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February 18, 2012

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RE: Mesabi Nugget NPDES/SDS Permit MN0067687 and Proposed Variances

Dear Commissioner Aasen, Mr. Timerson, Mr. Pierard, Mr. Pfeifer:

The comments below are submitted on behalf of WaterLegacy, a Minnesota non-profit organization formed in 2009 to protect Minnesota's water resources and the communities that depend on them.

For the reasons discussed below, WaterLegacy believes that the draft NPDES/SDS permit MN0067687 and the proposed variances from water quality standards for bicarbonates, hardness, total dissolved solids and specific conductance proposed in that NPDES/SDS permit fail to comply with the Clean Water Act (CWA) and regulations promulgated under the CWA.

We request that the proposed Mesabi Nugget permit be scheduled for a hearing before the Minnesota Pollution Control Agency (MPCA) Citizens' Board and that the MPCA, upon reflection and review by its Board, reject all proposed variances from water quality standards and further require revisions to the draft NPDES/SDS permit to protect wild rice and prevent mercury contamination of fish. In addition, we believe that it would be appropriate for the United States Equal Protection Agency (EPA) to object to the draft NPDES/SDS permit and reject all proposed variances from water quality standards.

INTRODUCTION
According to the Variance Issue Statement (VIS) provided by the MPCA to WaterLegacy on February 14, 2012, Mesabi Nugget Delaware, LLC (Mesabi Nugget) and Steel Dynamics, Inc. (SDI) operate an iron nugget production facility (Large Scale Demonstration Plant – LDSP)

located near Hoyt Lakes, Minnesota at the former Cliffs Erie mining site. This facility was originally permitted in 2005, although construction was delayed until 2009 because of financing issues and a change in ownership. In January 2010, the Mesabi Nugget facility commenced operation of the 600,000 metric ton/year iron nugget facility. (MPCA, *Variance Issue Statement*, February 14, 2012, attached as Exhibit 1, "Ex. 1, VIS," p 1)

The draft NPDES/SDS permit MN0067687 for the Mesabi Nugget facility pertains to industrial wastewater discharged through SD001 (formerly SD003 under the Cliffs Erie operation) to Second Creek, a Class 2B, 3C, 4A, 4B, 5 and 6 water under Minnesota Rules 7050.0430 and an Outstanding International Resource Water under Minnesota Rules Chapter 7052. (MPCA, *Draft NPDES/SDS Permit MN0067687*, Noticed Jan. 30, 2012, attached as Exhibit 2, "Ex. 2, NPDES Draft," pp. 4-5). Second Creek is part of the Partridge River and St. Louis River watersheds that ultimately flow to Lake Superior. Both the Partridge and the St. Louis Rivers are Class 2B, 3C, 4A, 4B, 5 and 6 water under Minnesota Rules 7050.0430 and Outstanding International Resource Waters under Minnesota Rules Chapter 7052. Since 1998, the St. Louis River has been listed as an impaired water due to mercury contamination in fish tissue from the Partridge River downstream to the Embarrass River.

I. The Mesabi Nugget draft NPDES/ SDS permit fails to comply the Clean Water Act and with federal regulations implementing the Act.

It is axiomatic that a state with a federally authorized NPDES program is required to issue permits that ensure the protection of federally approved water quality standards. See 33 U.S.C. §1311(b)(1)(C), CWA §301(b)(1)(C); and generally, 40 C.F.R. Part 123 (see especially 40 C.F.R. §123.25(a)(1)); and 40 C.F.R. §§122.4 and 122.44. Where a state proposes to issue a permit that fails to apply or to ensure compliance with any applicable requirement including water quality based effluent limitations, EPA has the authority to review and to object to such permit issuance pursuant to its authority under 40 C.F.R. §123.44.

No permit may be issued when the conditions of the permit do not provide for compliance with the applicable requirements of the Clean Water Act or regulations promulgated under the CWA. 40 C.F.R. §122.4(a). NPDES permit conditions must attain compliance with State narrative requirements as well as numeric standards. 40 C.F.R. 122.44(d).

The Clean Water Act protects any designated uses in existence in receiving waters at any time subsequent to November 28, 1975. 40 C.F.R. § 131.3(e). Designated uses of waters can include uses for propagation and maintenance of wild rice species, aquatic life, industrial and agricultural uses.

Federal law precludes backsliding, and a permit may not be renewed, reissued or modified to contain effluent limitations which are less stringent than the comparable effluent limitations in the previous permit. 33 U.S.C. §1342(o), CWA §402(o). Where a renewed or reissued permit has both interim and final effluent limitations, "interim effluent limitations, standards or conditions must be at least as stringent as the final effluent limitations, standards, or conditions in the previous permit." 40 C.F.R. 122.44(l). In addition, any exceptions to anti-backsliding provisions do not apply if the proposed effluent limitation is less stringent than that required by existing water quality standards at the time when a permit is renewed, reissued or modified or if the implementation of the proposed less stringent water limitation would result in a violation of a water quality standard applicable to such waters. 40 C.F.R. 122.44(l)(2)(ii).

In addition to precluding backsliding, the Clean Water Act does not permit indeterminate deferral of compliance with effluent limitations. EPA guidance suggests that NPDES permits

must require immediate compliance with water quality based effluent limitations unless they were adopted after July 1, 1977 and the State has clearly indicated that it intends to allow permits to defer compliance.[1]

Minnesota statutes and rules define a "schedule of compliance" not as a customary permitting strategy, but as "a schedule of remedial measures." Minn. Stat. §115.01, Subd. 16, Minn. R. 7000.0100, Subp. 11. Any schedule of compliance in a permit "must require compliance in the shortest reasonable period of time." Minn. R. 7001.0150, Subp. 2(A). If a proposed permittee will not comply with all applicable state and federal pollution control statutes and rules, the agency may refuse to issue a new, modified or reissued permit. Minn. R. 7001.0140, Subp. 2(A).

Federal regulations enacted under the Clean Water Act require that a schedule of compliance be "an enforceable sequence of interim requirements leading to compliance with the CWA and regulations." 40 CFR §122.2. Schedules must require "compliance as soon as possible," 40 CFR §122.47(a)(1), and schedules that exceed one year must have interim requirements and dates of achievement. 40 CFR §122.47(a)(3).

A. Draft permit conditions are inconsistent with Minnesota's narrative as well as numeric standards that prevent impairment or degradation of wild rice.

The permit record does not disclose whether production of wild rice from natural stands was a designated use of the Second Creek receiving waters at any time subsequent to November 28, 1975, requiring that this use be protected under the Clean Water Act. 40 C.F.R. § 131.3(e). It is, however, undisputed that the Partridge River, into which the Second Creek flows, is currently used for the production of natural stands of wild rice. Mesabi Nugget states in its June 2010 Application for Variance, "During the summer of 2009, a wild rice survey (required by the MPCA) discovered wild rice in the Partridge River, just downstream from the confluence of Second Creek." (Mesabi Nugget, *Variance Application*, June 2010, attached as Exhibit 3, "Ex.3, Variance App." p. 1)

The Mesabi Nugget draft NPDES/SDS permit contains no limits on sulfates either in its "interim" or "final" period. (Ex. 2, NPDES Draft, pp. 10-14) The only constraint on sulfates is provided in paragraph 6.1 of the draft permit, which states, "To minimize the potential impact to wild rice resources in downstream waters, the Permittee shall not discharge from Outfall SD001 from April 1 through August 31 of each year." (Ex. 2, NPDES Draft, p. 15).

Failure to set limits for sulfate discharge to wild rice waters is inconsistent with precedent set in the MPCA's contested permit proceedings (Clay Boswell NPDES, permit issued in 1975) and uncontested proceedings (U.S. Steel Corp. Keetac NPDES, permit issued in 2011). The Boswell case set less stringent limits on sulfates in certain months, but both permits provided year-round limits on sulfate discharge to wild rice waters.

WaterLegacy believes that failure to set year-round sulfate limits conflicts with Minnesota Rule 7050.0224, Subpart 2 and with federal regulations that require compliance with state standards. 40 C.F.R. 122.44(d). Subpart 2 of the wild rice sulfate standard sets a 10 mg/L limit for sulfates in waters used for the production of wild rice during periods when wild rice "may be susceptible to damage by high sulfate levels." Scientific research suggests that wild rice may be susceptible to damage by high sulfate levels outside its growing season due to the conversion of sulfates to

[1] U.S. EPA Memo, Compliance Schedules for Water Quality-Based Effluent Limitations in NPDES Permits, May 10, 2007 available at http://water.epa.gov/lawsregs/guidance/wetlands/upload/signed-hanlon-memo.pdf (last visited Feb. 15, 2011). Citing the EPA decision *In The Matter of Star-Kist Caribe, Inc.,* 3 E.A.D. 172, 175, 177 (1990).

toxic hydrogen sulfide in sediments of streams, rivers and lakes. Support for some degree of susceptibility is provided in the MPCA's November 8, 2011 Study Protocol to Protect Wild Rice, which states, "In Minnesota surface waters, it is suspected that any negative effect of sulfate on wild rice likely involves the conversion of sulfate to sulfide—a conversion that is accomplished by anaerobic bacteria that respire sulfate instead of oxygen."[2] The decision to place no concentration limits on high sulfate levels from September 1 through March 31 is unreasonable under Minn. R. 7050.0224, Subpart 2 and subject to EPA review under 40 C.F.R. 122.44(d).

Even if one were to accept the MPCA's interpretation that Subpart 2 of Minn. R. 7050.0224 could be satisfied if discharge were prohibited "from April 1st through August 31st due to the potential for impacts to downstream wild rice from sulfate in the discharge," (Ex. 1, VIS, p. 2), the Mesabi Nugget permit is not properly drafted to apply even this modest condition. The draft permit would allow uncontrolled release of sulfates during the month of August, as well as the month of September if Mesabi Nugget can show that its effluent does not exceed 1.0 chronic toxicity units. (Ex. 2, NPDES Draft, p. 15, ¶ 6.2). To meet the minimal protection of wild rice specified in the MPCA's supporting documents, Paragraph 6.2 must be revised so that discharge after whole effluent toxicity (WET) testing could only occur from September 1 through September 30, not from August 1 through September 30 as provided in the draft permit. (*See e.g.* Ex. 1, VIS, p. 13, "Specifically, discharge from SD001 will not be authorized during September of each year unless Mesabi Nugget can demonstrate through WET testing that toxicity exceeding one toxicity unit is not present.").

The MPCA may have some discretion to interpret the requirements of Minn. R. 7050.0224, but under 40 C.F.R. 122.44(d) NPDES permit conditions must ensure compliance with both numeric and narrative standards. The draft NPDES/SDS permit fails to ensure compliance with narrative water quality standards preventing impairment or degradation of Minnesota's natural stands of wild rice:

> 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. . . 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. Minn. R. 7050.0224, Subpart 1 (emphasis added).

Nothing in the permit record suggests that an analysis was performed by MPCA to determine what limits on sulfate concentrations or mass loading from September through April are needed to prevent formation of hydrogen sulfides or other conditions that impair or degrade waters and aquatic habitat necessary to support the propagation and maintenance of wild rice.

The Sulfate Transport and Wild Rice Impact Studies described in the draft permit neither discuss the fate of sulfates in the aquatic ecosystem nor seek an outcome related to protection of the use of waters for the propagation and maintenance of wild rice. Studies could drag on for more than four years without any determination of whether conditions are needed to protect the resource, let alone imposition of such conditions through reissuance or modification of a permit. (Ex. 2, NPDES Draft, p. 25).

WaterLegacy would propose the following conditions consistent with Clean Water Act requirements to prevent degradation of designated wild rice uses:

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[2] MPCA, *The Sulfate Standard to Protect Wild Rice*, Nov. 8, 2011, p. 5 http://www.pca.state.mn.us/index.php/view-document.html?gid=16356 last visited on Feb. 15, 2012.

Revise draft permit page 15, Paragraph 6.2 so that discharge after WET testing can only occur from September 1 through September 30.

Set limits on SD001 sulfate discharge from September 1 through March 31 to protect natural stands of wild rice.

If regulators believe more study is needed to place limits on sulfate discharge from September through March, revise conditions for ***Studies to Determine Sulfate Fate and Transport and Prevent Wild Rice Impairment*** *as follows:*

1. *Within 90 days of permit issuance, the Permittee shall submit for approval a Sulfate Fate and Transport Study work plan and a Wild Rice Impact Study work plan.*

   - *The Sulfate Fate and Transport Study shall be designed to determine the fate (including conversion to hydrogen sulfide) and transport of sulfate in receiving waters and sediments, including but not limited to Second Creek, the Partridge River and the St. Louis River.*

   - *The Wild Rice Impact Study shall be designed to consider impacts from the fate and transport of sulfates and from water level changes due to Permittee's discharge on the propagation and maintenance of wild rice. At a minimum, the Wild Rice Impact Study shall include two years of monitoring/survey for the presence and general condition of wild rice and sampling for phytoliths in sediments.*

2. *Within 24 months after MPCA approval of the Sulfate Fate and Transport Study work plan, the Permittee shall complete and submit for approval the Sulfate Fate and Transport Report. Within 24 months after MPCA approval of the Wild Rice Impact Study, the Permittee shall complete and submit for approval the Wild Rice Impact Report.*

3. *The MPCA shall have the authority to reject, amend, revise or approve any study work plans and reports described in this section.*

4. *Within 90 days of receiving the completed Sulfate Fate and Transport Report and Wild Rice Impact Report, the MPCA will determine what additional conditions limiting sulfates and/or volume or timing of discharge from SD001 are required to ensure compliance with Minnesota rules preventing impairment or degradation of waters and aquatic habitats that support the propagation and maintenance of wild rice and shall propose such conditions for permit modification with public notice.*

B. Draft permit conditions fail to ensure that mercury releases will not violate water quality based effluent limitations.

WaterLegacy appreciates that the Mesabi Nugget draft NPDES/SDS permit contains mercury water quality based effluent limitations intended to be consistent with the Great Lakes Initiative, Chapter 7052 of Minnesota Rules. However, WaterLegacy would request clarification of why the average limit is set at 1.8 rather than the 1.3 nanograms per liter level given that 7Q10 flow levels in Second Creek do not permit consideration of dilution. (*See* Ex. 2, NPDES Draft, pp. 9, 12). The draft permit suggests that a second filtration process for mercury can be required prior to discharge from the Area 1 pit if the initial MNC Mercury Filter is insufficient to bring mercury levels down to permitted levels. (*Id*., p. 4)

However, permit conditions pertaining to the Area 1 pit are insufficient to ensure that Mesabi Nugget discharge complies with mercury water quality standards. The draft permit provides no mercury limit for SW003, the Area 1 pit, described in the permit as a Lake/Reservoir. (*Id*., pp. 8, 10, 13). The Area 1 Lake/Reservoir is accessible to wildlife and waterfowl that may be impacted by high mercury levels.

Area 1 Lake/Reservoir hydrology also seeps and flows to surface waters. The MPCA's Variance Issues Statement explains, "Pit 1 watershed hydrology is such that total water inflows exceed water losses to groundwater and evaporation resulting in a long-term overflow or discharge of the pit to Second Creek." (Ex. 1, VIS, p. 14). The Area 1 Pit Water Treatment Evaluation prepared by Mesabi Nugget confirms that lowering the water level in the pit to 1546 feet mean sea level was needed "in order to stop seepage in the southeast corner of the pit." (Mesabi Nugget, *Area 1 Pit Water Treatment Evaluation in Support of the Nondegradation Analysis*, June 2011, attached as Exhibit 4, "Ex. 4, Area 1 Pit Eval.," p. 1). These reports suggest that there is a "significant nexus" between the Area 1 pit and navigable waters, requiring control of mercury levels in the Area 1 pit.[3]

In addition to requesting permit conditions limiting mercury concentrations in the Area 1 Lake/Reservoir, WaterLegacy would suggest revision of specific draft permit conditions that could allow mercury seepage to surface water in excess of water quality standards. The draft permit requires Mesabi Nugget to cease discharge through SD001 if monitoring data shows exceedances of the mercury standard three times in any 12-month period or four times in any 60-month period. (Ex. 2, NPDES Draft, p. 15, ¶7.1). However, even if mercury levels in the Area 1 pit exceed limits, the draft permit would allow Mesabi Nugget to continue iron nugget production and store mercury in this Lake/Reservoir. (*Id*., p. 16, ¶7.4).

The Variance Issues Statement confirms that waters flowing into the Area 1 pit enter groundwater. Even if seepage from the pit's surface could be controlled by reducing water levels, no studies demonstrate that water infiltrating Area 1 pit groundwater would not have a direct hydrological connection to nearby surface waters. Discharge to groundwater that is connected to groundwater is governed by the Clean Water Act[4] and the Great Lakes Initiative (GLI) requires limits on mercury, particularly where downstream waters are already impaired due to contamination of fish tissue with mercury.

The following changes to the Mesabi Nugget draft permit would prevent violation of GLI mercury standards resulting from hydrological connections between the Area 1 pit and waters of

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[3] *See N. Cal. River Watch v. Healdsburg*, 496 F.3d 993, 995, 1002 (9th Cir. 2007).

[4] See EPA responses to Comments on National Pollutant Discharge Elimination System Permit Regulation and Effluent Limitations Guidelines and Standards for Concentrated Animal Feeding Operations, 66 Fed. Reg. 3,016 (Jan. 12, 2001), *available at* http://www.sba.gov/advo/laws/is_cafopr2.txt. "EPA does not argue that the CWA directly regulates ground water quality. In the Agency's view, however, the CWA does regulate discharges to surface water which occur via ground water because of a direct hydrologic connection between the contaminated ground water and nearby surface water. EPA repeatedly has taken the position that the CWA can regulate discharges to surface water via ground water that is hydrologically connected to surface waters . . .EPA has made consistent statements on at least five other occasions. In the Preamble to the final NPDES Permit Application Regulations for Storm Water Discharges, the Agency stated: ''this rulemaking only addresses discharges to waters of the United States, consequently discharges to ground waters are not covered by this rulemaking (unless there is a hydrological connection between the ground water and a nearby surface water body.'') 55 Fed. Reg. 47,990, 47,997 (Nov. 16, 1990) (emphasis added). *See also* 60 Fed. Reg. 44,489, 44,493 (Aug. 28, 1995) (in promulgating proposed draft CAFO permit, EPA stated, ''discharges that enter surface waters indirectly through groundwater are prohibited''); EPA, ''Guide Manual On NPDES Regulations For Concentrated Animal Feeding Operations'' at 3 (Dec. 1995), *available at* http://www.epa.gov/guide/cafo/ (''Many discharges of pollutants from a point source to surface water through groundwater (that constitutes a direct hydrologic connection) also may be a point source discharge to waters of the United States.'').

the State:

> *Set mercury limits for SW003 (the Area 1 Lake/Reservoir) as well as for SD001.*
>
> *Revise page 16, Part 7.4 of the draft permit to allow the Permittee to continue iron nugget production after mercury exceedances only if, prior to occurrence of the conditions in Part 7.1, the Permittee has demonstrated through studies approved by the MPCA that water in the Area 1 pit is not hydrologically connected to surface waters.*

C. Draft permit conditions regarding bicarbonates, hardness, total dissolved solids and specific conductance fail to meet federal anti-backsliding requirements.

The MPCA's Variance Issues Statement suggests that the draft permit merely carries forward a set of variances granted in 2005: "The existing permit issued in 2005 included a variance for the same parameters. The current request is in essence a continuation of the existing variance." (Ex. 1, VIS, p. 6, similar statement at p. 2). However, this is manifestly incorrect. Mesabi Nugget provides admits that they "voluntarily ceased discharging on June 30, 2010 because the Minnesota Pollution Control Agency (MPCA) had not reissued the permit and extended the water quality variances beyond the expiration date of the permit." (Ex. 4, Area 1 Pit Eval., p. 1).

What neither the proposed draft permit nor the Variance Issues Statement disclose is that the MPCA issued a modification of the Mesabi Nugget NPDES/SDS permit MN0067687 on February 24, 2011. That permit stated, "The Permittee shall comply with the limits and monitoring requirements as specified below" and set standards for bicarbonates, hardness, total dissolved solids and specific conductance. (MPCA, *NPDES/SDS Permit MN0067687 Modification*, Feb. 24, 2011, attached as Exhibit 5, "Ex. 5 NPDES Modification," pp. 8-9).

The MPCA's application of the more stringent standards in the February 24, 2011 NPDES permit modification is reflected in the difference between the standards contained in the MPCA's discharge monitoring summary reports for 2010 and 2011. In 2010, standards under the 2005 variance were applied; whereas in 2011, more stringent standards based on the expiration of the variances were applied. (See MPCA, *Discharge Monitoring Summary Reports*, 2011 and 2010, attached as Exhibit 6, "Ex.6 DMRs," compare p. 1 of the 2011and 2010 reports).

As detailed in the chart below, the standards put in place in the February 24, 2011 permit modification are more stringent than those that would be effective if the January draft NPDES/SDS permit and variances were to be approved.

NPDES Permit MN0067687 **Parameter**	**Modification Feb. 24, 2011** **Effective Date: 2011**	**DRAFT January 2012 Interim** **Effective Date: Approval 2012**	**DRAFT January 2012 Final** **Effective Date: None**
Bicarbonates (Cal. Mo. Ave.)	268 mg/L	*362 mg/L*	257 mg/L
Bicarbonates (Cal. Mo. Max.)	301 mg/L	*378 mg/L*	267 mg/L
Hardness (Cal. Mo. Ave.)	268 mg/L	*831 mg/L*	512 mg/L
Hardness (Cal. Mo. Max.)	301 mg/L	*863 mg/L*	532 mg/L
Total Dissolved Solids (Cal. Mo. Ave.)	752 mg/L	*1160 mg/L*	726 mg/L
Total Dissolved Solids (Cal. Mo. Max.)	842 mg/L	*1228 mg/L*	768 mg/L
Specific Conductance (Cal. Mo. Ave.)	1074 µmhos/cm	*1889 µmhos/cm*	1025 µmhos/cm
Specific Conductance (Cal. Mo. Max.)	1203 µmhos/cm	*1965 µmhos/cm*	1066 µmhos/cm

The Mesabi Nugget draft permit makes a conclusory statement that the permit would comply with Minn. R. 7053.0275 regarding anti-backsliding. (Ex. 2, NPDES Draft, p. 6). However, Minn. R. 7053.0275 explicitly states that the Agency may not set less stringent effluent limits unless a permittee has established that it is entitled to less stringent limits under section 402(o) of the Clean Water Act, the federal anti-backsliding provisions previously cited. Federal anti-backsliding statutes and regulations preclude approval of the standards for bicarbonates, hardness, total dissolved solids and specific conductance in the proposed draft permit.

As explained previously, the potential that some of the "final" effluent limitations may be as stringent as existing standards does not satisfy anti-backsliding requirements. Where a renewed or reissued permit has both interim and final effluent limitations, *interim* effluent limitations, standards or conditions must be at least as stringent as the effluent limitations, standards, or conditions in the previous permit. 40 C.F.R. 122.44(l). The interim effluent limitations in the draft permit are significantly less stringent than existing permit conditions as well as substantially less stringent than Minnesota's water quality based effluent limitations.

Further, as discussed in more detail in the next section, the "final" effluent limitation in the proposed draft permit is a meaningless construct. The MPCA has specified no means to attain the limitations and no date by which they must be attained.

Federal anti-backsliding law, applicable to Minnesota NPDES permits and incorporated by reference in Minnesota rules, precludes relaxation of the effluent limits for bicarbonates, hardness, total dissolved solids and specific conductance proposed in the Mesabi Nugget draft permit. In order to comply with anti-backsliding provisions, the following limits applicable in the "interim" period should be applied to discharge from SD001.

Set NPDES/SDS permit limits at least as stringent as the following:	
Bicarbonates (Cal. Mo. Ave.)	*268 mg/L*
Bicarbonates (Cal. Mo. Max.)	*301 mg/L*
Hardness (Cal. Mo. Ave.)	*268 mg/L*
Hardness (Cal. Mo. Max.)	*301 mg/L*
Total Dissolved Solids (Cal. Mo. Ave.)	*752 mg/L*
Total Dissolved Solids (Cal. Mo. Max.)	*842 mg/L*
Specific Conductance (Cal. Mo. Ave.)	*1074 µmhos/cm*
Specific Conductance (Cal. Mo. Max.)	*1203 µmhos/cm*

D. Draft permit conditions provide no schedule of compliance with water quality standards for bicarbonates, hardness, total dissolved solids or specific conductance.

WaterLegacy has concluded that draft permit effluent limitations for bicarbonates, hardness, total dissolved solids and specific conductance are impermissible backsliding, as explained above, and impermissible variances under the Clean Water Act as explained in subsequent sections. Even if the Mesabi Nugget draft permit provided an enforceable sequence of interim requirements leading to compliance with water quality standards for these four parameters, the permit conditions would still conflict with applicable state and federal law.

However, the lack of any schedule of compliance that would make the "final" effluent limitations enforceable is particularly troubling. The MPCA granted variances for bicarbonates, hardness, total dissolved solids and specific conductance in 2005. Seven years later, Mesabi Nugget has requested and the Agency is poised to approve an indefinite plan for non-compliance

with water quality based effluent standards.

The draft permit contains no requirement that any method of treatment of discharge from Mesabi Nugget SD001 ever be adopted and sets no date by which compliance with water quality standards will be required. (*See* Ex. 2, NPDES Draft, pp. 18-20) Neither the Water Balance Study nor the Chemical Balance Study seem directed to compliance with any water quality standards, and they may well be duplicative of studies already completed or underway in connection with environmental review.

The Pollutant Reduction Study is required to propose a specific plan of action with a schedule that will result in compliance with the final effluent limitations. (*Id.*, p. 20 ¶8.14). However, the Variance Issue Statement makes it clear that even this eventual plan for a schedule need not include installation of wastewater treatment equipment or source mitigation to achieve water quality standards. The MPCA has apparently agreed that a "plan of action" developed after more than another year of reports could just as well include "a proposal for alternative discharge location and/or submittal of information necessary to support a request for development of site specific water quality standards." (Ex. 1, VIS, p. 16).

The draft permit contains a general platitude, "For as long as this variance is in effect, it shall be the responsibility of the Permittee to make all reasonable progress towards attainment of the water quality standards." (Ex. 2, NPDES Draft, p. 18, ¶ 8.2) Again, the Variance Issue Statement more boldly concedes that there is no schedule of compliance with water quality standards for bicarbonates, hardness, total dissolved solids or specific conductance: "Because of these factors and uncertainties, the exact timeframe for compliance with final effluent limitations is not known at this time." (Ex. 1, VIS, p. 12)

WaterLegacy believes that interim effluent limitations for bicarbonates, hardness, total dissolved solids and specific conductance cannot be less stringent than the limits set in February 2011 after Mesabi Nugget's variance had expired. Thus, there is no need for a schedule of compliance. However, the combination of backsliding to reinstate 2005 variances that violate federal regulations and the failure to set any schedule for attainment of water quality standards is a striking departure from the requirements of the Clean Water Act and the State's responsibilities in executing its delegated NPDES authority.

II. Proposed variances in the Mesabi Nugget draft NPDES/ SDS permit fail to comply with the Clean Water Act and federal regulations implementing the Act.

Although a regulated party may apply for a variance from water quality standards under Minnesota Rules, a variance can only be granted with EPA approval.

Minnesota Rule 7000.7000, Subpart 2 explains the procedure to apply for a variance. The application (F) requires a report from an engineer if the claim is made that it is not "technologically feasible" or, (E) "if the applicant seeks a variance primarily on grounds of economic burden" requires "financial statements" 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)"

Minnesota's substantive standard for a variance from water quality standards, requires findings of "exceptional circumstances" and **"**that strict conformity with the standards would be unreasonable, impractical, or not feasible under the circumstances." A variance also must be "in

harmony" with "the intent of the applicable state and federal laws." Minnesota Rule 7050.0190, Subpart 1.

The EPA characterizes variances from water quality standards as changes to water quality standards and applies substantive and procedural requirements similar to what is required to remove a designated use."[5] Thus, the EPA determines if a variance is appropriate or not using the legal framework for removal of designated uses established in 40 C.F.R. §131.10. The legal authority of the EPA to grant a variance depends, first, on whether the designated use to be removed is an existing use. "*Designated uses* are those uses specified in water quality standards for each water body or segment whether or not they are being attained." 40 C.F.R. §131.3(f). "*Existing uses* are those 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).

Where a water body currently complies with water quality standards, uses of that water body are "existing uses" and states may not remove an existing designated use. 40 C.F.R. § 131.10(h). A variance that would remove an existing use violates federal regulations.

Where a water body is already in violation of water quality standards, the designated use is not actually attained. EPA may approve a variance and allow a state to remove a designated use that is *not* an existing use only if more stringent controls "would result in substantial and widespread economic and social impact." 40 C.F.R. §131.10(g)(6).

As discussed below, analysis under 40 C.F.R. §131.10 requires rejection of the variances requested in connection with the Mesabi Nugget draft NPDES permit.

A. Proposed variances for hardness, total dissolved solids and specific conductance would remove existing uses from Second Creek, the Partridge River and the St. Louis River in violation of federal regulations.

Neither the Mesabi Nugget draft permit nor the Variance Issue Statement analyze in any detail whether the proposed variances would remove existing uses from receiving waters. The discussion of the high economic costs of proposed wastewater treatment might suggest that it has been assumed that no existing uses would be removed by granting the variances. This assumption would be erroneous.

Applicable water quality standards for Minnesota waters are 250 mg/L for bicarbonates in Class 4A waters, 500 mg/L for hardness in Class 3C waters, 700 mg/L for total dissolved solids for Class 4A waters and 1000 µmhos/cm for specific conductivity for Class 4A waters. These standards apply to Second Creek, the Partridge River and to the St. Louis River.

The record demonstrates that existing uses would be removed from each of these receiving waters should the proposed variances be granted, precluding the EPA's approval of variances.

With respect to Second Creek, the most recent monitoring of discharge under the previous variance from July 2009 to June 2010 demonstrated that Second Creek Upstream of Mesabi Nugget's SD001 discharge exceeded water quality standards for bicarbonates, hardness and specific conductance. (Ex. 1, VIS, p. 5 chart). A variance from water quality standards for these parameters would not remove an existing use of Second Creek, so consideration of economic and social impacts of denial of the variance under 40 C.F.R. §131.10(g)(6) might be appropriate.

[5] EPA, *NPDES Permit Writers' Manual* (September 2010) p. 6-10, available at http://cfpub.epa.gov/npdes/writermanual.cfm?program_id=45, last visited Feb. 16, 2012.

However, in this same recent year of monitoring, Second Creek Upstream of Mesabi Nugget's SD001 discharge *met* the 700 mg/L water quality standard for total dissolved solids. After receiving untreated discharge from Mesabi Nugget Area 1 pit under the 2005 variance, Second Creek Downstream violated the total dissolved solids standard. (*Id.*) Under 40 C.F.R. §131.10(h), the EPA must reject the proposed variance from the total dissolved solids water quality standard since it would remove an existing Class 4A use from Second Creek.

Granting the proposed variances would also remove existing uses from the Partridge River and the St. Louis River under low flow conditions. Mesabi Nugget's Toxicity Identification Evaluation (TIE) 2008-2011 Study released in June 2011 demonstrates that Area 1 pit violates standards for hardness, total dissolved solids and specific conductance. However, baseline monitoring suggests that the Partridge River currently complies with standards for hardness, total dissolved solids and specific conductance, and the St. Louis River complies with standards for specific conductance, the only parameter for which data is provided. (Mesabi Nugget, *Toxicity Identification Evaluation 2008 – 2011 Study for the Mesabi Nugget Pits Mesabi Nugget Phase I Project*, June 2011, attached as Exhibit 7, "Ex. 7 TIE Study," *see* Table 2).

Should the proposed variances be granted, under 7Q10 low-flow conditions Partridge and St. Louis River waters would no longer meet water quality standards. As explained in the Variance Issues Statement, under low flow conditions,

> [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 the St. Louis River. (Ex. 1, VIS, p. 13) (emphasis added).

Based on Mesabi Nugget's TIE Study and the MPCA's Variance Issues Statement, variances for hardness, total dissolved solids (TDS) and specific conductance would remove existing Class 3C and Class 4A uses of the Partridge and St. Louis Rivers in violation of 40 C.F.R. §131.10(h).

In addition, it is also likely that granting proposed variances for hardness, total dissolved solids and specific conductance would impair aquatic life, removing an existing Class 2B use from receiving waters.

For the Mesabi Nugget discharge, site-specific studies have connected high levels of total dissolved solids, associated conductivity and sulfates to aquatic toxicity, as summarized in the June 2011 Area 1 Pit Water Treatment Evaluation, "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. 4, Area 1 Pit Eval., p. 5).

The June 2011 TIE Study of Area 1 pit discharge suggested that elevated levels of sulfate and alkalinity may result in toxicity due to blockage or chemical interference with micronutrient uptake. (Ex. 7, TIE Study June 2011, p. 2) 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 sulfate levels rather than bicarbonate levels appeared to be associated with toxicity to the test endpoint species, *C. dubia*. (*Id*., p. 8) According to the logistic regression models for the pits and St. Louis River, alkalinity, sulfate, chloride, and sodium were the factors most often correlated with negative impacts to *C. dubia* young production. (*Id*., p. 15)

This site-specific information regarding toxicity at Mesabi Nugget is consistent with EPA's conclusion that scientific literature and research increasingly recognize the relationship between salinity and conductivity levels and adverse impacts to biological communities.[6]

The MPCA's 2012 listing of impaired waters included 105 new listings of waters in Minnesota's Arrowhead Region due to impairments for aquatic life identified in bioassessments of fish or macroivertebrates.[7] Variances for salinity and conductivity are likely to create adverse impacts to aquatic life. Should existing industrial and agricultural water quality standards that control salinity and conductivity be relaxed either in individual permit applications or in state rulemaking proceedings, it is likely that such weakened standards would impair existing designated uses of Class 2 waters to sustain aquatic life. WaterLegacy proposes the following:

> *Reject the proposed variance for total dissolved solids that would remove existing uses from Second Creek and remove existing uses from the Partridge and St. Louis Rivers under low flow conditions.*
>
> *Reject proposed variances for hardness and specific conductance that would remove existing uses from the Partridge and St. Louis Rivers under low flow conditions.*
>
> *Inform the MPCA that existing standards for total dissolved solids and specific conductance may be needed to protect existing uses for aquatic life in Class 2 waters.*

B. Proposed Mesabi Nugget variances do not meet state or federal legal requirements for exceptional circumstances or widespread economic and social impact.

Proposed Mesabi Nugget variances for total dissolved solids, hardness and specific conductance are precluded under 40 C.F.R. §131.10(h) since they remove existing designated uses from receiving waters. In addition, a careful look at the record demonstrates that, even if proposed variances were not precluded under paragraph (h) of Section 131.10, none of the four proposed variances would meet threshold requirements under state rules and federal regulation 40 C.F.R. 131.10(g)(6).

The proposed variances to avoid requirements for water treatment systems using membrane technology do not meet the requirement of "exceptional circumstances" demonstrating infeasibility. Minn. R. 7050.0190, Subpart 1.

Various Mesabi Nugget documents reflect that there are similar systems in mining situations throughout the world, where the use of the technology makes economic sense. (*See e.g.* Ex. 3, Variance App., p. 8). The company's recent Water Treatment Evaluation for Mesabi Nugget's Area 1 pit states that membrane treatment is a "technology that is widely commercially available, having a number of large-scale installations, which can reliably produce treated water that could meet the water quality standards." (Ex. 4, Area 1 Pit Eval., p. 4) In addition, the Water Treatment Evaluation concluded that the process water from the LSDP is the primary source of total dissolved solids, (*Id.*) providing a significant opportunity to dissolved solids at the source.[8]

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[6] See EPA, *A Field-based Aquatic Life Benchmark for Conductivity in Central Appalachian Streams,* Final Report EPA/600/R-10/023F (March 2011), pp. 2-3, available at http://cfpub.epa.gov/ncea/cfm/recordisplay.cfm?deid=233809, last visited Feb. 16, 2012.

[7] MPCA, *Minnesota Impaired Waters List, 2012 Inventory of all Impaired Waters*, available at http://www.pca.state.mn.us/index.php/water/water-types-and-programs/minnesotas-impaired-waters-and-tmdls/assessment-and-listing/303d-list-of-impaired-waters.html, last visited Feb. 15, 2012.

[8] The Water Treatment Evaluation (Nov. 2009) stated at page 2, "a significant contributor to the Area 1 Pit water quality is the return of treated process water from the LSDP. This flow of only 445 gpm, contains 22,000 kg/d of TDS." This 11 percent flow volume was estimated to provide up to 50 percent of the total dissolved solid load.

Where a technology proposed is widely commercially available and source reduction is available to facilitate compliance with water quality standards, "exceptional circumstances" preventing water treatment cannot be demonstrated.

A finding that the need for membrane technology to meet Minnesota water quality standards is an "exceptional circumstance" would also have far-reaching application to other mining projects where advanced treatment has also been proposed. The MPCA stated in its Variance Issue Statement:

> Advanced treatment systems utilizing membrane technology have been proposed to treat scrubber water at U.S. Steel – Keetac and Essar Steel, tailings basin water at U.S. Steel – Minntac and mine and plant site water at PolyMet. (Ex. 1, VIS, p. 8)

Approving the proposed Mesabi Nugget variances would set precedent that requiring use of water treatment technology for mining pollution is "exceptional" in Minnesota, undermining all other Minnesota proposals for membrane technology to ensure compliance with water quality standards.

Although couched as a question of "technological" feasibility, Mesabi Nugget's opposition to water treatment and the MPCA's willingness to allow the proposed variances are primarily economic in nature. Mesabi Nugget's claims of technological infeasibility focus on the infeasibility of implementing water treatment technology to meet the 10 mg/L wild rice sulfate standard. The company has asserted, "No commercial facility exists which has met a water quality standard of 10 mg/L." (Ex. 3, Variance App., p. 7). The Memorandum prepared for Mesabi Nugget by Barr Engineering in May 2011, *Economic Consequences of meeting 10 mg/L Sulfate Standard* makes the same claim that, "Treatment of process wastewaters to 10 mg/L for sulfates is not technically feasible" (M. Hansel, Barr Engineering, *Economic Consequences of meeting 10 mg/L Sulfate Standard* Memorandum, May 31, 2011, attached as Exhibit 8, "Ex. 8, Barr Econ. Memo," p. 1). Since the draft permit proposes seasonal limitations on discharge rather than water treatment technology to meet the 10 mg/L wild rice sulfate standard, these objections appear to be moot.

The Permittee's remaining objections to compliance and the MPCA's apparent willingness to grant variances are fundamentally based on economic infeasibility. These claims are based on insufficient data under Minnesota Rule 7000.7000, Subpart 2(E) and fail to meet the test of "widespread economic and social impact" required under 40 C.F.R. §131.10(g)(6).

The Economic Consequences memorandum from Mesabi Nugget's consultants emphasizes that the capital cost for membrane treatment (reverse osmosis) at the Area 1 pit would be $40.6 million, with annual operations and maintenance of $3.3 million per year, based on achieving a 10 mg/L sulfate standard. (Ex. 8, Barr Econ Memo, p. 2). Assuming the need to treat to a 10 mg/L level, a useful life of equipment of only 20 years and an interest rate of 7 percent, none of which may be reasonable assumptions, and making no explicit allowance for source reduction to minimize sulfate concentrations, Mesabi Nugget's consultants concluded that capital and operating costs to comply with water quality standards would be $14.2 per metric ton of nuggets produced. (*Id*.). They then asserted, based on a comparison with Brazilian Pig Iron prices and an assumed $256/metric ton price for nuggets that water treatment would add 5.5 percent to Mesabi Nugget's cost, resulting in a competitive disadvantage to Mesabi Nugget. (*Id*., pp. 2-3).

The MPCA, in their Variance Issues Statement, did not challenge any of the above assumptions. The Agency acknowledged that reverse osmosis systems, with and without evaporation/ crystallization are in use for treatment of wastewater generated by other industry sectors in

Minnesota (Ex. 1, VIS, p. 8) and apparently recognized that other systems to treat the high volumes and relatively low concentrations of constituents had been designed and built outside Minnesota. (*Id*., pp. 7-8). However, despite commercial applications of similar systems to remove salinity, the Variance Issues Statement concluded, "Staff concurs with Mesabi Nugget's assessment on the technical feasibility of this technology as well as on the more general concepts of its uncertainty, costs and practicality. (*Id*., p. 10) The Agency concluded, "MPCA staff concur with the company's analysis that maintains wastewater treatment alternatives that may theoretically be capable of providing treatment are complex, unproven and therefore economically risky, and even if they were technically feasible would be exceptionally expensive to install and operate at the flows and concentrations projected for their facility." (*Id*., p. 14-15)

WaterLegacy does not have access to sufficient information to test all of the assumptions contained in the Barr Economic Consequences Memo and carried forward in the MPCA's Variance Issues Statement. It is probable that source reduction of sulfates would reduce treatment costs. It is also likely that use of seasonal discharge limits rather than wastewater treatment to meet the 10 mg/L sulfate standard would reduce costs. It is probable that the useful life of water treatment systems exceeds 20 years and that current interest rates for capital construction are lower than the 7 percent rate assumed by Barr. It is unlikely that the $256/metric ton price for Brazilian Pig Iron is the appropriate price against which to assess treatment costs, since the price for Brazilian Pig Iron has been generally trending up during the past decade and is currently at a price of $450/metric ton.[9] Were these assumptions tested, it is unlikely that compliance with water quality standards would represent 5.5 percent of the price of nuggets.

The MPCA and the EPA must investigate these assumptions asking whether annual revenues of $225,000,000 (assuming 500,000 tons of production and current Pig Iron prices) are too modest to allow Mesabi Nugget to control its own pollution. Using current Brazilian Pig Iron prices, the cost of water quality compliance would drop to 3.2 percent of the price of nuggets. Further analysis of assumptions could further decrease the ratio of cost to price. Is there any cost percentage that Mesabi Nugget would not seek to avoid to maximize its profits? What obligation, if any, do regulators have to protect a company's marginal competitive edge at the expense of enforcing the laws that preserve water quality?

Whatever the accurate percentage of cost to nugget price might be, Mesabi Nugget has not met the requirements under state and federal regulations for granting a variance. The company has provided no financial statements on the status of its business, plant, system or facility with and without the granting of a variance as required by Minn. R. 7000.7000, Subp. 2(E). Mesabi Nugget has made no showing under 40 C.F.R. §131.10(g)(6) that requiring the Company to comply with water quality standards "would result in substantial and widespread economic and social impact."

The record suggests that the Mesabi Nugget plant currently employs over 70 full time employees. (Ex. 1, VIS, p. 14) No information has been provided as to the additional construction jobs and permanent jobs that would provide positive benefits to the economy if Mesabi Nugget were to construct and maintain a water treatment system to comply with existing water quality standards. Further, no information has been provided as to the positive economic and social impact upon anglers, wild rice harvesters and Indian tribal members, among others, if Mesabi Nugget were to comply with Minnesota's water quality standards.

Even if variances were not precluded under Section 131.10(h), the record would not support granting variances for bicarbonates, hardness, total dissolved solids and specific conductance

[9] See Pig Iron Prices, http://www.steelonthenet.com/files/pig_iron.html, last updated on Feb. 9, 2012.

under state rules and federal Section 131.10(g)(6) where appropriate technologies are commercially available, there are no exceptional circumstances and widespread social and economic impact has not been demonstrated. The following relief is appropriate:

> *Reject all proposed variances for bicarbonates, hardness, total dissolved solids and specific conductance.*

CONCLUSION

The proposed Mesabi Nugget draft permit neither complies with state rules nor with the Clean Water Act and federal regulations promulgated to implement the CWA. The permit fails to meet the requirements for State delegated authority under the NPDES program and variances must be denied under the legal framework applied by the EPA's water quality standards branch.

WaterLegacy requests that a hearing be scheduled before the MPCA's Citizens Board and that the MPCA and the EPA take the following actions as described in more detail above:

> *Revise the draft permit so that discharge after WET testing can only occur from September 1 through September 30.*
>
> *Set limits on SD001 sulfate discharge from September 1 through March 31 to protect natural stands of wild rice.*
>
> *If more study is needed to place limits on sulfate discharge from September through March, revise conditions to provide Studies to Determine Sulfate Fate and Transport and Prevent Wild Rice Impairment as described more fully above.*
>
> *Set mercury limits for SW003 (the Area 1 Lake/Reservoir) as well as for SD001.*
>
> *Revise the draft permit so that iron nugget production can only occur after mercury exceedances if Mesabi Nugget has proved that water in the Area 1 pit is not hydrologically connected to surface waters.*
>
> *Revise NPDES/SDS permits to set interim effluent limits for bicarbonates, hardness, total dissolved solids and specific conductance that are at least as stringent as those in the February 24, 2011 permit modification.*
>
> *Reject proposed variances for hardness, total dissolved solids and specific conductance on the grounds such variances would remove existing uses from receiving waters.*
>
> *Reject proposed variances for bicarbonates, hardness, total dissolved solids, and specific conductance on the grounds that they fail to meet state and federal threshold requirements.*

WaterLegacy has focused in our comments on the substantive inadequacies of the proposed Mesabi Nugget NPDES/SDS permit. However, the failure of this permit and variances to follow procedural requirements is also troubling.

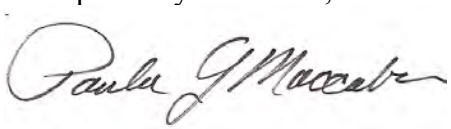
Federal regulations require that a fact sheet be provided with the draft permit in any case where a variance is proposed in order to summarize the principal facts and the significant factual, legal, methodological and policy questions considered in preparing the draft permit and how the public may comment. 40 C.F.R.§§124.8, 124.56. No such fact sheet was provided by the MPCA, and the public notice released on January 30, 2012 failed to provide any explanation of the rationale

for the proposed variances.[10] The Public Notice also failed to provide members of the public with a contact to provide comments in electronic form.

No information pertinent to the Mesabi Nugget draft permit, variances, studies or discharge monitoring reports was available on the MPCA's web site. WaterLegacy contacted the Agency on January 31, 2012 requesting the variance application, technical reports, and the Agency's justification for variances among other information. Although the MPCA eventually provided over 100 documents (some duplicative) to WaterLegacy in various installments, the Variance Issue Statement was not made available until February 14, more than two weeks after Public Notice was issued for the permit. Incomplete release of documents to the public and to various parties undermines confidence in the process by which the Mesabi Nugget permit and variances were prepared and submitted for public and federal scrutiny.

In addition to requesting substantial revisions of the Mesabi Nugget draft NPDES/SDS permit and denial of all proposed variances, WaterLegacy would repeat requests made in other permitting matters that the MPCA provide a more open and transparent permitting process. Please feel free to call me at 651-646-8890 if you have any questions regarding the above comments.

Respectfully submitted,



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cc: Krista McKim, EPA Region 5 (mckim.krista@epa.gov)
Christine Wagener, EPA Region 5 (wagener.christine@epa.gov)

[10] MPCA, *Public Notice of Intent to Reissue NPDES/SDS Permit MN0067687* (January 31, 2012) available at http://www.pca.state.mn.us/index.php/about-mpca/mpca-news/public-notices/public-notices.html, last visited Feb. 16, 2012.