

REVISED DRAFT (Reflecting Tribal Staff Feedback)

WATERS USED FOR PRODUCTION OF WILD RICE – PARTRIDGE AND EMBARRASS RIVERS

MPCA Draft Staff Recommendation – August 13, 2012

ISSUE:

Minnesota Rule 7050.0224 identifies a Class 4A water quality standard of 10 mg/L for sulfate, “...applicable to water used for production of wild rice during periods when the rice may be susceptible to damage by high sulfate levels”. In order to effectively apply the standard, it needs to be determined whether a particular water is a ‘water used for production of wild rice’. Because Minnesota Rule 7050 does not specifically identify all waters used for production of wild rice, this determination needs to be made on a case-by-case basis for most waters.

OBJECTIVE:

This document focuses on the development of a draft MPCA staff recommendation that would identify the portions of the Partridge and Embarrass River systems potentially affected by current or proposed PolyMet and/or Mesabi Nugget activities that would be ‘waters used for production of wild rice’ to which the Class 4A sulfate water quality standard would apply. This draft staff recommendation will specifically consider portions of the Partridge and Embarrass Rivers downstream of the PolyMet and Mesabi Nugget projects as well as potentially affected tributaries to the rivers (to include Wyman Creek, Second Creek, Spring Mine Creek, Trimble Creek, and an unnamed creek tributary to the Embarrass River) for which sufficient information is available to make a recommendation.

BACKGROUND

Per MPCA staff request, PolyMet and Mesabi Nugget have completed detailed field wild rice surveys of waters in the Partridge and Embarrass River watersheds potentially impacted by their projects. The field surveys have covered the majority of the river reaches downstream of the proposed projects as well as potentially affected tributary streams (with the exception of portions of these waters that were not safely accessible). The field surveys identified specific locations in these waters containing identifiable wild rice plants as well as presenting a relative estimate of stand density or quality. This and other relevant information was reviewed by an internal team of MPCA staff which included water quality standard/effluent limit and water quality permitting technical and managerial staff and MNDNR wild rice resource representation. The review by this team considered the wild rice resources from the perspective of use of the grain as a food source by both wildlife and humans. Without benefit of established criteria or literature as to what amount or density of wild rice constitutes a stand suitable for use as a food source by wildlife, the team applied best professional judgment on the amount of wild rice that might reasonably and practicably be used by wildlife. For the purposes of this staff recommendation, “wildlife” was interpreted to mean more than an individual bird/animal but nothing more specific than that. This, by necessity, results in a non-quantified assessment. The consensus reached by the internal group is reflected in the following draft MPCA staff recommendation.

A preliminary version of the most recent draft staff recommendation (dated May 8, 2012) was distributed to tribal staff for their review and feedback. Feedback and comments received on this previous version were considered by the internal MPCA team in the current revision of the draft staff recommendation.

SUMMARY - DRAFT MPCA STAFF RECOMMENDATION

PARTRIDGE RIVER (PR) WATERSHED

PR1. ‘Upper’ Partridge River (above Colby Lake)

- a. The uppermost portion of the ‘upper’ Partridge River, above the confluence with Colvin Creek, is not a water used for production of wild rice.
- b. The middle section of the ‘upper’ Partridge River, between the confluence with Colvin Creek and river mile approximately 22 just upstream of the railroad bridge near Allen Junction in the NW1/4, Sec. 15, T58N, R14W, is not a water used for production of wild rice.
- c. The lower portion of the ‘upper’ Partridge River, from river mile approximately 22 just upstream of the railroad bridge near Allen Junction in the NW1/4, Sec. 15, T58N, R14W to Colby Lake, is a water used for production of wild rice.

PR2. The ‘lower’ Partridge River, below Colby Lake, in its entirety from the outlet of Colby Lake to the confluence with the St. Louis River is a water used for production of wild rice.

PR3. Colby Lake is not a water used for production of wild rice.

PR4. Wyman Creek is not a water used for production of wild rice.

PR5. Second Creek

- a. The lowermost portion of Second Creek, from First Creek to the confluence with Partridge River is a water used for production of wild rice.
- b. The remainder of Second Creek, above the confluence with First Creek, is not a water used for production of wild rice.

EMBARRASS RIVER (ER) WATERSHED

ER1. ‘Upper’ Embarrass River (above and including Wynne Lake)

- a. The uppermost portion of the Embarrass River, above the MN-135 highway river bridge, is not a water used for production of wild rice.
- b. The portion of the Embarrass River from the MN-135 highway bridge to the inlet to Sabin Lake is a water used for production of wild rice.
- c. Hay Lake (located in T59N, R15W, Sec. 8) is a water used for production of wild rice.

- d. Sabin Lake is not a water used for production of wild rice.
- e. Wynne Lake is not a water used for production of wild rice with the exception of the northernmost tip of the lake (Embarrass River inlet) which is a water used for production of wild rice.

ER2. Embarrass River below Wynne Lake

- a. The portion of the Embarrass River between the outlet of Wynne Lake and the inlet to Embarrass Lake is not a water used for production of wild rice.
- b. Embarrass Lake is a water used for production of wild rice.
- c. No evaluation on the status of the Embarrass River below the outlet of Embarrass Lake with respect to production of wild rice was made; therefore, no conclusion was reached by MPCA staff on whether this portion of the Embarrass River is a water used for production of wild rice.

ER3. Spring Mine Creek is not a water used for production of wild rice

ER4. The tributary streams to the ‘upper’ Embarrass River, Trimble Creek and ‘Unnamed Creek’, are each not a water used for production of wild rice.

ER5. The former Wild Rice Valley Farms wild rice farm is not a water used for production of wild rice.

RATIONALE

PARTRIDGE RIVER WATERSHED

PR1. ‘Upper’ Partridge River (above Colby Lake)

PR1.a. The uppermost portion of the ‘upper’ Partridge River, above the confluence with Colvin Creek, is not a water used for production of wild rice.

MPCA staff review of the supporting information in the February 10, 2012 Barr/PolyMet Technical Memorandum (oblique aerial imagery, stream morphology surveys) for the portion of the Partridge River above Colvin Creek (where field surveys were not conducted because of access and safety concerns) and follow-up discussion with Barr technical staff resulted in the conclusion that it is not likely that this portion of the river would provide significant areas favorable for the production of wild rice. Specifically, the aerial photos did not indicate the immediate presence of wild rice plants or the presence of significant ‘embayment’ areas within the river which, as observed in the surveys of the ‘upper’ Partridge River just above Colby Lake (Item 1.c below), seem to be the favored locations for the wild rice that is present in that section of river.

PR1.b. The middle section of the ‘upper’ Partridge River, between the confluence with Colvin Creek and river mile approximately 22 just upstream of the railroad bridge near Allen Junction in the NW1/4, Sec. 15, T58N, R14W, is not a water used for production of wild rice.

MPCA staff previously concluded that this segment of the Partridge River was a water used for production of wild rice based exclusively on survey results from the initial 2009 PolyMet Wild Rice Report. Subsequent information presented in the November 4, 2011 Barr/PolyMet Technical Memorandum and a more detailed follow-up submittal dated August 7, 2012 indicates that it is likely that another aquatic grass species (*Glyceria borealis*) was misidentified by the field crew conducting the survey within this reach as wild rice during the 2009 survey. Survey results from the 2010 and 2011 PolyMet Wild Rice Reports indicate that wild rice was not present in those years for this same portion of the Partridge River. MPCA review of the information provided by Barr/PolyMet and subsequent discussion with Barr technical staff resulted in the conclusion that the 2009 reported identification of wild rice in this segment of the Partridge River was inaccurate and that this portion of river is not a water used for production of wild rice.

PR1.c. The lower portion of the ‘upper’ Partridge River, from river mile approximately 22 just upstream of the railroad bridge near Allen Junction in the NW1/4, Sec. 15, T58N, R14W to Colby Lake, is a water used for production of wild rice.

Survey results from the 2010 and 2011 PolyMet Wild Rice Reports identify the presence of wild rice in amounts in the judgment of MPCA staff (i.e., “several dozen plants...”; “density ‘2’ stand approximately 30 feet in diameter...”) to be used as a food source for wildlife in this portion of the river.

PR2. The ‘lower’ Partridge River, below Colby Lake, in its entirety from the outlet of Colby Lake to the confluence with the St. Louis River is a water used for production of wild rice.

Survey results from multiple surveys (2009, 2010 and 2011 PolyMet and 2009 Mesabi Nugget Wild Rice Reports), as well as information and photos submitted by the 1854 Treaty Authority in an October 29, 2010 email, identify the presence of significant amounts of wild rice in amounts in the judgment of MPCA staff to be used as a food source for wildlife and humans in this portion of the river.

PR3. Colby Lake is not a water used for production of wild rice.

Survey results from the 2009 and 2010 PolyMet Wild Rice Reports indicate that wild rice was not present in Colby Lake.

PR4. Wyman Creek is not a water used for production of wild rice.

Survey observations from the 2010 PolyMet Wild Rice Report (also reported in the 2010 Cliffs Erie SD030 Wild Rice Report) did not identify wild rice in surveyed portions of Wyman Creek, with the additional observation that stream habitat / morphology was not conducive for wild rice in the un-surveyed portions.

PR5. Second Creek

PR5.a. The lowermost portion of Second Creek from First Creek to the confluence with Partridge River is a water used for production of wild rice.

Survey results from the 2010 Mesabi Nugget and 2011 PolyMet Wild Rice Reports identify the presence of wild rice in amounts in the judgment of MPCA staff (i.e., up to a subjective ‘density factor’ of 3) to be used as a food source for wildlife in the lowermost 750 feet of Second Creek prior to its confluence with the Partridge River. These survey results are reasonably consistent with verbal information provided on observations made by some tribal environmental staff.

PR5.b. The remainder of Second Creek, above the confluence with First Creek, is not a water used for production of wild rice.

Survey observations from the 2009 and 2010 Mesabi Nugget and 2011 PolyMet Wild Rice Reports did not identify wild rice in surveyed portions of Second Creek above the lowermost 750 feet prior to its confluence with the Partridge River, with the additional observation that stream habitat / morphology was not conducive for wild rice in the un-surveyed portions.

EMBARRASS RIVER WATERSHED

ER1. ‘Upper’ Embarrass River (above and including Wynne Lake)

ER1.a. The uppermost portion of the Embarrass River, above the MN-135 highway river bridge, is not a water used for production of wild rice.

Survey results from the 2009, 2010 and 2011 PolyMet Wild Rice Reports identified the presence of “isolated” occurrences of wild rice in this portion of the Embarrass River, however the very limited amounts in the judgment of MPCA staff (i.e., “a few stems in isolated locations...”) were not sufficient to be used as a meaningful food source by wildlife in this portion of the river.

The former Wild Rice Valley Farms wild rice farm, operated from 1957 to 1993, was located adjacent to, and appropriated water from, the Embarrass River along this portion of the river. Although the wild rice farm was present and appropriating water from the Embarrass River when the Class 4A sulfate water quality standard was promulgated in 1973, there is no documentation in the form of an Agency determination at that time that the Embarrass River was a water used for production of wild rice nor had the Agency applied the 10 mg/L wild rice sulfate standard to any permitted discharge to the Embarrass River. Additionally, upon cessation of wild rice farming operations, the wild rice farm was purchased by LTV Steel Mining Company in 1994 and converted to an approved wetland replacement bank in 1997 for the purpose of satisfying LTV’s wetland replacement obligation. Currently, the property remains in use as a wetland compensation area. Vegetation surveys conducted by Barr for LTV Steel Mining Company and Cliffs Erie LLC within the former rice farm cells in the early 2000s documented no wild rice within the former farm area and no wild rice was observed in the adjacent portion of the Embarrass River during the Barr/PolyMet fields surveys in 2009-2011.

As noted above, MPCA considered the historic presence of the wild rice farm and water appropriation but concluded that the adjacent portion of the Embarrass River is not a water used for production of wild rice.

ER1.b. The portion of the Embarrass River from the MN-135 highway bridge to the inlet to Sabin Lake is a water used for production of wild rice.

Survey results from the 2009, 2010 and 2011 PolyMet Wild Rice Reports identify the presence of wild rice in amounts in the judgment of MPCA staff (i.e., "approximately 75 wild rice stems along 25 feet of shoreline...") to be used as a food source for wildlife in this portion of the river. Additionally, MPCA staff recognize that the amount and extent of wild rice identified in the surveys may indicate that stream conditions are conducive to wild rice, and the wild rice present could potentially represent the remnants of a larger stand that may have been historically present in (and prior to) 1975 which is consistent with general oral information from the tribal representatives for this area.

ER1.c. Hay Lake (69-0435-00, located in T59N, R15W, Sec. 8) is a water used for production of wild rice.

Hay Lake is designated in Minn. Rules 7050.0470, subp 1.B.(60) as a wild rice water. In addition, survey results from the PolyMet 2009, 2010 and 2011 Wild Rice Reports identified wild rice in Hay Lake.

ER1.d. Sabin Lake is not a water used for production of wild rice.

Survey results from the 2009, 2010 and 2011 PolyMet Wild Rice Reports indicate that wild rice was not present in Sabin Lake.

ER1.e. Wynne Lake is not a water used for production of wild rice with the exception of the northernmost tip of the lake (Embarrass River inlet) which is a water used for production of wild rice.

Survey results from the 2009, 2010 and 2011 PolyMet Wild Rice Reports indicate that wild rice was not present in Wynne Lake with the exception of the northernmost tip of the lake where it was present in amounts in the judgment of MPCA staff (i.e., "approximately 24 wild rice plants...") to be used as a food source for wildlife in this portion of the lake.

ER2. Embarrass River below Wynne Lake

ER2.a. The portion of the Embarrass River between the outlet of Wynne Lake and the inlet to Embarrass Lake is not a water used for production of wild rice.

Although un-surveyed for the presence of wild rice, MPCA staff has concluded that this portion of the Embarrass River, being largely an excavated-through-bedrock diversion of the river from its natural course, does not present conditions conducive for the presence of wild rice.

ER2.b. Embarrass Lake is a water used for production of wild rice.

Survey results from the 2009 and 2010 PolyMet Wild Rice Reports document the presence of several small areas of sparse wild coverage along much of the shoreline of Embarrass Lake (no wild rice was identified in the 2011 survey), indicating that lake/shoreline conditions are conducive to the presence of wild rice in at least some years in the amounts in the judgment of MPCA staff to be used as a food source for wildlife.

ER2.c. No evaluation on the status of the Embarrass River below the outlet of Embarrass Lake with respect to production of wild rice was made; therefore, no conclusion was reached by MPCA staff on whether this portion of the Embarrass River is a water used for production of wild rice.

Survey results are available for portions of the Embarrass River downstream of Embarrass Lake (including Lower Embarrass Lake, Unnamed Lake and Cedar Island Lake). Since an evaluation was not needed for permitting decisions, no conclusion was reached by MPCA staff on whether any portion of the Embarrass River below Embarrass Lake is a water used for production of wild rice.

ER3. Spring Mine Creek is not a water used for production of wild rice.

Survey results from the 2009, 2010 and 2011 PolyMet Wild Rice Reports did not identify wild rice in surveyed portions of Spring Mine Creek, with the additional observation that stream habitat / morphology was not conducive for wild rice in the un-surveyed portions.

ER4. The tributary streams to the ‘upper’ Embarrass River, Trimble Creek and ‘Unnamed Creek’, are each not a water used for production of wild rice.

Survey results from the 2010 and 2011 PolyMet Wild Rice Reports did not identify wild rice in surveyed portions of Trimble Creek or ‘Unnamed Creek’, with additional information provided in the reports and in the June 29, 2011 Barr/PolyMet Technical Memorandum indicating that stream habitat / morphology was not conducive for wild rice in the un-surveyed portions of these streams.

ER5. The former Wild Rice Valley Farms wild rice farm is not a water used for production of wild rice.

An agricultural (paddy) wild rice farm was located adjacent to the Embarrass River just upstream of Highway 135. The land used for the farm was originally marginal cropland and black spruce wetland immediately prior to creation of the wild rice farm. Upon cessation of wild rice farming operations, the area was purchased by LTV Steel Mining Company in 1994 and converted to an approved wetland replacement bank in 1997 for the purpose of satisfying LTV’s wetland replacement obligation. Currently, the property remains in use as a wetland compensation area. Vegetation surveys conducted by Barr for LTV Steel Mining Company and Cliffs Erie LLC within the former rice farm cells in the early 2000s documented no wild rice within the former farm area and no wild rice was observed in the adjacent portion of the Embarrass River during the Barr/PolyMet fields surveys in 2009-2011.

DRAFT STAFF RECOMMENDATION REVISIONS – ADDITIONAL INFORMATION

This draft MPCA staff recommendation is based on information currently available. MPCA staff will consider additional information that may become available in the future, whether from project proposers or from other interested/affected parties, and reserves the right to modify the draft staff recommendation accordingly.

APPENDIX I – Supporting Information

1. *PolyMet '2009 Wild Rice and Sulfate Monitoring' Report*
 - A. Evaluated the 'upper' and 'lower' Partridge River, Embarrass River and Spring Mine Creek (among other waters).
 - B. 'Patches' of wild rice comprised of a few stems totaling less than 1% of the surveyed acreage were identified in several locations in the 'upper' Partridge River between Colvin Creek and Colby Lake. (Other portions of the 'upper' Partridge were not specifically surveyed because of unfavourable wild rice habitat (e.g., rocky rapids) or inaccessibility.)
 - C. Larger stands with a relative density factor of three to five (out of five) were identified in the 'lower' Partridge River both upstream and downstream of the County Road 110 bridge.
 - D. No wild rice was identified in Colby Lake.
 - E. A 'few stems' of wild rice were observed in isolated locations in the Embarrass River above Embarrass Lake.
 - F. Several small areas of wild rice with a relative density factor of one (out of five) were identified along the north, south and southwest shoreline of Embarrass Lake (a 'flowage lake' of the Embarrass River).
 - G. More extensive and denser stands of wild rice were identified in Cedar Island Lake, another 'flowage lake' of the Embarrass River located downstream of Embarrass Lake.
 - H. No wild rice was identified in surveyed portions of Spring Mine Creek.
2. *Mesabi Nugget '2009 Wild Rice Survey and Sulfate Monitoring'*
 - A. Evaluated the 'lower' Partridge River (among other waters).
 - B. Identified several stands of moderate to relatively high density wild rice in the 'lower' Partridge River (below Colby Lake), both upstream and downstream of Second Creek.
3. *PolyMet '2010 Wild Rice and Water Quality Monitoring Report'*
 - A. Evaluated the 'upper' and 'lower' Partridge River, Embarrass River, Spring Mine Creek, Trimble Creek, the 'unnamed' creek, Wyman Creek and Second Creek (among other waters).
 - B. Wild rice was identified in only one small stretch of the 'upper' Partridge River (approximately 3 miles above Colby Lake). Wild rice was not identified in other stretches of the 'upper' Partridge where it was observed in 2009. (The report offers that small stands such as these may be present in some years but not others and/or that the 2009 reports may have been misidentified as wild rice.)
 - C. Larger stands with a relative density factor of three to five (out of five) were identified in the 'lower' Partridge River both upstream and downstream of the County Road 110 bridge – this is consistent with what was reported in 2009.
 - D. No wild rice was identified in Colby Lake – this is consistent with what was reported in 2009.
 - E. No wild rice was identified in Wyman Creek from the headwaters to the SD012 discharge point.
 - F. No wild rice was identified in surveyed portions of Second Creek, although field staff offered that conditions appeared to be favourable to potentially support wild rice in portions of the downstream one half to one third of the stream.
 - G. Small patches of wild rice with less than 1% coverage were identified in a small number of locations of the Embarrass River above Wynne Lake. Notably, no wild rice was identified in the stretch of the Embarrass River adjacent to the former paddy wild rice farm. The 2010 observations were reported to be consistent with what was observed in 2009.

- H. Several small areas of wild rice with a relative density factor of mostly one (out of five) were identified along mostly the north and southwest shoreline of Embarrass Lake (a 'flowage lake' of the Embarrass River). This is consistent with what was reported in 2009.
 - I. More extensive and denser stands of wild rice were identified in Cedar Island Lake, another 'flowage lake' of the Embarrass River located downstream of Embarrass Lake. This is consistent with what was reported in 2009.
 - J. No wild rice was observed in surveyed portions of Spring Mine Creek, Trimble Creek or the unnamed creek tributary to Embarrass River. Some portions of these streams were not surveyed because of access/safety concerns but were reported to generally have relatively unfavourable conditions for wild rice.
4. *Cliffs Erie 'SD012 Field Studies Results and Long Term Mitigation Plan (2011)*
- A. Results from a 2010 evaluation of Wyman Creek are presented.
 - B. No wild rice was observed in Wyman Creek from the SD012 (Pit 3) discharge point to the confluence with the Partridge River.
5. *PolyMet (Barr) Technical Memorandum 'Additional Information Regarding 'Unnamed Creek' Northwest of Former LTV Tailings Basin' (June 2011)*
- A. Evaluated for wild rice portions of the 'unnamed' creek that were not surveyed in the 2010 wild rice survey (due to accessibility and safety concerns) using true-color and infrared aerial photographs and the results of previous wetland, hydrology, botanical and aquatic surveys.
 - B. Included the results of annual vegetative surveys conducted at the LTV wetland mitigation site (former paddy wild rice farm) in 2001-2003. The complete species list did not identify any wild rice. (The former paddy wild rice farm is located adjacent to portions of the unnamed creek and the Embarrass River).
 - C. Barr concluded that based on the available data and professional judgment, there is no evidence of, or reason to believe there is, wild rice in the unnamed creek.
 - D. Surveyed for wild rice along the segment of the Embarrass River immediately adjacent to the former wild rice farm. No wild rice was identified in this segment.
6. *Barr Submittal (via Email) 'Wild Rice in the Embarrass River – Additional Detail' (Sept. 2011)*
- A. Submitted as a response to a specific MPCA staff request for, (a) additional detail on wild rice occurrences reported in previous PolyMet wild rice surveys conducted in the Embarrass River above Embarrass Lake, and (b) a direct comparison of the results of the 2009, 2010 and 2011 wild rice surveys conducted by PolyMet for the same river segment.
 - B. Information provided included, (a) a composite map superimposing reported wild rice occurrences from the 2009, 2010 and 2011 surveys, (b) a spreadsheet providing a comparison between the three surveys at eight reference points, including an estimate of the number of wild rice plants observed at each location, and (c) photographs taken during the three surveys at each of the reference points.
 - C. Some degree of wild rice was observed in all three survey years at three of the eight reference points, with the number of individual plants ranging from approximately five to approximately 75 at one location. Wild rice was not consistently observed at five of the eight reference points.
7. *Barr 'Technical Memorandum – Embarrass and Partridge Rivers Information Request' (Feb. 2012)*
- A. Provided aerial imagery of the former wild rice farm location from 1940 to 2009. These showed, in a very general manner, the progression of activities at the former rice farm site.

- B. Included complete annual vegetation survey results, including site photographs, of the wetland replacement bank site from the 1998 through 2001. No wild rice was identified in any of the wetland replacement bank cells, nor was it observed in adjacent portions of the Embarrass River.
- C. Provided oblique low-level aerial imagery of the portion of the Partridge River upstream of where the field surveys ended (due to access and safety issues). Follow-up verbal communication with Barr technical staff indicated that no indications of wild rice in the photographs was observed and that the general morphology of this segment of the Partridge River was less favorable for wild rice as compared to where the small stands of wild rice were observed in the field surveys of the upper Partridge just above Colby Lake. In particular, this upper portion of the Partridge River does not have the number or extent of the shallow embayments or ‘backwaters’ in which most of the observed wild rice in downstream portions of the ‘upper’ Partridge River is found.
- D. Included the report of the 2005 Level I Rosgen Survey conducted for the PolyMet EIS process. While not directly applicable, the report provides some additional insight on the general morphology of the upper Partridge River.

8. *Cliffs Erie Memo ‘Embarrass River Wild Rice Farm’ (Feb. 2012)*

- A. Provided information from Cliffs Erie archives on the history, operation and water appropriation of the former Wild Rice Valley Farms (operated from 1957 to 1993).
- B. Provided information on the transfer of the former rice farm property to LTV Steel Mining Company in 1994 for the purpose of satisfying the company’s wetland replacement obligations (wetland replacement bank).
- C. Provided a copy of the transferred/amended MNDNR Water Appropriation Permit which documented the change in permittee from the wild rice farm to LTV and a change in the purpose of the permitted appropriation from the Embarrass River from wild rice irrigation to facilitation of wetland construction for compliance with the Wetlands Conservation Act.

9. *PolyMet ‘2011 Wild Rice and Water Quality Monitoring Report’ (Feb. 2012)*

- A. Formally documented the findings of the Sept. 2011 submittal by Barr (see above) regarding the locations of where wild rice was observed in the Embarrass and Partridge Rivers in the 2011 field survey and as compared to what was observed in the 2009 and 2010 field surveys.
- B. Provided additional information on plant, root and seed weight, plant density and water quality monitoring results.

10. *MNDNR 2008 Report to the Minnesota Legislature ‘Natural Wild Rice in Minnesota’*

- A. The report included an inventory, listed by county, of waters known to support wild rice with an estimate of wild rice coverage in acres for about 60 percent of the waters listed.
- B. The report specifically stated that it is a ‘work in progress’ and that ‘further edits and review are needed, especially for... the numerous river/stream segments that may have been missed in this inventory’.
- C. The Embarrass River was listed in the inventory, but no specific location or estimate of coverage was provided.
- D. Neither the Partridge River nor any of the tributary streams to either the Partridge or Embarrass Rivers are listed in the inventory.

11. *May 2010 Draft List of ‘350 Significant Wild Rice Waters in Minnesota’*

- A. Compiled by the Wild Rice Management Workgroup, a coalition of federal, state, and tribal resource managers and other wild rice stakeholders.
- B. The preface to the list clearly states that the list is of the 350 most important wild rice waters in Minnesota based on harvest, ecological and/or cultural and historical values and is not a complete list of wild rice waters, as well as stating that all waters supporting wild rice are important.
- C. The Partridge River in T58N, R14-15W is listed – this is in the ‘lower’ Partridge River downstream of Colby Lake.
- D. Neither the Embarrass River nor any of the tributary streams to either the Partridge or Embarrass Rivers are listed.

12. Ernest Jenks' Publication '*The Wild Rice Gatherers of the Upper Lakes*' (1901)

- A. Provides insight on the historical extent of wild rice in the general area by stating: “Farther south the St. Louis River system tells the same tale – the streams all bear abundant stores of wild rice.”

13. Grand Portage Tribal Comments on PolyMet's Refined Embarrass Lake Wild Rice Mitigation (Nov. 2010)

- A. Among other information, states that “oral histories indicate that the upper Embarrass River between Hay Lake and what is now Highway 135 was used for wild rice harvest” and that “Hay Lake, a headwater lake of the Embarrass River... still maintains dense natural wild rice stands”.
- B. Made a general reference that wild rice was noted by the 1854 Treaty Authority in 2008 between Hay Lake and Highway 135, but no other additional information was provided.

14. Comments on Oct. 20, 2011 Draft Staff Recommendation

- A. Great Lakes Indian Fish and Wildlife Commission (GLIFWC) Comments (Nov. 2011)
 - i. The draft Cultural Landscape Report prepared as part of the PolyMet EIS process provides oral accounts of tribal members that portions of the Embarrass River system upstream of Embarrass Lake were historically harvested for wild rice.
 - ii. Wild rice production waters should be those where any wild rice is currently growing or has been confirmed to have been present in the past.
 - iii. Water was appropriated from the Embarrass River for use in the former wild rice farm when it was in operation from 1957 to 1993 – the existence of the wild rice farm is consistent with the concept that the Embarrass River should be a water used for production of wild rice.
 - iv. Concern that the original staff recommendation was developed after only a single survey year in 2009; however, wild rice presence and density is variable over time (year to year) and space (place to place) – this natural fluctuation was not considered in development of the staff recommendation.
 - v. There is no research that defines the number of wild rice plants that would make it minimally usable as a food source for wildlife – a single plant could be sufficient.
 - vi. It is possible that the small stands of wild rice observed in the Embarrass River upstream of Embarrass Lake represent remnants of once larger areas of wild rice – the degraded water quality may have decreased the abundance of wild rice in these areas.
 - vii. Included a claim that the 2009 survey identified wild rice in Longnose Creek so this should be identified as a wild rice production water.
- B. Water Legacy Comments (Dec. 2011; Jan. 2012)

- i. It should be presumed that wild rice is present in the unsurveyed portions of the Partridge River upstream of Colvin Creek absent information to the contrary.
 - ii. Surveys conducted by Barr documented some wild rice in the Embarrass River upstream of Embarrass Lake and in Hay Lake.
 - iii. The existence of the wild rice farm, in operation from 1957 to 1993, is consistent with the concept that the Embarrass River should be a water used for production of wild rice.
 - iv. Diminished density of natural wild rice in the Embarrass River upstream of Embarrass Lake may have resulted from the degradation of water quality in the Embarrass due to mining-related discharges.
 - v. Minnesota's sulfate standard does not limit protection of wild rice that is of sufficient density to be used for human harvest, but also includes wildlife uses.
 - vi. Smaller stands of wild rice may be instrumental in preserving genetic diversity.
- C. Citizen Comments, including NE Minnesotans for Wilderness (Dec. 2011 – Jan. 2012)
- i. Comments raised the general concern that the designation of wild rice production waters in the Oct. 20, 2011 staff recommendation for the Embarrass River was too narrow because of the presence of the former wild rice farm, a 'long history of experience', the identification of locations by Barr of wild rice in the Embarrass (and Hay Lake) above Embarrass Lake, and that remaining diminished stands should be protected.
 - ii. Smaller stands used as a food source by wildlife should also be protected.
 - iii. Concern was raised over the fact that the field surveys were not done over multiple years covering the entire cycle of the wild rice resource.
 - iv. It is important to protect small isolated populations of wild rice for their stores of critical divergent genetic stock.
 - v. Included a claim that the 2009 survey identified wild rice in Longnose Creek so this should be identified as a wild rice production water.

15. *'Oral Information' from Tribal Technical Staff*

- A. Several instances of oral communication by tribal technical staff in the context of comments on other staff recommendations or in the context of review of PolyMet EIS documents have suggested that, in general, portions of the Embarrass River have supported historic (pre-mining) harvesting of wild rice.
- B. Specific reaches were not identified and written documentation of the oral information has not been submitted to MPCA staff.
- C. River segments adjacent to the former paddy wild rice farm were 're-evaluated' (see above) as a result of verbal comments received during the review of PolyMet EIS documents – no wild rice was identified.

16. *Barr Technical Memorandum 'PolyMet Wild Rice Surveys – Additional Information' (Aug. 7, 2012)*

- A. Provided additional information regarding the circumstances which led to the misidentification of a grass species, Glyceria borealis, as wild rice along a segment of the Partridge River during the 2009 PolyMet wild rice survey.
- B. Provided additional information regarding Barr's procedure to train staff to identify wild rice and carry out wild rice surveys.
- C. Provided additional information regarding Barr wild rice survey quality assurance procedures.