OAH 25-2004-39617

STATE OF MINNESOTA
OFFICE OF ADMINISTRATIVE HEARINGS

FOR THE DEPARTMENT OF NATURAL RESOURCES

In the Matter of Minnesota Environmental Rights Act Challenge to Minn. R. 6132.2000	**FINDINGS OF FACT, CONCLUSIONS OF LAW, AND RECOMMENDATION**

This matter came before Administrative Law Judge Megan J. McKenzie for a hearing from November 4, 2024 to November 13, 2024, at the Office of Administrative Hearings in Saint Paul, Minnesota. The matter involves a challenge to Minn. R. 6132.2000 (2023) under the Minnesota Environmental Rights Act (MERA).[1] The record closed on February 19, 2025, upon the submission of the Parties' closing briefs and proposed findings.

Philip S. Pulitzer, Oliver J. Larson, and Brian Carter, Assistant Attorneys General, appeared on behalf of the Minnesota Department of Natural Resources (DNR or the Department). Heather M. McElroy, Michael V. Ciresi, Katie Crosby Lehmann, Jacob F. Siegel, and Melissa A. Goodman, Ciresi Conlin LLP, appeared on behalf of Northeastern Minnesotans for Wilderness (NMW). John A. Kvinge and Peder A. Larson, Larkin Hoffman Daly & Lindgren Ltd., appeared on behalf of Twin Metals Minnesota, LLC (Twin Metals).

STATEMENT OF THE ISSUES[2]

1. Is Minn. R. 6132.2000, together with the water quality standards for the Boundary Waters Canoe Area Wilderness (BWCAW), adequate to protect the waters of the BWCAW from pollution, impairment, or destruction (as defined in Minn. Stat. § 116B.02, subd. 5 (2024)) arising from nonferrous metallic mineral mining in the Rainy River Headwaters (RRH) watershed?

2. Is Minn. R. 6132.2000 adequate to protect the BWCAW from pollution, impairment, or destruction associated with noise and light impacts arising from nonferrous metallic mineral mining in the RRH watershed?

[1] Minn. Stat. §§ 116B.01-13 (2024).
[2] Stipulation (Dec. 16, 2023).

SUMMARY OF RECOMMENDATION

The Administrative Law Judge determines that Minn. R. 6132.2000 and the water quality standards for the BWCAW are adequate to protect the waters of the BWCAW from pollution, impairment, or destruction arising from nonferrous metallic mineral mining in the RRH watershed. However, 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 RRH watershed. Therefore, the Department should initiate a rulemaking proceeding to amend Minn. R. 6132.2000, or promulgate a new rule to sufficiently protect the BWCAW from noise and light pollution arising from nonferrous metallic mineral mining in the RRH watershed.

Based upon all the files and proceedings herein and the submissions of the parties, the Administrative Law Judge now hereby makes the following:

FINDINGS OF FACT

I. MERA Lawsuit and Procedural Background

1. 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."[3] The BWCAW is the largest unit of the National Wilderness Preservation System east of the Rocky Mountains and north of the Everglades.[4]

2. On June 24, 2020, NMW filed a MERA lawsuit against the Department and the Commissioner of the Department of Natural Resources (Commissioner) in Ramsey County District Court, pursuant to Minn. Stat. § 116B.10.[5]

3. Minn. Stat. § 116B.10, subd. 1 (2024) permits an organization with employees or members in Minnesota to bring a civil action for declaratory or equitable relief against the State of Minnesota or any state agency challenging a rule for which the appeals period has expired. In an action under Minn. Stat. § 116B.10, plaintiffs bear the burden of proving that the challenged rule "is inadequate to protect the air, water, land, or other natural resources located within the state from pollution, impairment, or destruction."[6]

4. In its MERA lawsuit, NMW alleges that the DNR nonferrous metallic mineral mine siting rule, Minn. R. 6132.2000, is inadequate to protect the BWCAW from pollution, impairment, or destruction.[7]

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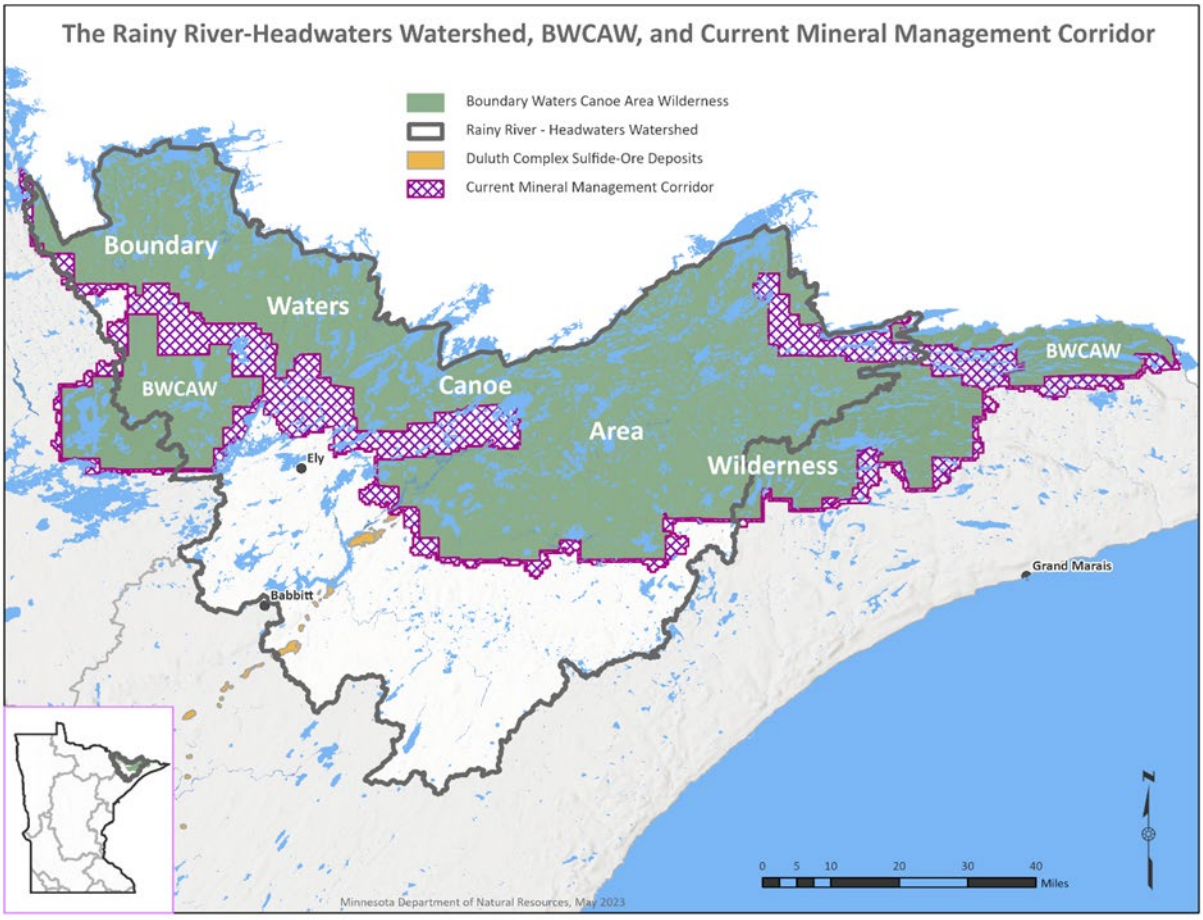
[3] Minn. Stat. § 84.523, subd. 2 (2024).
[4] Evidentiary Hearing Transcript Volume (Tr. Vol.) 6 at 20 (J. Engstrom).
[5] *Register of Actions*, 62-CV-20-3838; *see* Exhibit (Ex.) 1 at DNR000001-68 (First Amended Complaint filed January 20, 2021).
[6] Minn. Stat. § 116B.10, subd. 2.
[7] Exhibit (Ex.) 1 at 000007-08.

5. Minn. R. 6132.2000 prohibits nonferrous metallic mineral mining in the BWCAW and nonferrous metallic mineral mining that disturbs the surface in the BWCAW Mineral Management Corridor, which is depicted in the map below:[8]



6. A nonferrous metallic mineral is defined as "a metallic mineral from which iron is not the predominant metal extracted."[9] Examples of nonferrous metallic minerals are copper and nickel.[10]

7. In the MERA lawsuit, and in this contested case proceeding, NMW alleges that Minn. R. 6132.2000 is inadequate because it does not prohibit nonferrous metallic mineral mining in the entire RRH watershed, which flows into the BWCAW.[11] The RRH watershed is depicted in the map in finding of fact five. NMW further alleges that nonferrous metallic mineral mining upstream of the BWCAW will likely result in material adverse impacts to the water quality in the BWCAW.[12]

[8] Minn. R. 6132.2000, subps. 2A, 3A (2023); Ex. 1 at DNR000199 (Map of Mineral Management Corridor).
[9] Minn. R. 6132.0100, subp. 22 (2023).
[10] Ex. 1 at DNR000128.
[11] Ex. 1 at DNR000001-13; NMW's Post-Hearing Brief at 1-2 (Feb. 19, 2025).
[12] Ex. 1 at DNR000001-13; NMW's Post-Hearing Brief at 1-2.

8. On September 30, 2020, Twin Metals, a company that has proposed a nonferrous metallic mineral mine in the RRH watershed, filed a notice of intervention in the MERA lawsuit.[13]

9. Actions brought under Minn. Stat. § 116B.10 undergo a three-stage procedure, which combines district court and administrative review processes. In the first stage, the plaintiff must make a prima facie showing in district court of "the existence of material evidence" which shows the inadequacy of the challenged rule to protect a natural resource from pollution, impairment, or destruction.[14] If the plaintiff meets their prima facie burden, the district court does not decide the case on the merits, but rather remits the matter to the state agency that promulgated the rule.[15] In the second stage, the agency must initiate the appropriate administrative proceedings to consider and make findings necessary to issue an order on the adequacy of the challenged rule to protect the natural resources in question.[16] In the final stage, the district court retains "jurisdiction for purposes of judicial review to determine whether the order of the agency is supported by the preponderance of the evidence."[17]

10. During the first stage of review of NMW's MERA lawsuit, the DNR and NMW stipulated that a remand to the DNR for the second stage administrative review process was appropriate given the low initial bar NMW would need to meet to establish a prima facie case at the district court.[18] On September 13, 2021, the district court remanded the matter to the DNR for the second stage administrative review process, which requires 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.[19]

11. On October 4, 2021, the DNR issued a Procedural Order on Remand establishing a public comment period from November 9, 2021, to 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:

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[13] *Register of Actions*, 62-CV-20-3838, Index #14 (Twin Metals Minnesota LLC's Notice of Intervention filed Sept. 30, 2020).
[14] Minn. Stat. § 116B.10, subds. 2, 3.
[15] Minn. Stat. § 116B.10, subd. 3.
[16] Minn. Stat. § 116B.10, subd. 3.
[17] Minn. Stat. § 116B.10, subd. 3.
[18] *Register of Actions*, 62-CV-20-3838, Index #19 (Stipulation for Remand Between Plaintiff and the Minnesota Department of Natural Resources filed Nov. 18, 2020); Notice and Order for Prehearing Conference at 3 (Nov. 7, 2023).
[19] Ex. 1 at DNR000119-22. The district court's Order for Remand required the DNR to establish a public comment process prior to issuing findings and an order on the adequacy of Minn. R. 6132.2000. Ex. 1 at DNR000119-20. The district court further ordered the DNR to issue its findings and order within one year of the Order for Remand. *Id.* The district court later granted an extension for the DNR to issue its findings and order by May 31, 2023. *Register of Actions*, 62-CV-20-3838, Index #98 (Order Granting Motion for Extension dated Sept. 20, 2022); *see* Ex. 1 at DNR000129.

- [t]he exclusion of mining in the BWCAW set forth in Minn. R. 6132.2000 subp. 2A, and

- [t]he 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?[20]

12. After publishing notices of the comment period on its website, in the *State Register*, and through its GovDelivery service, DNR received over 4,000 comments during the public comment period.[21]

13. DNR engaged in a detailed and thorough review of all the public comments and all technical data and materials submitted.[22] Technical experts from the DNR, outside consultants, and the Minnesota Pollution Control Agency (MPCA) evaluated the impacts that a mine could have on the BWCAW, and considered whether the current mine siting rule in Minn. R. 6132.2000 is adequate to protect the BWCAW from potential pollution that could arise from nonferrous metallic mineral mining in the RRH watershed.[23] DNR reviewed the public comments and expert literature submitted by commenters and internally researched. [24] The DNR also analyzed Minn. R. 6132.2000 and the existing statutory authority delegated by the legislature.[25]

14. On May 31, 2023, the Commissioner issued the Findings of Fact, Conclusions of Law, and Order on Remand (Order on Remand).[26] The Order on Remand found that Minn. R. 6132.2000, working in conjunction with the existing environmental protection legal framework, such as the BWCAW's antidegradation water quality standard, is adequate to protect the waters of the BWCAW from pollution, impairment, or destruction associated with potential nonferrous metallic mineral mining in the RRH watershed.[27] The Order on Remand further found, however, that Minn. R. 6132.2000 is inadequate to protect the BWCAW from noise and light pollution arising from potential nonferrous metallic mineral mining in the RRH watershed.[28] Because the Commissioner concluded that Minn. R. 6132.2000 is not adequate to protect the BWCAW from noise

[20] Ex. 1 at DNR000123-25.
[21] Ex. 1 at DNR000130. The published notices of the comment period and public comments are contained in the administrative record labeled as Ex. 1 at DNR000200-121408, DNR123743-123766.
[22] Ex. 20 at 4-6 (J. Engstrom Direct).
[23] Ex. 20 at 4-6 (J. Engstrom Direct); *see* Ex. 1 at DNR123767-124009 (DNR Review of Public Comments), DNR124010-124056 (MPCA Review of Public Comments), DNR124057-124085 (Outside Consultant Review of Public Comments).
[24] Ex. 20 at 5-6 (J. Engstrom Direct).
[25] Ex. 20 at 5-6 (J. Engstrom Direct).
[26] Ex. 1 at 000126-99.
[27] Ex. 1 at DNR000196, DNR000126-99.
[28] Ex. 1 at DNR000195, DNR000126-99.

and light pollution, the Order on Remand instructed the DNR to initiate rulemaking to expand the size of the BWCAW Mineral Management Corridor.[29]

15. On June 29, 2023, NMW made a timely demand for a contested case hearing to address: (1) whether Minn. R. 6132.2000 and the related environmental protection legal framework are adequate to protect the waters of the BWCAW and RRH watershed from pollution, impairment, or destruction; and (2) whether Minn. R. 6132.2000 should be amended to prohibit nonferrous metallic mineral mining in the RRH watershed.[30]

16. On June 30, 2023, Twin Metals made a timely demand for a contested case hearing to address: (1) whether Minn. R. 6132.2000 is adequate to protect the BWCAW from pollution, impairment, or destruction associated with noise and light impacts arising from nonferrous metallic mineral mining in the RRH watershed; and (2) whether rulemaking to expand the size of the Mineral Management Corridor is necessary to protect the BWCAW.[31]

17. Because both demands for a contested case hearing were made in a timely manner prior to the DNR initiating rulemaking, the DNR consolidated the contested case demands pursuant to Minn. R. 1400.6350.[32]

18. On November 7, 2023, the DNR filed a Notice and Order for Prehearing Conference with the Office of Administrative Hearings, initiating this contested case proceeding.[33]

19. On December 16, 2023, the parties stipulated to the following issues for hearing:

a. Is Minn. R. 6132.2000, together with the water quality standards for the Boundary Waters Canoe Area Wilderness (BWCAW), adequate to protect the waters of the BWCAW from pollution, impairment, or destruction (as defined in Minn. Stat. § 116B.02, subd. 5 (2024)) arising from nonferrous metallic mineral mining in the Rainy River Headwaters (RRH) watershed?

[29] Ex. 1 at DNR000198. On May 31, 2023, the DNR issued a press release discussing its Order on Remand and recommending that the Minnesota Legislature consider whether certain mining practices in the RRH watershed are compatible with protection of the BWCAW. Ex. 1 at DNR000212-13 (DNR News Release dated May 31, 2023). As of the date of this Recommendation, the legislature has not enacted any new restrictions to mining in the RRH watershed beyond the preexisting legal framework discussed in detail herein. *See* Tr. Vol. 6 at 42 (J. Engstrom).
[30] Notice and Order for Prehearing Conference at 4-5, Ex. D.
[31] Notice and Order for Prehearing Conference at 5, Ex. E.
[32] Notice and Order for Prehearing Conference at 5.
[33] Notice and Order for Prehearing Conference.

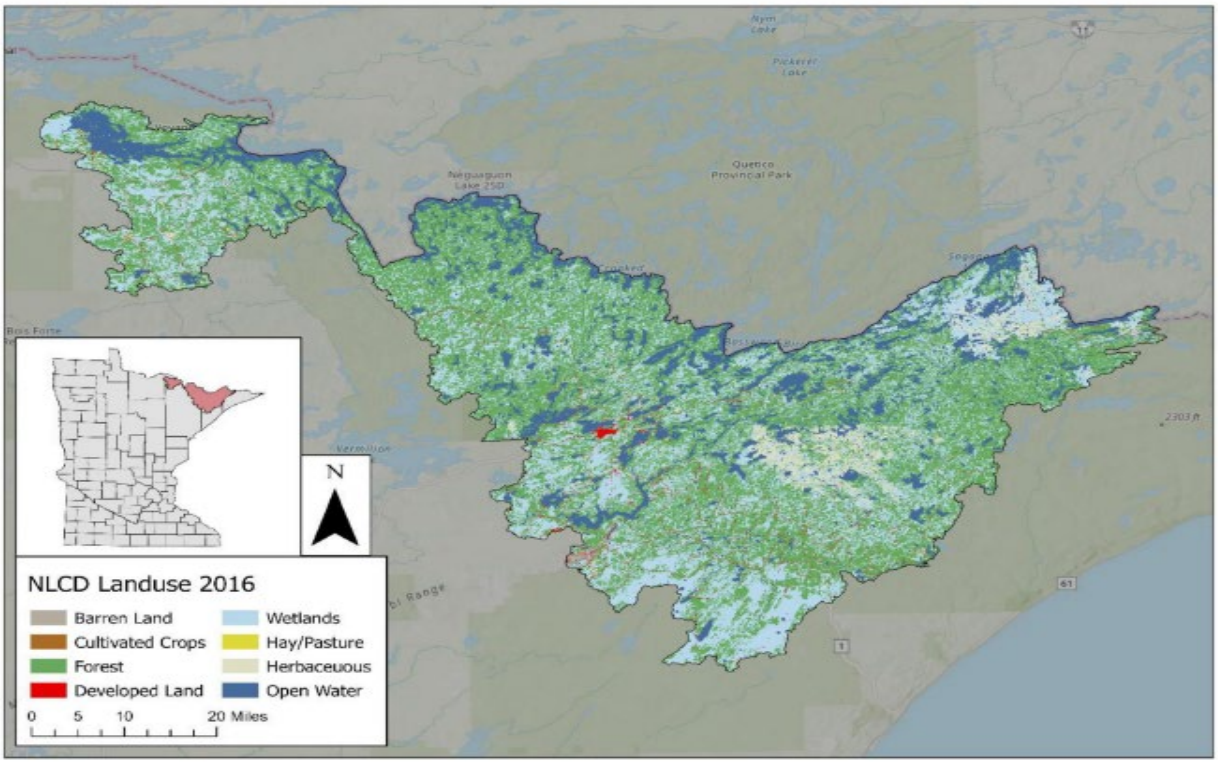
b. Is Minn. R. 6132.2000 adequate to protect the BWCAW from pollution, impairment, or destruction associated with noise and light impacts arising from nonferrous metallic mineral mining in the RRH watershed?[34]

II. RRH Watershed and the BWCAW

20. The RRH watershed is located in Northeastern Minnesota and a southern part of the Ontario province of Canada.[35] The Minnesota portion of the RRH watershed is over 1.8 million acres, with large sections contained within the BWCAW, Voyageurs National Park, and the Superior National Forest.[36]

21. The RRH watershed has excellent water quality, and most of the watershed is forested and undeveloped.[37] The largest population center in the RRH watershed is Ely, with a population of approximately 3,408.[38] Land use in the RRH watershed is

Figure 1. Rainy River - Headwaters land use map (NLCD 2016)



[34] Stipulation (Dec. 16, 2023). In the Notice and Order for Prehearing Conference, the DNR recommended a third issue for hearing, which the parties later stipulated to withdraw, finding it more appropriate to consider the third issue during a potential future rulemaking procedure under the terms of the district court's Order for Remand. *See* Notice and Order for Prehearing Conference at 5; Stipulation at 3; Ex. 1 at DNR000119-22 (Order for Remand).

[35] Ex. 1 at DNR123455 (MPCA, RAINY RIVER - HEADWATERS WATERSHED RESTORATION AND PROTECTION STRATEGY REPORT (June 2022)) (WRAPS Report).

[36] Ex. 1 at DNR123459 (WRAPS Report).

[37] Ex. 1 at DNR123455, DNR1234560, DNR123508 (WRAPS Report).

[38] Ex. 1 at DNR123460 (WRAPS Report).

depicted in the map below.[39]

22. 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 owning 13 percent of the land.[40] Less than 1 percent of the land is owned by counties and 11 percent is privately owned.[41] Within the BWCAW, land ownership is a patchwork of federal and state ownership.[42]

23. Most rivers in the Minnesota portion of the RRH watershed flow north toward the Canadian border and border waters.[43] Surface water and groundwater from the RRH watershed flow into the BWCAW.[44] Almost half of the entire drainage area of the RRH watershed is within the BWCAW.[45]

24. The Kawishiwi River is the largest river system in the RRH watershed.[46] The Kawishiwi River originates in the BWCAW and flows south and west out of the BWCAW before turning back northward to reenter the BWCAW.[47]

25. Currently, the Peter Mitchell Mine is the only operating taconite mine in the RRH watershed.[48] Historically, the Dunka Mine was an open pit taconite mine operating in the RRH watershed, but it is now closed.[49] Copper-nickel deposits are also located in the RRH watershed, but there are no copper-nickel sulfide mines currently in operation in the watershed.[50]

26. The majority of the BWCAW lies within the RRH watershed.[51]

27. 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

[39] Ex. 1 at DNR123461 (WRAPS Report).
[40] Ex. 1 at DNR123462 (WRAPS Report).
[41] Ex. 1 at DNR123462 (WRAPS Report).
[42] Ex. 1 at DNR092643-47; DNR092653 (Public comment and maps by mining company Teck American Inc.).
[43] Ex. 1 at DNR123463 (WRAPS Report).
[44] Ex. 4 at 7 (Chambers Direct).
[45] Ex. 1 at DNR123462 (WRAPS Report).
[46] Ex. 1 at DNR123463 (WRAPS Report), DNR054993 (MPCA, RAINY RIVER-HEADWATERS WATERSHED MONITORING AND ASSESSMENT REPORT (June 2017)).
[47] Ex. 1 at DNR123463 (WRAPS Report).
[48] Ex. 1 at DNR123483 (WRAPS Report); Ex. 4 at 10 (Chambers Direct).
[49] Ex. 1 at DNR123483 (WRAPS Report); Ex. 4 at 10 (Chambers Direct); *see* Ex. 308.
[50] Ex. 1 at DNR123483 (WRAPS Report); Ex. 4 at 10 (Chambers Direct).
[51] Ex. 1 at DNR123459 (WRAPS Report).

> throughout the country. Despite extensive logging, the BWCAW 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.[52]

28. The federal government has recognized the BWCAW as "an irreplaceable national treasure."[53] There is no development in the BWCAW.[54] With several hundred miles of streams and over 1,000 lakes, approximately 20 percent of the surface area of the BWCAW is water.[55] The BWCAW is the only significant lake-land canoe area wilderness in the nation and is renowned for its water-based recreational opportunities.[56] The BWCAW includes 1,200 miles of canoe routes.[57] Clean water is critical for recreational use and for the water-rich ecosystem of the BWCAW.[58]

29. The BWCAW is one of the most visited wilderness areas in the United States, receiving approximately 150,000 visitors per year.[59] The BWCAW provides solitude and recreation in an undeveloped natural setting and a connection with "untrammeled nature."[60] Visitors come to the BWCAW for "deep sensory isolation from man's activities," including isolation from artificial noise.[61]

30. The BWCAW is "a refuge for plants and animals[,] a system of incredibly clean water, and a sanctuary that grows in value every day for city-bound Americans. It is treasured by Americans from every state, beloved to the point that entry restrictions are necessary."[62]

31. The RRH watershed and the BWCAW provide diverse habitat for thousands of breeding, wintering, and migratory species of terrestrial wildlife, including over 350 species of birds, mammals, reptiles, amphibians, and thousands of species of invertebrates.[63] Many rare or threatened species of animals are found in the BWCAW and RRH watershed, including Canada lynx, northern long-eared bats, and gray wolves.[64]

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[52] H.R. Rep. No. 95-1117, at 2 (1978).
[53] Ex. 300 at DNR147905.
[54] Tr. Vol. 5 at 39 (Cole).
[55] Ex. 300 at DNR147906.
[56] Ex. 300 at DNR147906.
[57] Ex. 300 at DNR147905.
[58] Tr. Vol. 6 at 21 (J. Engstrom).
[59] Ex. 300 at DNR147905.
[60] Ex. 300 at DNR147905.
[61] Ex. 1 at DNR090818 (Minnesota Environmental Quality Board, REGIONAL COPPER-NICKEL STUDY).
[62] Ex. 10 at 3 (Landwehr Direct).
[63] Ex. 300 at DNR147912.
[64] Ex. 300 at DNR147912; Ex. 1 at DNR103745.

Over the decades, the BWCAW has provided protection for species under stress or with declining populations, such as moose.[65]

III. Legislative History of the BWCAW

32. The majority of the RRH watershed is within the territory ceded to the United States in the 1854 Treaty of La Pointe (1854 Treaty) between the United States and the Chippewa of Lake Superior.[66] The 1854 Treaty reserved usufructuary treaty rights to hunt, fish, and gather in the ceded territory, including lands within the BWCAW, 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.[67]

33. 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."[68] The Wilderness 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."[69] The Wilderness Act established the BWCAW.[70]

34. In 1976, the Minnesota Legislature prohibited mining in the BWCAW.[71] The State prohibition codified a long-standing state administrative policy of not issuing mineral leases in the BWCAW.[72]

35. Minn. Stat. § 84.523, subd. 3 states:

> 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.

36. In 1978, Congress adopted the Boundary Waters Canoe Area Wilderness Act (BWCAW Act), which enlarged the BWCAW and imposed restrictions on mining in

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[65] Ex. 1 at DNR103745.
[66] Ex. 300 at DNR147901; Ex. 307 at 4-356.
[67] Ex. 300 at DNR147901; Ex. 307 at 4-356.
[68] Wilderness Act, Pub. L. No. 88-577, § 2(a), 78 Stat. 890 (1964).
[69] Wilderness Act, Pub. L. No. 88-577, § 2(c), 78 Stat. 890, 891 (1964).
[70] Wilderness Act, Pub. L. No. 88-577, § 4(d)(5), 78 Stat. 890, 895 (1964).
[71] 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, § 1, subd. 3 (adoption of same).
[72] The Boundary Waters Wilderness Act, H.R. 2820, 95 Cong. H622 (1977).

the BWCAW.[73] One of the stated goals of the BWCAW Act is to "minimize to the maximum extent possible, the environmental impacts associated with mineral development."[74]

37. The BWCAW Act prohibits exploration or mining of minerals owned by the United States in the BWCAW.[75] It also prohibits the federal government from issuing permits or leases for exploration or mining in the BWCAW that may affect navigable waters.[76] 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.[77] The BWCAW Act's prohibitions on mining apply in the BWCAW and in the BWCAW Mining Protection Area.[78] The Mining Protection Area is a 222,000 acre area that links together the three separate units of the BWCAW.[79]

38. Similar to Minn. Stat. § 84.523, subd. 3, 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 United States President.[80]

39. The prohibitions on mining in the BWCAW Act do not apply to the portions of the Superior National Forest or the RRH watershed that are outside of the BWCAW and Mining Protection Area.[81]

IV. DNR's Mine Siting Rule – Minn. R. 6132.2000

40. The DNR has broad authority to regulate mining and promulgate rules governing mining, including nonferrous metallic mineral mining.[82]

41. The DNR is tasked with both the protection of natural resources and the promotion of mining.[83] For example, Minn. Stat. § 93.44 (2024) 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

[73] Boundary Waters Canoe Area Wilderness, Pub. L. 95-495, 92 Stat. 1649 (1978).
[74] Boundary Waters Canoe Area Wilderness, Pub. L. 95-495, § 2(4), 92 Stat. 1649 (1978).
[75] Boundary Waters Canoe Area Wilderness, Pub. L. 95-495, § 11(a)(1), 92 Stat. 1649, 1655 (1978).
[76] Boundary Waters Canoe Area Wilderness, Pub. L. 95-495, § 11(a)(2), 92 Stat. 1649, 1655 (1978).
[77] Boundary Waters Canoe Area Wilderness, Pub. L. 95-495, § 11(a)(3), 92 Stat. 1649, 1655 (1978).
[78] Boundary Waters Canoe Area Wilderness, Pub. L. 95-495, § 11(a), 92 Stat. 1649, 1655 (1978).
[79] Boundary Waters Canoe Area Wilderness, H.R. 12250, Report 95-1274, at 14 (1978).
[80] Boundary Waters Canoe Area Wilderness, Pub. L. 95-495, § 11(a), 92 Stat. 1649, 1655 (1978).
[81] *See generally* Boundary Waters Canoe Area Wilderness, Pub. L. 95-495, 92 Stat. 1649 (1978).
[82] Minn. Stat. §§ 93.47, 93.481 (2024).
[83] *See* Minn. Stat. §§ 93.44, .47 (2024).

good mining practices, and the recognition and identification of the beneficial aspects of mining.

42. The DNR must consider certain factors when adopting mining regulations, including, for example:

> (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 also shall 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.[84]

43. Furthermore, the DNR must ensure that mining only occurs in areas that can be reclaimed.[85]

44. In 1993, the DNR adopted its nonferrous metallic mineral mining rules, including the challenged mine siting rule – Minn. R. 6132.2000.[86]

45. Minn. R. 6132.2000 has not changed since its original adoption.[87]

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[84] Minn. Stat. § 93.47, subd. 2 (2024).
[85] Minn. Stat. § 93.47, subd. 3 (2024).
[86] Minn. R. ch. 6132 (1993).
[87] *Compare* Minn. R. 6132.2000 (1993) *with* Minn. R. 6132.2000 (2023).

46. Minn. R. 6132.2000 provides, in relevant part:

> 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.

47. The DNR's goal in developing the mine siting rule was to avoid land use conflicts and environmental nuisance conditions, as well as to identify locations where the land cannot be satisfactorily reclaimed after mining.[88]

48. 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) Minn. Stat. § 93.47, subd. 3 prohibits the issuance of permits in areas that cannot be satisfactorily reclaimed.[89]

49. The SONAR further explains that the purpose of the prohibition of surface disturbance in the Mineral Management Corridor is to create "a buffer between inconsistent land uses, and [reduce] the intrusive effects of mining onto adjacent lands."[90] The Mineral Management Corridor was designed to "provide a reasonable separation between the BWCAW and lands upon which the state is willing to offer mineral leases ... [and] to prevent the direct overland flow of runoff water, that forms within the corridor area, from entering the BWCAW.[91]

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[88] Ex. 1 at DNR002843-44 (*In the Matter of the Proposed Permanent Rules Relating to Nonferrous Metallic Mineral Mineland Reclamation*, OAH No. 9-2000-7009-1, Hearing Transcript (Dec. 7, 1992)).
[89] Ex. 1 at DNR002150 (SONAR for Nonferrous Metallic Mineral Mineland Reclamation Rules).
[90] Ex. 1 at DNR002151 (SONAR for Nonferrous Metallic Mineral Mineland Reclamation Rules).
[91] Ex. 1 at DNR002151 (SONAR for Nonferrous Metallic Mineral Mineland Reclamation Rules).

50. Minn. R. 6132.2000, subp. 3A, identifies the Mineral Management Corridor by citing a DNR map entitled "Minnesota Department of Natural Resources B.W.C.A.W. Mineral Management Corridor" and dated February 1991. The map of the Mineral Management Corridor notes that the Corridor includes small surface watersheds that flow directly into the BWCAW, a quarter-mile buffer around the BWCAW, and principal recreational entrances and travel corridors entering the BWCAW.[92]

51. The setback provided by the Mineral Management Corridor was not designed to meet water quality, air quality, or noise standards.[93] The DNR "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 [the DNR] wanted to do is just establish a separation, and we felt that that was reasonable because of the high use of those areas."[94] In the SONAR for Chapter 6132, the DNR deferred enforcement of these environmental standards to other agencies:

> 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 [of natural resources]. 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.[95]

52. The administrative law judge who presided over the rulemaking in 1993 considered one commenter's arguments, similar to NMW's arguments here, that surface mining be banned in the entire RRH watershed.[96] The administrative law judge noted that the commenter did not provide evidence to support their argument and concluded:

> The Department has shown that the setback distances chosen are needed and reasonable to prevent disruption caused by mining operations, and to screen the mining operations from other uses. While larger distances may provide more protection, [the] DNR is not obligated to choose any particular alternative more than one that accomplishes the Department's objective.[97]

53. Because the Mineral Management Corridor's purpose is to create a buffer between inconsistent land uses and not to enforce environmental standards, the

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[92] Ex. 1 at DNR050685 (DNR map of Mineral Management Corridor, Feb. 1991).
[93] Ex. 1 at DNR002151 (SONAR for Nonferrous Metallic Mineral Mineland Reclamation Rules).
[94] Ex. 1 at DNR002931 (*In the Matter of the Proposed Permanent Rules Relating to Nonferrous Metallic Mineral Mineland Reclamation*, No. 9-2000-7009-1, Hearing Transcript (Dec. 7, 1992)).
[95] Ex. 1 at DNR002151 (SONAR for Nonferrous Metallic Mineral Mineland Reclamation Rules).
[96] Ex. 1 at DNR010876 (*In the Matter of the Proposed Permanent Rules Relating to Nonferrous Metallic Mineral Mineland Reclamation, Minnesota Rules, Chapter 6132*, REPORT OF THE ADMINISTRATIVE LAW JUDGE (Minn. Office Admin. Hearings Feb. 5, 1993)).
[97] Ex. 1 at DNR010876 (*In the Matter of the Proposed Permanent Rules Relating to Nonferrous Metallic Mineral Mineland Reclamation, Minnesota Rules, Chapter 6132*, REPORT OF THE ADMINISTRATIVE LAW JUDGE (Minn. Office Admin. Hearings Feb. 5, 1993).

boundaries of the Mineral Management Corridor are arbitrary and lack any scientific basis.[98]

V. Environmental Protection Legal Framework for the BWCAW

54. Any company proposing to conduct nonferrous metallic mineral mining in Minnesota needs to obtain a permit to mine from the DNR, along with ensuring compliance with both federal and state water quality rules and possibly secure a National Pollutant Discharge Elimination System (NPDES) permit from MPCA.[99]

55. The parties agree that the adequacy of Minn. R. 6132.2000 to protect the BWCAW from pollution, impairment, or destruction cannot be considered in isolation – it can only be determined in light of the context of the environmental protection legal framework currently in place.[100] If Minn. R. 6132.2000, operating in conjunction with the environmental protection legal framework, is sufficient to protect the BWCAW from pollution, impairment, or destruction, then the siting rule complies with MERA. If not, then the siting rule violates MERA, and the DNR must undertake rulemaking to sufficiently protect the BWCAW.

56. This case considers the adequacy of state law to protect the BWCAW. Accordingly, in examining the environmental protection legal framework currently in place, the Judge will consider only those laws and rules where the State has regulatory or enforcement authority, notwithstanding whether that authority is original or delegated from the federal government. Federal laws granting decision making or enforcement authority only to federal agencies will not be considered.

57. "Pollution, impairment, or destruction" is defined under MERA 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; provided that 'pollution, impairment, or destruction' shall not include conduct which violates, or is likely to violate, any such standard, limitation, rules, order, license, stipulation agreement or permit solely because of the introduction of an odor into the air.[101]

[98] Ex. 10 at 5-6 (Landwehr Direct); Ex. 12 at 4 (Myers Direct).
[99] Ex. 20 at 9 (J. Engstrom Direct).
[100] This flows from the basic principle of statutory interpretation that words and phrases are not read in isolation. *Moore v. Robinson Env't*, 954 N.W.2d 277, 280-81 (Minn. 2021). Statutes must be examined in light of their context and construed as a whole with surrounding sections. *See State v. Gaiovnik*, 794 N.W.2d 643, 647 (Minn. 2011); *Am. Fam. Ins. Grp. v. Schroedl*, 616 N.W.2d 273, 277 (Minn. 2000).
[101] Minn. Stat. § 116B.02, subd. 5.

58. Therefore, examining the existing environmental quality standards that are in place to protect the BWCAW is necessary to determine the adequacy of Minn. R. 6132.2000. The relevant environmental protections include the DNR's reclamation rules, environmental review standards, the Clean Water Act and its related permitting programs, and noise and light regulations. Federal decisions affecting mining in the RRH watershed, while not dispositive, will also be discussed.

A. DNR's Reclamation Rules – Chapter 6132

59. Minn. R. 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. With respect to general siting criteria, Minn. R. 6132.2000 provides as follows:

> Subp. 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 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.

60. Minn. R. 6132.2000, subp. 5, provides additional tools for the DNR to require the siting of storage and processing facilities in areas that are already disturbed or have less potential to cause environmental impacts.

61. Minn. R. 6132.2000 is part of a larger chapter governing nonferrous metallic mineral mining and should be considered in conjunction with these rules.[102] Chapter 6132 contains many other provisions designed to reduce the environmental impacts of mining and ensure land is successfully reclaimed.

62. Minn. R. 6132.1100, subp. 6 requires a mining company to develop a mining and reclamation plan prior to permitting. The mining and reclamation plan must describe:

A. the operating life of the mine, including the rate of mining and anticipated changes in that rate;

B. the mining activities to be conducted, including:

(1) the types, amounts, sequence, and schedule of mining the ore body and storage piling materials, including the distinctions among ore, lean ore, and waste rock; and

(2) the ore beneficiating process, including a discussion of the type and amount of chemicals to be added and the types, amounts, sequence, schedule, and means of tailings disposal;

C. the engineering design, methods, sequence, and schedules of reclamation including closure and post-closure maintenance that address the goals and meet the requirements of parts 6132.2000 to 6132.3200, including anticipated reclamation research; and

D. the mine waste characterization.[103]

63. Minn. R. 6132.1000 requires a mining company to conduct mine waste characterization prior to permitting. “Mine waste” is defined as “a material, such as surface overburden, rock, lean ore, leached ore, or tailings that in the process of mining and beneficiation has been exposed or removed from the earth.”[104]

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[102] *See Am. Fam. Ins. Grp. v. Schroedl*, 616 N.W.2d 273, 277 (Minn. 2000) (“[Courts must] read and construe a statute as a whole and must interpret each section in light of the surrounding sections to avoid conflicting interpretations.”).
[103] Minn. R. 6132.1100, subp. 6.
[104] Minn. R. 6132.0100, subp. 16.

64. The primary sources of sulfate water pollution from mining are waste rock, tailings, and open pit walls.[105]

65. Mine waste characterization must include chemical, mineralogical, and petrological analysis of mine waste, laboratory tests describing acid generation and dissolved solids released from mine waste, and certain information regarding reagents associated with tailings or leached ore materials.[106] The Commissioner may require additional information based on the required tests.[107]

66. Mine waste characterization is a central aspect of the DNR's evaluation of a proposed mine, as the mining company must evaluate the non-economic materials that result from mining—such as waste rock and tailings—to understand the amount of minerals to be extracted and how the waste rock will react or behave in the environment when it is exposed to air and water.[108]

67. If the mine waste characterization shows that the waste is reactive and releases substances that adversely impact natural resources, then the mining company must establish how it will handle and store the waste to protect the environment.[109]

68. Minn. R. 6132.2200, subp. 2 contains specific requirements for reactive mine waste, including that the mining company conduct chemical and physical characterization of the waste prior to applying for a permit and continuously thereafter until the mine ceases operations, as well as requirements for reactive mine waste storage facilities.

69. The mining company must submit facility designs to the DNR to evaluate and determine whether a reactive waste storage facility will be constructed, operated, and maintained to ensure protection of natural resources, and will be monitored and inspected to ensure compliance with its design plans.[110]

70. The mine waste characterization often results in changes to the mining and reclamation plan by the mining company. [111]

71. Mine waste characterization must be completed, included in an application for a permit to mine, and shared with the MPCA, which regulates water quality and compliance monitoring standards.[112]

[105] Tr. Vol. 2 at 76-77 (Chambers).
[106] Ex. 20 at 12-13 (J. Engstrom Direct); Minn. R. 6132.1000, subp. 2.
[107] Ex. 20 at 12-13 (J. Engstrom Direct); Minn. R. 6132.1000, subp. 2.
[108] Ex. 20 at 12-13, 15-16 (J. Engstrom Direct); *see* Minn. R. 6132.2200.
[109] Ex. 20 at 16 (J. Engstrom Direct); *see* Minn. R. 6132.2200, subp. 1.
[110] Minn. R. 6132.2200, subp. 2C.
[111] Ex. 20 at 16 (J. Engstrom Direct).
[112] Ex. 20 at 23 (J. Engstrom Direct); Minn. R. 6132.1000, subp. 3.

72. If the mining company cannot manage and store waste to prevent adverse impacts on natural resources, a permit cannot be issued.[113]

73. Minn. R. 6132.1200 requires a mining company seeking a permit to mine to provide adequate financial assurance to ensure the DNR can complete reclamation activities, including closure and post-closure maintenance, or perform corrective actions if noncompliance with design and operating criteria occurs.[114]

74. The DNR's evaluation of financial assurance within a permit to mine application includes the costs to close and maintain a site and any need for long-term treatment, and DNR requires the mining company to use proven financial assurance tools.[115]

75. The DNR tailors the required financial assurance to a mine's operations and risks, which can require substantial financial outlays.[116] For example, the DNR required financial assurance tools which exceed $1 billion for the only nonferrous metallic mineral mine currently permitted in Minnesota.[117]

76. The Commissioner may modify a permit to mine at any time to ensure that there is adequate financial assurance for a mine.[118]

77. If a mining company fails to meet the financial assurance requirements, the DNR may deny, suspend, revoke, or modify a permit to mine or assess civil penalties.[119]

78. Minn. R. ch. 6132 contains many additional requirements for nonferrous metallic mineral mining.

79. Minn. R. 6132.2300 provides requirements for the construction of lifts and benches for the overburden portions of mine pit walls to ensure that they are structurally sound.

80. Minn. R. 6132.2400 sets forth requirements for the design and construction of storage piles for purposes of minimizing hydrologic impacts, enhancing the growth of vegetation, controlling erosion, promoting progressive reclamation, and ensuring structural soundness.

81. Minn. R. 6132.2500 requires that tailings basins be designed by professional engineers proficient in tailings basin design. Furthermore, tailings basin designs must incorporate several factors, including a rationale for site selection, operating

[113] Minn. R. 6132.1000, subp. 1; Minn. R. 6132.220, subp. 1; Ex. 20 at 3 (J. Engstrom Direct).
[114] Minn. R. 6132.1200, subp. 1; Ex. 37 at 7-8 (J. Engstrom Rebuttal).
[115] Ex. 37 at 7-8 (J. Engstrom Rebuttal); Minn. R. 6132.1200, subps. 2-5.
[116] *See, e.g.*, Ex. 306 at 3, 22-28.
[117] Ex. 306 at 22-28.
[118] Minn. R. 6132.1200, subp. 7.
[119] Minn. R. 6132.1200, subp. 7.

performance specifications needed for environmental protection, and plans for monitoring construction, operations, and reclamation.[120]

82. Minn. R. 6132.2700 provides specific requirements regarding the establishment of vegetation in mining areas to control erosion, screen mining areas from incompatible uses, and provide for subsequent land uses. These requirements include the establishment and maintenance of vegetation in mining areas after the areas are no longer scheduled to be used for mining.[121]

83. Minn. R. 6132.2800 requires dust control in mining areas by techniques approved by the Commissioner.

84. Minn. R. 6132.2900 establishes standards for air overpressure and ground vibrations caused by blasting to protect human health and welfare, as well as to protect property outside mining areas. Mining operators are required to monitor all blasts and keep a blaster's log documenting specific information about the blast.[122]

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

86. Minn. R. 6132.3200 governs mine closure and post-closure maintenance to ensure that the mining area is stable and free of hazards, and to minimize hydrologic impacts and the release of substances that adversely impact natural resources. Closure requirements include sealing accesses to underground mines, constructing safety fences or barriers, and the removal of debris, equipment, and facilities.[123] If closure cannot be achieved without continued maintenance, the mining company must implement a plan for post-closure maintenance and provide financial assurance.[124]

87. Individuals who own property that will be affected by a proposed mine, or government entities who have responsibilities that are affected by a proposed mine, may object to the proposed permit and request a contested case hearing.[125] If the Commissioner determines that there is a material issue of fact related to the proposed mine for which the Commissioner has jurisdiction, and that a hearing would aid in resolving the issue, the Commissioner must initiate a contested case proceeding under Minn. Stat. ch. 14 before an administrative law judge.[126]

88. Chapter 6132 is designed to be flexible to allow the DNR to tailor permits to particular site conditions because each site has its own challenges and characteristics.[127] This flexibility is emphasized in Minn. R. 6132.0200, which states, "[b]ecause of the unique character of each mining operation and the extreme diversity of the possible types

[120] Minn. R. 6132.2500, subp. 2.
[121] Minn. R. 6132.2700, subp. 2B.
[122] Minn. R. 6132.2900, subp. 2A.
[123] Minn. R. 6132.3200, subp. 2E.
[124] Minn. R. 6132.3200, subp. 2E(6).
[125] Minn. Stat. § 93.483; Minn. R. 6132.4000, subp. 2.
[126] Minn. Stat. § 93.483, subd. 3; Minn. R. 6132.4000, subp. 2, 6132.5000.
[127] Ex. 20 at 3 (J. Engstrom Direct).

and sizes of operations, specific permit requirements shall be established within the framework established by parts 6132.0100 to 6132.5300." The flexibility to tailor mining permits is necessary to:

> control possible adverse environmental effects of nonferrous metallic mineral mining, to preserve natural resources, and to encourage planning of future land utilization, while at the same time promoting orderly development of nonferrous metallic mineral mining, encouragement of good mining practices, and recognition and identification of the beneficial aspects of nonferrous metallic mineral mining.[128]

89. The Minnesota Court of Appeals has upheld Chapter 6132 as complying with the DNR's statutory authority because Chapter 6132 complies with the mandate in Minn. Stat. § 93.47 to establish reclamation standards, adopt procedures for determining when those standards cannot be met, and deny permits when standards cannot be met.[129] The court further found that "[C]hapter 6132 does not implicate constitutional vagueness concerns because no one is left to guess what conduct is proscribed."[130]

90. The mine siting rule, Minn. R. 6132.2000, works in conjunction with the entirety of Chapter 6132 to protect the BWCAW from pollution, impairment, or destruction. Under Chapter 6132, the DNR can create project-specific permit conditions necessary to protect the BWCAW and RRH watershed.

B. Environmental Review

91. Newly proposed nonferrous metallic mineral mines in Minnesota must undergo an environmental review process at the beginning of the permitting process.[131] Environmental review is a detailed process of reviewing a project and its potential environmental impacts to guide and inform permitting decisions.[132]

92. Environmental review is governed by the Minnesota Environmental Protection Act (MEPA), Minn. Stat. ch. 116D, and its related rules, Minn. R. chapter 4410.[133]

93. The first step in environmental review involves the preparation of an environmental assessment worksheet (EAW), which serves primarily to aid in the determination of whether an environmental impact statement (EIS) is needed, or, if an EIS is mandatory, the EAW serves as the scoping document for the EIS.[134]

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[128] Minn. R. 6132.0200.
[129] *Minn. Ctr. for Envtl. Advocacy v. Minn. Dep't of Natural Res.*, No. A18-1956, 2019 WL 3545839, at *7-8 (Minn. Ct. App. Aug. 5, 2019).
[130] *Id.* at *10.
[131] Ex. 20 at 7 (J. Engstrom Direct).
[132] Minn. R. 4410.0300 (2023).
[133] Ex. 20 at 7 (J. Engstrom Direct).
[134] Minn. Stat. § 116D.04, subd. 1a(c); Minn. R. 4410.1000, subp. 1; Minn. R. 4410.2100, subp. 2.

94. Environmental review for a new nonferrous metallic mineral mine is through the mandatory environmental impact statement.[135] This includes nonferrous metallic mineral mines, processing facilities, or tailings basins in the RRH watershed.[136]

95. "The purpose of an EIS is to provide information for governmental units, the proposer of the project, and other persons to evaluate proposed projects which have the potential for significant environmental effects, to consider alternatives to the proposed projects, and to explore methods for reducing adverse environmental effects."[137]

96. An EIS is an information gathering document that informs the permitting decisions of all relevant agencies.[138] An EIS is prepared using an interdisciplinary approach that includes the natural, environmental, and social sciences.[139]

97. An EIS is completed by the responsible governmental unit designated under Minn. R. ch. 4410. For metallic mineral mining operations, the responsible governmental unit is the DNR.[140] Other agencies involved in the permitting process for a new mine that have specialized expertise or access to information, such as the MPCA, are also involved in preparing the EIS.[141]

98. An EIS assessment is exhaustive and covers a broad range of topics that are specific to the ultimate design of a proposed project.[142]

99. During the environmental review process, the impacts of a mining project on the water quality of adjacent and downstream areas must be evaluated, including geochemical characterization of the potential sources of pollution from mining activities such as tailings, waste rock, and the wall rock of either an open pit or underground mining operation.[143] This evaluation characterizes and quantifies the quality of: (1) the water pumped out of the mine; (2) the process waters generated in the processing facility; and (3) water generated from the tailings management facility, waste rock storage facility, water retention basins, and in the mine itself after closure.[144]

100. Environmental review of a proposed mine also includes a detailed analysis of the water balance of the mine that addresses all water sources and flows in the mining operation.[145] This analysis is based on detailed mathematical-based models that account

[135] Minn. R. 4410.4400, subp. 8; Ex. 20 at 7 (J. Engstrom Direct).
[136] Ex. 20 at 7 (J. Engstrom Direct).
[137] Minn. R. 4410.2000, subp. 1.
[138] Minn. R. 4410.2900.
[139] Minn. R. 4410.2200.
[140] Minn. R. 4410.4300, subp. 11; .4400, subp. 8.
[141] Ex. 20 at 23 (J. Engstrom Direct); Minn. R. 4410.2200.
[142] Ex. 16 at 38-39 (Donohue Direct).
[143] Ex. 16 at 39 (Donohue Direct).
[144] Ex. 16 at 39 (Donohue Direct).
[145] Ex. 16 at 39 (Donohue Direct).

for climatic conditions such as rainfall, snowfall, evaporation, and all operational facets of the mine.[146]

101. Additionally, environmental review requires a detailed hydrogeologic model of the mining operations incorporating site-specific data on groundwater flow mapping, hydraulic characterization of the geologic formations near the project site, hydrologic monitoring of groundwater elevations and chemistry, hydrologic monitoring of stream flows and chemistry, hydrologic monitoring of groundwater and surface water interactions in streams, lakes and wetlands, and geologic characterization of the site.[147] The hydrogeologic model is then used to evaluate potential sources of water pollution from the mining operation.[148]

102. During environmental review, various mathematical-based models are used to integrate hydrogeologic, hydrologic, geochemical, and engineering-based models to evaluate the performance of key mining facilities, including the mine, tailings repositories, waste rock facilities, and water retention basins.[149] Model integration provides a comprehensive assessment of a mine's water quality effects on local groundwater, adjacent surface water, and downstream resources, such as the BWCAW in this case.[150]

103. The results of this evaluation guide the development of engineering designs for water treatment systems that are required to treat wastewater from the mine.[151] Water treatment of mine wastewater must comply with water quality standards administered by the MPCA to protect adjacent and downstream waters.[152]

104. To secure the permits that are required to operate a mine in the RRH watershed, a mine's water treatment must comply with the MPCA's stringent water quality standards for the BWCAW.[153]

105. Environmental review often drives changes to project designs and operation plans to protect water quality that may be impacted by the mine.[154]

106. The environmental review process is comprehensive and may be challenging due to requests from the DNR staff seeking to ensure that a project meets the requirements of statute and rule.[155] If the DNR or the MPCA have concerns over regulatory compliance during the environmental review process, a mining company will often make changes to the proposed project to address those concerns.[156]

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[146] Ex. 16 at 39 (Donohue Direct).
[147] Ex. 16 at 40 (Donohue Direct).
[148] Ex. 16 at 40 (Donohue Direct).
[149] Ex. 16 at 40 (Donohue Direct).
[150] Ex. 16 at 40 (Donohue Direct).
[151] Ex. 16 at 40 (Donohue Direct).
[152] Ex. 16 at 40-41 (Donohue Direct).
[153] Ex. 16 at 40-41 (Donohue Direct).
[154] Ex. 16 at 41 (Donohue Direct); Tr. Vol. 2 at 78-79 (Chambers).
[155] Tr. Vol. 3 at 144-45, 148, 151 (Donohue); Ex. 16 at 41-42 (Donohue Direct).
[156] Tr. Vol. 3 at 144-46 (Donohue); Ex. 37 at 5-6 (J. Engstrom Rebuttal).

107. If it becomes apparent during the environmental review that a mining project cannot meet permitting standards, then the project or a component of the project could be abandoned before it faces permit denial.[157]

108. After obtaining all necessary information to complete their review of a proposed project, the DNR and the MPCA draft an EIS, which is then published to the public and subject to public hearings and comments.[158] The DNR must review and respond to public comments regarding the draft EIS, which can number in the thousands.[159] The public comments may trigger further analysis by the DNR prior to issuing a final EIS, and the DNR is required to discuss and respond to timely submitted comments about the draft EIS.[160] Prior to preparing a final EIS, the DNR must "consult with and request the comments of every governmental office which has jurisdiction by law or special expertise with respect to any environmental effect involved."[161]

109. The final EIS is then published for notice and comment from the public and other state and federal regulatory agencies regarding the adequacy of the EIS.[162]

110. After issuing the final EIS, the DNR must issue an adequacy determination as to whether the final EIS complies with MEPA requirements and adequately addresses the environmental issues raised through project scoping.[163] The DNR's EIS adequacy determination is subject to judicial review.[164]

C. The Clean Water Act and Related Permitting Programs

111. Some of the most significant environmental standards that protect the BWCAW are the water quality standards for the BWCAW.

112. The Clean Water Act (CWA)[165] is a comprehensive federal water quality statute designed to promote cooperation between federal and state governments to "restore and maintain the chemical, physical, and biological integrity of the Nation's waters."[166]

113. To achieve this result, the CWA employs tools like wastewater discharge permits, water quality standards, effluent limitations, and protections for wetlands and wild rice, which are described in greater detail below. The MPCA is the delegated authority to implement the CWA in Minnesota.[167]

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[157] Tr. Vol. 3 at 145-46 (Donohue); Ex. 37 at 5-6 (J. Engstrom Rebuttal); Ex. 35 at 13-14 (Haugen Rebuttal).
[158] Ex. 16 at 42 (Donohue Direct); Minn. R. 4410.2600.
[159] Minn. R. 4410.2600, subp. 10; Ex. 16 at 42 (Donohue Direct).
[160] Ex. 16 at 42 (Donohue Direct); Minn. R. 4410.2700, subp. 1; *see* Minn. R. 4410.2600, subp. 10.
[161] Minn. Stat. § 116D.04, subd. 6a.
[162] Minn. R. 4410.2700, subps. 3-6; Minn. R. 4410.2800, subp. 2; Ex. 16 at 42-43 (Donohue Direct).
[163] Minn. R. 4410.2800, subp. 4; Ex. 16 at 42 (Donohue Direct).
[164] Minn. Stat. § 116D.04, subd. 10.
[165] 33 U.S.C. § 1251 et seq.
[166] 33 U.S.C. § 1251(a).
[167] Minn. Stat. § 115.03, subds. 1(a), 4a, 5; *see also* 40 C.F.R. § 123.1.

i. NPDES/SDS Permits

114. The CWA requires a person or entity to obtain a permit prior to discharging any pollutant into a water of the United States.[168]

115. A "discharge of a pollutant" is the addition of any pollutant to navigable waters from any point source, where a point source is a "discernible, confined and discrete conveyance," such as a pipe or ditch.[169]

116. The federal permitting program established to implement these provisions is the National Pollutant Discharge Elimination System (NPDES) program.[170] Discharge of pollutants into surface waters that will not cause or contribute to a violation of water quality standards can be authorized through the NPDES permitting process, which is administered in Minnesota by the MPCA.[171]

117. In addition to the federal requirements to protect water quality are the state requirements in Minnesota's Water Pollution Control Act.[172]

118. Minnesota law requires a person or entity to obtain a permit prior to operating a "disposal system" that discharges into waters of the State.[173] A "disposal system" would include an industrial mining operation.[174]

119. Minnesota's permitting program is called the State Disposal System (SDS) program.[175] The MPCA typically issues a combined NPDES/SDS permit containing all applicable federal and state conditions.[176]

ii. Water Quality Standards and Antidegradation Review

120. Water quality standards consist of three components: (1) the beneficial uses of a particular water body; (2) numeric and narrative criteria to ensure that the water body is suitable for those beneficial uses; and (3) antidegradation provisions.[177]

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[168] 33 U.S.C. § 1311(a).
[169] 33 U.S.C. § 1362(12)(A), (14).
[170] 33 U.S.C. § 1342(a)(1).
[171] 33 U.S.C. § 1342; 40 C.F.R. § 122.4(i); Ex. 19 at 12 (Cole Direct).
[172] Minn. Stat. §§ 115.01-.09 (2024).
[173] Minn. Stat. § 115.07, subd. 1; *see* Minn. Stat. § 115.03, subd. 1.
[174] Minn. Stat. § 115.01, subd. 5 (defining "disposal system" as "a system for disposing of sewage, industrial waste and other wastes, and includes sewer systems and treatment works").
[175] *See* Minn. §§ 115.03, subd. 1(a)(13)-(14), 115.07, subd. 1(b).
[176] *See* Minn. R. 7001.1010 (issuance of an NPDES permit satisfies the requirement to obtain both SDS and NPDES permits); Ex. 19 at 12 (Cole Direct) ("Additionally, MPCA also issues state disposal system (SDS) permits that functionally work the same as NPDES permits regarding water quality standards but apply to non-surface-water discharges to protect groundwater, which are not covered by NPDES permits.").
[177] Ex. 19 at 4 (Cole Direct); Minn. R. 7050.0110 ("This chapter includes a classification system of beneficial uses applicable to waters of the state, narrative and numeric water quality standards that protect specific beneficial uses, antidegradation provisions, and other provisions to protect the physical, chemical, and biological integrity of waters of the state."); *see generally In re 401 Water Quality Certification*, 822 N.W.2d 676 (Minn. Ct. App. 2012).

121. Under the first component of water quality standards, beneficial uses, the MPCA must classify a water body by how it is used by people, aquatic communities, and wildlife.[178] Federal law requires states to specify "water uses to be achieved and protected" for the waters within the state including rivers, lakes, and streams.[179] The classification of water bodies takes into consideration the water's value for uses such as public water supplies, recreation, or agriculture and wildlife.[180]

122. Water classifications are forward looking, meaning they reflect not only a water's current use, but also uses that would be attainable if the level of pollutants being discharged into the water is controlled through permitting or other regulatory efforts.[181]

123. Minnesota has designated seven beneficial use classes associated with surface waters:

> Class 1 is domestic consumption; it is drinking water source protection, and this class is broken down into three subclasses, 1A, 1B, 1C. Class 2 is aquatic life and recreation and includes four subclasses 2A, 2Bd, 2B, 2D. Class 3 is industrial consumption. Class 4 is agriculture and wildlife and includes subclasses 4A, 4B. Subclass 4A also provides protection for wild rice from excess sulfate. Class 5 is aesthetic enjoyment and navigation. Class 6 is other uses and protection of border waters. And Class 7 is limited resource value waters.[182]

124. All groundwater is assigned Class 1, domestic consumption, as a protected source of drinking water.[183] Groundwater is also protected by water quality standards adopted by the MPCA.[184]

125. Because surface waters provide various beneficial uses, all surface waters are assigned multiple use classes.[185] Surface waters that cannot meet Class 2, aquatic life and recreational uses, are assigned Class 7, limited resource value waters.[186] Class 7 waters are still expected to meet protective standards for downstream waters and other beneficial uses.[187]

126. The second component of water quality standards, numeric and narrative criteria, is often referred to simply as "standards" in Minnesota.[188] Standards set the

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[178] Ex. 19 at 5 (Cole Direct); *see* 33 U.S.C. § 1313; 40 C.F.R. pt. 131; Minn. Stat. § 115.44, subd. 2.
[179] 40 C.F.R. § 131.10; Minn. R. 7050.0224.
[180] Ex. 19 at 5 (Cole Direct); Minn. R. 7050.0140.
[181] *See* 40 C.F.R. § 131.10(d).
[182] Ex. 19 at 5-6 (Cole Direct); *see* Minn. R. 7050.0140.
[183] Ex. 19 at 6 (Cole Direct).
[184] Minn. R. 7050.0221.
[185] Ex. 19 at 6 (Cole Direct).
[186] Ex. 19 at 6 (Cole Direct).
[187] Ex. 19 at 6 (Cole Direct).
[188] Ex. 19 at 6 (Cole Direct); Minn. Stat. § 115.44, subd. 4.

conditions necessary to protect an associated beneficial use, and each beneficial use is protected by multiple standards.[189]

127. Water quality standards represent the quality, defined through a myriad of parameters, that a water body must have to support the uses associated with each classification.[190] For example, standards identify the allowable concentrations of a particular pollutant that may be present in the water without making it unusable for the activities for which it is classified.[191]

128. If a water quality standard is not met, it indicates the water is in a polluted condition that actually or potentially interferes with the designated use or classification of the water.[192] In contrast, when water quality standards are met, a water's designated use is generally protected.[193]

129. The third component of water quality standards is antidegradation provisions.[194] States must adopt antidegradation provisions and develop implementation methods that, at a minimum, reflect federal policy found in 40 C.F.R. § 131.12.[195]

130. Minnesota Rules 7050.0250 to 7050.0335 establish the state's antidegradation requirements and comport with federal regulations.[196]

131. The purpose of Minnesota's antidegradation provisions is to achieve and maintain the highest possible quality of waters in the state.[197] Water quality standards must maintain existing high water quality unless a lowering of water quality is necessary to accommodate important economic and social development.[198] "High water quality" is defined as "water quality that exceeds, on a parameter-by-parameter basis, levels necessary to support the protection and propagation of aquatic life and recreation in and on the water."[199]

132. Some waters of the state are protected by higher standards, such as the standards for outstanding resource value waters (ORVWs).[200] ORVWs are waters with "exceptional characteristics" that must be maintained and protected.[201] These exceptional characteristics include "wilderness, scientific, educational, ecological, recreational,

[189] Ex. 19 at 6 (Cole Direct).
[190] 33 U.S.C. § 1313(c); 40 C.F.R. § 131.11; Minn. Stat. § 115.44, subd. 4; Ex. 19 at 6 (Cole Direct).
[191] Ex. 19 at 6 (Cole Direct).
[192] Minn. R. 7050.0220, subp. 1 (2023).
[193] 40 C.F.R. § 131.11.
[194] Ex. 19 at 7-9 (Cole Direct).
[195] Ex. 19 at 8 (Cole Direct).
[196] Ex. 19 at 8 (Cole Direct).
[197] Ex. 19 at 8 (Cole Direct); Minn. R. 7050.0250.
[198] Ex. 19 at 8 (Cole Direct); Minn. R. 7050.0250.
[199] Minn. R. 7050.0255, subp. 21; Ex. 19 at 8 (Cole Direct).
[200] Ex. 19 at 8 (Cole Direct); Minn. R. 7050.0250(C), 7050.0335.
[201] Minn. R. 7050.0255, subp. 27, 7050.0250(C); Ex. 19 at 8 (Cole Direct).

cultural, or aesthetic resource characteristics or other special qualities that warrant stringent protection from degradation."[202]

133. There are two classes of ORVWs – prohibited and restricted.[203] Prohibited ORVWs receive the highest level of protection possible, and this designation is reserved for waters that possess extraordinary or unique water quality characteristics and often have minimal human impacts.[204]

134. The surface waters within the BWCAW are prohibited ORVWs, meaning they receive the highest possible antidegradation protection under Minnesota law.[205]

135. Net increases in loading or other causes of degradation to prohibited ORVWs are forbidden.[206] "Net increases in loading or other causes of degradation" is defined as "when applied to a proposed activity that is not regulated by an existing control document, *any* loading or other causes of degradation resulting from the proposed activity."[207] Control documents include NPDES permits.[208]

136. "Loading" is defined as "the quantity of pollutants, expressed as mass, resulting from a discharge or proposed discharge to a surface water."[209] "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."[210] "Measurable change" is defined as "the practical ability to detect a variation in water quality, taking into account limitations in analytical technique and sampling variability."[211]

137. Therefore, the antidegradation standard for prohibited ORVWs prohibits a new proposed activity that causes a discharge which would result in a miniscule, but measurable, decrease in water quality.[212] The antidegradation standard for prohibited ORVWs also prohibits a new proposed activity that increases loading, but does not result in a measurable decrease in water quality.[213]

138. The prohibition on any increase in loading without measurable degradation protects prohibited ORVWs from multiple unmeasurable discharges which would cumulatively result in degradation.[214] If a new proposed activity would cause a net increase in loading to a prohibited ORVW, the MPCA would prohibit the proposal, even if

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[202] Minn. R. 7050.0255, subp. 14.
[203] Minn. R. 7050.0335; Ex. 19 at 8 (Cole Direct).
[204] Ex. 19 at 9 (Cole Direct).
[205] Minn. R. 7050.0335, subp. 3A.
[206] Minn. R. 7050.0265, subp. 7, 7050.0270, subp. 6; Ex. 19 at 9 (Cole Direct).
[207] Minn. R. 7050.0255, subp. 26A (emphasis added).
[208] Minn. R. 7050.0255, subp. 10.
[209] Minn. R. 7050.0255, subp. 22.
[210] Minn. R. 7050.0255, subp. 11.
[211] Minn. R. 7050.0255, subp. 24.
[212] Ex. 19 at 10 (Cole Direct).
[213] Ex. 19 at 10 (Cole Direct).
[214] Ex. 19 at 10 (Cole Direct).

the impacts to the water body itself are not measurable.[215] This standard applies to new proposed discharges both directly into a prohibited ORVW or upstream from a prohibited ORVW, if it would cause any net increase in loading to the prohibited ORVW.[216]

139. Because the waters of the BWCAW are prohibited ORVWs, any new activity that results in *any* loading or degradation in the BWCAW is prohibited.[217] Even a single ounce of sulfate pollution added to the waters of the BWCAW violates the antidegradation requirements.[218]

iii. Effluent Limits

140. Discharge of pollutants into the waters of the state are regulated by NPDES permits, which are required to include conditions that will meet and maintain the water quality standards of not only the receiving water but also all downstream waters.[219]

141. If a discharge has the "reasonable potential" to cause or contribute to a violation of a water quality standard, the NPDES permit for that discharge must include an effluent limit, which must be met by the permit holder to attain and maintain the water quality standard.[220]

142. Effluent limitations restrict the quantities, rates, or concentrations of substances that are discharged by "point sources," such as pipes conveying pollutants.[221] The MPCA can include effluent limitations in its permits to ensure compliance with applicable water quality standards.[222]

143. The reasonable potential analysis is used to determine whether a discharge, alone or in combination with other sources of pollutants to a water body, and under a set of conditions arrived at by making a series of reasonable assumptions, could lead to an excursion above an applicable water quality standard.[223] If the MPCA determines that the discharge will cause, or has the reasonable potential to cause or contribute to an excursion above a water quality standard, it must set effluent limits to avoid that scenario.[224]

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[215] Ex. 19 at 11 (Cole Direct).
[216] Ex. 19 at 11 (Cole Direct).
[217] Minn. R. 7050.0335, subp. 3A, 7050.0265, subp. 7.
[218] Tr. Vol. 5 at 50-51 (Cole); *see* Tr. Vol. 1 at 44-45 (DNR opening statement).
[219] 33 U.S.C. §§ 1312(a), 1342(a)(1); 40 C.F.R. §§ 122.44(d), 131.10(b); Minn. R. 7050.0155 ("All waters must maintain a level of water quality that provides for the attainment and maintenance of the water quality standards of downstream waters, including the waters of another state.").
[220] 33 U.S.C. § 1311(b)(1)(C); 40 C.F.R. § 122.44(d)(1)(i)-(vii); *see* Ex. 35 at 5-6 (Haugen Rebuttal).
[221] Minn. R. 7001.1020, subp. 13 ("Effluent limitation" is defined as "a restriction established by rule or permit condition on quantities, discharge rates, and concentrations of pollutants that are discharged from point sources into waters of the state."); *In Re Cities of Annandale and Maple Lake NPDES/SDS Permit Issuance for the Discharge of Treated Wastewater,* 731 N.W.2d 502, 509-10 (Minn. 2007); Ex. 35 at 5-6 (Haugen Rebuttal).
[222] 33 U.S.C. § 1312.
[223] Ex. 35 at 6 (Haugen Rebuttal); 40 CFR § 122.44(d)(1)(i)-(vi).
[224] Ex. 35 at 6 (Haugen Rebuttal); 40 CFR § 122.44(d)(1)(ii).

144. A discharge into a prohibited ORVW cannot be permitted, even with proposed effluent limitations.[225]

145. If a discharge is proposed upstream of a prohibited ORVW, the MPCA could grant a permit with enforceable effluent limitations if the MPCA determined that the permit applicant could meet the required effluent limits and not cause a net increase in loading or other causes of degradation to the prohibited ORVW.[226] If the MCPA determines that the permit applicant cannot comply with required effluent limitations, the permit must be denied.[227]

146. A proposed nonferrous metallic mineral mine in the RRH watershed is a new activity that is not regulated by an existing control document.[228] Therefore, a discharge from the proposed mine cannot cause "any loading or other causes of degradation" to the BWCAW.[229] For a mine to be permitted in the RRH watershed, effluent limitations must be set to meet the water quality standard for the BWCAW. Furthermore, the MPCA must determine that the mining company can comply with the required effluent limitations or the permit must be denied.[230]

iv. Wetlands and Wild Rice Regulations

147. Wetlands receive both federal and state protections, and mine operators must replace wetlands that are drained or filled because of mining activities.[231]

148. The CWA requires that a mine operator obtain a permit before discharging dredge or fill materials into navigable waters.[232] This type of CWA permit is commonly referred to as a "section 404 permit."[233] Section 404 permits typically require mitigation, such as wetland replacement for wetlands impacted by mining projects.[234]

149. The U.S. Army Corps of Engineers may only grant a section 404 permit if the MPCA certifies that the discharge will not violate State water quality standards through a 401 Certification.[235] Under the MPCA's antidegradation rules, a section 401 Certification triggers antidegradation review.[236]

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[225] Ex. 35 at 7-8 (Haugen Rebuttal).
[226] Ex. 35 at 8 (Haugen Rebuttal); *see* Minn. R. 7050.0155 ("[a]ll waters must maintain a level of water quality that provides for the attainment and maintenance of the water quality standards of downstream waters").
[227] Ex. 35 at 8 (Haugen Rebuttal); 40 C.F.R. § 122.4; *see* Minn. R. 7001.0140, subp. 1.
[228] *See* Minn. R. 7050.0255, subps. 10, 26A.
[229] Minn. R. 7050.0335, subp. 3A, 7050.0265, subp. 7.
[230] 33 U.S.C. § 1311(b)(1)(C); 40 C.F.R. § 122.44(d)(1)(i)-(vii); *see* Ex. 35 at 8 (Haugen Rebuttal).
[231] 33 U.S.C. § 1344; Minn. Stat. §§ 103G.221-.2375, .2212-.222 (Minnesota Wetland Conservation Act).
[232] 33 U.S.C. § 1344.
[233] Ex. 16 at 25, 43 (Donohue Direct).
[234] 33 C.F.R. pt. 332.
[235] 33 U.S.C. § 1341(a)(1); Ex. 19 at 13 (Cole Direct).
[236] Minn. R. 7050.0265, subp. 1(D); Ex. 19 at 13 (Cole Direct).

150. Waters in the RRH watershed that are used to produce wild rice are subject to a water quality standard of 10 mg/L of sulfate during those times in the growing season when wild rice is susceptible to damage by high sulfate levels.[237]

151. However, the wild rice sulfate standard does not control sulfate discharges affecting the BWCAW. Instead, it is the State's more stringent prohibited ORVW antidegradation rules that prohibit *any* loading of sulfate control discharges affecting the BWCAW.[238]

D. Noise and Light Regulations

152. MPCA also regulates noise pollution, and any mine in the RRH watershed must comply with the applicable noise regulations.[239]

153. Noise is regulated based on the land use activities of the area where the listener is located. The noise area classification (NAC) system divides land use activities into four classifications.[240] Wilderness areas are not specifically classified by the NAC system and may fit into either Noise Area Classification 1, as "[c]amping and picnicking areas (designated)," or Noise Area Classification 4, as "[u]ndeveloped and unused land area."[241]

154. The MPCA's noise regulations do not prohibit all audible noise.[242] The regulations also do not provide strict caps on the maximum allowable volume at any given time.[243] Instead, the regulations provide that an area can exceed a certain volume 50 percent of the time and another volume 10 percent of the time.[244]

155. For Noise Area Classification 1, noise can exceed 60 dB(A) 50 percent of the time and 65 dB(A) 10 percent of the time during the day, and noise can exceed 50 dB(A) 50 percent of the time and 55 dB(A) 10 percent of the time at night.[245] The noise level of a loud restaurant is approximately 65 dB(A).[246] There are no noise regulations or limits for Noise Area Classification 4.[247]

156. If the BWCAW is considered a Noise Area Classification 4, there are no regulations ensuring that a mine operating in the RRH watershed would not negatively impact the wilderness experience in the BWCAW.[248]

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[237] Minn. R. 7050.0224, subp. 2, 7050.0470, subp. 2(A)(1).
[238] Minn. R. 7050.0250(C), 7050.0265, subp. 7; Ex. 19 at 10-11 (Cole Direct).
[239] Minn. Stat. § 116.07, subd. 4(e); *see* Minn. R. ch. 7030.
[240] Minn. R. 7030.0040, 7030.0050.
[241] Minn. R. 7030.0040, subp. 2.
[242] Minn. R. 7030.0040, subp. 2, 7030.0020, subps. 7-8 (defining L10 and L50).
[243] Minn. R. 7030.0040, subp. 2, 7030.0020, subps. 7-8 (defining L10 and L50).
[244] Minn. R. 7030.0040, subp. 2, 7030.0020, subps. 7-8 (defining L10 and L50).
[245] Minn. R. 7030.0040, subp. 2.
[246] Tr. Vol. 4 at 78 (Sauvageot).
[247] Minn. R. 7030.0040, subp. 2.
[248] Minn. R. 7030.0040, subp. 2.

157. Furthermore, if the BWCAW is considered a Noise Area Classification 1, which is unclear from the current regulatory scheme, compliance with the MPCA noise rules will not ensure that a mine in the RRH watershed would not negatively impact the wilderness experience in portions of the BWCAW.[249]

158. This regulatory framework for noise pollution is inconsistent with the federal wilderness designation of the BWCAW under the Wilderness Act. The Wilderness Act defines wilderness as an area where "the earth and its community of life are untrammeled by man." The Wilderness Act further describes wilderness areas as being "affected primarily by the forces of nature, with the imprint of man's work substantially unnoticeable."[250]

159. The BWCAW has been designated as a Wilderness Quiet Park by the non-governmental organization Quiet Parks International due to its noise-free interval of 15 minutes or more – meaning that 15 minutes or more passes between human-made noise intrusions.[251]

160. In Minnesota, local governments may pass ordinances that regulate outdoor lighting to reduce noise pollution, and the Department of Administration is required to create a model ordinance for local governments to use when developing their light pollution regulations.[252]

161. There are no federal or state statutes or rules that directly regulate light pollution in the BWCAW or the visual impact that mining facilities may have on the BWCAW.

162. The International Dark Sky Association is a non-governmental organization that provides tools and resources to reduce light pollution and promote responsible outdoor lighting.[253] The International Dark Sky Association has designated the BWCAW as a Dark Sky Sanctuary, which is defined by the organization as:

> public or private land that has an exceptional or distinguished quality of starry nights and a nocturnal environment that is protected for its scientific, natural, or educational value, its cultural heritage, and/or public enjoyment. . . . [a Dark Sky Sanctuary] is typically situated in a very remote location with few (if any) nearby threats to the quality of its dark night skies.[254]

163. Dark skies attract visitors to the BWCAW because of the unique wilderness experience these skies provide.[255]

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[249] Tr. Vol. 4 at 77-79 (Sauvageot).
[250] Wilderness Act, Pub. L. No. 88-577, § 2(c), 78 Stat. 890, 891 (1964).
[251] Ex. 8 at 31 (Fristrup Direct).
[252] Minn. Stat. § 16B.328, subd. 2.
[253] Ex. 8 at 35 (Fristrup Direct).
[254] Ex. 8 at 35 (Fristrup Direct).
[255] Ex. 8 at 36 (Fristrup Direct).

E. Federal Decisions Affecting Mining in the RRH Watershed

164. Twin Metals held two mineral leases in the Superior National Forest – one lease was located adjacent to the BWCAW, and the other lease was located within three miles of the BWCAW.[256] Both leases were located within the RRH watershed.[257]

165. On December 14, 2016, the U.S. Forest Service (USFS) withheld its consent for renewal of the two mineral leases in the Superior National Forest held by Twin Metals, citing "the inherent potential risk that development of a regionally-untested copper-nickel sulfide ore mine within the same watershed as the BWCAW might cause serious and irreplaceable harm to this unique, iconic, and irreplaceable wilderness area."[258]

166. The USFS concluded that "even a remote possibility of damaging the BWCAW" outweighed the economic benefits of the mining operations proposed by Twin Metals.[259] The USFS noted that Twin Metal's proposed mining operations could result in significant damage to the BWCAW:

> Based on information provided by [Twin Metals] to date . . ., existing science, and examination of similar proposals, there is no reason to doubt that the mining operations [Twin Metals] 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 [Twin Metals]'s two leases are adjacent or proximate to the BWCAW and within the same watershed as the wilderness. It might be possible for [Twin Metals] 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 [Twin Metals'] 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 [Twin Metals'] 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

[256] Ex. 1 at DNR038634 (U.S. Forest Service (USFS) Decision dated Dec. 14, 2016).
[257] Ex. 1 at DNR038634 (USFS Decision dated Dec. 14, 2016).
[258] Ex. 1 at DNR038634 (USFS Decision dated Dec. 14, 2016).
[259] Ex. 1 at DNR038654 (USFS Decision dated Dec. 14, 2016).

> BWCAW that could result from any contamination of the area with [acid mine drainage] and leached metals might be extreme.[260]

167. On January 24, 2022, the USFS confirmed that its 2016 withdrawal of consent still represented the agency's position.[261] On January 26, 2022, the Bureau of Land Management (BLM) cancelled Twin Metals' mineral leases in the RRH watershed, noting that the USFS did not consent to renewal.[262]

168. On September 19, 2021, the USFS submitted an application to the BLM for withdrawal of approximately 225,504 acres of the Superior National Forest within the RRH watershed, excluding the BWCAW and the Mining Protection Area, from disposition under U.S. mineral and geothermal leasing laws for 20 years, subject to valid existing rights.[263]

169. In its withdrawal application, the USFS described water quality as "a focal point" for the BWCAW and contended that "[p]otential impacts from mining could alter water quality and thus degrade key components of the wilderness ecosystem such as habitat for wildlife (lynx, moose, loons), fish (walleye, lake trout, and other game fish), and wild rice."[264] The USFS emphasized that it was uncertain whether perpetual maintenance of waste storage facilities and perpetual treatment of water discharge was possible, and noted that increased traffic, noise, light, dust, and other emissions from mining operations could alter the wilderness character of the BWCAW.[265] The USFS further noted that permanently stored waste from mining could "lead to irreversible degradation of this key water-based wilderness resource."[266]

170. In support of its withdrawal application, the USFS initiated an environmental review, accepted public comments, and issued an Environmental Assessment (EA) in December 2022.[267]

171. The EA noted that "existing literature suggests that hardrock mineral 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."[268] The EA concluded that wastewater and leaks pose risks to the BWCAW, which can be reduced through mitigation measures, but those risks will increase as facilities age.[269] "After mining is complete and a mine is closed and remediated, the risk of leaks, accidents, and failures may increase because there is more uncertainty on

[260] Ex. 1 at DNR038653-54 (USFS Decision dated Dec. 14, 2016).
[261] Ex. 300 at 4 n.8.
[262] Ex. 300 at 4.
[263] Ex. 300 at 1, 3; *see* Ex. 1 at DNR000226-42 (Application for Withdrawal).
[264] Ex. 1 at DNR000228 (Application for Withdrawal).
[265] Ex. 1 at DNR000228 (Application for Withdrawal).
[266] Ex. 1 at DNR000228 (Application for Withdrawal).
[267] Ex. 300 at 78.
[268] Ex. 300 at 33.
[269] Ex. 300 at 51.

whether the resources and capacity will be available for long-term monitoring and corrective action."[270]

172. The EA found that the primary risk to the BWCAW posed by mining is negative impact to water quality.[271] According to the EA, the two most significant risks to water quality are tailings storage failures, and failures of wastewater collection, treatment, and discharge systems.[272] A catastrophic failure of a wet basin tailings storage dam in the RRH watershed could travel downstream and impact the water quality of Birch Lake, which, in turn, poses a risk, although reduced, to downstream waters such as the BWCAW.[273] Failures of water collection, treatment, and discharge systems could also result in exceedances of water quality standards in Birch Lake and further downstream to the BWCAW.[274]

173. The EA concluded that mining in the Superior National Forest would negatively impact experiencing solitude and primitive recreation in the BWCAW due to noise and light pollution.[275]

174. On January 26, 2023, the U.S. Secretary of the Department of the Interior issued Public Land Order No. 7917, which withdrew approximately 225,504 acres of federal land in the Superior National Forest from disposition under mineral leasing laws for 20 years, subject to existing rights.[276] The purpose of the withdrawal is to protect and preserve the natural resources, ecological integrity, and wilderness values in the RRH watershed, the BWCAW, the Mining Protection Area, and the 1854 ceded territory from the potential adverse effects of mining.[277]

175. As of the date of this Recommendation, Public Land Order No. 7917 remains in effect.

VI. Water Quality

A. Water Flow Through the RRH Watershed

176. None of the parties contest that clean water is important for recreational use of the BWCAW and critical to the entire water-rich ecosystem of the BWCAW, including its wildlife.[278] Because surface water and groundwater from the RRH watershed flows

[270] Ex. 300 at 46.
[271] Ex. 300 at 45.
[272] Ex. 300 at 45.
[273] Ex. 300 at 50.
[274] Ex. 300 at 45.
[275] Ex. 300 at 51-52.
[276] Ex. 1 at DNR122543-48 (Public Land Order No. 7917).
[277] Ex. 1 at DNR122543-45 (Public Land Order No. 7917).
[278] *See generally* DNR's Post-Hearing Brief (Feb. 19, 2025); NMW's Post-Hearing Brief (Feb. 19, 2025); Twin Metals's Post-Hearing Brief (Feb. 19, 2025).

into the BWCAW, the water flow within the RRH watershed must be analyzed in order to determine whether potential mining pollution in the watershed will reach the BWCAW.[279]

177. The RRH watershed "is underlain by crystalline bedrock. Most of the watershed has very thin soils[,] often with less than three feet overlying bedrock[,] with the notable exception of a buried bedrock valley beneath Birch Lake."[280] It is generally assumed that the groundwater system in the RRH watershed follows the surface topography through the thin, unconsolidated deposits and shallow bedrock fractures discharging to the local surface water bodies.[281]

178. Unlike the majority of Minnesota that has deeper soils and productive bedrock aquifers, groundwater flow, especially within bedrock in the RRH watershed, constitutes a small fraction of overall flow.[282] Therefore, surface water flow is the controlling water flow factor in the RRH watershed.[283]

179. Within the RRH watershed, Birch Lake is a regulated reservoir within the Winton Hydroelectric Project.[284] Water from Birch Lake flows through a chain of rivers and lakes, including the South Kawishiwi River, White Iron Lake, the Garden Lake/Farm/South Farm reservoir, the Kawishiwi River, and the southwestern two-thirds of Fall Lake.[285] If water pollution occurs in the RRH watershed, Birch Lake or one of its tributaries is most likely be the initial receiving water.[286]

180. Discharge from the Garden/Farm/South Farm Lakes reservoir is controlled at the outlet of Garden Lake through the Winton hydroelectric powerhouse and dam.[287] Water from Garden Lake and runoff from the City of Ely and the surrounding area flows into Fall Lake prior to flowing north into the BWCAW.[288]

181. The distance for water to flow from Birch Lake into the BWCAW at Fall Lake is approximately 16 miles.[289]

182. After entering the BWCAW at Fall Lake, water flows north through Newton Lake, Basswood Lake, and a chain of lakes along the Canadian border before exiting the BWCAW and entering Voyagers National Park and Lake of the Woods, until it eventually flows through Canada to Hudson Bay.[290]

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[279] Ex. 4 at 7 (Chambers Direct); Ex. 1 at DNR123046 (Rainy River Withdrawal Water and Aquatic Species Report dated June 2022).
[280] Ex. 1 at DNR123046 (Rainy River Withdrawal Water and Aquatic Species Report dated June 2022).
[281] Ex. 1 at DNR123046 (Rainy River Withdrawal Water and Aquatic Species Report dated June 2022).
[282] Ex. 1 at DNR123046 (Rainy River Withdrawal Water and Aquatic Species Report dated June 2022).
[283] Ex. 1 at DNR123046 (Rainy River Withdrawal Water and Aquatic Species Report dated June 2022).
[284] Ex. 1 at DNR123049 (Rainy River Withdrawal Water and Aquatic Species Report dated June 2022).
[285] Ex. 1 at DNR123049 (Rainy River Withdrawal Water and Aquatic Species Report dated June 2022).
[286] Ex. 1 at DNR123046 (Rainy River Withdrawal Water and Aquatic Species Report dated June 2022).
[287] Ex. 1 at DNR123049 (Rainy River Withdrawal Water and Aquatic Species Report dated June 2022).
[288] Ex. 1 at DNR123049 (Rainy River Withdrawal Water and Aquatic Species Report dated June 2022).
[289] Ex. 1 at DNR123049 (Rainy River Withdrawal Water and Aquatic Species Report dated June 2022).
[290] Ex. 1 at DNR123049 (Rainy River Withdrawal Water and Aquatic Species Report dated June 2022).

183. Due to snowmelt runoff, peak water flows in the RRH are reached in the spring, and then water flows recede through the summer, responding temporarily to rainfall.[291] Water flows continue to decline through the fall and winter, reaching an annual minimum during February and March.[292]

184. The watershed-to-lake-area ratio is very high for Birch Lake and the downstream lakes in the RRH watershed – this means that water flushes through these lakes much quicker than other lakes in the RRH watershed that have smaller watershed-to-lake-area ratios.[293]

185. The water quality conditions in the RRH watershed are excellent, characterized by low sulfate concentrations (ranging from 1 to 5 mg/L).[294] The watershed is highly sensitive to anthropogenic stressors and benefits from low development levels.[295]

B. Risks to Water Quality Created by Mining in the RRH Watershed

186. A mine is a "new geologic feature" that becomes part of the landscape forever.[296] An underground mine changes the groundwater hydrology in perpetuity.[297]

187. Copper and nickel are sulfide ores that are bonded to sulfur.[298] In a typical copper-nickel sulfide mine, the target metals make up less than one percent of the rock that is processed as ore, leaving over 99 percent of the rock mined onsite as sulfide-containing waste.[299] Sulfide-ore copper mining generates waste rock and tailings full of sulfides, which, when exposed to air and water, generate acid and release sulfate into the surrounding environment.[300]

188. Sulfate occurs from the oxidation of sulfide minerals.[301] In general, sulfate does not have a significant direct impact on aquatic organisms and is only considered a nuisance factor for drinking water.[302] However, there are two factors of concern for sulfate levels in Minnesota: (1) even very low levels of sulfate negatively affect the growth of wild rice; and (2) sulfate is an important factor in the methylation of mercury.[303] The addition of sulfate into low-sulfate waters, such as the waters of the RRH watershed, can increase

[291] Ex. 1 at DNR123050 (Rainy River Withdrawal Water and Aquatic Species Report dated June 2022).
[292] Ex. 1 at DNR123050 (Rainy River Withdrawal Water and Aquatic Species Report dated June 2022).
[293] Ex. 1 at DNR123050 (Rainy River Withdrawal Water and Aquatic Species Report dated June 2022).
[294] Ex. 1 at DNR123050 (Rainy River Withdrawal Water and Aquatic Species Report dated June 2022).
[295] Ex. 1 at DNR123050 (Rainy River Withdrawal Water and Aquatic Species Report dated June 2022).
[296] Tr. Vol. 1 at 129 (Myers).
[297] Tr. Vol. 1 at 129 (Myers).
[298] Ex. 4 at 11 (Chambers Direct).
[299] Ex. 4 at 10 (Chambers Direct).
[300] Ex. 4 at 11 (Chambers Direct); Tr. Vol. 5 at 104 (Wenz).
[301] Ex. 4 at 8 (Chambers Direct); Tr. Vol. 5 at 104 (Wenz).
[302] Ex. 4 at 8 (Chambers Direct).
[303] Ex. 4 at 8-9 (Chambers Direct).

the production of methylmercury.[304] Methylmercury is a bioaccumulative form of mercury, which is a potent neurotoxin that affects both human and wildlife health.[305]

189. The background levels of sulfate in the RRH watershed are very low, ranging from 1 to 2 milligrams per liter.[306]

190. The surface waters of the BWCAW are very sensitive to elevated levels of sulfate due to the crystalline bedrock and the chemistry of the waters.[307] Even small increases in sulfate in the BWCAW would likely alter water and sediment chemistry and increase mercury methylation.[308]

191. Water pollution is a known risk of copper-nickel sulfide mining, and potential sources of pollution at copper-nickel mine sites include a break in a tailings pipeline, a tailings dam failure, the improper discharge of contaminated water, leakage from a fuel tank, and failure of a water treatment system, in addition to the "long term risks" caused by seepage of water from tailings facilities, waste rock storage, and water retention facilities.[309] Nonferrous metallic mineral mining in the RRH watershed poses significant risks to the BWCAW from above ground storage and disposal of waste tailings, permanent above ground storage of reactive waste rock, heap leaching, and smelting.[310]

192. Water from a mine site could enter streams and lakes in many ways, including through wastewater treatment plant discharges, uncollected runoff and leakage, concentrate spills, pipeline spills, truck accidents, spillway releases, tailings dam failures, water collection and treatment operation failures, and post-closure failures.[311] In wet environments, pollution can travel faster and farther through interconnected waterways.[312]

193. The primary sources of sulfate water pollution from mining are waste rock, tailings, and open pit walls.[313]

194. Waste rock is often permanently stored onsite in piles typically weighing millions of tons.[314] Piles of waste rock are exposed to the elements, and any water that

[304] Ex. 6 at 5 (D. Engstrom Direct).
[305] Ex. 6 at 4 (D. Engstrom Direct)
[306] Tr. Vol. 1 at 124-25 (Myers); Ex. 12 at 16 (Myers Direct); Ex. 2 at 9 (Brezonik Direct); Tr. Vol. 2 at 33 (Brezonik).
[307] Ex. 6 at 7 (D. Engstrom Direct).
[308] Ex. 6 at 7 (D. Engstrom Direct).
[309] Tr. Vol. 3 at 98, 100-01, 111-12 (Donohue).
[310] Tr. Vol. 6 at 39-40, 52 (J. Engstrom); Ex. 1 at DNR000212-13 (DNR News Release dated May 31, 2023).
[311] Ex. 1 at DNR103755 (USFS Decision dated Dec. 14, 2016).
[312] Ex. 4 at 24 (Chambers Direct).
[313] Tr. Vol. 2 at 76-77 (Chambers).
[314] Ex. 4 at 11 (Chambers Direct).

infiltrates into the waste rock can become contaminated seepage as it exits the pile.[315] Waste rock liners can be used for storage, but the liners may leak or degrade over time.[316]

195. After ore has been harvested from a mine, it is ground up and mixed with chemicals to separate the desired minerals, such as copper or nickel, from the remaining rock, which are called tailings.[317] Because tailings are ground up into particles the size of sand, there is more surface area in tailings to expose the minerals to oxygen and water and cause oxidation.[318]

196. Tailings are most often moved in a slurry mixed with water and stored in a tailings dam, but water can be removed from the tailings before they are stored in a method called "dry stacking."[319] Even with "dry stacking," tailings may still re-saturate, oxidize, and leach sulfate.[320] A wet climate and the potential for leaching of heavy metals were among the reasons the DNR concluded that dry stacking tailings would not be appropriate for the PolyMet mine, a copper-nickel sulfide mine located outside of the RRH watershed.[321]

197. Similar to waste rock, tailings liners can leak over time.[322] The likelihood of a tailings dam failure in a copper-nickel sulfide mine also increases over time.[323] In addition to seepage risks, both tailings dams and "dry stacked" piles pose risks of structural failure and collapse.[324]

198. Open pit mines pose a significant risk of sulfate pollution due to the large amount of waste rock produced and the exposure of the walls to the elements.[325] Oxygen and water easily penetrate the pit walls to oxidize exposed sulfide minerals and create sulfate.[326] There is currently sulfate pollution in the discharges from the Peter Mitchell Mine and the Dunka Mine, which is likely due to the pit walls being exposed to precipitation.[327]

199. Underground mine workings, including backfilled mines, also pose risks of sulfate pollution if the hydrologic conditions allow for movement of groundwater through the mine, exposing the rock to oxidation through dissolved oxygen in the groundwater.[328]

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[315] Ex. 4 at 11 (Chambers Direct).
[316] Ex. 4 at 19-20 (Chambers Direct); Tr. Vol. 3 at 113-14 (Donohue).
[317] Ex. 4 at 20 (Chambers Direct); Tr. Vol. 1 at 70 (Landwehr).
[318] Ex. 4 at 11 (Chambers Direct).
[319] Ex. 4 at 21 (Chambers Direct); Tr. Vol. 6 at 50-51 (J. Engstrom).
[320] Ex. 4 at 21-22 (Chambers Direct).
[321] Tr. Vol. 6 at 50-51 (J. Engstrom).
[322] Ex. 4 at 21-22 (Chambers Direct); Tr. Vol. 3 at 113-14 (Donohue).
[323] Tr. Vol. 6 at 80-87 (J. Engstrom).
[324] Ex. 4 at 21-22 (Chambers Direct).
[325] Ex. 4 at 23 (Chambers Direct).
[326] Ex. 4 at 11 (Chambers Direct).
[327] Ex. 4 at 23 (Chambers Direct
[328] Ex. 4 at 18-19 (Chambers Direct); Tr. Vol. 5 at 102-04 (Wenz).

200. It is impossible to eliminate all risks of pollution from mining.[329] Accidents happen in mines, even when mitigation or regulations should have precluded an accident.[330] Possible accidents include tailings pile failures, groundwater pollution, chemical discharges, and mine collapses, among other things.[331]

201. A review of water quality impacts from 14 operating copper sulfide mines in the United States found that 100 percent of the mines experienced pipeline spills or accidental releases, 13 mines had water collection and treatment systems failures resulting in contaminated seepage, tailings spills occurred at nine mines, and a partial failure of tailings impoundments occurred at four mines.[332]

202. A typical copper-nickel sulfide mine will operate for 10 to 40 years, and a post-closure monitoring program may exist for a defined number of years after operations cease.[333] After a post-closure monitoring program ends, a mine will remain without monitoring of its piles of waste rock and tailings impoundment, or the open pit or underground mine workings, all of which would remain potential sources of pollution.[334] Over long periods of reclamation or long-term monitoring, the risks of human error and failure increase.[335] The risk of pollution increases after mine closure due to the reduction in detection and oversight.[336]

203. Once sulfate and pollution reach the BWCAW, it cannot be cleaned up because there are no roads, motors, electricity, ditches, sediment ponds, trenches, water treatment plants, or other infrastructure that can remove the pollutants and maintain the existing water quality.[337] Sulfates and mercury are almost impossible to remove from water with current technology, even if the infrastructure was in place.[338] Furthermore, large amounts of financial assurance would not be able to alleviate pollution in the BWCAW due to the impracticality of cleanup within the BWCAW.[339]

204. Mining activities upstream of Birch Lake at the Dunka and Peter Mitchell Mines have caused increased sulfate loading in Birch Lake.[340]

205. However, there is insufficient data to determine whether the mining-related sulfate loads are flowing out of Birch Lake, and if so, how far downstream the loads are traveling.[341] While it is possible that mining-related sulfate loads from Birch Lake are flowing into Fall Lake 16 miles downstream (i.e., the entrance to the BWCAW) the data

[329] Tr. Vol. 3 at 112-13 (Donohue).
[330] Ex. 10 at 17 (Landwehr Direct).
[331] Ex. 10 at 17 (Landwehr Direct).
[332] Ex. 1 at DNR103756-57 (USFS Decision dated Dec. 14, 2016).
[333] Ex. 4 at 24 (Chambers Direct); Tr. Vol. 3 at 116-17 (Donohue).
[334] Ex. 4 at 24-25 (Chambers Direct); Ex. 10 at 23-24 (Landwehr Direct); Tr. Vol. 1 at 129 (Myers).
[335] Tr. Vol. 6 at 46 (J. Engstrom).
[336] Ex. 4 at 20 (Chambers Direct); Tr. Vol. 2 at 66-67 (Chambers).
[337] Ex. 10 at 17, 22 (Landwehr Direct); Ex. 4 at 27-28 (Chambers Direct); Tr. Vol. 2 at 108 (Chambers).
[338] Ex. 10 at 17 (Landwehr Direct).
[339] *See* Tr. Vol. 2 at 107-08 (Chambers).
[340] Ex. 2 at 10-11 (Brezonik Direct); Ex. 12 at 15-16 (Myers Direct).
[341] Tr. Vol. 5 at 107-08 (Wenz); Ex. 315.

in the record is currently insufficient to support that conclusion by a preponderance of the evidence.[342]

206. While Twin Metals' proposed copper-nickel sulfide mine in the RRH watershed is not the only possible mine that could be operated in the watershed, it is the one for which there is the most evidence in the record.[343]

207. Twin Metals' proposed copper-nickel sulfide mine in the RRH watershed is approximately 1,200 acres total, 900 acres of which would be turned into an industrial mine site, which includes gravel parking lots, dirt roads, buildings, and a tailings disposal site, among other things.[344] Up to 100 semi-trucks a day could be coming in and out of the proposed mine and the Ely area, hauling materials and fuel, among other things.[345]

C. Sulfate's Impact on Wild Rice

208. Wild rice is a culturally and ecologically important plant – the Ojibwe and Dakota peoples consider wild rice to be sacred, wild rice is the Minnesota state grain, and wild rice provides food and nesting material for numerous animal species, including ducks, loons, grebes, muskrats, geese, trumpeter swans, beaver, deer, and moose.[346] Wild rice lakes are habitat for 17 bird species included on the DNR's list of "species of greatest conservation need."[347]

209. Wild rice populations in Minnesota have decreased significantly.[348]

210. Low-sulfate lakes are prime habitat for wild rice.[349] The RRH watershed contains 177 listed wild rice lakes and streams.[350] The South Kawishiwi River and all of the downstream lakes that flow toward and into the BWCAW are wild rice waters, including Birch Lake, White Iron Lake, Farm Lake, Garden Lake, Fall Lake (which crosses the boundary into the BWCAW), Newton Lake, Basswood Lake, and Crooked Lake.[351]

211. In lakes, streams, and wetlands, certain bacteria exploit decaying plants in low-oxygen sediment and transform sulfate into hydrogen sulfide, which can reach toxic concentrations for wild rice.[352] If sulfate is not available, sulfide is not produced.[353]

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[342] Ex. 38 at 8-11 (Wenz Rebuttal).
[343] Tr. Vol. 1 at 51-52 (Landwehr).
[344] Tr. Vol. 1 at 52-53 (Landwehr).
[345] Tr. Vol. 1 at 54 (Landwehr).
[346] Ex. 14 at 3, 7 (Swain Direct).
[347] Ex. 14 at 7 (Swain Direct).
[348] Ex. 14 at 6 (Swain Direct).
[349] Ex, 14 at 8 (Swain Direct).
[350] Ex. 14 at 5-6 (Swain Direct).
[351] Ex. 14 at 5 (Swain Direct).
[352] Ex. 14 at 8-9 (Swain Direct).
[353] Ex. 14 at 10 (Swain Direct).

212. Wild rice is particularly vulnerable to elevated levels of sulfide, which can cause wild rice plants to develop black roots and prevent the production of healthy seeds, thereby decreasing production.[354]

213. Even a small increase in sulfate levels is likely to negatively impact wild rice habitats in the RRH watershed and the BWCAW.[355] The addition of sulfate to low-sulfate waters represents a large relative increase, which, in turn, produces a correspondingly large percentage increase in sulfide, which is toxic to wild rice.[356]

VII. Noise and Light Pollution

214. Mining creates loud levels of noise due to the use of heavy materials and machinery and the moving of large amounts of air underground – this noise is not natural to the wilderness.[357]

215. A copper-nickel sulfide mine operating under normal conditions in the RRH watershed can propagate noise tens of miles past the boundary into the BWCAW.[358] Under strong inversion where the weather is cold and still, noise from the RRH watershed can project about 25 miles from the source.[359] If more than one mine was operating in the RRH watershed, a higher aggregate noise level would be created that could extend further into the BWCAW.[360]

216. Mining in the RRH watershed would create noise impacts on the BWCAW which would have consequential impacts on wildlife. The conditions under which mine noise will propagate the furthest into the BWCAW typically will occur at the time of day when biological systems, including human visitors, will be the most sensitive to material noise impacts.[361]

217. Being subjected to excess noise is akin to hearing loss.[362] Mining noises raise the background sound level, effectively deafening all organisms in the surrounding environment by raising their hearing threshold.[363] If the hearing threshold is higher for visitors to the BWCAW, their wilderness experience is degraded.[364]

218. Similarly, industrial mining activity in the RRH watershed can project enough light to be visible many miles into the BWCAW.[365] The primary sources of light pollution from mining are vehicular headlights, outdoor luminaires, and light leakage from

[354] Ex. 14 at 9 (Swain Direct).
[355] Ex. 14 at 15 (Swain Direct).
[356] Ex. 14 at 15 (Swain Direct).
[357] Tr. Vol. 2 at 124-25 (Fristrup).
[358] Tr. Vol. 2 at 121-22 (Fristrup).
[359] Tr. Vol. 2 at 123, 129-35 (Fristrup).
[360] Tr. Vol. 2 at 122 (Fristrup).
[361] Tr. Vol. 2 at 132-33 (Fristrup).
[362] Tr. Vol. 2 at 124 (Fristrup).
[363] Tr. Vol. 2 at 123 (Fristrup).
[364] Tr. Vol. 2 at 123-24 (Fristrup).
[365] Tr. Vol. 2 at 122 (Fristrup).

brightly lit indoor areas through windows and doors.[366] There are several types of light pollution that are generated by mining activities, including sky glow, light domes, light trespass, and glare.[367]

219. The most widespread type of light pollution is sky glow, a consequence of photons generated by human lighting escaping into the sky and scattering back toward earth.[368] To an observer, the effect of sky glow is diffuse luminance that brightens all areas of the sky and veils perception of faint stars.[369]

220. Increases in BWCAW sky glow from new mines would interfere with the unique dark sky wilderness experience that BWCAW provides and could jeopardize the BWCAW's status as an International Dark Sky Association Dark Sky Sanctuary.[370]

221. Sky glow will disappear shortly after the source lights are extinguished; however, the ecological effects from light pollution can persist for months or years.[371] Nocturnal insects may develop different sensory and behavioral traits in response to light pollution, and nocturnal bird migration may also be affected.[372]

222. A more localized form of pollution is the light dome that forms on the horizon above dense sources of light, such as cities, airports, mines, and ball fields.[373] Light domes, like those produced by mines, can be large and bright enough to alter visual environments for BWCAW visitors and animals that are active at night.[374]

223. Light trespass is the direct spillage of light from a lighted area into an adjacent habitat.[375] "These levels of light can be high enough to alter plant physiology and completely disrupt nocturnal ecological processes."[376]

224. Glare is the visual dysfunction created by bright light sources within an individual's field of view.[377] Glare can inhibit the perception of visual detail and make vision uncomfortable for humans.[378]

225. Lighting from mining, especially from mines closer to the BWCAW boundary, will have substantial negative effects on the BWCAW because the current light levels are low.[379] Just as with noise pollution, more sources of light in the RRH watershed, such as mines, will lead to a larger aggregate level of sky glow and a brighter light dome

[366] Ex. 8 at 38 (Fristrup Direct).
[367] Ex. 8 at 34-35 (Fristrup Direct).
[368] Ex. 8 at 34 (Fristrup Direct).
[369] Ex. 8 at 34-35 (Fristrup Direct).
[370] Ex. 8 at 39 (Fristrup Direct).
[371] Ex. 8 at 39 (Fristrup Direct).
[372] Ex. 8 at 39 (Fristrup Direct).
[373] Ex. 8 at 35 (Fristrup Direct).
[374] Ex. 8 at 35 (Fristrup Direct).
[375] Ex. 8 at 35 (Fristrup Direct).
[376] Ex. 8 at 35 (Fristrup Direct).
[377] Ex. 8 at 35 (Fristrup Direct).
[378] Ex. 8 at 35 (Fristrup Direct).
[379] Ex. 8 at 40 (Fristrup Direct).

that will project more light into the BWCAW and degrade the wilderness experience.[380] Adding new mines to the RRH watershed will likely worsen the sky quality in the BWCAW.[381]

VIII. Incorporation

226. Any fact stated in the Memorandum that is not expressly referenced in these Findings of Fact is incorporated herein.

227. Any Conclusion of Law more properly considered a Finding of Fact is incorporated herein.

Based upon these Findings of Fact, the Administrative Law Judge now hereby makes the following:

CONCLUSIONS OF LAW

1. The Administrative Law Judge and the DNR have jurisdiction over this matter pursuant to Minn. Stat. §§ 14.50, 116B.10, subd. 3 (2024) and the district court's September 13, 2021, Order for Remand.[382]

2. Minn. Stat. § 116B.10, subd. 1, permits an organization with employees or members in Minnesota to bring a civil action for declaratory or equitable relief against the State of Minnesota or any state agency when challenging a rule for which the appeals period has expired.

3. In an action under Minn. Stat. § 116B.10, plaintiffs bear the burden of proving that the challenged rule "is inadequate to protect the air, water, land, or other natural resources located within the state from pollution, impairment, or destruction."[383]

4. This action was brought by NMW under Minn. Stat. § 116B.10, challenging the adequacy of the DNR's nonferrous metallic mineral mine siting rule, Minn. R. 6132.2000, to protect the BWCAW from pollution, impairment, or destruction caused by nonferrous metallic mineral mining in the RRH watershed.

5. The BWCAW is a "natural resource" under MERA because it contains "mineral, animal, botanical, air, water, land, timber, soil, quietude, recreational and historical resources," as well as scenic and aesthetic resources owned by governmental units.[384]

6. MERA defines "pollution, impairment, or destruction" as:

[380] Tr. Vol. 2 at 122-23 (Fristrup).
[381] Ex. 8 at 39 (Fristrup Direct).
[382] Ex. 1 at DNR000119-22 (Order for Remand).
[383] Minn. Stat. § 116B.10, subd. 2.
[384] Minn. Stat. § 116B.02, subd. 4.

> 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.[385]

7. "Person" includes mine owners and operators.[386] Nonferrous metallic mineral mining is "conduct" within the meaning of MERA. The term "environmental quality standard" under MERA includes the water quality standards for the BWCAW and other standards described in the Findings of Fact above.

8. As used in Minn. Stat. § 116B.02, subd. 5, "likely" means having a high probability of occurring.[387]

9. Under MERA, conduct causes pollution, impairment, or destruction when it either: (1) violates or *likely* violates an environmental quality standard; or (2) materially adversely affects or is *likely* to materially adversely affect the environment.[388] MERA does not require Minn. R. 6132.2000 to ensure that there is absolutely no risk of pollution, impairment, or destruction to the BWCAW. Instead, the mine siting rule will only be found inadequate under MERA if nonferrous metallic mineral mining in the RRH watershed will *likely* violate an environmental quality standard or cause material adverse effects to the BWCAW.[389]

10. Under the MERA standard, Minn. R. 6132.2000 is adequately protective if compliance with the rule and the existing environmental protection framework, including administrative and judicial review, renders both a violation of an environmental quality standard in the BWCAW and material adverse effects to the BWCAW not likely to result from nonferrous metallic mineral mining in the RRH watershed.

11. Under Minn. Stat. § 116B.10, subd. 3, the district court retains jurisdiction over this matter "for purposes of judicial review to determine whether the order of the agency is supported by the preponderance of the evidence." Therefore, inadequacy of the DNR's mine siting rule, Minn. R. 6132.2000, working in conjunction with related environmental quality standards to protect the BWCAW from pollution, impairment, or destruction, must be demonstrated by a preponderance of the evidence.

12. In a MERA action, courts consider the *Schaller* factors to determine whether conduct is likely to materially adversely affect the environment.[390] The *Schaller* factors are:

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[385] Minn. Stat. § 116B.02, subd. 5.
[386] Minn. Stat. § 116B.02, subd. 2.
[387] *Likely*, MERRIAM-WEBSTER, https://www.merriam-webster.com/dictionary/likely (last visited Apr. 16, 2025); *Likely*, BLACK'S LAW DICTIONARY (12th ed. 2024).
[388] Minn. Stat. § 116B.02, subd. 5 (emphasis added).
[389] *See* Minn. Stat. § 116B.02, subd. 5.
[390] *State ex rel. Schaller v. County of Blue Earth*, 563 N.W.2d 260, 267 (Minn. 1997).

(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 adverse 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.[391]

The *Schaller* factors are not exclusive, and every factor does not need to be met to find a material adverse effect.[392] The *Schaller* factors are a "flexible guideline for consideration as may be appropriate based on the facts of each case."[393]

13. Analyzing the second *Schaller* factor, there is no dispute that the BWCAW contains natural resources that are rare, unique, or endangered.[394] The BWCAW's uniqueness is underscored by its status as the largest wilderness area east of the Rocky Mountains and north of the Everglades.[395]

14. Evaluating the fifth *Schaller* factor, wilderness areas in the United States are shrinking and subject to increasing pressures due to climate change and increases in population.[396]

15. The remaining three *Schaller* factors are closely related, and in this case, it is prudent to evaluate these factors together while considering the existing legal framework in place to protect the BWCAW from pollution, impairment, or destruction. The quality and severity of any adverse effects, the long-term adverse effects, and significant consequential adverse effects of nonferrous metallic mineral mining in the RRH watershed on the BWCAW's water, light, and noise qualities can only be determined upon

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[391] *Id.*
[392] *Id.*
[393] *Id.*
[394] *State ex rel. Friends of the Boundary Waters Wilderness v. AT&T Mobility, LLC*, No. A11–1725, 2012 WL 2202984, at *6 (Minn. Ct. App. June 18, 2012); Ex. 300 at DNR147905-06, DNR147912; Ex. 1 at DNR103745; Tr. Vol. 5 at 39 (Cole); Tr. Vol. 6 at 21 (J. Engstrom).
[395] Evidentiary Hearing Transcript Volume (Tr. Vol.) 6 at 20 (J. Engstrom).
[396] Ex. 10 at 3 (Landwehr Direct); Tr. Vol. 3 at 122 (Donohue); Ex. 1 at DNR001378-79 (Comment of Minnesota Center for Environmental Advocacy), DNR000165-66 (Order on Remand).

careful consideration of the likelihood of those effects occurring under the current regulatory landscape.

16. Mining is a heavily regulated activity, and the question of whether Minn. R. 6132.2000 is adequate to protect the BWCAW from pollution, impairment, or destruction can only be determined within the context of the overall regulatory framework.[397]

17. Surface waters within the BWCAW are prohibited ORVWs.[398] The water quality standards for prohibited ORVWs preclude any new activity that results in *any* loading or degradation in the BWCAW.[399] Even a single ounce of sulfate pollution added to the waters of the BWCAW violates the antidegradation requirements.[400] This standard applies to new proposed discharges, both directly into a prohibited ORVW or upstream from a prohibited ORVW, if it would cause any net increase in loading to the prohibited ORVW.[401]

18. The DNR is prohibited from issuing a permit to mine that would result in a violation of the antidegradation standard that applies to the waters of the BWCAW.[402]

19. Permitting a mining operation in Minnesota is a detailed and thorough process that includes rigorous environmental review, substantial financial assurance, and extensive planning. This process requires compliance with a large number of regulations.[403]

20. During the permitting process, material issues of fact may be subject to administrative review through a contested case proceeding under Minn. Stat. ch. 14.[404] Additionally, the DNR's EIS adequacy determination is subject to judicial review.[405]

21. A nonferrous metallic mineral mine in the RRH watershed presents many risks to the water quality of the BWCAW from the possible release of sulfate into the watershed. There are many possible ways that sulfate could be released from a mine, including leaks, accidents, failures of water treatment, and spills, among other things.[406] If sulfate pollution reached the BWCAW, there would be substantial and long-term adverse effects due to the current low-sulfate and pristine quality of the water.[407]

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[397] This flows from the basic principle of statutory interpretation that words and phrases are not read in isolation. *Moore v. Robinson Env't*, 954 N.W.2d 277, 280-81 (Minn. 2021). Statutes must be examined in light of their context and construed as a whole with surrounding sections. *See State v. Gaiovnik*, 794 N.W.2d 643, 647 (Minn. 2011); *Am. Fam. Ins. Grp. v. Schroedl*, 616 N.W.2d 273, 277 (Minn. 2000).
[398] Minn. R. 7050.0335, subp. 3A.
[399] Minn. R. 7050.0335, subp. 3A, 7050.0265, subp. 7.
[400] Tr. Vol 5 at 50-51 (Cole); *see* Tr. Vol. 1 at 44-45 (DNR opening statement).
[401] Ex. 19 at 11 (Cole Direct).
[402] Minn. R. 7050.0265, subp. 7; *see* Ex. 16 at 40-41 (Donohue Direct).
[403] *See supra* Section V.
[404] Minn. Stat. § 93.483; Minn. R. 6132.4000, subp. 2, 6132.5000.
[405] Minn. Stat. § 116D.04, subd. 10.
[406] *See supra* Section VI.B.
[407] *See supra* Section VI.B, C.

Furthermore, sulfate pollution in the BWCAW would be impossible to remediate due to the lack of infrastructure in the wilderness and the limitations of current technology.[408]

22. However, the record does not establish that these risks to the BWCAW's water quality are likely to occur under the MERA standard. The strict antidegradation water quality standard of the BWCAW prohibits any mine from being permitted in the RRH watershed if it cannot comply with the water quality standard for prohibited ORVWs. As a practical matter, it is likely currently impossible for a mine to comply with the antidegradation water quality standard, and thus obtain a permit. But even if errors are made at the agency level during the permitting process, the additional layers of administrative and judicial review are sufficient to ensure that the waters of the BWCAW are protected from pollution, impairment, or destruction.

23. The preponderance of the evidence establishes that Minn. R. 6132.2000, together with the water quality standards for BWCAW, is **adequate** to protect the waters of the BWCAW from pollution, impairment, or destruction, as defined in Minn. Stat. § 116B.02, subd. 5, arising from nonferrous metallic mineral mining in the RRH watershed.

24. In contrast, under the current regulatory framework, a nonferrous metallic mineral mine operating in the RRH watershed near the BWCAW could comply with the MPCA noise regulations and still degrade the wilderness quality of the BWCAW through noise pollution.[409] A mine operating in the RRH watershed will likely propagate noise 10 to 25 miles into the BWCAW.[410] If the hearing threshold is higher for visitors to the BWCAW, their wilderness experience is degraded.[411]

25. There are no applicable environmental quality standards regulating light pollution from nonferrous metallic mineral mining in the RRH watershed.

26. Industrial mining activity in the RRH watershed is likely to project enough light to be visible many miles into the BWCAW.[412] Increases in BWCAW sky glow from new mines would interfere with the unique dark sky wilderness experience that BWCAW provides and could jeopardize the BWCAW's status as an International Dark Sky Association Dark Sky Sanctuary.[413]

27. The ecological effects from light pollution can persist for months or years.[414] Nocturnal insects may develop different sensory and behavioral traits in response to light pollution, and nocturnal bird migration may also be affected.[415] Plant physiology may be altered and nocturnal ecological processes can be completely disrupted by light

[408] *See supra* Section VI.B.
[409] Minn. R. 7030.0040, subp. 2, 7030.0020, subps. 7-8 (defining L10 and L50); *see supra* Section V.D, VII.
[410] Tr. Vol. 2 at 121-23, 129-35 (Fristrup).
[411] Tr. Vol. 2 at 123-24 (Fristrup).
[412] Tr. Vol. 2 at 122 (Fristrup).
[413] Ex. 8 at 39 (Fristrup Direct).
[414] Ex. 8 at 39 (Fristrup Direct).
[415] Ex. 8 at 39 (Fristrup Direct).

pollution.[416] Lighting from mining, especially from mines closer to the BWCAW boundary, will have substantial negative effects on the BWCAW because the current light levels are low.[417] Adding new mines to the RRH watershed will likely worsen the sky quality in the BWCAW.[418]

28. Noise and light impacts to the BWCAW would be long-term because mining operations typically continue for decades.[419]

29. Noise and light impacts to the BWCAW that would accompany a proposed mine amount to a material adverse impact in violation of MERA.

30. Minn. R. 6132.2000, together with the MPCA noise regulations, are **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 RRH watershed.

31. Because Minn. R. 6132.2000 is not adequate to protect the BWCAW from noise and light pollution under MERA, the DNR must undertake rulemaking to ensure sufficient protection of the noise and night wilderness conditions of the BWCAW

32. Any portion of the Memorandum below that is properly considered a Conclusion of Law is incorporated herein.

33. Any Finding of Fact more properly considered a Conclusion of Law is incorporated herein.

Based upon these Findings of Fact and Conclusions of Law, and for the reasons explained in the accompanying Memorandum, the Administrative Law Judge now hereby makes the following:

RECOMMENDATION

1. Minn. R. 6132.2000 should be found **adequate** to protect the waters of the BWCAW from pollution, impairment, or destruction, as defined in Minn. Stat. § 116B.02, subd. 5, arising from nonferrous metallic mineral mining in the RRH watershed.

2. Minn. R. 6132.2000 should be found **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 RRH watershed.

3. It is respectfully recommended that the Department **initiate a rulemaking proceeding** to amend Minn. R. 6132.2000 or promulgate a new rule to sufficiently protect

[416] Ex. 8 at 35 (Fristrup Direct).
[417] Ex. 8 at 40 (Fristrup Direct).
[418] Ex. 8 at 39 (Fristrup Direct).
[419] Ex. 4 at 24 (Chambers Direct).

the BWCAW from noise and light pollution arising from nonferrous metallic mineral mining in the RRH watershed.

Dated: May 12, 2025

MEGAN J. MCKENZIE
Administrative Law Judge

NOTICE

This Order is a recommendation, not a final order. The Commissioner of the Department of Natural Resources (Commissioner) will make the final decision after a review of the record. Under Minn. Stat. § 14.61 (2024), the Commissioner shall not make a final decision until this Order has been made available to the parties for at least ten calendar days. The parties may file exceptions to this Order and the Commissioner must consider the exceptions in making a final decision. Parties should contact Commissioner, 500 Lafayette Road, St. Paul, MN 55155, to learn the procedure for filing exceptions or presenting argument.

The record closes upon the filing of exceptions to the Order and the presentation of argument to the Commissioner, or upon the expiration of the deadline for doing so. The Commissioner must notify the parties and Administrative Law Judge of the date the record closes. If the Commissioner fails to issue a final decision within 90 days of the close of the record, this Order will constitute the final agency decision under Minn. Stat. § 14.62, subd. 2a (2024).

Under Minn. Stat. § 14.62, subd. 1 (2024), the Commissioner is required to serve the final decision upon each party and the Administrative Law Judge by first class mail or as otherwise provided by law.

MEMORANDUM

I. Summary

NMW filed the underlying matter in Ramsey County District Court under Section 10 of MERA.[420] NMW challenged whether Minn. R. 6132.2000, which governs siting of nonferrous metallic mineral mines, is adequate to protect the BWCAW and the RRH watershed from pollution, impairment, or destruction. This contested case proceeding is within the second stage of the MERA Section 10 process, during which the DNR must make findings on the adequacy of the challenged rule to protect the natural resources in

[420] Minn. Stat. § 116B.10.

question.[421] This is the first contested case proceeding to be litigated under MERA Section 10.

NMW argues that the only way to adequately protect the BWCAW from pollution, impairment, or destruction is to amend Minn. R. 6132.2000 to ban nonferrous metallic mineral mining in the entire RRH watershed.[422] Twin Metals argues that the existing environmental regulations adequately protect the BWCAW from material adverse impacts from mining in the BWCAW.[423] The DNR argues that Minn. R. 6132.2000, together with the water quality standards for the BWCAW and the existing regulatory framework, is adequate to protect the waters of the BWCAW, but inadequate to protect the BWCAW from noise and light pollution.[424]

The Administrative Law Judge concludes that Minn. R. 6132.2000 and the water quality standards for the BWCAW are adequate to protect the waters of the BWCAW from pollution, impairment, or destruction arising from nonferrous metallic mineral mining in the RRH watershed. However, Minn. R. 6132.2000 is inadequate to protect the BWCAW from pollution, impairment, or destruction associated with noise and light impacts arising from nonferrous metallic mineral mining in the RRH watershed.

II. Burden of Proof

In an action under Minn. Stat. § 116B.10, plaintiffs bear the burden of proving that the challenged rule "is inadequate to protect the air, water, land, or other natural resources located within the state from pollution, impairment, or destruction."[425] The district court retains "jurisdiction for purposes of judicial review to determine whether the order of the agency is supported by the preponderance of the evidence."[426] Thus, MERA requires that this recommendation and the DNR's final order be supported by a preponderance of the evidence.

In other words, the Administrative Law Judge must determine: (1) whether the preponderance of the evidence demonstrates that Minn. R. 6132.2000, working in conjunction with related environmental quality standards, is adequate to protect the waters of the BWCAW from pollution, impairment, or destruction arising from nonferrous metallic mineral mining in the RRH watershed; and (2) whether the preponderance of the evidence demonstrates that Minn. R. 6132.2000 and related regulations are adequate to protect the BWCAW from pollution, impairment, or destruction associated with noise and light impacts arising from nonferrous metallic mineral mining in the RRH watershed.

[421] Minn. Stat. § 116B.10, subd. 3.
[422] NMW's Post-Hearing Brief (Feb. 19, 2025).
[423] Twin Metals's Post-Hearing Brief (Feb. 19, 2025).
[424] DNR's Post-Hearing Brief (Feb. 19, 2025).
[425] Minn. Stat. § 116B.10, subd. 2.
[426] Minn. Stat. § 116B.10, subd. 3.

To establish a fact by a preponderance of the evidence, "it must be more probable that the fact exists than that the contrary exists."[427] If the evidence is equally balanced, then that fact or issue has not been proven by a preponderance of the evidence.[428]

III. Analysis

A. Minn. R. 6132.2000, Along with the Water Quality Standard for the BWCAW, Is Adequate to Protect the Waters of the BWCAW from Pollution, Impairment, or Destruction

Surface waters within the BWCAW are prohibited ORVWs.[429] The water quality standards for prohibited ORVWs preclude any new activity that results in *any* loading or degradation in the BWCAW.[430] Even a single ounce of sulfate pollution added to the waters of the BWCAW violates the antidegradation requirements.[431] This standard applies to new proposed discharges both directly into a prohibited ORVW or upstream from a prohibited ORVW, if it would cause any net increase in loading to the prohibited ORVW.[432]

The DNR is prohibited from issuing a permit to mine that would result in a violation of the antidegradation standard that applies to the waters of the BWCAW.[433] This adequately protects the BWCAW from pollution, impairment, or destruction.

NMW has established that nonferrous metallic mineral mining poses risks to the BWCAW, particularly when a mine does not comply with its permit conditions and applicable regulations. The federal EA noted that "existing literature suggests that hardrock mineral 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."[434] A catastrophic failure of a wet basin tailings storage dam in the RRH watershed could travel downstream and impact the water quality of Birch Lake, which, in turn, poses a risk, although reduced, to downstream waters such as the BWCAW.[435] Failures of water collection, treatment, and discharge systems could also result in exceedances of water quality standards in Birch Lake and further downstream to the BWCAW.[436]

The U.S. Department of the Interior ultimately correctly determined that the risks posed by mining in the RRH watershed were extremely high and made a policy decision to withdraw approximately 225,504 acres of federal land in the Superior National Forest

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[427] *City of Lake Elmo v. Metropolitan Council*, 685 N.W.2d 1, 4 (Minn. 2004).
[428] *Id.*
[429] Minn. R. 7050.0335, subp. 3A.
[430] Minn. R. 7050.0335, subp. 3A, 7050.0265, subp. 7.
[431] Tr. Vol 5 at 50-51 (Cole); *see* also Tr. Vol. 1 at 44-45 (DNR opening statement).
[432] Ex. 19 at 11 (Cole Direct).
[433] Minn. R. 7050.0265, subp. 7; *see* Ex. 16 at 40-41 (Donohue Direct).
[434] Ex. 300 at 33.
[435] Ex. 300 at 50.
[436] Ex. 300 at 45.

from disposition under mineral leasing laws for 20 years.[437] Here, however, the Administrative Law Judge is tasked with a legal question, not a policy one.

The Administrative Law Judge recognizes the serious and catastrophic risks posed by nonferrous metallic mineral mining to the BWCAW but concludes that a preponderance of the evidence does not support the conclusion that those risks are likely to occur under the current legal framework that prohibits the DNR from issuing a permit to mine unless the antidegradation standard can be met.

NMW argues that the DNR and the MPCA have failed to protect natural resources through the environmental review and permitting processes and contends the DNR cannot rely on those processes to protect the waters of the BWCAW. The prohibited ORVW designation for the BWCAW, however, provides robust protection and restricts the MPCA's ability to issue NPDES permits for mines and/or specific mine designs in the RRH watershed.

NMW argues that any nonferrous metallic mineral mine in the RRH watershed will be unable to comply with the water quality standards for the BWCAW. But MERA asks a slightly different question - whether a violation of an environmental quality standard or a material adverse impact is likely under the current regulatory framework. The DNR has yet to site a mine under Minn. R. 6132.2000 in the RRH watershed, and given the risks to water quality posed by nonferrous metallic mineral mines using current technology, it is highly unlikely that a mine could be lawfully permitted in the RRH watershed under the existing legal framework.[438] Although the Dunka and Peter Mitchell taconite mines in the RRH watershed have legacy water pollution issues, those mines were sited and constructed prior to the modern environmental regulations and do not establish that Minn. R. 6132.200 is inadequate.[439]

NMW cannot succeed by arguing that future environmental review and permitting processes will not be conducted in accordance with the law. The Judge will not find that the regulatory and judicial review processes of the State of Minnesota are ineffective or meaningless or that officials from the DNR, the MPCA, the Office of Administrative Hearings, and the judicial branch will not diligently follow the applicable laws, including the antidegradation water quality standard for the BWCAW, when analyzing proposed mining operations in the RRH watershed. This tribunal must presume that the DNR and the MPCA will act consistently with applicable laws.[440] Mine permitting decisions also

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[437] Ex. 1 at DNR122543-48 (Public Land Order No. 7917).

[438] Minnesota Rules Chapter 6132 provides DNR with the flexibility to require all necessary additional permit conditions when mines are proposed in more environmentally sensitive or otherwise challenging areas, such as the RRH watershed. Permit requirements such as all mining taking place underground, removal of tailings from the RRH watershed, underground waste rock storage or removal of waste rock from the watershed, and a prohibition on all ore processing in the watershed may significantly reduce the likelihood of water pollution. Tr. Vol. 2 at 77-79 (Chambers). Whether such measures would be sufficient to comply with the antidegradation standard must be evaluated in the review of a particular mine.

[439] Ex. 35 at 8-10 (Haugen Rebuttal).

[440] *No Power Line, Inc. v. Minn. Env't Quality Council*, 262 N.W.2d 312, 325 (Minn. 1977) ("Although the judiciary has the responsibility of ensuring that administrative agencies comply with legislative mandates,

undergo administrative and judicial reviews, adding extra layers of protection in the case of agency mistake or error. Judicial review by an officer of the court sworn to uphold the laws and the Constitution of the State of Minnesota is anything but meaningless – it is the bedrock of the rule of law.

Because there is a rigorous permitting process in place that requires extensive environmental review and prohibits issuing a permit to mine that would result in a violation of the BWCAW's antidegradation standard, it is not likely that the BWCAW's water quality standard will be violated, and it is not likely that the BWCAW will be materially adversely affected by a mine in the RRH watershed because such mine is likely unable to be permitted.[441]

Finally, NMW argues that Minnesota law requires that water quality be managed on a watershed basis. The Minnesota Legislature has declared that it is the public policy of the State to "manage groundwater and surface water resources from the perspective of aquifers, watersheds, and river basins to achieve protection, preservation, enhancement, and restoration of the state's valuable groundwater and surface water resources."[442] The statute requires management "from the perspective of" a watershed, but it does not require uniform standards across a watershed. The nondegradation standard necessarily considers the RRH as a watershed system by regulating upstream discharges. Furthermore, although it may be prudent policy to ban nonferrous metallic mineral mining in the entire RRH watershed to protect the BWCAW from any risk of pollution, impairment, or destruction, MERA only requires that the challenged rule be *adequate* to protect natural resources, not the most protective rule possible. As noted above, MERA does not apply a zero-risk standard.[443]

Therefore, the Administrative Law Judge concludes that Minn. R. 6132.2000, together with the relevant legal framework, is adequate to protect the waters of the BWCAW from pollution, impairment, or destruction arising from nonferrous metallic mineral mining in the RRH watershed.

B. Minn. R. 6132.2000 is Not Adequate to Protect the BWCAW from Noise and Light Pollution

A mine operating in full compliance with the MPCA's noise rules under Minn. R. Part 7030 may still negatively impact wildlife and the wilderness experience for users of the BWCAW.[444] Minn. R. 6132.2000 was not designed to ensure compliance with the MPCA's noise rule. Additionally, the buffer provided by the Mineral Management Corridor

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a presumption of administrative regularity exists."); *In re Appeal of Selection Process for the Position of Electrician*, 674 N.W.2d 242, 246 (Minn. Ct. App. 2004) (*quoting Buchwald v. Univ. of Minn.*, 573 N.W.2d 723, 727 (Minn. Ct. App. 1998)).

[441] *See* Minn. Stat. § 116B.02, subd. 5.

[442] Minn. Stat. § 103A.212.

[443] Minn. Stat. § 116B.02, subd. 5.

[444] Minn. R. 7030.0040, subp. 2, 7030.0020, subps. 7-8 (defining L10 and L50); *see supra* Findings of Fact Section V.D, VII.

is arbitrary and not sufficient to protect the BWCAW from mining noise disturbances, which can travel 10 to 25 miles into the BWCAW from the RRH watershed.[445]

Wilderness areas, such as the BWCAW, are not specifically classified by the NAC system and may fit into either Noise Area Classification 1 as "camping and picnicking areas (designated)" or Noise Area Classification 4 as "undeveloped and unused land area."[446] For Noise Area Classification 1, the regulations provide that noise can exceed 60 dB(A) 50 percent of the time and 65 dB(A) 10 percent of the time during the day, and noise can exceed 50 dB(A) 50 percent of the time and 55 dB(A) 10 percent of the time at night.[447] A loud restaurant has a noise level of approximately 65 dB(A).[448] If the BWCAW is considered a Noise Area Classification 4, there are no regulations ensuring that a mine operating in the RRH watershed would not negatively impact the wilderness experience in the BWCAW.[449]

Noise Area Classification 1 would also fail to protect the BWCAW from pollution, impairment, or destruction because 65 dB(A), which can be exceeded 10 percent of the time during the day, is akin to a loud restaurant, which is a far cry from an untrampled wilderness area such as the BWCAW.[450]

Being subjected to excess noise is akin to hearing loss.[451] Mining noises raise the background sound level, effectively selectively deafening all organisms in the surrounding environment by raising their hearing threshold.[452] If the hearing threshold is higher for visitors to the BWCAW, their wilderness experience is degraded.[453]

Noise can also affect wildlife by interfering with verbal communication, masking the sounds of predators, or interfering with breeding.[454] Noise can then cause animals to relocate, which can expose them to new hazards such as predators or interactions with humans.[455]

Therefore, even compliance with existing rules would fail to prevent pollution, impairment, or destruction of the BWCAW with regard to noise, and the DNR's mine siting rule must be amended to address this shortcoming and comply with MERA.

Twin Metals suggests that project design, modeling, and mitigation can eliminate the impact of noise pollution and proposes that the DNR create a noise standard at the

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[445] Tr. Vol. 2 at 121-23, 129-35 (Fristrup). The Mineral Management Corridor only provides a quarter of a mile buffer around the BWCAW. *See* Ex. 1 at DNR050685 (DNR map of Mineral Management Corridor, Feb. 1991).
[446] Minn. R. 7030.0040, subp. 2.
[447] Minn. R. 7030.0040, subp. 2.
[448] Tr. Vol. 4 at 78 (Sauvageot).
[449] Minn. R. 7030.0040, subp. 2.
[450] Tr. Vol. 4 at 78-79 (Sauvageot); Ex. 17 at 10 (Sauvageot Direct).
[451] Tr. Vol. 2 at 124 (Fristrup).
[452] Tr. Vol. 2 at 123 (Fristrup).
[453] Tr. Vol. 2 at 123-24 (Fristrup).
[454] Tr. Vol. 2 at 194-96 (Fristrup); Ex. 8 at 8 (Fristrup Direct).
[455] *Id.*

boundary of the BWCAW that mining companies can use to develop noise mitigation measures based on their distance from the BWCAW.[456] Twin Metals proposes the DNR impose a noise standard for the boundary of the BWCAW during the environmental review process, possibly 35 dB(A), to protect the wilderness quality of the BWCAW.[457]

Twin Metals' proposal underscores the inadequacy of the current regulatory framework to protect the BWCAW from noise pollution, impairment, or destruction under MERA. Furthermore, Twin Metals' proposal is inappropriate because it runs afoul of Minnesota's rulemaking procedures. Minn. Stat. § 14.381 governs unadopted or unpromulgated rules and prohibits the DNR from adopting uniform standards or rules without undertaking formal rulemaking procedures. Thus, Twin Metals invites the DNR to engage in unpromulgated rulemaking by setting a new uniform standard at the edge of the BWCAW that would apply to all mining operations, in violation of Minnesota's rulemaking requirements.[458]

Additionally, there are no applicable environmental quality standards regulating light pollution from nonferrous metallic mineral mining in the RRH watershed. Industrial mining activity in the RRH watershed is likely to project enough light to be visible many miles into the BWCAW.[459] The Mineral Management Corridor only provides a quarter-mile buffer around the BWCAW.[460] Increases in BWCAW sky glow from new mines would interfere with the unique dark sky wilderness experience that BWCAW provides.[461] Lighting from mining, especially from mines closer to the BWCAW boundary, will have substantial negative effects on the BWCAW because the current light levels are low.[462] Therefore, Minn. R. 6132.2000 fails to protect the BWCAW from light pollution, impairment, or destruction, and the rule must be amended to address this shortcoming and comply with the MERA.[463]

As with noise pollution, Twin Metals proposes that the DNR can establish light thresholds to protect the BWCAW during the environmental review process.[464] But similar to the noise pollution issue, the DNR cannot set uniform thresholds for light pollution to protect the BWCAW without violating the prohibition on unpromulgated rulemaking.[465] Therefore, Twin Metals' proposals for developing thresholds and standards supports the

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[456] Tr. Vol. 4 at 71-72 (Sauvageot).
[457] Tr. Vol. 4 at 79-80 (Sauvageot).
[458] *See* Minn. Stat. § 14.02, subd. 4 (defining "rule").
[459] Tr. Vol. 2 at 122 (Fristrup).
[460] *See* Ex. 1 at DNR050685 (DNR map of Mineral Management Corridor, Feb. 1991).
[461] Ex. 8 at 39 (Fristrup Direct).
[462] Ex. 8 at 35, 39-40 (Fristrup Direct).
[463] The Administrative Law Judge notes that contrary to the credible and useful testimony given by Dr. Fristrup regarding noise and light pollution, the testimony given by Mr. Bylhouwer was neither credible nor particularly useful. For example, Mr. Bylhouwer could not answer simple questions regarding the strength of headlights on a truck, the worst-case scenario for how far away vehicle lighting could be seen by the naked eye, or the worst-case scenario for the spatial extent of sky glow. Tr. Vol. 4 at 11-20 (Bylhouwer).
[464] Tr. Vol. 4 at 38-40 (Bylhouwer).
[465] Minn. Stat. § 14.381; *see* Minn. Stat. § 14.02, subd. 4 (defining "rule").

conclusion that rulemaking is needed to protect the BWCAW from both noise and light pollution.

The Administrative Law Judge concludes that 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 RRH watershed.

IV. Conclusion

The preponderance of the evidence establishes that Minn. R. 6132.2000 and the water quality standards for the BWCAW are adequate to protect the waters of the BWCAW from pollution, impairment, or destruction arising from nonferrous metallic mineral mining in the RRH watershed. However, the preponderance of the evidence does not establish that Minn. R. 6132.2000 is adequate to protect the BWCAW from pollution, impairment, or destruction associated with noise and light impacts arising from nonferrous metallic mineral mining in the RRH watershed.

Therefore, the Department should initiate a rulemaking proceeding to amend Minn. R. 6132.2000 or promulgate a new rule to sufficiently protect the BWCAW from noise and light pollution arising from nonferrous metallic mineral mining in the RRH watershed.

M. J. M.