Corp.*, 954 N.W.2d 572, 574 n. 1 (Minn. 2021).

288. DNR thus concludes that the quality and severity of effects do not support a MERA violation as to water quality.

289. As to whether the effects on water quality would be long-term, DNR acknowledges that water quality impacts caused by nonferrous metallic mineral mining, if they occur, could potentially continue for decades or longer. If such impacts were likely to occur, some could be long-term, but again, DNR does not believe such impacts are likely due to the protective water quality standards for the BWCAW.

290. As to consequential impacts on other natural resources, DNR acknowledges that water quality is broadly connected to the health of wildlife and plants throughout the BWCAW.

291. Water pollution can cause lethal or sublethal impacts to wildlife, such as altered behavior, lowered immune response, or reproductive issues.

292. Water pollution can alter aquatic or terrestrial food webs. For example, studies have shown impacts to caddisfly abundance in streams long distances downstream from mining operations.

293. Nonetheless, DNR has concluded that the water quality standards for the BWCAW are protective and therefore consequential impacts on other natural resources are unlikely.

294. For the above reasons, DNR concludes that the mine siting rule – in conjunction with the water quality standards for the BWCAW – is adequate to protect the BWCAW from pollution, impairment, and destruction of its surface waters.

295. DNR acknowledges, however, that siting certain facilities, such as tailings basins and reactive waste rock storage facilities, is inherently challenging in the Rainy River Headwaters watershed and would require careful application of permitting standards and rigorous analysis of any specific proposal. DNR acknowledges that regulating such facilities through closure, after active operations cease, is also challenging, and requires careful monitoring, maintenance if necessary, and robust financial assurance.

296. As discussed above, DNR has determined that the mine siting rule is not adequate to protect the BWCAW from noise and light impacts that would disrupt users' wilderness experience. The remedy for that inadequacy is to expand the Mineral Management Corridor. Although the current water quality standards are protective of the BWCAW, expansion of the Mineral Management Corridor for noise and light impacts would, as a secondary benefit, provide additional protection for the water quality of the BWCAW. More specifically, for mines proposed to be near the BWCAW, it would create a larger buffer between certain higher risk surface uses, such as tailings basins or reactive waste rock storage, and the BWCAW boundary.

297. DNR acknowledges that expansion of the Mineral Management Corridor only addresses surface disturbance and that underground mines could ultimately be located adjacent to the BWCAW as long as there would not be any associated surface disturbance within the Mineral Management Corridor. While underground mines could pose some risk to water quality, potential surface water impacts from underground mining are far lower than those that may arise from above ground facilities. Further, any surface water discharge from an underground mine would also be subject to the stringent water quality standards for the BWCAW, which are protective, and therefore consequential impacts on other natural resources are unlikely.

XII. AIR QUALITY

298. Some commenters argue that air quality impacts from mining could negatively affect the BWCAW, but DNR concludes that these effects do not rise to the level of a MERA violation.

299. Because the BWCAW is a Class I airshed, it receives additional protection under the Clean Air Act. For any mine that is a "major emitting facility" under the Clean Air Act, the mine could only be permitted if the USFS would decide that the mine would not affect the air quality-related values of the BWCAW. 42 U.S.C. § 7475(d). In addition, MPCA would have to ensure that a permit would not undermine the State's compliance with the regional haze rule. 40 C.F.R. § 51.308(d).

300. DNR acknowledges that there is some uncertainty as to air quality impacts associated with mining. Some commenters argue that actual air quality impacts may be higher than modeling would suggest, as a result of equipment breakdown or misuse. The federal EA also found that air quality impacts of mining are highly variable. (EA at 60.)

301. Some commenters argue that windblown fugitive dust would have significant impacts on the BWCAW, but the federal EA concluded fugitive dust can be controlled and generally settles quickly. (EA at 60.)

302. On this record, DNR has no reason to conclude that there is a "per se" violation as to air quality. The record does not suggest that mining in the Rainy River Headwaters watershed would be likely to violate applicable air quality standards.

303. As to the *Schaller* factors, DNR concludes that potential air quality related impacts are not of a quality and severity that would rise to the level of a MERA violation. DNR's conclusion is based on the protective air quality standards for the BWCAW, and the uncertainty reflected in the federal EA as to the severity of air quality impacts relating to mining.

304. DNR acknowledges that air quality impacts of mining can be long-term as mining generally continues for decades.

305. DNR also acknowledges that air quality can have consequential effects on a wide range of resources, by impacting water quality and plants. For example, one commenter raised concerns over potential impacts to lichens caused by fugitive dust.

306. However, due to uncertainty about the quality and severity of the environmental effects, DNR concludes that nonferrous metallic mineral mining in the Rainy River Headwaters

watershed is not likely to cause pollution, impairment, or destruction of the BWCAW relating to air quality.

307. DNR notes, however, that increasing the size of the Mineral Management Corridor to address noise and light impacts will also help, as a secondary benefit, to mitigate air quality related impacts. More specifically, for mines proposed to be located near the BWCAW, it would require both processing facility smoke stacks and sources of fugitive emissions such as tailings basins to be set back further from the BWCAW boundary.

XIII. WILDLIFE

308. Consequential impacts to wildlife that relate to Water Quality or Mercury, Sulfate and Wild Rice are discussed in those sections of these findings, but here we address direct impacts that could be caused to wildlife by siting nonferrous metallic mineral mining in the Rainy River Headwaters watershed.

309. Siting mines in the watershed would necessarily cause habitat loss or fragmentation for various species. Mining can involve land use changes over large geographic areas, and these changes could alter migration routes for species or cause habitat edge effects, which are changes in population or community structures that occur at the boundary of two or more habitats.

310. Species that are found in the BWCAW do not always remain within its boundaries. For example, moose have home ranges of up to 36 square miles, and wolves have an average territory size of 57 square miles. Black bears migrate between six and sixteen miles.

311. Yet, DNR concludes that the quality and severity of adverse effects to wildlife caused by land use changes are not sufficient to constitute a MERA violation. In every case, there is an edge to the wilderness, and wildlife that roam outside of the wilderness's boundaries will encounter residential and industrial development. These developments do impact habitat availability, habitat quality, and migration routes. However, there is nothing so unique about the land use impact that would be caused by nonferrous metallic mineral development in the Rainy River Headwaters watershed that suggests resulting wildlife impacts would violate MERA.

312. Further, federal and State threatened and endangered species receive protections under the federal and State endangered species acts that would lessen any impacts of mineral

development. For example, projects permitted by the federal government cannot destroy critical habitat for federal threatened or endangered species. 33 U.S.C. § 1536(a)(2).

313. DNR does not have information that suggests nonferrous metallic mineral mining in the Rainy River Headwaters watershed is likely to result in violations of applicable environmental quality standards, such as the federal and State endangered species acts.

314. Based on the evidence available to DNR, impacts to wildlife caused by the development of mining infrastructure are not of the quality or severity that would constitute a MERA violation.

315. Impacts caused by land use changes are long-term because buildings and other structures may be in place for decades.

316. Though impacts to wildlife caused by land use changes would presumably have consequential effects (for example, territories of wildlife may be altered), it is not clear from the data that these effects would be severe.

317. For the above reasons, DNR concludes that the mine siting rule, in conjunction with the federal and State endangered species acts, is adequate to protect the BWCAW from impacts to wildlife relating to land use changes.

318. Nonetheless, DNR has concluded that it is necessary to expand the scope of the Mineral Management Corridor to address noise and light impacts, and this expansion will lessen impacts to wildlife. Mines that are proposed to be located near the BWCAW would have to set back mining infrastructure further from the edge of the BWCAW and in so doing, would mitigate wildlife impacts.

XIV. MERCURY, SULFATE AND WILD RICE

319. Many commenters raised concerns about the impacts of increased sulfate and mercury levels on fish and on wild rice.

Sulfate

320. Sulfate-reducing bacteria produce sulfide, which negatively impacts wild rice. Exposing wild rice stands to high sulfate water can cause them to fail. (EOR, *Response to comments on mercury, sulfate and wild rice* dated January 31, 2023.)

321. The federal EA found that tailings basins pose the greatest risk to wild rice because the failure of a tailings basin dam could result in high levels of sulfate being released into the

watershed. The EA did conclude, however, that the probability of a dam failure is low. (EA at 34.)

Mercury and Mercury Methylation

322. Many commenters raised concerns about the potential for increased sulfate levels from mining to stimulate mercury methylation. Mercury methylation primarily occurs when sulfate-reducing bacteria transform mercury into methylmercury. Methylmercury is a neurotoxin that bioaccumulates and biomagnifies in food chains. (EOR, *Response to comments on mercury, sulfate and wild rice* dated January 31, 2023, at 3.)

323. Mercury methylation increases when additional sulfate is introduced to low-sulfate waters. (EOR, *Response to comments on mercury, sulfate and wild rice* dated January 31, 2023, and references therein, e.g., Jeremiason, J. D. et al., (2006) *Sulfate addition increases methylmercury production in an experimental wetland*.) Waters in the Rainy River Headwaters watershed are low in sulfate; the State water quality standard for sulfate of 10 milligrams per Liter is five to ten times the existing sulfate level of many lakes in the watershed.

324. The relationship between sulfate and mercury methylation differs in areas such as the adjacent St. Louis River watershed, where evidence indicates chronic sulfate loading to lakes and wetlands downstream of mining operations has inhibited mercury methylation, and the methylmercury in the St. Louis River is largely sourced from non-mining tributaries with extensive wetland areas (EOR*, Response to comments on mercury, sulfate and wild rice* dated January 31, 2023; and additional references, e.g., Johnson, N.W. et al. (2016) *Methylmercury production in a chronically sulfate-impacted sub-boreal wetland, and* Berndt, M. et al. (2014) *Hydrologic and geochemical controls on St. Louis River chemistry with implications for regulating sulfate to control methylmercury concentrations*.). Commentors opposing the rule change suggested that watershed and wetland processes are similar in both the St. Louis River and Rainy River Headwaters watersheds and therefore similar relationships between sulfate and methylmercury may also be expected. However, the Rainy River Headwaters watershed is not currently chronically impacted by sulfate loading, and further site-specific considerations are necessary to understand potential impacts to mercury cycling in the Rainy Rivers Headwaters watershed.

325. Mining could also increase mercury levels in the watershed. There is some uncertainty as to whether nonferrous metallic mineral mining would mobilize mercury to water

bodies, but it is clearer that air emissions from processing plants could lead to locally higher mercury levels. (EOR, *Response to comments on mercury, sulfate and wild rice* dated January 31, 2023.) Mercury levels are, however, largely the result of smokestack emissions outside of the watershed.

326. Because methylmercury biomagnifies, mercury levels in top predatory fish can be ten times the level of water in which the fish are located. Fish tissue in the watershed already exceeds the standard for mercury. (EOR, *Response to comments on mercury, sulfate and wild rice* dated January 31, 2023, at 3.)

327. Biomagnification also affects the common loon, a Minnesota species of greatest conservation need. Studies have found that loons have up to 22 times the concentration of methylmercury of small fish. High levels of methylmercury in loons leads to lethargic or erratic behavior and reduced reproductive success, and results in a negative immune response.

328. High mercury levels may also make bats more susceptible to white nose syndrome.

329. Humans can be exposed to mercury through fish consumption. The EPA set a water quality standard for mercury designed to protect human health, which is 1.8 nanograms per Liter. Surface waters throughout the Rainy River Headwaters watershed already exceed these standards. Sensitive groups and people who rely on fish as part of their diet are already at risk due to levels of mercury in fish tissue in the watershed.

Schaller Factors

330. DNR must consider whether the mine siting rule, in conjunction with applicable water quality standards, is adequate to protect the BWCAW from pollution, impairment or destruction relating to sulfate and mercury pollution.

331. As an initial matter, for the same reasons discussed in the Water Quality section above, DNR concludes that nonferrous metallic mineral mining is not likely to cause violations of applicable environmental quality standards, such as the water quality standard for sulfate.

332. As to the *Schaller* factors, DNR concludes impacts relating to mercury, sulfate and wild rice are not of the quality and severity that would support a MERA violation.

333. As discussed above, increased sulfate levels that are still below the water quality standard could result in increased mercury methylation in the Rainy Rivers Headwaters watershed. However, the antidegradation standard for the BWCAW requires that there is "no

measurable change" in water quality in the BWCAW. Thus, MPCA could not approve NPDES permits that allowed additional loading of sulfate up to the water quality standard within the BWCAW.

334. Mercury levels are largely the result of smokestack emissions outside of the watershed. (EOR, *Response to comments on mercury, sulfate and wild rice* dated January 31, 2023, at 2.)

335. DNR recognizes that sulfate and mercury pollution pose serious risks to the BWCAW with potential impacts to both wildlife and human health.

336. DNR also recognizes that these impacts may uniquely affect tribal members exercising treaty-reserved usufructuary rights in the BWCAW. As compared to other Minnesotans, tribal members may consume more fish as part of their diet and therefore be more affected by the already high levels of mercury in fish tissue in the BWCAW. Tribal members are also uniquely affected by damage to wild rice plants caused by sulfate because wild rice is central to the Ojibwe diet and culture.

337. The water quality standard for sulfate and the anti-degradation standard for the BWCAW are sufficient, however, to protect against these risks to wildlife and human health. MPCA would have to impose strict limits on any NPDES permits throughout the Rainy River Headwaters watershed to comply with the "no measurable change" standard for the BWCAW, and if the standard could not be met, then the facility could not be permitted. DNR therefore concludes that the mine siting rule, in conjunction with applicable water quality standards, is adequate to protect the BWCAW from pollution, impairment, or destruction.

338. As to whether the effects of sulfate on mercury and wild rice would be long-term, DNR acknowledges that water quality impacts caused by nonferrous metallic mineral mining, if they occurred, could potentially continue for decades or longer. If such impacts were likely to occur, they could be long-term, but again, DNR does not believe such impacts are likely due to the protective water quality standards for the BWCAW.

339. Sulfate pollution is linked to consequential effects on other natural resources, such as wild rice, fish, and other wildlife.

340. However, DNR has concluded that consequential impacts from nonferrous metallic mineral mining in the watershed are unlikely due to the protective water quality standards for the BWCAW.

341. DNR has, however, decided to undertake rulemaking to expand the size of the Mineral Management Corridor to address noise and light impacts, and the expanded Corridor will also provide additional protection to the BWCAW from sulfate and mercury pollution as a secondary benefit. For any mine that would be proposed near the BWCAW, above-ground facilities that may be sources of sulfate pollution, such as tailings basins, would have to be sited further away from the BWCAW. Potential mercury sources such as processing facilities would also have a larger buffer from the BWCAW.

XV. OTHER ISSUES

342. DNR considered a variety of other issues that the agency concluded did not rise to the level of a MERA violation.

343. Nonferrous metallic mineral mining in certain areas of the Rainy River Headwaters watershed would likely result in visual impacts to the BWCAW. For example, tailings basins or other facilities may be visible from nearby wilderness areas if located near the current Minerals Management Corridor. The federal EA did address visual or scenic impacts and noted these impacts may be noticeable to BWCAW visitors. (EA at 53.) DNR does not have enough information about potential visual impacts, however, to reach any conclusions as to whether a MERA violation would result from these impacts. The extent of visual impacts depends upon project-specific information on the location and height of facilities that are not before the agency in this case.

344. DNR reviewed comments on the impacts that mining causes to forest resources. Though forests in the BWCAW would not be directly impacted (e.g., harvested) due to mining occurring outside of the BWCAW, DNR recognizes that forests can suffer consequential impacts relating to mining, such as damage through air and water pollution. Commenters noted that boreal forests found in the BWCAW, including old growth forests, are important carbon sinks and create habitat that supports biodiversity and filters and recharges groundwater and surface waters. DNR did not find a MERA violation with respect to forest resources because DNR does not anticipate any direct impacts to forests, and as discussed above, DNR also did not find a MERA violation as to air or water pollution.

345. DNR considered comments regarding impacts to recreational use of the BWCAW. MERA protects recreational resources. Minn. Stat. § 116B.02, subd. 4.

346. Commenters explained that the pristine quality of the BWCAW – including its air, water, forests, wildlife, quietude, and dark skies -- is the essence of the wilderness experience. Further, good water quality is critical to recreational users' ability to travel in the BWCAW because they cannot pack in enough water. This pristine quality of the BWCAW is quintessential to the experience of wilderness as a place that is "untrammeled by man." Wilderness Act, Pub. L. No. 88-577, § 2(c), 78 Stat. 890, 891 (1964).

347. DNR also reviewed the predictions in the federal EA about recreational use decreasing in areas near mining districts. (EA at 43.)

348. DNR did not find a separate MERA violation as to recreational use because these impacts are consequential, rather than direct, impacts. However, concerns about recreational use underlie DNR's finding that the mine siting rule is inadequate to protect the BWCAW from noise and light impacts of nonferrous metallic mineral mining.

349. DNR considered comments about the unique threat of nonferrous metallic mineral mining to the BWCAW. Commenters note that due to the geology of the BWCAW, it has less buffering capacity than some other areas of the state and is more susceptible to damage caused by pollution. The BWCAW's waters are low in sulfate and thus susceptible to mercury methylation. The BWCAW's waters are also low in alkalinity which lessens their ability to neutralize acid and heavy metals.

350. Further, if it were necessary to undertake remediation actions in the BWCAW, these activities could interfere with the wilderness experience of BWCAW users and be complicated by restrictions on motorized access.

351. DNR did not find a separate MERA violation as to the unique susceptibility of the BWCAW to pollution because this is an existing condition that heightens risks in this area, rather than a direct impact. Though DNR acknowledges that the geology of the BWCAW provides less buffering capacity than some other areas of the state, DNR concludes that that water quality standards for the BWCAW are protective. The geology of the area underscores the importance of the prohibited outstanding resource value water designation for the BWCAW.

352. DNR also notes that by expanding the size of the Mineral Management Corridor for noise and light impacts, the nonferrous metallic mineral mine siting rule would better protect the BWCAW from water pollution by requiring intensive surface uses such as tailings basins and waste storage to be sited farther from the BWCAW. An expanded Corridor would also

provide a more extensive buffer where, if necessary, remediation could occur outside of the BWCAW boundary.

353. DNR considered cultural resources but did not find a MERA violation on this topic. A cultural resource is generally defined as remains of past human lives and falls within the definition of a protected MERA resource. 36 C.F.R §1.4 (defining cultural resource); Minn. Stat. § 116B.02, subd.4 (defining natural resources to include historical resources).

354. DNR recognizes that the Ojibwe have a long history of living in, and managing, the forests in the BWCAW. Larson, E.R., Kipfmueller, K.F., and Johnson, L.B. 2021. *People, fire, and pine: Linking human agency and landscape in the Boundary Waters Canoe Area Wilderness and beyond.* Annals of the American Association of Geographers 111(1): 1–25. The BWCAW is also entirely contained within the ceded territory from the 1854 Treaty, and the Ojibwe have reserved rights to hunt, fish and gather in the BWCAW.

355. Further, as evidenced by ancient pictographs, BWCAW lands were used by ancient native peoples for centuries before the Ojibwe came to northeastern Minnesota. Between 1690 and 1865, the area also served as part of the voyageurs route that played such an important part in U.S. history.

356. The protection of treaty reserved rights and associated cultural resources is covered under analysis of impacts to specific natural resources such as in the Mercury, Sulfate and Wild Rice section. Other historic resources are protected by the National Historic Preservation Act, 16 U.S.C. § 470, the Minnesota Historic Sites Act, Minn. Stat. §§ 138.661-.669, the Minnesota Field Archeology Act, Minn. Stat. §§ 138.31-.42, and Minn. Stat. § 307.08. Both federal and State law often preclude the disturbance of cultural sites without consultation with tribal nations. *See, e.g.,* Minn. Stat. § 307.08, subd. 8 (prohibiting the disturbance of Indian burial grounds without the approval of the Indian Affairs Council). The DNR has, therefore, concluded that the federal and State regulatory structure designed to protect these resources and ensure consultation with tribal nations is adequate, and there is no MERA violation as to cultural resources.

357. DNR notes that NEMW provided it with polling data on Minnesota residents' views on the BWCAW. Polling data is not relevant to the question of whether the mine siting rule is adequate to protect the BWCAW from pollution, impairment, or destruction.

358. DNR reviewed comments addressing the need for mines that can supply copper and nickel for green energy development. Some commenters stressed that these mines should

be developed in the United States to ensure better environmental outcomes and alleviate potential supply change disruptions. Other commenters note that mines in less environmentally sensitive locations can supply these minerals. MERA protects "natural resources located within the state." Minn. Stat. § 116B.10, subd. 2. For that reason, DNR concludes that these types of global supply chain issues are beyond the scope of this case.

XVI. REMEDY

359. DNR has determined that its mine siting rule is not adequate to protect natural resources from pollution, impairment, or destruction relating to noise and light. DNR has decided to undertake rulemaking to expand the size of the Mineral Management Corridor in which no surface disturbance is permitted to address potential noise and light impacts. DNR's decision is based upon the above discussion, as well as the following considerations.

Potential Conflict Between MERA and Chapter 93

360. DNR must strike a careful balance among the various policy objectives set forth in Minnesota Statutes chapter 93 and MERA.

361. Chapter 93 requires that the DNR "control possible adverse environmental effects of mining . . . *while at the same time*. . . promoting the orderly development of mining." Minn. Stat. § 93.44. In adopting rules, DNR must give "due consideration" to the environment and to economic effects on mine operators, surrounding communities and the State; to future land utilization and to employment opportunities; to the protection of natural resources and to the development of state-owned minerals. Minn. Stat. § 93.47, subd. 2.

362. MERA further requires DNR to ensure that its rules are adequate to protect natural resources in the State from pollution, impairment, or destruction. Minn. Stat. § 116B.10, subd. 2.

363. MERA may conflict with chapter 93 because it does not expressly require DNR to weigh economic factors along with environmental ones when the agency adopts mining regulations. In fact, MERA states that economic considerations alone are not a defense to a MERA action. Minn. Stat. § 116B.04(b).

364. DNR recognizes, however, that it must give effect to both chapter 93 and MERA to the extent possible. Minn. Stat. § 645.26, subd. 1 (conflicting laws should be interpreted to give effect to both to the extent possible). DNR must reconcile the MERA standard of

prevention of pollution, impairment, or destruction with the consideration of the economic factors set forth in Minn. Stat. ch. 93 and the reality that Minnesota's environmental laws do allow for some development and impacts as long as they meet state standards.

365. To give effect to both chapter 93 and MERA, DNR has evaluated whether its siting rule is adequate based upon the legal requirements set forth in MERA and relevant caselaw. But in rulemaking, DNR must adopt an appropriate setback in the Mineral Management Corridor based upon the full panoply of environmental and economic factors described in Minnesota Statutes section 93.47.

366. Commenters on the siting rule raised many economic issues relevant to the rule, such as investment by mining companies in the Rainy River Headwaters watershed, the importance of the tourism and amenity-based economy to local communities, the benefits of mining jobs to local economies, and the value of school trust minerals located in the Rainy River Headwaters watershed. These economic issues are of great importance to the people of the State of Minnesota, but MERA does not take these issues into account in its definition of "pollution, impairment, or destruction." For that reason, DNR will consider these economic factors in rulemaking, as required by Minn. Stat. § 93.47. Both environmental and economic factors will influence the dimensions of the Mineral Management Corridor expansion.

Limitations of Existing Rule

367. DNR staff testified at the 1992 rulemaking hearing that the nonferrous metallic mineral mine siting rule was designed to provide a separation between conflicting land uses, rather than to meet noise, water quality or air quality standards. *In the Matter of the Proposed Permanent Rules Relating to Nonferrous Metallic Mineral Mineland Reclamation*, Hearing Transcript at 126 (Dec. 7, 1992).

368. This does not mean that DNR lacks the authority to require mine operators to protect the environment. Minnesota Rules chapter 6132 was designed as a flexible tool that allows DNR staff to tailor permits to site-specific conditions to do just that. *In the Matter of the Proposed Permanent Rules Relating to Nonferrous Metallic Mineral Mineland Reclamation*, Hearing Transcript at 22 (Dec. 7, 1992). DNR staff often include special conditions designed to protect the environment in Permits to Mine, and they could do so in the Rainy River Headwaters watershed.

369. But regulating nonferrous metallic mineral mining adjacent to the BWCAW has its challenges. As discussed above, the BWCAW is a national wilderness area and has been given federal protections to protect these wilderness characteristics. Existing State noise regulations are not protective of a wilderness setting like the BWCAW, and light pollution is not regulated. DNR has concluded the current setback distance for surface disturbance should be increased through rulemaking to better account for potential land use conflicts and environmental nuisance condition impacts to the BWCAW such as light impacts and noise from blasting and mining operations.

370. New technology is now available to the DNR to more accurately assess the setback needed to protect the BWCAW from light impacts. The DNR also now has decades of experience regulating modern mine blasting and equipment operations and can utilize that experience to more accurately assess the setback needed to protect the BWCAW from noise impacts.

371. While mining projects could likely comply with existing State standards applicable to noise impacts, that compliance would not necessarily prevent a material adverse impact to the wilderness experience in the BWCAW.

372. Expanding the Mineral Management Corridor is consistent with the framework of the existing siting rule, which is designed to prevent land use conflicts. An expanded Mineral Management Corridor would better protect the BWCAW from noise and light impacts. As discussed above, DNR has concluded that its siting rule is not adequate to prevent the BWCAW from these impacts.

373. Further, though DNR has the authority to impose conditions in its Permits to Mine to ensure compliance with applicable standards, DNR believes that certain mining activities may be particularly challenging to regulate in this watershed due to the prohibited outstanding resource value waters designation for the BWCAW.

374. Though, as described above, DNR concluded that its siting rule, along with the prohibited outstanding resource value water designation, is protective of water quality impacts to the BWCAW, an expanded Mineral Management Corridor to address noise and light impacts would, as a secondary benefit, provide additional protection for the water quality of the BWCAW. Tailings basins, above-ground reactive waste storage facilities, and wastewater treatment facilities – all of which tend to pose higher risks of water pollution than some other mine facilities – could not be located within the expanded Mineral Management Corridor.

375. Expanding the Mineral Management Corridor is the "necessary or appropriate" remedy to protect the BWCAW from noise and light pollution. Minn. Stat. § 116B.07.

Broader Policy Issues

376. DNR recognizes that this case raises policy issues that extend beyond the agency's authority and the requirements of MERA.

377. Congress has not acted to impose specific mining regulations on State or private lands outside of the BWCAW and the Mining Protection Area. Given the significant implications of adding new restrictions to Minnesota's mining laws, the State Legislature is the proper venue to determine if policy changes – beyond expanding the Mineral Management Corridor to address noise and light impacts – are warranted.

378. Plaintiff, and some commenters, contend that MERA requires the DNR to prohibit nonferrous metallic mineral mining throughout the Rainy Rivers Headwaters watershed, but DNR is required by Minnesota Statutes chapter 93 to both control the adverse environmental effects of mining and promote its orderly development. A watershed-wide ban would represent a fundamental shift in State policy and thus is the appropriate domain of the State Legislature, not an executive agency.

379. Further, Plaintiff, and some commenters, contend that MERA does not allow nonferrous metallic mineral mining in the Rainy Rivers Headwaters watershed if it would pose *any* risk to the BWCAW. Some commenters favor a zero-risk policy when it comes to the BWCAW. MERA contains no such requirement. MERA only proscribes conduct that is *likely* to violate environmental quality standards or *likely* to materially adversely affect the environment. Minn. Stat. § 116B.02, subd. 5. State courts have also noted MERA's limitations, concluding, "We cannot construe MERA as prohibiting virtually all human enterprise." *State ex rel. Wacouta Twp.v. Brunkow Hardwood Corp.*, 510 N.W.2d 27, 30 (Minn. Ct. App. 1993).

380. Throughout this remand, DNR has addressed whether nonferrous metallic mineral mining in the Rainy River Headwaters is *likely* to cause pollution, impairment, or destruction of the BWCAW, not whether there is *any* possibility of this result. In short, whether the State should adopt a zero-risk approach to mining across the entirety of the watershed to protect the BWCAW is a question that cannot be addressed in this case.

381. DNR concludes that this case raises significant policy questions that would be better addressed by the State Legislature.

382. While the prohibited outstanding resource value waters designation applicable to the BWCAW is protective, there are some mining activities that may inherently present more challenges in meeting the applicable water quality standards. While the challenges associated with these activities do not constitute a MERA violation, DNR specifically recommends that the Legislature assess State policy relative to the following mining practices and their compatibility with the protection of the BWCAW: a) above ground storage or disposal of waste tailings from nonferrous metallic mineral mining within the Rainy River Headwaters watershed, including consideration of wet and dry disposal methods; b) permanent above ground storage of reactive waste rock from nonferrous metallic mineral mining within the Rainy River Headwaters Watershed; 3) heap leaching activities within the Rainy River Headwaters watershed; and 4) smelting activities within the Rainy River Headwaters watershed.

CONCLUSIONS OF LAW

1. This is an action brought under Minn. Stat. § 116B.10, challenging the adequacy of DNR's nonferrous metallic mineral mine siting rule to protect the BWCAW from pollution, impairment, or destruction.

2. The BWCAW meets the definition of "natural resources" in Minn. Stat. § 116B.02, subd. 4 because it contains mineral, animal, botanical, air, water, land, timber, soil, quietude, historical, and recreational resources, as well as scenic and aesthetic resources owned by governmental units.

3. Pollution, impairment, or destruction is any conduct by any person that violates or is likely to violate any environmental quality standard, limitation, rule, order, license, stipulation agreement or permit of the state or a political subdivision, or any conduct which materially adversely affects or is likely to materially adversely affect the environment. Minn. Stat. §116B.02, subd. 5.

4. "Person" includes mine owners and operators. Minn. Stat. § 116B.02, subd. 2.

5. Nonferrous metallic mineral mining is "conduct" within the meaning of the Minnesota Environmental Rights Act.

6. The term "likely" as used in Minn. Stat. § 116B.02, subd. 5 means having a high probability of occurring. *www.merriam-webster.com*.

7. The term "environmental quality standard" as used in Minn. Stat. § 116B.02, subd. 5 includes the water quality standards for the BWCAW and other standards described in section VII of this Order.

8. Minn. R. 6132.2000 is adequate to protect the BWCAW from pollution, impairment, or destruction (as defined in Minn. Stat. § 116B.02, subd. 5) if the rule, along with the existing environmental protection framework, can ensure that 1) no violations of environmental quality standards in the BWCAW are likely to result from nonferrous metallic mineral mining in the Rainy River Headwaters watershed, during operations or closure; and 2) no material adverse effects to the BWCAW are likely to result from nonferrous metallic mineral mining in the Rainy River Headwaters watershed, during operations or closure.

9. DNR must consider the five factors set forth in the case *State by Schaller v. County of Blue Earth*, 563 N.W.2d 260, 267 (Minn. 1997), in determining whether a material adverse effect on the BWCAW is likely to occur. These factors are as follows: "1) The quality and severity of any adverse effects of the proposed action on the natural resources affected; 2) Whether the natural resources affected are rare, unique, endangered, or have historical significance; 3) Whether the proposed action will have long-term effects on natural resources, including whether the affected resources are easily replaceable (for example, by replanting trees or restocking fish); 4) Whether the proposed action will have significant consequential effects on other natural resources (for example, whether wildlife will be lost if its habitat is impaired or destroyed); 5) Whether the affected natural resources are significantly increasing or decreasing in number, considering the direct and consequential impact of the proposed action."

10. The natural resources present in the BWCAW are rare, unique and in some cases, endangered. The BWCAW is rare and unique because it is the largest wilderness area east of the Rocky Mountains. As described above, the BWCAW provides a home to federal and State endangered and threatened plant and animal species, and State plant and animal species of special concern. Thus, some of the resources in the BWCAW are also endangered.

11. DNR lacks sufficient evidence to make a determination as to whether wilderness areas such as the BWCAW are significantly decreasing in number.

12. Nonferrous metallic mineral mining near the BWCAW could likely comply with MPCA's noise ordinance and therefore is not likely to violate an applicable environmental quality standard relating to noise.

13. The quality and severity of adverse effects relating to sound intruding on the BWCAW due to nonferrous metallic mineral mining support a finding of material adverse effects on the BWCAW.

14. Nonferrous metallic mineral mining in the Rainy River Headwaters watershed is not subject to applicable environmental quality standards relating to light.

15. The quality and severity of adverse effects due to light from nonferrous metallic mineral operations disturbing the dark skies of the BWCAW support a finding of material adverse effects on the BWCAW.

16. Noise and light impacts to the BWCAW would be long-term because mining operations typically continue for decades.

17. Noise and light impacts to the BWCAW would have consequential impacts on wildlife, such as interfering with communications or masking the sounds of predators.

18. Rule 6132.2000, in conjunction with the existing MPCA noise regulations, is not adequate to protect the BWCAW from pollution, impairment, or destruction relating to noise impacts arising from nonferrous metallic mineral mining in the Rainy River Headwaters watershed.

19. Rule 6132.2000 is not adequate to protect the BWCAW from pollution, impairment, or destruction relating to light impacts arising from nonferrous metallic mineral mining in the Rainy River Headwaters watershed.

20. Nonferrous metallic mineral mining in the Rainy Rivers Headwaters watershed is not likely to violate the water quality standards for the BWCAW.

21. Due to the protective water quality standards for the BWCAW, the quality and severity of adverse effects relating to water quality do not support a finding of material adverse effects to the BWCAW.

22. Water quality impacts to the BWCAW are not likely to be long-term due to the protective water quality standards for the BWCAW.

23. Water quality impacts to the BWCAW are not likely to have consequential effects due to the protective water quality standards for the BWCAW.

24. Rule 6132.2000, along with the water quality standards for the BWCAW, is adequate to protect the BWCAW from pollution, impairment, or destruction relating to water quality.

25. Air quality impacts to the BWCAW arising from nonferrous metallic mineral mining in the Rainy River Headwaters watershed are not likely to violate applicable environmental quality standards.

26. The quality and severity of adverse effects relating to air quality do not support a finding of material adverse effects on the BWCAW.

27. Air quality impacts to the BWCAW, if they occurred, could be long-term.

28. Air quality impacts to the BWCAW, if they occurred, could likely have consequential impacts to other resources, such as surface waters and plants.

29. Rule 6132.2000, along with the Clean Air Act and related regulations, is adequate to protect the BWCAW from pollution, impairment or destruction relating to air quality arising from nonferrous metallic mineral mining in the Rainy River Headwaters watershed.

30. The quality and severity of adverse effects to wildlife arising from land use changes related to nonferrous metallic mineral mining do not support a finding of material adverse effects to the BWCAW.

31. Effects to wildlife relating to land use changes associated with nonferrous metallic mineral mining would be long-term.

32. Consequential effects to wildlife relating to land use changes would not likely be severe, and therefore consequential effects do not support a finding of material adverse effects to the BWCAW.

33. Rule 6132.2000, along with the federal and State endangered species acts, is adequate to protect the BWCAW from pollution, impairment, or destruction relating to land use changes in the Rainy River Headwaters watershed that affect wildlife.

34. Due to the water quality standard for sulfate and the antidegradation standard for the BWCAW, the quality and severity of adverse effects relating to mercury, sulfate and wild rice arising from nonferrous metallic mineral mining in the Rainy River Headwaters watershed do not support a finding of material adverse effects on the BWCAW.

35. Impacts to the BWCAW relating to mercury, sulfate and wild rice are not likely to be long-term due to applicable water quality standards.

36. Impacts to the BWCAW relating to mercury, sulfate and wild rice are not likely to have consequential effects due to applicable water quality standards.

37. Rule 6132.2000, together with the water quality standard for sulfate and the antidegradation standard for the BWCAW, is adequate to protect the BWCAW from pollution, impairment, or destruction relating to mercury, sulfate and wild rice.

38. Expanding the size of the Mineral Management Corridor is an appropriate remedy to address the above-described MERA violations. Because DNR has found a MERA violation as to noise and light impacts (which are not watershed dependent), DNR concludes that it may be appropriate to expand the entire Mineral Management Corridor, including portions of the Corridor that are located outside of the Rainy River Headwaters watershed.

39. Any Findings of Fact that might properly be termed Conclusions and any Conclusions that might properly be termed Findings of Fact are hereby adopted as such.

ORDER

IT IS HEREBY ORDERED

1. Minn. R. 6132.2000 is not adequate to protect the BWCAW from pollution, impairment, or destruction associated with noise and light impacts arising from nonferrous metallic mineral mining in the Rainy River Headwaters watershed, and DNR therefore will initiate rulemaking within 120 days to expand the size of the Mineral Management Corridor set forth in Minn. R. 6132.2000, subp. 3(A).

2. Either NEMW or Twin Metals may demand a contested case hearing within 30 days of the issuance of this order.

Dated: May 31, 2023

___/s/ Sarah Strommen_____
Sarah Strommen
Commissioner
Minnesota Department of Natural Resources

Exhibit A
Map of Mineral Management Corridor