

**BEFORE THE ENVIRONMENTAL APPEALS BOARD
UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, D.C.**

In re: Mesabi Nugget Delaware, LLC)
Hoyt Lakes, Minnesota)
NPDES/SDS Permit No. MN0067687)

PETITION FOR REVIEW OF WATERLEGACY

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INTRODUCTION

Pursuant to 40 C.F.R. § 124.19(a), WaterLegacy, a Minnesota non-profit 501(c)(3) corporation formed to protect Minnesota's water resources ("WaterLegacy" or "Petitioner") petitions for review of the approval of a water quality standard variance for discharge by Mesabi Nugget Delaware, LLC ("Mesabi Nugget") into Second Creek of the Partridge River watershed in St. Louis County, which discharge is wholly within the Lake Superior Basin of Minnesota. The permit at issue is a National Pollutant Discharge Elimination System ("NPDES") permit, MN0067687, and the variance would allow the Mesabi Nugget iron nugget production facility to exceed Minnesota water quality standards for bicarbonates, hardness, total dissolved salts and specific conductance until August 1, 2021.

STATEMENT OF ISSUES FOR REVIEW

Petitioner contends that approval of this variance by United States Environmental Protection Agency ("EPA") Region 5 on December 27, 2012 was clearly erroneous, unsubstantiated by the record, and would undermine EPA guidance and policy requiring water quality treatment to comply with water quality standards necessary to protect wildlife and aquatic life. The following issues are presented for review:

- (1) Whether findings that Mesabi Nugget variances would not impair existing uses for growth of natural wild rice, wildlife and aquatic life are clearly erroneous, such that variances would violate the Clean Water Act and implementing regulations.
- (2) Whether granting Mesabi Nugget variances in excess of five years for discharge of bicarbonates, hardness and specific conductance is clearly erroneous and inconsistent with federal regulations pertaining to Great Lakes waters.
- (3) Whether the finding that "human caused conditions" support Mesabi Nugget's variance from compliance with water quality standards is clearly erroneous and inconsistent with federal regulations.

- (4) Whether findings that “exceptional circumstances” preclude compliance with water quality standards, that wastewater treatment for Mesabi Nugget is “technically infeasible,” that compliance with standards would cause “undue hardship” are unsupported by the record and do not conform to Minnesota procedure.

FACTUAL AND STATUTORY BACKGROUND

The Mesabi Nugget iron pellet production facility was originally permitted under NPDES/SDS permit MN0067687 issued to Mesabi Nugget, LLC and Steel Dynamics, Inc. on July 29, 2005. The Mesabi Nugget facility would discharge its effluent, which is the subject of this petition, through Outfall SD001 to Second Creek. In issuing the original variance for Mesabi Nugget, the Minnesota Pollution Control Agency (“MPCA”) found that Second Creek is a Class 2B, 3B, 4A, 4B, 5 and 6 water under Minn. R. 7050.0430 and an Outstanding International Resource Water (OIRW) within the Lake Superior Basin under Chapter 7052 of the Minnesota Rules. (Ex. 1, NPDES/SDS Permit MN0067687 for Mesabi Nugget and Steel Dynamics July 29, 2005, “2005 Permit”) p. 4). Second Creek flows into the Partridge River, which is a tributary to the St. Louis River, the largest tributary to Lake Superior. The 2005 permit granted the Mesabi Nugget facility variances from Minnesota water quality standards for hardness, bicarbonates, total dissolved solids (TDS) and specific conductance. (Ex. 1, 2005 Permit, p. 17).

Minnesota Rules provide a Class 3C industrial consumption water quality standard for hardness (Ca + Mg as CaCO₃) of 500 milligrams per liter (“mg/L”) and a Class 3B standard of 250 mg/L. Minn. R. 7050.0223, subp. 4 and subp. 3. Minnesota’s Class 4A and Class 4B standards limit specific conductance to 1000 micromhos per centimeter (“umhos/cm”), bicarbonates (HCO₃) to 5 milliequivalents per liter (250 mg/L), and total dissolved salts¹ to 700 mg/L. Minn. R. 7050.0224, subp. 2.

¹ Various MPCA documents refer to this standard as “total dissolved salts (solids)” or “total dissolved solids.”

Minnesota Rules state that classifications of waters “should not be construed to be in order of priority, nor considered to be exclusive or prohibitory of other beneficial uses,” Minn. R. 7050.0140, subp. 1. As explained in Minn. R. 7050.0220, subp. 1, numeric and narrative water quality standards protect surface waters for all designated beneficial use of those waters:

The numeric and narrative water quality standards in this chapter prescribe the qualities or properties of the waters of the state that are necessary for the designated public uses and benefits. If the standards in this chapter are exceeded, it is considered indicative of a polluted condition which is actually or potentially deleterious, harmful, detrimental, or injurious with respect to designated uses or established classes of the waters of the state.

All surface waters are protected for multiple beneficial uses.

In June 2010, Steel Dynamics, Inc. and Mesabi Nugget, LLC jointly applied to the MPCA for a variance, requesting a “continuation of the variances from these water quality standards for the 5-year term of the reissued permit.” The application referenced findings of chronic toxicity to *Ceriodaphnia Dubia* (*C. Dubia*) from Area 1 Pit discharge, stating that applicants were “mindful of the need to protect the aquatic life uses in Second Creek and the Partridge River.” (Ex. 2, Mesabi Nugget & Steel Dynamics, Variance Application for Permit MN0067687, June 2010, “Variance Application,” p. 1).

After the 2005 variance expired on June 30, 2010, Mesabi Nugget voluntarily ceased discharging because the MPCA had not extended its water quality variances. (Ex. 3, Barr Engineering, Area 1 Pit Water Treatment Evaluation in Support of the Non-Degradation Analysis, Mesabi Nugget Phase II Project, November 2009, “Barr Water Treatment Evaluation I,” p. 1) The MPCA issued a modification of permit MN0067687 to Mesabi Nugget, LLC and Steel Dynamics, Inc. on February 24, 2011, setting permit limits for bicarbonates, hardness, total dissolved salts (solids) and specific conductance consistent with the water quality standards in Minnesota Rules. (Ex. 4, NPDES/SDS Permit Modification MN0067687 for Mesabi Nugget and

Steel Dynamics, Feb. 24, 2011, pp. 8-9). These permit limits were reflected in Discharge Monitoring Summary Reports from 2010 and 2011 (Ex. 5, Discharge Monitoring Summary Mesabi Nugget (MN0067687) 2010-2011, pp. 1, 5).

On January 30, 2012, the MPCA provided public notice of its intent to reissue to Mesabi Nugget LLC² variances from compliance with Minnesota water quality standards for bicarbonates, hardness, total dissolved salts (solids) and specific conductance. This draft permit proposed indefinite variances with no time limit. (Ex. 6, NPDES/SDS Draft Permit MN0067687 for Mesabi Nugget, Jan. 2012, “Draft Permit Jan. 2012,” pp. 18-20). WaterLegacy filed comments with the MPCA opposing the Mesabi Nugget variances and NPDES/SDS permit conditions on February 18, 2012. (Ex. 7, WaterLegacy Comment on NPDES/SDS Permit MN0067687, Feb. 18, 2012, “WL Feb. 2012 Comment”).³

The MPCA’s Variance Issue Statement (Ex. 8, MPCA Variance Issue Statement for Mesabi Nugget and Steel Dynamics NPDES/SDS Permit No. MN0067687, Nov. 9, 2011, “MPCA VIS,”) and Mesabi Nugget’s Toxicity Identification Evaluation Report (Ex. 9, Barr Engineering, Toxicity Identification Evaluation 2008-2010 for the Mesabi Nugget Pits, June 2011, “Barr TIE Report,”) prepared in connection with the proposed variance, demonstrated that granting the requested Mesabi Nugget variances would remove existing beneficial uses from Second Creek, the Partridge River and the St. Louis River. WaterLegacy’s February 19, 2012 comments attached these documents and, among other issues, objected that granting the variances would impair downstream natural stands of wild rice and aquatic life and remove existing uses of Lake Superior Basin waters; that the variance contained no compliance date and that claims of technical infeasibility, undue economic burden, exceptional circumstances and

² Steel Dynamics, Inc. was not named in this notice or on any version of permit MN0067687 after January 2012.

³ WaterLegacy’s comments with all attached exhibits were also provided to EPA staff David Pfeifer and Kevin Pierard on February 18, 2012.

widespread economic and social impact were unsubstantiated. (Ex. 7, WL Feb. 2012 Comment).

The MPCA VIS summarized monitoring data from July 2009 to June 2010, when Mesabi Nugget was still discharging pollutants exceeding Minnesota water quality standards under the 2005 variance. Comparison of water quality in Second Creek upstream and downstream of Mesabi Nugget's discharge during this period showed that Second Creek upstream exceeded water quality standards for bicarbonates, hardness and specific conductance, but met the Minnesota water quality standard for total dissolved salts (solids). After receiving untreated discharge from Mesabi Nugget under the previous variance, Second Creek downstream of Mesabi Nugget also violated Minnesota's 700 mg/L water quality standard for total dissolved salts. (Ex. 8, MPCA VIS, p. 5).

Barr's TIE Report demonstrated that Mesabi's Area Pit 1 and Area Pit 6 water exceeded Minnesota standards for hardness, specific conductance and total dissolved salts (solids).⁴ However, baseline downstream monitoring indicated that the Partridge River complied with standards for hardness, specific conductance and total dissolved salts (solids), and the St. Louis River complied with standards for specific conductance, the only parameter for which data was provided. (Ex. 9, Barr TIE Report, Table 2, p. 27 of 51⁵).

The MPCA VIS acknowledged that if variances were granted to Mesabi Nugget, under low flow conditions the Partridge and St. Louis Rivers would no longer meet water quality standards:

[T]he SD001 discharge when considered alone was projected to result in standards continuing to be exceeded in Second Creek for all four variance parameters and exceedances being extended to Partridge River for TDS and specific conductance. When contributions from the Area 6 Pit were included in the 7Q10 low flow evaluation, exceedance of standards for hardness, TDS and specific conductance could extend into

⁴ No data was provided for bicarbonates.

⁵ Where internal and exhibit page numbers may differ, citation is made to the pages of the exhibit.

the St. Louis River. (Ex. 8, MPCA VIS, p. 13).

As summarized below, in Second Creek, the Partridge River and the St. Louis River, granting the Mesabi Nugget variances would remove existing uses from downstream waters.

WATER QUALITY	Second Creek	Partridge River	St. Louis River
Existing Conditions			
Bicarbonates	Violation		
Hardness	Violation	Compliance	
Specific Conductance	Violation	Compliance	Compliance
Total Dissolved Salts	Compliance	Compliance	
With Variance Low-Flow			
Bicarbonates	Violation		
Hardness	Violation		
Specific Conductance	Violation	<i>Violation</i>	<i>Violation</i>
Total Dissolved Salts	<i>Violation</i>	<i>Violation</i>	<i>Violation</i>

Mesabi Nugget’s studies evaluating water quality treatment connected high levels of total dissolved solids, associated conductivity and sulfates to aquatic toxicity: “Preliminary toxicity studies indicate that the overall TDS (and associated conductivity), sulfate concentration, and pH rise during the WET test are the potential causative agents for the observed intermittent toxicity.” (Ex. 3, Barr Water Treatment Evaluation I, p. 13 of 58).

Barr’s toxicity studies were not definitive as to the cause of whole effluent toxicity. But, they suggested that elevated levels of sulfate and alkalinity in Area Pit 1 may result in toxicity due to blockage or chemical interference with micronutrient uptake. (Ex. 9, Barr TIE Report, p. 6 of 51). Sulfate levels were approximately 360 mg/L in Area 1 Pi 1, and 1,300 mg/L in Area 6 Pit. (*Id.*, pp. 10, 19 of 51). When the chemistry of Area 6, Area 1 and Area 2WX pits was compared, toxicity was correlated with higher concentrations of anions and cations, and higher levels of sulfate and alkalinity appeared to be associated with toxicity to the test endpoint species, *C. dubia*. (*Id.*, p. 22 of 51). The TIE Report stated that “it is difficult to separate out the direct toxic

effect of sulfate, presumably due to the effect of excessive ionic strength, from other effects such as the inhibition of trace metal uptake by *C. dubia*.” (*Id.*, p. 19 of 51).

Minnesota Rule 7050.0190, subp. 1 requires an applicant seeking a variance from water quality standards to demonstrate “exceptional circumstances” preventing conformity with standards, that compliance with standards is “not feasible” and that strict enforcement of standards would cause “undue hardship.”

In evaluating treatment methods to remove sulfates and comply with other water quality standards, Barr Engineering consultants for Mesabi Nugget concluded that reverse osmosis with zero liquid discharge was the selected and feasible technology, (Ex. 3, Barr Water Treatment Evaluation I, p. 19 of 58), “Evaporation and crystallization (ZLD) is, again, the primary technically feasible option for concentrate management under this treatment alternative.” (*Id.* pp. 24, 28 of 58). Barr’s later evaluation of treatment classified reverse osmosis as an “established” technology with “multiple commercial installations.” In response to the question whether reverse osmosis was “implementable within 2 years” Mesabi Nugget’s consultants stated that this was “potential,” but there was some uncertainty or limited installations. (Ex. 10, Barr Engineering, Area 1 Pit Water Treatment Evaluation in Support of the Nondegradation Analysis, Mesabi Nugget Phase II Project, June 2011, “Barr Water Treatment Evaluation II,” Table 2-5, p.17 of 41) Barr verified that reverse osmosis is “widely commercially available, having a number of large-scale installations which can reliably produce treated water that could meet the water quality standards.” (*Id.*, p. 20 of 41)

MPCA staff continued to develop their Variance Issues Statement, preparing a revised VIS in November 2011. (Ex. 11, MPCA Variance Issue Statement for Mesabi Nugget and Steel Dynamics NPDES/SDS Permit No. MN0067687, Nov. 9, 2011, “MPCA VIS II,”). The revised

VIS documented that reverse osmosis (“RO”) technology had been required to treat mine wastewater at several other facilities including:

- Blacksville Mine in West Virginia where treatment systems employing RO have been proposed and approved for treatment of wastewater from coal mines at approximately the same flow rate as for Mesabi Nugget.
- Hutchinson Mine in Virginia where treatment systems employing RO have been proposed and approved for treatment of wastewater from coal mines at approximately the same flow rate as for Mesabi Nugget.
- Kennecott Eagle Mine in Marquette County Michigan, where an RO evaporation/crystallization has been required to treat water from copper mining before subsequent reintroduction to groundwater;
- Orvana Copperwood project in Gogebic County Michigan where a wastewater treatment system with RO evaporation/crystallization has been designed to treat copper mine water for reuse and/or discharge to a Lake Superior tributary. (Ex. 11, MPCA VIS II, pp. 12-13)

The MPCA’s revised VIS then suggested that reverse osmosis was “technologically infeasible” for Mesabi Nugget under Minnesota Rule 7050.0190, subp. 1 because changes in air pollution technology could change the composition of influent to the RO system and affect the selection of pretreatment technology. (Ex. 11, MPCA VIS II, p. 9). MPCA staff stated that RO systems with evaporation/crystallization had not yet been designed, required or constructed for other Minnesota mining facilities within the Lake Superior Basin, including the Minntac, Essar Steel and PolyMet projects. (*Id.*, p. 11).

Neither the MPCA VIS nor the Barr Engineering Water Treatment Evaluation identified any “exceptional circumstances” that might justify the Mesabi Nugget variances. The MPCA did state that Mesabi Nugget maintained that wastewater treatment would be “exceptionally expensive.” (Ex. 11, MPCA VIS II, pp. 8, 24).

Minnesota Rules 7000.7000, subp. 2(E) specifies the proof required to demonstrate that compliance with water quality standards would pose an undue economic burden.

[F]inancial statements prepared or approved by a certified public accountant, or other person acceptable to the agency, which shall fairly set forth the status of the business, plant, system, or facility for each of the three financial years immediately preceding the year of the application, and an analysis of the effect of such financial status if the variance is not granted (if the business, plant, system, or facility has not been in operation for this period, then the financial statements and analysis must be based on the most complete data available).

No such financial statements or certified accounting set forth to either MPCA or EPA the status of the business or the effect on Mesabi Nugget's finances if variances were not granted.

For its conclusions regarding the undue economic burden on Mesabi Nugget, MPCA's revised VIS cited an advocacy memorandum prepared by a vice president at Mesabi Nugget's consultant, Barr Engineering. (Ex. 11, MPCA VIS II, p. 27). This advocacy memorandum focused on the 10 mg/L sulfate limit – not the variance pollutants, contained no discussion of the financial relationship or status of Steel Dynamics and did not provide the analysis required by Minn. R. 7000.7000, subp. 2(E). (Ex. 12, M. Hansel, Barr Engineering, Memorandum, Economic Consequences of Meeting 10 mg/L Sulfate Standard, May 31, 2011).

MPCA set the Mesabi Nugget NPDES/SDS permit and variances on public notice for a meeting of its Citizens' Board on October 23, 2012. With this Notice, the MPCA submitted proposed Findings of Fact, Conclusions of Law and Order, as well as a revised draft permit for Mesabi Nugget LLC and the revised VIS cited above. The October 2012 version of the Mesabi Nugget draft permit granted variances for bicarbonates, hardness, specific conductance and total dissolved salts (solids) and set a compliance date of August 1, 2021. (Ex. 13, NPDES/SDS Draft Permit MN0067687 for Mesabi Nugget, Oct. 2012, "Draft Permit Oct. 2012," p. 21).

WaterLegacy submitted supplemental comments to the MPCA on October 18, 2012 (Ex. 14, WaterLegacy Supplemental Comments on NPDES/SDS Permit MN0067687, for Oct. 23, 2012) and testified at the hearing opposing the variance as well as various weaknesses in permit

conditions. At the hearing, representatives of Steel Dynamics spoke for Mesabi Nugget and testimony was introduced that Steel Dynamics reported to the Securities and Exchange Commission that environmental compliance would not have an adverse effect on its finances. WaterLegacy emphasized that approval of the variance would, in effect, grant Mesabi Nugget 16 years before compliance with pollutant limits for bicarbonates, hardness, specific conductance and total dissolved salts would be required in the Lake Superior Basin.

On October 23, 2012, the MPCA Citizens' Board approved the MPCA's proposed findings, permit and variance, with one dissenting vote. The MPCA's Findings (Ex. 15, MPCA, Approval of Findings of Fact, Conclusions of Law, and Order and Authorization to Grant a Variance and to Reissue NPDES/SDS Permit MN0067687, Oct. 24, 2012, "MPCA Findings") included the following conclusions pertinent to this petition:

- Mesabi Nugget Delaware LLC, the permittee, is owned by Steel Dynamics. (*Id.*, ¶4)
- Second Creek is a Class 2B, 3C⁶, 4A, 4B, 5 and 6 water and is classified for the protection of aquatic life and recreation, industrial use, agriculture and wildlife, aesthetic enjoyment and navigation, and other uses, and is an Outstanding International Resource Water under Minnesota Rule 7052.0010, subp. 34. (*Id.*, ¶ 13)
- Under 7Q10 low flow conditions, the SD001 discharge when considered alone was projected to result in standards continuing to be exceeded in Second Creek for all four variance parameters, with exceedances being extended to the Partridge River for TDS and specific conductance. (*Id.*, ¶48)
- The Partridge River and portions of Second Creek downstream of the discharge have been determined by the MPCA staff to be waters used for the production of wild rice to which the Class 4A 10 mg/L wild rice standard would be applicable. (*Id.*, ¶ 13)
- Downstream waters used for production of wild rice are susceptible to damage from high sulfate levels (*Id.*, ¶21).

⁶ The MPCA noted that since the last permit reissuance, the industrial use classification for unlisted waters in Minn. R. 7050.0430 has changed from Class 3B to Class 3C, changing the water quality standard for industrial use of Second Creek and the Partridge River from 250 mg/L to 500 mg/L. (Ex. 15, ¶13).

- WET testing has demonstrated that Area 1 Pit water has been intermittently chronically toxic to *C. dubia*, although not toxic to fathead minnows. The intermittent chronic toxicity has resulted in a reduction in the number of young per bearing female, but not complete reproduction failure. (*Id.*, ¶81)
- The potential exists for impact on sensitive macroinvertebrates as a result of the discharge. (*Id.*, ¶44)

MPCA's findings adopted Mesabi Nugget's conclusion that "existing Class 2B (aquatic life and recreation) use of the water would not be removed or materially degraded with granting of the variance." (*Id.*, ¶46). MPCA found "exceptional circumstances" applicable to Mesabi Nugget's variance request related pre-existing water quality of the Area 1 Pit and to the fact that changes in ownership resulted in "unanticipated delay" in construction and operation of the facility until early 2010. (*Id.*, ¶23).

MPCA adopted Mesabi Nugget's claims that reverse osmosis was technically infeasible:

- "Requiring construction of wastewater treatment systems, such as reverse osmosis (RO), *at this time* to meet the final effluent limitations is not technically feasible under the circumstances." Treatment technology such as RO "may at some point in time be capable of achieving applicable effluent limitations." (*Id.*, ¶24)(emphasis in original)
- "Some technological uncertainty remains for the Mesabi Nugget discharge" and "Mesabi Nugget has indicated that in order to make an informed decision on the *potential installation* of addition wastewater treatment" additional time and "detailed economic evaluation" would be needed. (*Id.*, ¶ 30)(emphasis added)

MPCA also concurred with Mesabi Nugget "that the immediate installation of additional advanced wastewater treatment facilities would cause Mesabi Nugget undue hardship," (*Id.*, ¶34), citing Mesabi Nugget's estimates that reverse osmosis would cost approximately \$29.5 million in capital costs and \$1 million in operating costs; an annualized cost of \$4.3 million. (*Id.*, ¶33). Based on a "brief evaluation" provided by Mesabi Nugget of how the "projected cost for immediate installation of treatment could affect the cost of iron nugget production and how that could affect market competitiveness," MPCA staff also agreed with Mesabi Nugget that the

immediate installation of RO wastewater treatment would result in “unsustainable losses” jeopardizing the entire Mesabi Nugget project, supporting “a determination under EPA regulations that substantial and widespread economic and social impact would result if the variances were not granted.” (*Id.*, ¶¶ 36, 37, 51)

WaterLegacy provided additional formal and informal comments to EPA Region 5 in connection with the EPA’s review of the variance. On November 1, 2012, WaterLegacy sent an email to EPA staff questioning the omission of owner and joint venturer Steel Dynamics from the permit. (Ex. 16, WaterLegacy Email Comments to EPA on NPDES/SDS Permit MN0067687, Nov. 1, 2012). On November 8, 2011, WaterLegacy sent a comment letter to EPA citing information regarding Steel Dynamics to show that Mesabi Nugget had not demonstrated either undue economic burden or widespread economic and social impact. (Ex. 17, WaterLegacy Comments to EPA on NPDES/SDS Permit MN0067687, Nov. 8, 2012, “WL Nov. 2012 Comment”). WaterLegacy also sent an email on December 10, 2012 questioning why the 5-year limit on variances in the Lake Superior Basin had not been applied to Mesabi Nugget. (Ex. 18, WaterLegacy Email Comments to EPA on NPDES/SDS Permit MN0067687, Dec. 10, 2012). EPA Region 5, in its December 27, 2012 decision to approve the variance confirmed that it had considered these comments, as well as the February 18, 2012 WaterLegacy comment included in Appendix A of the official submittal from MPCA. (Ex. 19, EPA, Review of MPCA Request for Approval of a Variance from Water Quality Standards Mesabi Nugget Permit No. MN0067687, Dec. 27, 2012 “EPA Region 5 Review,” p. 2).

EPA Region 5 approved the variances for bicarbonates, hardness, specific conductance and total dissolved solids proposed for Mesabi Nugget. Region 5 confirmed that concentrations of these four pollutants in Mesabi Nugget’s in untreated discharge to Second Creek exceed water

quality standards and that “flow in Second Creek consists solely or primarily of the Area 1 Pit discharge during significant portions of the year” so that the annual 7Q10 low flow for Second Creek is zero. (*Id.*, p. 8)

With respect to concerns in the record about impairment of downstream stands of natural wild rice and aquatic toxicity, EPA Region 5 noted that Mesabi Nugget variance “does not seek relief from any other uses of criteria contained in Minnesota’s water quality standards.” (*Id.*, p. 5). Region 5 concluded that the MPCA was not required to perform a use attainability analysis (“UAA”) since the only uses proposed to be removed by the State were industrial and agricultural uses, for which a UAA was discretionary under 40 C.F.R. § 131.10(k). (*Id.*, pp. 12, 19). With respect to the prohibition on removal of existing uses under 40 C.F.R. §131.10(h), Region 5 analyzed the identified industrial and irrigation uses and concluded that “the affected uses are not existing uses.” (Ex. 19, EPA Region 5 Review, p. 18)

Region 5 explained that Mesabi Nugget did not request a variance from Minnesota Rule, subp. 2, which limits sulfate discharge to 10 mg/L for “waters used for the production of wild rice during periods when the rice may be susceptible to damage by high sulfate levels,” so compliance with this standard was not part of its decision. (Ex. 19, EPA Region 5 Review, p. 5). With respect to impacts of variance pollutants on natural wild rice, Region 5 stated:

Review of the papers by John Moyle that are the basis of Minnesota's wild rice protection criterion (Moyle, 1944; Moyle, 1969; Moyle, 1975) provides no indication that the parameters for which Mesabi is requesting a variance would be expected to adversely affect wild rice if the sulfate criterion is met. (*Id.*, p. 5)

Region 5 provided no other evidence for its conclusion that the Mesabi Nugget variances would not impact wild rice (*Id.*, p. 15), and did not analyze subpart 1 of Minnesota Rule 7050.0224 which describes wild rice as a wildlife use and prohibits its impairment or degradation.

EPA Region 5 stated, “As described in detail in section III C below, this variance does

not affect aquatic life use protection.” (*Id.*, p. 11). However, the review decision has no section III C other than a conclusion to approve the variance and contains no substantive analysis of the potential that granting Mesabi Nugget variances would remove existing uses by impairing or degrading aquatic life.

EPA Region 5 concluded that Minnesota need not limit Mesabi Nugget’s variance to 5 years since compliance with procedures in 40 C.F.R. §132 is discretionary with Great Lakes states for the 14 pollutants listed in Table 5 of part 132. (*Id.*, p. 20).

Region 5’s discussion of technical infeasibility of reverse osmosis, undue economic burden and exceptional circumstances warranting a variance merely repeated verbatim (or nearly verbatim) several paragraphs of the MPCA’s Findings, after deleting all references to costs of reverse osmosis or any economic consequences of regulatory compliance. (*Id.*, pp. 8-10, quoting Ex. 15 MPCA Findings related to infeasibility: ¶¶27, 29, 30, 33, 42, 34, 23, 24, 28, 31, 32).

Region 5 did not find that denial of the variance would result in “substantial and widespread economic and social impact” under 40 C.F.R. §131.10(g)(6). Region 5 instead concluded that MPCA’s arguments that Mesabi Nugget’s compliance with water quality standards must be delayed due to issues concerning its air quality compliance “are consistent with” 40 C.F.R. §131.10(g)(3), which allows a variance where “human caused conditions or sources of pollution prevent the attainment of the use and cannot be remedied.” (*Id.*, p. 18)

COMPLIANCE WITH PROCEDURAL REQUIREMENTS

Petitioner satisfies the threshold requirements for filing a petition for review under 40 C.F.R. §124.19(a):

1. Petitioner WaterLegacy has standing to petition for review of the permit decision.

WaterLegacy's February 18, 2012 comments on Mesabi Nugget permit MN0067687 were made within the MPCA's public notice period, and supplemental comments for the MPCA Citizens' Board meeting were timely filed according to MPCA practice.

Additional formal and informal comments to EPA Region 5 were submitted prior to the EPA's decision on the variance and were considered in EPA's review. WaterLegacy's comments are attached to this Petition as Exhibits 7, 14, 16, 17 and 18.

2. As noted in the preceding discussion of the factual record (*infra*, pp. 4-5, 9-10, 12) nearly all of the issues raised by Petitioner in this appeal petition were raised in WaterLegacy's comments to the MPCA and to Region 5 and are therefore preserved for review. Issues not previously raised by WaterLegacy are responses to novel arguments made in the review decision of EPA Region 5. These include Region 5's arguments that John Moyle's research on wild rice suggests that the variances would not impair wild rice, that the variance pollutants are exempt from the 5-year limit in Great Lakes Basin regulations and that the variances are authorized due to "human caused conditions" pursuant to 40 C.F.R. 131.10(g)(3).

ARGUMENT

1. **Findings that variances for Mesabi Nugget would not impair existing uses for growth of natural wild rice, wildlife and aquatic life are clearly erroneous. Such variances would violate the Clean Water Act and implementing regulations.**

Section 101(a)(2) of the Clean Water Act establishes "the national goal that wherever attainable, an interim goal of water quality which provides for the protection and propagation of fish, shellfish, and wildlife and provides for recreation in and on the water be attained by July 1, 1983." Section 303(c)(2) of the CWA requires states and tribes to adopt water quality standards based upon these designated uses:

Such standards shall be such as to protect the public health or welfare, enhance the quality of water and serve the purposes of this chapter. Such standards shall be established taking into consideration their use and value for public water supplies, propagation of fish and wildlife, recreational purposes, and agricultural, industrial, and other purposes, and also taking into consideration their use and value for navigation.

Federal regulations at 40 C.F.R, Part 131 interpret and implement these CWA provisions and require that states adopt water quality standards to “serve the purposes of the Clean Water Act.” As explained in 40 C.F.R. §131.2:

‘Serve the purposes of the Act’ (as defined in sections 101(a)(2) and 303(c) of the Act) means that water quality standards should, wherever attainable, provide water quality for the protection and propagation of fish, shellfish and wildlife and for recreation in and on the water and take into consideration their use and value of public water supplies, propagation of fish, shellfish, and wildlife, recreation in and on the water, and agricultural, industrial, and other purposes including navigation.

Water quality standards must provide for all uses specified in Section 101(a) unless those uses have been shown to be unattainable. Uses are presumed to be attainable unless a structured scientific assessment, described in 40 C.F.R. § 131.3(g) as a “use attainability analysis” (UAA) rebuts this presumption.

In designating uses or appropriate criteria for those uses, a State must assure the attainment and maintenance of downstream water quality standards. 40 C.F.R. §131.10(b). Whether through a permanent change in a standard or through a variance, a state may not remove existing uses of waters. 40 C.F.R. §131.10(h). “Existing uses” are all uses actually attained in the water body on or after November 28, 1975, “whether or not they are included in the water quality standards.” 40 C.F.R. §131.3(e). Federal antidegradation regulations also require protection of existing uses; “Existing instream water uses and the level of water quality necessary to protect the existing uses shall be maintained and protected.” 40 C.F.R. §131.12(a)(1).

Under the Clean Water Act and implementing regulations, whether or not Minnesota's water quality standards for bicarbonates, hardness, total dissolved salts (solids) and specific conductance were specifically adopted to protect natural stands of wild rice and aquatic life, these existing uses of downstream waters cannot be impaired, degraded or removed as a result of variances, such as those proposed for Mesabi Nugget.

EPA Region 5's conclusion that the Mesabi Nugget variances would not impair, degrade or remove existing downstream uses for wild rice and aquatic life was clearly erroneous and unsubstantiated by scientific evidence. Region 5 decided that a use attainability analysis (UAA) was discretionary based on Mesabi Nugget's *intent*, stating that since the Mesabi Nugget variance "does not seek to modify" existing uses protected under Section 101(a)(2) of the Clean Water Act applicable to Second Creek and the Partridge River (Ex. 19, EPA Region 5 Review, pp. 18-19), performing a UAA was discretionary under 40 C.F.R. §§131.10(j) and 131.10(k). On the existing record, since no UAA was performed, Mesabi Nugget variances must be denied if downstream uses for natural wild rice and for aquatic life will be impaired, degraded or removed.

As summarized previously (*infra*, pp. 4-6, 10), granting the proposed variances to Mesabi Nugget will cause violations of Minnesota water quality standards for total dissolved salts in Second Creek, the Partridge River and the St. Louis River and violations of specific conductance in the Partridge River and the St. Louis River. For the Mesabi Nugget variances to meet the threshold requirements of Clean Water Act Section 101(a)(2) and Title 40, part 131 of the Code of Federal Regulations, approval of the variances must be based on scientific evidence that these violations will not impair or degrade growth of wild rice or aquatic life downstream. The EPA Region 5 decision approving the Mesabi Nugget variances is clearly erroneous and is unsupported by such evidence.

a) Variations Sought by Mesabi Nugget will Impair and Degrade Wild Rice

Minnesota Rule 7050.0224, subp. 1 explicitly protects natural stands of wild rice from impairment or degradation resulting from violation of *any* agricultural or wildlife numeric or narrative water quality standard in Part 7050.0224, including limits on bicarbonates, specific conductance or total dissolved salts. This Rule also states that protection of wild rice is a beneficial use to support wildlife as well as a food source for human beings. Minnesota Rule 7050.0224, subp. 1 provides:

The numeric and narrative water quality standards in this part prescribe the qualities or properties of the waters of the state that are necessary for the agriculture and wildlife designated public uses and benefits. Wild rice is an aquatic plant resource found in certain waters within the state. *The harvest and use of grains from this plant serve as a food source for wildlife and humans . . .* The quality of these waters and the aquatic habitat necessary to support the propagation and maintenance of wild rice plant species must not be materially impaired or degraded. *If the standards in this part are exceeded in waters of the state that have the Class 4 designation, it is considered indicative of a polluted condition which is actually or potentially deleterious, harmful, detrimental, or injurious with respect to the designated uses.* (emphasis added)

There is no evidence in this record that the polluted conditions in Second Creek, the Partridge River and the St. Louis River which would result from Mesabi Nugget variations would not be deleterious or harmful to downstream stands of natural wild rice. None of the articles by John Moyle cited by Region 5 (Ex. 19, EPA Region 5 Review, p. 5) state that loadings of specific conductance in excess of 1,000 umhos/cm and total dissolved salts in excess of 700 mg/L would not be detrimental to natural stands of wild rice. In fact, John Moyle's research suggests that higher levels of salts are quite harmful and injurious to wild rice.

One of the papers referenced in EPA Region 5's decision states, "In Minnesota wild rice is not found in waters high in alkali or sulfate salts." (Ex. 20, John Moyle, *Wild Rice – Some Notes, Comments and Problems*, Special Pub. 47 of the Minnesota Department of Conservation,

1975, p. 2). A literature review prepared by Moyle in 1975 for the MPCA in the Clay Boswell proceeding, a case where the wild rice sulfate standard was applied, explains that above several hundred parts per million, any salts can have an adverse osmotic effect on plants:

At higher concentrations (several hundred ppm) sulfates probably have an adverse osmotic effect, upsetting absorptive and water-regulating systems of the plant. For example, it has been found that along the Atlantic coast, wild rice does not grow in brackish waters where the salinity exceeds 400 ppm. Also, it does not grow in North Dakota waters that have a high concentration of dissolved salts (carbonates, sulfates, and chlorides). (Ex. 21, John Moyle, *Review of the Relationship of Wild Rice to Sulfate Concentration of Waters*, Memo for MPCA, March 16, 1975, "Moyle Review," p. 3).

Moyle recommended a more stringent sulfate limit than that for other salts based on the mechanism by which sulfates are reduced to hydrogen sulfide by bacteria in anaerobic soils. (*Id.*).

Moyle's testimony under oath in the Clay Boswell contested case hearing confirmed both the greater risk of sulfates due to hydrogen sulfide reduction and the general scientific evidence that high levels of salts can impair natural wild rice:

Q: Is there any other mechanism that the relationship of sulfate concentration and wild rice could work through?

A: Yes. If you have very high concentrations along with high carbonate and fluorides, you have a high total concentration of salts in the water. Now, these become really brackish, or saline waters, or alkaline waters sometimes that's called. And the effect there may be an osmotic effect; that is, the high concentrations in the water prevent the plant from taking in the nutrients it needs in the water. It sort of dries up the plant, you might say. And of course, that sort of thing has been known for a long time, especially in coastal waters where the salts are mostly chlorides. (Ex. 22, Excerpts of Hearing Testimony, *In the Matter of the Applications for NPDES Permits for Minnesota Power & Light Co. (Clay Boswell)* March 19, 1975, "Moyle Testimony 1975" p. 5 of 6)

Although not specifically argued in Region 5 variance review, no scientific evidence substantiates that restricting discharge during spring and summer months would adequately protect existing uses of downstream waters for the growth of wild rice. Moyle's research implicates year-round sensitivity to sulfates by identifying reduction to hydrogen sulfide in

anaerobic sediments as the most likely mechanism for sulfate toxicity. (Ex. 21, Moyle Review 1975, p. 3; Ex. 22. Moyle Testimony 1975, pp. 4-5 of 6).⁷

Under Minnesota Rule 7050.0224, subp. 1, preservation of water quality for the propagation and maintenance of natural wild rice is a wildlife use protected pursuant to Section 101(a)(2) of the Clean Water Act. No variance which impairs or degrades an existing use of Second Creek, the Partridge River or the St. Louis River for natural wild rice can be granted pursuant to 40 C.F.R. § 131.10(h). Rather than supporting the Mesabi Nugget variance, writings and testimony from John Moyle, the leading scientific expert upon which EPA Region 5 relies in its review decision, suggest that the exceedances of Minnesota water quality standards for total dissolved salts and specific conductance would impair and degrade use of waters for the growth of natural wild rice. EPA Region 5's conclusion that granting the Mesabi Nugget variances would not remove existing uses of waters for natural wild rice and wildlife is wholly unsubstantiated.

b) Variations Sought by Mesabi Nugget will Impair Aquatic Life

The record in these proceedings (*infra*, pp. 6-7, 11) demonstrates that the untreated discharge from Mesabi Nugget can be chronically toxic to aquatic life. The MPCA found that Area 1 Pit water was intermittently chronically toxic to *C. dubia*, resulting in a reduction in the number of young per bearing female, and concluded that sensitive macroinvertebrates could be impacted by this discharge. (Ex. 15, MPCA Findings, ¶¶44, 81 quoted *infra* at p. 12). Mesabi Nugget WET tests conducted to date have not complied with EPA standards, most obviously by

⁷ The MPCA has also hypothesized that sulfate reduction to sulfide by anaerobic bacteria in sediments results in toxicity to wild rice. MPCA, *The Sulfate Standard to Protect Wild Rice*, Nov. 8, 2011, p. 5, available at <http://www.pca.state.mn.us/index.php/view-document.html?gid=16356> last visited on Jan. 15, 2013.

failing to include a plant species.⁸ If anything, toxicity of Mesabi Nugget discharge under the variances may be understated.

Second Creek, the receiving water for Mesabi Nugget's surface water discharge has a low flow (7Q10) of zero. It is common knowledge in Minnesota that, in most cases, winter is the low flow time for streams and the EPA has noted that for much of the year, "flow in Second Creek consists solely or primarily of the Area 1 pit discharge." (Ex. 19, EPA Region 5 Review Decision, p. 8). Mesabi Nugget's NPDES/SDS permit would allow discharges up to 5.8 million gallons per day during low flow conditions. (Ex. 13, Draft Permit Oct. 2012, p. 4). This means that from fall through early spring, the entire flow of Second Creek is likely to be Mesabi Nugget's untreated discharge, magnifying the effects of variance pollutants on downstream bodies of water.

The evidence that Mesabi Nugget's untreated pit water discharge will exceed downstream water quality standards and is toxic to aquatic life precludes granting of variances to Mesabi Nugget absent rigorous scientific proof that existing aquatic life uses will not be impaired. Although EPA Region 5 asserted that Mesabi Nugget's variance does not affect aquatic life protection, no evidence whatsoever was provided by EPA to substantiate its conclusion on this key variance issue. (See discussion *infra*, p. 13).

Even without WET testing specific to Mesabi Nugget's untreated discharge, it would be clearly erroneous to assert that average specific conductance of 1889 umhos/cm and maximum specific conductance of 1965 umhos/cm proposed to be permitted under the Mesabi Nugget variance (Ex. 13, Draft Permit Oct. 2012, p. 10) would have no adverse affect on aquatic life.

EPA has set limitations on conductivity in other ecoregions impacted by mining to

⁸ See EPA, *Short Term Methods For Estimating The Chronic Toxicity of Effluents and Receiving Water to Freshwater Organisms*, October 2002 (EPA-821-R-02-013) p. 9.

protect aquatic life from salt mixtures that elevate conductivity. EPA set the chronic aquatic life benchmark value for conductivity derived from all-year data at 300 $\mu\text{S}/\text{cm}$ (equivalent to 300 $\mu\text{hos}/\text{cm}$) for West Virginia and Kentucky, stating that this standard is also expected to be applicable to ecoregions extending into Ohio, Pennsylvania, Tennessee, Virginia, Alabama, and Maryland. EPA noted that this benchmark is likely to apply when dissolved ions are dominated by salts of Ca^{2+} , Mg^{2+} , SO_4^{2-} and HCO_3^- particularly where natural background levels are lower. EPA explained, “the salt mixture dominated by salts of SO_4^{2-} and HCO_3^- is believed to be an insurmountable physiological challenge for some species.” (EPA, *A Field-Based Aquatic Life Benchmark for Conductivity in Central Appalachian Streams*, Final Report, EPA/600/R-10/023F, March 2011, p. xv⁹).

EPA has also stated as a general rule that specific conductance above 500 $\mu\text{hos}/\text{cm}$ may have the potential to impair aquatic life. The EPA web site states, “Studies of inland fresh waters indicate that streams supporting good mixed fisheries have a range between 150 and 500 $\mu\text{hos}/\text{cm}$. Conductivity outside this range could indicate that the water is not suitable for certain species of fish or macroinvertebrates.”¹⁰

WaterLegacy found no EAB precedent affirming a variance irrespective of impairment or degradation of downstream aquatic ecosystems that support wildlife and fish. On the contrary, the EAB has approved denial of variances on the grounds that the permit applicant “failed to demonstrate that its discharges would not interfere with the attainment or maintenance of water quality that assures the protection and propagation of a balanced, indigenous population of fish, shellfish, and wildlife.” *In re City & County of Honolulu Sand Island Wastewater Treatment Plant Honouliuli Wastewater Treatment Plant*, NPDES Appeal No. 09-07, slip op. at 2 (Aug. 12,

⁹ <http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=233809#Download> (last visited Jan. 15, 2013)

¹⁰ EPA, *What is conductivity and why is it important?* <http://water.epa.gov/type/rsl/monitoring/vms59.cfm> last visited Jan. 15, 2013.

2010). *See also In re Guam Waterworks Authority*, NPDES Appeal Nos. 09-15 & 09-16, slip. op. at 14, 16-17 (EAB November 16, 2011).

Mesabi Nugget has failed to demonstrate that its untreated discharge under the variances would not interfere with the maintenance and attainment of water quality that assures protection and propagation of wild rice to support wildlife and protection of indigenous aquatic life. The proposed variances should not be granted under the Clean Water Act and its implementing regulations, 40 C.F.R. § 131.10(h).

2. Granting Mesabi Nugget variances in excess of five years for discharge of bicarbonates, hardness and specific conductance is clearly erroneous and inconsistent with federal regulations for Great Lakes waters.

EPA Region 5 cited 40 C.F.R. §132.4 for the proposition that Minnesota could grant a variance to Mesabi Nugget in excess of the five-year limit in Part 132, Appendix F, Procedure 2(B). The full pertinent text of 40 C.F.R. §132.4 explains:

- (e)(2) The Great Lakes States and Tribes may, but are not required to, apply procedures consistent with procedures 1, 2, 3, 4, 5, 7, 8, and 9 of appendix F of this part in establishing controls on the discharge of any pollutant set forth in Table 5 of this part. Any procedures applied in lieu of these implementation procedures shall conform with all applicable Federal, State, and Tribal requirements. . .
- (g) For pollutants listed in Table 5 of this part, the Great Lakes States and Tribes shall:
 - (1) Apply any methodologies and procedures acceptable under 40 CFR part 131 when developing water quality criteria or implementing narrative criteria; and
 - (2) Apply the implementation procedures in appendix F of this part or alternative procedures consistent with all applicable Federal, State, and Tribal laws.
- (h) For any pollutant other than those in Table 5 of this part for which the State or Tribe demonstrates that a methodology or procedure in this part is not scientifically defensible, the Great Lakes States and Tribes shall:
 - (1) Apply an alternative methodology or procedure acceptable under 40 CFR part 131 when developing water quality criteria; or
 - (2) Apply an alternative implementation procedure that is consistent with all applicable Federal, State, and Tribal laws.

First, any flexibility for States to adopt different methodologies and procedures applies only “for the 14 pollutants listed in Table 5 of part 132.” (EPA, *Final Water Quality Guidance*

for the Great Lakes System; Final Rule, 40 CFR Parts 9, 122, 123, 131 and 132, 60 Fed. Reg. 15366, 15380 (March 23, 1995)). Three of the four pollutants for which Mesabi Nugget sought a variance are not listed.¹¹ Arguably, total dissolved salts (solids) is equivalent to “dissolved solids” in Table 5 of Part 132. However, bicarbonates, hardness and specific conductance are not among the pollutants in Table 5. Bicarbonates are part of total alkalinity, but are not equal to alkalinity. Hardness is basically a measurement of calcium and magnesium concentrations, neither of which are listed pollutants. Specific conductance measures the ability of water to carry an electrical current, which is related to the total concentration of various ionized substances in the water, which could include sodium, chloride, iron, aluminum, magnesium, calcium, nickel, copper, sulfate, manganese and zinc among other ions.

In addition, neither the text of 40 C.F.R. §132.4 nor precedent suggest that this regulation gives Great Lakes States discretion to grant variances for Table 5 pollutants that extend beyond five years -- for as much as 9 years in this variance or a total of 16 years in total variances granted to date to Mesabi Nugget. EPA guidance confirms that States and Tribes are allowed flexibility in the application of methodologies and procedures for Table 5 pollutants because “EPA believes that some or all of the methodologies and procedures are not scientifically appropriate for these pollutants.” *Great Lakes Water Quality Guidance, supra*, 60 Fed. Reg. at 15380. This rationale does not apply to the length of variances.

EPA guidance also does not limit apply the five-year maximum on variances in the Great Lakes Basin to any specific class of pollutants. “The final Guidance allows Great Lakes States and Tribes to adopt variances from water quality standards, applicable to individual existing

¹¹ Table 5 Pollutants Subject to Federal, State, and Tribal Requirements are as follows: Alkalinity, Ammonia Bacteria, Biochemical oxygen demand (BOD), Chlorine, Color, Dissolved oxygen, Dissolved solids, pH, Phosphorus, Salinity, Temperature, Total and suspended solids, Turbidity.

Great Lakes dischargers for up to five years, where specified conditions exist.” (*Id.* at 15376)

Where a state’s regulatory scheme failed to limit pollution in cases of observed toxicity, courts have rejected the application of a 40 C.F.R. §132.4(h) exemption. The Court of Appeals held in *Northeast Ohio Reg’l Sewer District v. U.S. EPA*, 411 F. 3d 726, 735 (6th Cir. 2005) that Ohio’s regulations could not be exempted from compliance with Great Lakes Water Quality Guidance under 40 C.F.R. §132.4(h). The Court explained that provisions allowing alternative methodologies were inserted because some of the methodologies or procedures in the Guidance “may not be technically appropriate” for future pollutants. Whole effluent toxicity (WET) discharges, the Court noted, do not fall into this category. *Id.*, at 736.

It is axiomatic under 40 C.F.R. §132.5(g)(3) that to be “consistent with” the Great Lakes Water Quality Guidance, a regulatory scheme must be at least as protective as the Guidance. *Northeast Ohio Sewer District, supra*, 411 F. 2d at 733. Federal rules adopting the Guidance “provide minimum standards that states must meet.” *American Iron & Steel Inst. v. U.S. EPA*, 115 F.3d 979, 987 (D.C. Cir. Ct. App. 1997). Longer and, under Region 5’s rationale, potentially indefinite variances from water quality standards, would not meet the basic test of being at least as protective of the environment as the five-year maximum duration provided in 40 C.F.R.§132, Appendix F, Procedure 2(B).

3. The finding that “human caused conditions” support Mesabi Nugget variances from compliance with water quality standards is clearly erroneous and inconsistent with federal regulations.

Mesabi Nugget variances are precluded under 40 C.F.R. §131.10(h) since they would impair and degrade existing uses for growth of natural wild rice, wildlife and aquatic life. It is, thus, inconsistent with federal regulations to evaluate whether the Mesabi Nugget variances could be granted under any of the grounds in 40 C.F.R. §131.10(g), which only allows variances

where no existing use is removed.

Even if it were appropriate for the EPA to assess the Mesabi Nugget variances under §131.10(g), Region 5's finding that Mesabi Nugget meets its criteria "for the period of time required to complete air controls and design and construct waste water treatment" (Ex. 19, EPA Region 5 Review Decision, p. 18) is clearly erroneous and contrary to EPA policy and practice. A variance can only be granted under 40 C.F.R §131.10(g)(3) "if the State can demonstrate that attaining the designated use is not feasible" and that "human caused conditions prevent the attainment of the use." The MPCA has not made this demonstration with respect to the Mesabi Nugget variances.

First, there is no evidence in this record that Minnesota water quality standards for variance pollutants – bicarbonates, hardness, total dissolved salts (solids) and specific conductance – can't be attained with water quality treatment. As detailed *infra*, pp. 7-8, Mesabi Nugget's consultants concluded that reverse osmosis (RO) water quality treatment was an established and feasible technology capable of producing treated water that would meet water quality standards. The only question was the timeline by which RO could be implemented. On this point, Barr Engineering asserted that there was uncertainty whether a two-year timeline could be achieved. (*See* Ex. 3, Barr Water Treatment Evaluation I, pp. 19, 24, 28 of 58; Ex. 10, Barr Water Treatment Evaluation II, pp.17, 20 of 41)

As a matter of evidence, this record fails to meet the burden of proof of unattainability required under §131.10(g). As a matter of policy, Region 5's review decision would broadly undermine requirements to comply with water quality standards when such compliance might require construction of an RO facility. This decision would fly in the face of requirements for RO treatment at other mining facilities, such as the Blacksville Mine in West Virginia, the

Hutchinson Mine in Virginia, the Kennecott Eagle Mine in Michigan and the Orvana Copperwood project in Michigan. The decision would also undermine the potential that RO would be required to treat discharge at Minnesota mining facilities that are currently undergoing review – Minntac, Essar and PolyMet.

It is the rule, rather than the exception, that composition of intake water over time involves uncertainty and that treatment facilities require design and construction. If States, Tribes and EPA were to deem any standards requiring pretreatment or design of treatment facilities “unattainable,” a vast range of compliance with the Clean Water Act would be in jeopardy.

Equally important, the “human caused conditions” at Mesabi Nugget are not among those contemplated to support a variance under 40 C.F.R. §131.10(g)(3). In discussing whether or not specific guidance was needed in the final rules, the EPA noted that the intent of variances for “human caused conditions” under §131.10(g)(3) or under Part 132, Appendix F, Procedure 2(C) was intended to allow flexibility where small dischargers impacted by ubiquitous pollutants could not prove widespread economic harm not to permit “bootstrapping” by dischargers. (EPA, *Proposed Water Quality Guidance for the Great Lakes System*, 40 CFR Parts 122, 123, 131, and 132, 58 Fed. Reg. 20802, 20922 (April 16, 1993)).

An example of such bootstrapping might be a discharger, whose past or present activities (including, but not limited to, discharges, spills, or leaching of pollutants) have contaminated sediments which currently cause non-attainment of water quality standards, requesting a water quality standards variance based on that previous and/or continuing, pollution. (*Id.*)

Although talk of legacy pollution may have clouded this issue, Barr Engineering’s analysis of water quality treatment concluded that the Mesabi Nugget pellet plant is the primary source of solute loads. Barr’s initial Water Treatment Evaluation for Mesabi Nugget explained,

Of key importance to developing these alternatives was the determination that a significant contributor to the Area 1 Pit water quality is the return of treated process

water from the LSDP [Mesabi Nugget Large Scale Demonstration Plant]. This flow of only 445 gpm, contains 22,000 kg/d of TDS. This flow represents only 11 percent of the projected maximum dewatering rate from Area 1 pit of 4,000 gpm, however it contributes up to 45 percent of the total mass of dissolved solids under Mine Alternative 1 and up to 50 percent of the total mass of dissolved solids under Mine Alternative 2. (Ex. 3, Barr Water Treatment Evaluation I, p. 2)

The Evaluation summarized, “Of all the solute loads, the process water from the LSDP is the primary source. (*Id.*, p. 7).

Any determination that Mesabi Nugget is entitled to a variance because “human caused conditions” prevent attainment of designated uses is clearly erroneous. Approval of variances because a plant must be designed and built to treat pollutants generated by the discharger itself would strike at the heart of EPA policies requiring compliance with water quality standards.

4. Findings that “exceptional circumstances” preclude compliance with water quality standards, that wastewater treatment for Mesabi Nugget is “technically infeasible,” and that compliance with standards would cause “undue hardship” are unsupported by the record and do not conform to Minnesota procedure.

Under 40 C.F.R. §131.5(a)(3), the EPA must review decisions granting a variance from water quality standards to determine whether the state has followed its legal procedures for revising or adopting standards. Where the record does not support the rationale provided in a permitting review, remand is appropriate. *In re City of Newburyport Wastewater Treatment Facility*, NPDES Appeal No. 04-06, slip op. at 13-14 (EAB December 8, 2005).

Minnesota Rule 7050.0190, subpart 1 requires three separate findings in order to support a variance – that there are “exceptional circumstances,” that enforcement of the standards would cause “undue hardship” and that strict conformity with water quality standards would be “unreasonable, impractical, or not feasible.” EPA Region 5 quoted the MPCA’s findings pertaining to these requirements, but did not assess whether the record supported the MPCA’s

conclusions. In this case, where the record does not support a variance under Minnesota rules, the state has not followed its legal requirements for revising water quality standards.

Briefly, the circumstances that MPCA described to support a variance are commonplace, not “exceptional.” MPCA relied on the fact that previous mining activity had impaired the water quality of Mesabi Nugget’s Area Pit 1 and that Mesabi Nugget had changed its ownership structure, resulting in a delay of proposed construction and operation of its facility.

(Ex. 15, MPCA Findings, ¶ 23). These occurrences are routine in Minnesota mining ventures, and considering them as “exceptional” would undermine water quality treatment throughout the Lake Superior Basin. PolyMet’s NorthMet copper-nickel mine project proposes to use an existing LTV Steel Mining Company tailings basin for deposit of its production waste. Should PolyMet, thus, be exempt from compliance with water quality standards? Dunka Pit discharge has been toxic to aquatic life for decades. Should non-compliance be excused because ownership of the mine has changed over the years? Although Minnesota rules do not define “exceptional” circumstances, common sense requires that development of mining projects on polluted sites and changes of mine ownership provide no rationale to exceed water quality standards.

Next, the record does not support a finding that reverse osmosis water quality treatment is technologically infeasible. Although Mesabi Nugget opposes “immediate” implementation of reverse osmosis, its own reports discussed *infra* at p. 7, clearly state that RO water quality treatment is technologically feasible and commercially available. (Ex. 3, Barr Water Treatment Evaluation I, pp. 19, 24, 28 of 58; Ex. 10, Barr Water Treatment Evaluation II, pp.17,20 of 41)

Finally, the record does not substantiate the finding made by the MPCA that requiring compliance with water quality standards would result in “undue hardship.” The record contains an advocacy memorandum from Mesabi Nugget’s consultant, but none of the certified financial

statements that are required to demonstrate undue hardship pursuant to Minnesota Rule 7000.7000, subp. 2(E).

The Mesabi Nugget iron nugget production facility, which began operation in January 2010, is a \$300 million project with the capacity to generate 600,000 metric tons of iron nuggets per year. (Ex. 15, MPCA Findings, ¶¶ 2, 35, 37). The costs of treatment to comply with Minnesota water quality standards are in keeping with the scope of the Mesabi Nugget project and the resources of its joint venturer and majority owner, Steel Dynamics.

As explained in WaterLegacy's November 8, 2012 comments (Ex. 17, WL Nov. 2012 Comment, pp. 4-5), MPCA's failure to consider the structure, size and financial status of Steel Dynamics resulted in an unsupportable conclusion that requiring water quality treatment at Mesabi Nugget would lead to plant closure. Steel Dynamics, which was a permittee on Mesabi Nugget's prior NPDES/SDS permit and jointly applied for the granted variances, is the primary owner of Mesabi Nugget, which is a joint venture between Steel Dynamics (81 percent) and Kobe Steel (19 percent).¹² Steel Dynamics' net sales were \$6.3 billion in 2010.¹³ Steel Dynamics' 10-Q Quarterly Report filed with the SEC on June 30, 2012 advised shareholders that "compliance with current environmental laws and regulations is not likely to have a materially adverse effect on our financial condition, results of operations or liquidity."¹⁴

WaterLegacy's concern that Minnesota has not followed the requirements of its own rules in granting variances are highlighted by the lack of clear and specific milestones to implement water quality treatment and achieve compliance with water quality standards. The Mesabi Nugget variances do not require any schedule for installation of reverse osmosis at any

¹² Mesabi Nugget web site at <http://www.mesabinuggetmn.com/ourcompany.php>, last visited Jan. 15, 2013.

¹³ Welcome to Mesabi Nugget PowerPoint Download, slide 2, available at <http://www.mesabinuggetmn.com/ourcompany.php>, last visited Jan. 15, 2013.

¹⁴ U.S. Securities and Exchange Commission, Form 10-Q for Steel Dynamics, Inc. June 30, 2012 <http://quote.morningstar.com/stock-filing/Quarterly-Report/2012/6/30/t.aspx?t=XNAS:STLD&ft=10-Q&d=7bf0f7696f470d1b5eb5db238e4298f0> at p. 24 (emphasis added), last visited Jan. 15, 2013.

time, only a schedule to study the feasibility of applying reverse osmosis. (Ex. 15, MPCA Findings, ¶32). The remote August 1, 2021 date by which compliance must be attained seems as likely to result in change in ownership or threat of closure as to result in construction of reverse osmosis or any other water quality treatment plant. The MPCA's removal of Steel Dynamics from permit MN0067687 creates additional concern regarding long-term fiscal responsibility for Mesabi Nugget discharge and water quality treatment.

It appears that the unsupported conclusions in this record may result from regulators' efforts to justify a variance from water quality standards, rather than impose an enforceable schedule of compliance. Variances in this case would remove existing uses, are inconsistent with the Clean Water Act and implementing regulations and do not comply with Minnesota rules.

Should EPA determine that Mesabi Nugget's compliance with all pertinent water quality standards is legally required, but could require a couple of years, Minnesota law would authorize adoption of an enforceable schedule of compliance for Mesabi Nugget to attain water quality standards "within the shortest reasonable period of time." Minn. R. 7001.0150, Subp. 2(A).

By statute, the MPCA is authorized to adopt, issue, reissue, modify, deny, or revoke, enter into or enforce reasonable schedules of compliance in order to prevent, control or abate water pollution. Minn. Stat. §115.03, subd.1(e). Although Minnesota Rules for the Great Lakes Basin may preclude schedules of compliance for new dischargers of "GLI pollutants" into the Great Lakes Basin under Minn. R. 7052.0260, subp. 2, this section does not constrain the MPCA's authority to adopt a schedule of compliance in this case. Not one of the pollutants for which variances are sought by Mesabi Nugget – bicarbonates, hardness, total dissolved salts (solids) or specific conductance – is a "GLI pollutant," which is defined in Minnesota Rule

7052.0010, subp. 21 as a “toxic pollutant listed as a pollutant of initial focus in the GLI Guidance, Code of Federal Regulations, title 40, part 132, Table 6.”

In the recent case *In re District of Columbia Water and Sewer Authority*, 13 E.A.D. 714 (EAB Mar. 19, 2008), the Environmental Appeals Board explained that the limitation on schedules of compliance in the Star-Kist case (*In re Star-Kist Caribe, Inc.*, 3 E.A.D. 172 (Adm’r 1990), *modification denied*, 4 E.A.D. 33 (EAB 1992) was based on underlying Idaho state law which did not allow for a schedule of compliance. In the *District of Columbia WASA* case, the EAB remanded the final permit to the region directing that a compliance schedule be included to implement pollution controls and achieve the nitrogen effluent limit. The EAB explained, “The Star-Kist cases held that when state regulations do not authorize compliance schedules in permits, EPA cannot include them, but when state regulations do authorize such compliance schedules, EPA may include them.” *District of Columbia WASA, supra*, 13 E.A.D. at 734. *See also In re City of Moscow, Idaho*, 10 E.A.D. 135, 153 (EAB 2001)

If Mesabi Nugget needs two years or even four years to design, engineer, pilot, construct and operate reverse osmosis in order to comply with Minnesota water quality standards, a schedule of compliance should set clear and specific milestones that will result in operation of RO water quality treatment within the five-year term of the NPDES/SDS permit for the facility.

CONCLUSION

On the basis of the arguments, evidence and exhibits provided herein, WaterLegacy requests that variances granted to Mesabi Nugget for bicarbonates, hardness, total dissolved salts (solids) and specific conductance be disapproved as inconsistent with the Clean Water Act and federal regulations and state rules enacted to implement the CWA. WaterLegacy further requests

that this matter be remanded with instructions that any schedule of compliance for the Mesabi Nugget facility set definite milestones for design and construction of water quality treatment to achieve compliance with Minnesota water quality standards for bicarbonates, hardness, total dissolved salts (solids) and specific conductance within the shortest reasonable period of time, not to exceed five years. WaterLegacy further requests that permit MN0067687 include Steel Dynamics as well as Mesabi Nugget as a named permittee to ensure financial responsibility for control of wastewater discharge and implementation of water quality treatment.

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EXHIBITS

- Exhibit 1 NPDES/SDS Permit MN0067687 for Mesabi Nugget and Steel Dynamics, July 29, 2005
- Exhibit 2 Mesabi Nugget & Steel Dynamics, Variance Application for Permit MN0067687, June 2010
- Exhibit 3 Barr Engineering, Area 1 Pit Water Treatment Evaluation in Support of the Non-Degradation Analysis, Mesabi Nugget Phase II Project, November 2009
- Exhibit 4 NPDES/SDS Permit Modification MN0067687 for Mesabi Nugget and Steel Dynamics Feb. 24, 2011
- Exhibit 5 Discharge Monitoring Summary Mesabi Nugget (MN0067687) 2010-2011
- Exhibit 6 NPDES/SDS Draft Permit MN0067687 for Mesabi Nugget, Jan. 2012
- Exhibit 7 WaterLegacy Comment on NPDES/SDS Permit MN0067687, Feb. 18, 2012
- Exhibit 8 MPCA Variance Issue Statement for Mesabi Nugget and Steel Dynamics, NPDES/SDS Permit No. MN0067687, Nov. 9, 2011
- Exhibit 9 Barr Engineering, Toxicity Identification Evaluation 2008-2100 for the Mesabi Nugget Pits, June 2011
- Exhibit 10 Barr Engineering, Area 1 Pit Water Treatment Evaluation in Support of the Nondegradation Analysis, Mesabi Nugget Phase II Project, June 2011
- Exhibit 11 MPCA Variance Issue Statement for Mesabi Nugget and Steel Dynamics NPDES/SDS Permit No. MN0067687, Nov. 9, 2011
- Exhibit 12 M. Hansel, Barr Engineering, Memorandum, Economic Consequences of Meeting 10 mg/L Sulfate Standard, May 31, 2011
- Exhibit 13 NPDES/SDS Draft Permit MN0067687 for Mesabi Nugget, Oct. 2012
- Exhibit 14 WaterLegacy Supplemental Comments on NPDES/SDS Permit MN0067687 for Oct. 23, 2012
- Exhibit 15 MPCA, Approval of Findings of Fact, Conclusions of Law, and Order and Authorization to Grant a Variance and to Reissue NPDES/SDS Permit MN0067687, Oct. 24, 2012

- Exhibit 16 WaterLegacy Email Comments to EPA on NPDES/SDS Permit MN0067687, Nov. 1, 2012
- Exhibit 17 WaterLegacy Comments to EPA on NPDES/SDS Permit MN0067687, Nov. 8, 2012
- Exhibit 18 WaterLegacy Email Comments to EPA on NPDES/SDS Permit MN0067687, Dec. 10, 2012
- Exhibit 19 EPA, Review of MPCA Request for Approval of a Variance from Water Quality Standards Mesabi Nugget Permit No. MN0067687, Dec. 27, 2012
- Exhibit 20 John Moyle, *Wild Rice – Some Notes, Comments and Problems*, Special Pub. 47 of the Minnesota Department of Conservation, 1975
- Exhibit 21 John Moyle, *Review of the Relationship of Wild Rice to Sulfate Concentration of Waters*, Memo for MPCA, March 16, 1975
- Exhibit 22 Excerpts of Hearing Testimony, *In the Matter of the Applications for NPDES Permits for Minnesota Power & Light Co. (Clay Boswell)* March 19, 1975,