

**NorthMet Mining Project and Land Exchange PSDEIS (ver. 2)**

**Tribal Comments and Co-lead Agencies' Dispositions**

**8/19/13**

**General Comments**

NorthMet Mining Project and Land Exchange PSDEIS (ver.2) - Tribal Comments and Co-Lead Agencies' Dispositions  
 8/19/2013

**General Comments**

Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 1	GP	801 NorthMet Mine PSDEIS (General Comments)			General Comment: We would like the information regarding the Bands participation to be revised. We will provide language for this revision in the live-edit sessions.	Changes have been made to address specific comments in the PSDEIS.
1854 1	1854	801 NorthMet Mine PSDEIS (General Comments)			General comment - The overall tone of the PSDEIS minimizes impacts and seems to argue in favor of the project. The document should be an objective look at the project impacts.	In preparing the EIS, the Co-leads are not arguing in favor of the project. Efforts have been made to keep a neutral tone throughout the entire document.

**NorthMet Mining Project and Land Exchange PSDEIS (ver. 2)**

**Tribal Comments and Co-lead Agencies' Dispositions**

**8/19/13**

**Executive Summary**

## Executive Summary

Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 1	GLIFWC	ES Executive Summary	Third bullet	8	As with the first 2 bullets, the third bullet should indicate the length of time that post-closure maintenance and water treatment would last. Therefore, it should indicate that water treatment and maintenance of permanent facilities would be required in perpetuity.	Text edited to reflect that the closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. The owning company would be held accountable to maintenance and monitoring required under permit and would not be released until all conditions have been met.
GLIFWC 2	GLIFWC	ES Executive Summary		5	The description of the history of the 2009 DEIS and the need for the SDEIS is not accurate. The reason for the development of a supplemental document and the continuation of the NEPA process is the the EPA gave the 2009 DEIS the lowest possible rating. The EPA found the project to have unacceptable environmental consequences and found that the DEIS failed in its purpose of accurately describing the project and the potential environmental impacts.	The EU-3 rating is discussed in section 1.2.2. "This process culminated in October 2009, with the publication of the NorthMet Project Draft EIS (DEIS) that analyzed the project as it was then designed proposed by PolyMet. After issuing the DEIS, the Co-lead Agencies, responding to public, other federal (including US EPA) and state agency and tribal comments and concerns, analyzed an alternative design that sought to resolve several major environmental concerns and permitting barriers."
GLIFWC 3	GLIFWC	ES Executive Summary	Figure 3	9	Map is misleading. The area labeled Mesabi Iron Range / Historic mining district encompasses areas that have never been mined and are outside the geologic formations where iron mines have operated. It suggests that the NorthMet mine site is part of a mined area which is not correct. The GIS layer depicting all the mine features on the range (pits, tailings basins, etc) should be used instead.	Change Made to Figure. This is now called "General Mesabi Iron Range- Historic Mining".
GLIFWC 4	GLIFWC	ES Executive Summary	Mining Operations-first paragraph	13	Describes the NorthMet deposit as low-medium quality. We disagree with this characterization. The deposit had a low ore grade compared to most other ore bodies in the Great Lakes region. It should be characterized only as low quality.	It is ERM's professional judgment that the NorthMet Deposit should be classified as low-medium grade. Classification of the ore-body in simplified terms is relative and subjective and does not have any implications to the economic viability of the resource, nor does it influence the environmental evaluation presented in Chapter 5. Full description of the mineral resource may be found in PolyMet's 43-101 document. No changes to text.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 5	GLIFWC	ES Executive Summary	first paragraph	20	Should state that water treatment would be perpetual.	Text edited to reflect that the closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. The owning company would be held accountable to maintenance and monitoring required under permit and would not be released until all conditions have been met.
GLIFWC 6	GLIFWC	ES Executive Summary	third paragraph	20	Should state that because water treatment would be perpetual, maintenance and monitoring needs would also be perpetual.	Text edited to reflect that the closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. The owning company would be held accountable to maintenance and monitoring required under permit and would not be released until all conditions have been met.
GLIFWC 7	GLIFWC	ES Executive Summary	first paragraph	29	What are environmental evaluation criteria? We assume that in many instances these criteria are also standards (eg. Water quality, noise, etc.) When legal standards are the same as environmental evaluation criteria, the term "standard" should be used throughout the document.	Environmental evaluation criteria is the framework selected for use in this NEPA EIS. Discussion of "standards" is a part of the regulatory/permitting process. No edit.
GLIFWC 8	GLIFWC	ES Executive Summary	NorthMet project effects on water resources section - first sentence	29	We disagree that current operating mines are subject to strict environmental rules. Historically, enforcement of water quality standards on these mines has been lax. Sentence should be removed.	Paragraph deleted. The stringency of environmental rules is open to interpretation.

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GLIFWC 9	GLIFWC	ES Executive Summary	NorthMet project effects on water resources section -third paragraph	29	This discussion is misleading. Compliance with water quality standards for this project is only possible with successful operation of water capture and treatment facilities in perpetuity. The section should state that without perpetual treatment, water quality standards would be exceeded. In addition the decreases in concentrations for some solutes after the project is built may be artifacts of incorrect modeling assumptions. We will provide more detail in the water sections.	See response for GLIFWC 5 & 6. Will consider revisions to text accordingly.
GLIFWC 10	GLIFWC	ES Executive Summary	first paragraph	30	The PSDEIS discussion on mercury states that there is a great deal of uncertainty on these mercury issues. Therefore it is not appropriate for the executive summary to present these results as definitive. See GLIFWC mercury attachment for more information.	No change to SDEIS text recommended because ES consistent with text in body of SDEIS.
GLIFWC 11	GLIFWC	ES Executive Summary		30	There are wetlands within the mine project area that will be severely impacted by several different types of mine related effects (fragmentation+drawdown+air deposition). While these wetlands will not be filled, the Corps should require up-front mitigation for them. More information is in GLIFWC wetland attachment.	A wetland monitoring plan would be developed and implemented if the NorthMet project is permitted. The plan would require wetland hydrology monitoring, vegetation monitoring, and wetland water quality monitoring to identify if indirect wetland impacts occur during implementation of the project. If indirect wetland impacts resulting from the project are determined by the monitoring program, compensatory wetland mitigation would be required for those indirect wetland impacts. Fragmented wetlands are classified as indirect impact; however, fragmented wetlands are included in upfront mitigation. Total upfront mitigation is for the 912.5 acres of direct effects and 26.4 acres of fragmented wetlands (indirect effect). Tables have been revised to reflect this.
GLIFWC 12	GLIFWC	ES Executive Summary	second paragraph - second column	31	Disagree with this paragraph. The conclusions written here are based on fatally flawed modeling of surface and groundwater hydrology for the Partridge River watershed. The statements in the paragraph are unsupported.	No change to SDEIS text recommended because subject experts believe that the hydrology for the Partridge River watershed was properly characterized.
GLIFWC 13	GLIFWC	ES Executive Summary	next to last paragraph	31	We disagree with the assumption that constituents exceeding water quality standards in the Embarras River area are natural in origin. It is an accepted fact that tailings basin seepage water has saturated the aquifer in the area. Therefore, the constituent loads exceeding standards are the result of historic mining operations and seepage from the LTV tailings basin.	There is no mention of constituents natural in origin, so no change warranted.
GLIFWC 14	GLIFWC	ES Executive Summary	last paragraph	31	The discussion on restoration of Lynx habitat at the mine site is misleading. The open water feature at the mine site is the re-flooded west pit. The water in the pit is expected to be contaminated and in need of treatment for centuries. In addition, there will be fencing around the pit lake. The speculative language about restoring lynx habitat should be removed.	Edit made to text. "Restoration of disturbed areas as part of mine closure would potentially create lynx habitat, although this successional process could take decades."

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GLIFWC 15	GLIFWC	ES Executive Summary	first paragraph - second column	32	Just because a site is not eligible for listing does not mean that it will not be impacted. The conclusion of no impact should be removed or rewritten.	Delete second half of the second sentence.
GLIFWC 16	GLIFWC	ES Executive Summary		32	A paragraph discussing natural resources as cultural resources from the tribal perspective is needed in this section. Impacts to natural resources are an impact to Ojibwe culture.	Added sentence where appropriate. "Natural resources and the lands on which they are gathered are important to the Bands for a number of reasons, including cultural, spiritual, and/or historic meanings, and will be considered under federal agency tribal trust responsibilities as outlined above and also as cultural resources under NEPA."
GLIFWC 17	GLIFWC	ES Executive Summary	first paragraph	33	Information on the negative socioeconomic effects of mining is conspicuously absent. Extensive information has been provided as part of the socioeconomic IAP. A fair representation of possible benefits AND possible negative effects of mining is expected in the executive summary.	See discussion in Section 5.2.10.14.
GLIFWC 18	GLIFWC	ES Executive Summary	last paragraph	35	Modeling in this PSDEIS assumes that the no action alternative is a continuation of existing conditions. Therefore, the statements in this paragraph are not carried forward into the modeling. This should be stated here.	Text to be clarified per response to GLIWFC comment 144.
GLIFWC 19	GLIFWC	ES Executive Summary	second paragraph	39	The phrase "smaller net gains in environmental resources" is not a supported assumption. The Superior N.F. has indicated that the land exchange is a real estate transaction only and that specific environmental resources are not necessarily a part of that transaction. The assumption of environmental gain should be removed.	Edit made to text. "In comparison to the combined Proposed Action, the combined Alternative B (NorthMet Project Proposed Action and Land Exchange Alternative B) would have the same direct impacts from the NorthMet Project Proposed Action, but would convey fewer lands through the land exchange. Removed "resulting in similar net gains in environmental resources". "
GLIFWC 20	GLIFWC	ES Executive Summary	table 1 - third bullet	40	99.9% water capture number is not supportable. Other areas of the document say 90% or 93% based on the location where water is captured. In all cases, there should be a range describing water capture amounts. 99.9% is neither correct nor plausible.	Edit made to text. "Greater than 90% of water would be captured and treated to meet effluent limits set to protect water quality standards."
GLIFWC 21	GLIFWC	ES Executive Summary		42	The conclusion that mercury loading will decrease is not supportable. See GLIFWC mercury attachment.	The aquatic species summary points in the SDEIS table have been revised and does no longer include the mercury loading conclusion commented on.

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GLIFWC 22	GLIFWC	ES Executive Summary	table 1	43	Need additional bullet stating: loss of carbon sink and release of stored carbon through wetland destruction. For proposed action and alternative B.	Acknowledge partial loss of carbon sink and release of stored carbon from wetlands destruction. Suggested text change. "Wetland mitigation plan will be implemented to offset increased carbon dioxide emissions to extent practicable."
GLIFWC 23	GLIFWC	ES Executive Summary	table 1	43	For noise and vibration bullet delete text describing effects to nearest receptors. Using receptors limits the impact analysis - see GLIFWC noise attachment.	Edit made to text. "Noise, ground vibration, and air blast impact area/zone would be limited to 11,456, 11,469, and 11,334 acres, respectively. The BWCAW, which is 20 miles away, is outside the maximum area of audibility (247,613 acres)."
GLIFWC 24	GLIFWC	ES Executive Summary	third bullet	44	add: increase in cumulative destruction of trail network and Mesabe Widjiu	No edit, The existing text address the Mesabe Widjiu
GLIFWC 25	GLIFWC	ES Executive Summary	First paragraph	29	The PSDEIS concludes that "Based on the results of the modeling and impacts analysis, the Northmet Project Proposed Action would not exceed applicable environmental evaluation criteria." Due to a general lack of understanding of mercury dynamics in the St. Louis River watershed, this conclusion is not defensible with regard to mercury. See the supplemental document "Great Lakes Indian Fish and Wildlife Commission (GLIFWC) Comments Related to Mercury" [Comment 1] for additional rationale.	Text will be clarified in SDEIS. See response to GLIFWC 195
GLIFWC 26	GLIFWC	ES Executive Summary	Executive Summary - general comment	17899	The executive summary should clearly state that the proposed NorthMet project requires perpetual water treatment and perpetual maintenance. Therefore, the proposed project violates Minnesota Rule 6132.3200 regarding closure and postclosure maintenance of mines. This rule states that the goal of closure and reclamation is that "The mining area shall be closed so that it is stable, free of hazards, minimizes hydrologic impacts, minimizes the release of substances that adversely impact other natural resources, and is maintenance free." This language should be inserted into the executive summary. In addition Rule 6132.3200 states that "No release from the permit to mine under part 6132.4800 shall be granted for those portions of the mining area that require postclosure maintenance until the necessity for maintenance ceases." Since maintenance would never cease under the project, the executive summary should indicate that the applicant would never be released from the permit to mine.	Text edited to reflect that the closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. The owning company would be held accountable to maintenance and monitoring required under permit and would not be released until all conditions have been met.

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GLIFWC 27	GLIFWC	ES Executive Summary	"The NorthMet Project Proposed Action would create up to 500 direct jobs during peak construction and 360 direct jobs during operations."	33	The NorthMet Project Proposed Action would create up to an estimated 500 full-time direct jobs during peak construction and 360 full-time direct jobs during operations. Estimates for full-time employment were provided by NorthMet. **It is essential that throughout the SDEIS authors need to repeatedly state that direct employment estimates for both construction and during operations were provided by NorthMet.	Text edited. It should be noted that these employment estimates were provided by PolyMet.
GLIFWC 28	GLIFWC	ES Executive Summary	"These direct jobs would generate additional indirect and induced employment, estimated to be 332 additional construction phase jobs and 631 additional operations phase jobs."	33	"These direct jobs would generate additional indirect and induced employment, estimated to be 332 additional construction phase jobs and 631 additional operations phase jobs." Indirect and Induced Effect employment numbers are calculated by IMPLAN and may be temporary, part-time, full-time, long-term or short term jobs, as IMPLAN does not differentiate between these. **It is essential that throughout the SDEIS authors need to repeatedly state that Indirect and Induced Effect employment numbers are calculated by IMPLAN and may be temporary, part-time, full-time, long-term or short term jobs. See GLIFWC socioeconomics attachment for additional information.	Text edited. It should be noted that indirect and induced effect employment numbers are calculated by IMPLAN and may be temporary, part-time, full-time, long-term or short term jobs.
7/	GLIFWC	ES Executive Summary	"While some skilled workers would be involved only temporarily and would possibly relocate from outside the region, the majority of the NorthMet Project Proposed Action-related jobs are expected to be filled by those currently residing in the Arrowhead re	33	The Draft Environmental Impact Statement (DEIS) prepared in 2009 stated, "Due to the estimated 20-year operating life of the facility, it is estimated that approximately 55% of labor for the operations would be non-local and would be relocated to the east range; 20% would commute daily or weekly from centers such as Duluth; and the remaining labor would be local" DEIS (page 4.10-15). The Executive Summary needs to clearly identify the number of jobs projected to be filled by "local residents" in St. Louis County rather than the broad Arrowhead Region. See GLIFWC socioeconomics attachment for additional information.	The DEIS definition of "local" appears to be limited to the East Range, essentially the nearby towns and cities in St. Louis County alone. By comparison, the PSDEIS clearly states that "local" workers--those who would commute daily or weekly--would come from a very wide commute shed, given the willingness of workers in this region to commute relatively long distances. The definitions of "local" are very different; therefore, no change is needed.
FDL 1	FDL	ES Executive Summary	Effects on Water Resources	29	"The models predicted that water discharges from the NorthMet Project Proposed Action would meet all applicable groundwater and surface water quality evaluation criteria at the 90th percentile confidence level". This is an area of fundamental disagreement; more comments later in Chapters 4 and 5.	No change to SDEIS text.
FDL 2	FDL	ES Executive Summary	Effects on Biological Resources	31	Impacts to over 2,440 acres of Minnesota Biological Survey site of High Biodiversity Significance and "imperiled or vulnerable communities" will be permanent and not mitigated. This represents a permanent resource loss within the 1854 Ceded Territory.	No known mitigation policy for MBS sites. Under Land Exchange Proposed Action, Tract 1 contains proposed "Outstanding" ranked MBS Site of Biodiversity Significance, while other non-federal lands have "Moderate" and "High" rankings that would help balance the exchange.

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FDL 3	FDL	ES Executive Summary	wildlife	30	Tribal cooperating agencies have consistently identified moose as a species of cultural significance. There is no analysis of impacts to moose.	Section 5.2.5.2.5 has been expanded to further discuss affects to game species and species of importance to the Bands, specifically moose.
FDL 4	FDL	ES Executive Summary	Cultural/Socioeconomic Resources	32	The tribal cooperating agencies do not concur with all of the eligibility determinations.	Section 106 process is on-going.
FDL 5	FDL	ES Executive Summary	cumulative effects	33	The tribal cooperating agencies fundamentally disagree with the conclusion that there would be few cumulative effects from the NorthMet Proposed Action. Further detailed analysis will be provided.	The Chapter 6 analysis was conducted in accordance with the CEQ regulations and consistent with EPA guidance on cumulative impacts assessment. The analysis found that while some effects from the proposed project could combine with effects from other actions in the area, none of <del>there</del> these would constitute a significant cumulative effect. Details regarding how the cumulative effects analysis can be found in Chapter 6, along with information regarding effects from past and present activities in the immediate area and regionally.
FDL 6	FDL	ES Executive Summary	permits	48	The Hydromet Residue Facility should be permitted as a hazardous waste facility. There is no evidence that it would exempt under the Bevill Amendment. There should be a RCRA citation for the required permit.	No text edit. MPCA has reviewed App B of RS33/RS65, Feb 21 2007 and determined that the waste as represented in that document is not hazardous waste. MPCA expects updated information on the waste that would be deposited in the Hydromet cell.
GP 2	GP	ES Executive Summary	The revised NorthMet Project Proposed Action and the need for the Land Exchange prompted the Co-Lead Agencies' decision to prepare a SDEIS.	5	US EPA gave the DEIS the lowest possible ranking (EU-3) meaning the DEIS was environmentally unsatisfactory and inadequately assessed significant environmental impacts and therefore an SDEIS was required.	The EU-3 rating is discussed in section 1.2.2. "This process culminated in October 2009, with the publication of the NorthMet Project Draft EIS (DEIS) that analyzed the project as it was then proposed by PolyMet. After issuing the DEIS, the Co-lead Agencies, responding to public, other federal (including US EPA) and state agency and tribal comments and concerns, analyzed an alternative design that sought to resolve several major environmental concerns and permitting barriers."
GP 3	GP	ES Executive Summary	Closure and post-closure maintenance would occur after mining and would include infrastructure removal and final land reclamation maintenance and monitoring and transitioning from mechanical to passive water treatment.	8	This statement is not consistent with the rest of the SDEIS that states if possible there would be a transition to passive water treatment if the treatment method can be proven effective during operations.	Change made to text.

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GP 4	GP	ES Executive Summary	While current operating mines in the region are subject to strict environmental rules, historic mining has resulted in higher ambient pollution levels, the effects of which continue today. With particular concern are sulfates, mercury and other metals and	29	In later discussions the existing ambient pollution levels are talked about as "natural background" and/or the no action alternative.	Paragraph removed.
GP 5	GP	ES Executive Summary	The NorthMet Project Proposed Action would reduce water flows in the Partridge and Embarrass Rivers tributary streams within the range of annual natural variability in terms of precipitation. Therefore, effects to flows are not anticipated to result in any measurable impacts to available aquatic habitat in any streams downstream of the NorthMet Project Area.	31	This is a major difference of opinion.	We believe the XP-SWMM modeling is acceptable for use in the SDEIS. The 20 year old data is acceptable as there haven't been any significant changes within the watershed. We believe the assumptions used were reasonably conservative. Additional detail is provided in the water sections of the SDEIS, and further rationale is provided in the Water Data Packages.
GP 6	GP	ES Executive Summary	Preliminary effect determinations have been drafted by the federal Co-Lead Agencies for review and comment by the Bands and SHPO. The federal Co-Lead Agencies have determined that there will be no effect to the sugarbush and the Erie Mining Company railroad mine and plant track. A segment of the Mesabe widjiu, a segment of the Beaver Bay to Lake Vermillion trail, and Erie Mining Company concentrator building, however, will be adversely affected by the project. These preliminary determinations will be used to facilitate ongoing consultation with the Bands and SHPO pertaining to the application of adverse effect criteria to these properties. Mitigation measures to resolve adverse effects would be developed after consultation on the effects determinations and consideration of any measures to avoid or minimize adverse effect.	32	The Bands were not consulted on the effects determinations, rather the Bands were told what the effects determinations were based on individual properties and trail "segments". The Bands continue to reiterate that these are not individual, "stand-alone" properties, they are part of a district that is connected by waterways and trail corridors.	Consultation on-going. Text edits to reflect this status.

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GP 7	GP	ES Executive Summary	No legal public access via land exists to the federal lands, so any current public use and exercise of usufructuary rights require approval of adjacent private landowners.	33	Waterways, trails and a federal road provide access to exercise usufructuary rights without adjacent private landowner permission. The 1854 Treaty states that Band members retain the right to hunt, fish and gather within the ceded territory. Usufructuary rights cannot be abrogated while the treaty is in effect and extend to public and private lands with access to the latter requiring permission of the landowner. There are no constraints on when or how often Band members may use a location. From a cultural perspective, an area where treaty rights are exercised may be used weekly, seasonally, annually or sporadically or remain unused for a generation or more, but as long as even one Band member recalls that setting, the landscape is in use.	The Mine Site is entirely surrounded by private property, roads, and railroads. There are access points to the NorthMet Project Area, however, via a Forest Service road, the Partridge River, and various trail segments. The Plant Site and Transportation and Utility Corridor are owned either by Cliffs Erie LLC or PolyMet, and are not open to the public. Entry points are gated and/or guarded, and crossing the corridor is prohibited. As such, current subsistence use in the NorthMet project area is limited, but not restricted.
GP 8	GP	ES Executive Summary	Compared to the combined proposed action and combined alternative B, the no action alternative would likely result in active but different, comprehensive management of water from the existing LTVSMC tailings basin. There would be no other measurable effe	39	(Except for required remediation of pollution from the Dunka Pit and Area Pit 5).	That is true, however, the discussion is limited to how the No Action alternative would apply to the NorthMet Project area, which pit 5 is outside of. The management of pit 5 area is likely to occur regardless of the NorthMet Project. No changes to the SDEIS text.
GP 9	GP	ES Executive Summary	Table 1. Comparison of Effects by Alternative. Under the "Combined Proposed Action": 99.9 % water discharge would be captured and	40	(There is no literature citation that demonstrates this percentage of water capture is possible).	Edit made to text. "Greater than 90% of water would be captured and treated to below water quality standards."
GP 10	GP	ES Executive Summary	Table 1. Under the No Action Alternative: Continuation of sulfate discharge from former LTVSMC tailings basin	40	does not consider the Consent Decree with Cliffs)	Text edited, the summary bullets for Water No Action were combined. Consent Decree is discussed in Table 1, to the effect of: Seepage water quality (including sulfate) from the existing LTVSMC Tailings Basin would be expected to improve over time as a result of the Consent Decree...
GP 11	GP	ES Executive Summary	Table 1. Continued... Under the "Combined Proposed Action":	42	wildlife does not consider the effects to existing major travel corridors.	Edit made to text. "Wildlife corridors at and adjacent to the NorthMet Project would be affected through the reduction of access to these corridors"
GP 12	GP	ES Executive Summary	Table 1. Continued...Decrease in mercury loading (varies by modeled location).	42	Major difference of opinion.	Text will be edited to remove this statement. See response to FDL 60 or GLIFWC 197.

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GP 13	GP	ES Executive Summary	Table 1. Continued...Under Air-Quality "Amphibole mineral fibers: below US EPA prevention of significant deterioration standards through use of best available control technology-like design.	43	Chrysotile fibers that would be expected to be found in the NorthMet deposit are not considered.	No text change is recommended. A fiber assessment was conducted to represent amphibole and serpentine (Chrysotile) fibers and is presented in Section 5.2.7.5. Serpentine fibers were not found in the ore, tailings, and process water samples from the floatation pilot tests conducted in 2005. However, serpentine fibers were observed from petrographic observations of waste rock (approximately 2% of minerals in the waste rock). MDH method 852, which measures airborne fiber levels via the ambient monitoring, measures both amphibole and chrysotile fibers.
GP 14	GP	ES Executive Summary	Table 1. Continued... Under Cultural Resources	44	omits the sugarbush and overlook.	Consultation on-going. Text to be revised.
GP 15	GP	ES Executive Summary	Table 1. Continued... Under Wilderness and SPecial Designation Areas	46	does not consider Chrysotile fibers or mercury.	No text change. Chrysotile emissions were assessed as discussed in Comment # GP 13. Currently there are no mercury standards specific to Class I or wilderness areas. A cumulative risk assessment was conducted for the nearest residence and a mercury deposition assessment was conducted at several local lakes to assess impacts on fish and fisherman. Since the nearest Class I region is much farther away from the NorthMet project Proposed Action than these assessments, the impacts from mercury is expected to be less.
1854 2	1854	ES Executive Summary	Subsection: Closure and Post-closure Maintenance	20	It is mentioned in the document that the goal for water treatment during long-term closure is to transition to non-mechanical water treatment technology. There should be mention that the method of completing this transition has not been fully developed and the current projection for water treatment is perpetual.	See response for GLIFWC 5 & 6.

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1854 3	1854	ES Executive Summary	Subsection: NorthMet Project Effects on Water Resources	29	As stated in the document, "The NorthMet Project Proposed Action is also predicted to not result in any significant effects on groundwater or surface water hydrology." This is potentially mis-leading because in the subsection "NorthMet Effects on Biological Resources" (ES-30) there is mention of groundwater drawdown potentially causing changes in wetland hydrology and being considered an indirect impact to wetlands. This should be clarified on ES-29 as well since there will be a significant effect on groundwater hydrology, which will indirectly impact wetlands.	The analog approach is considered a reasonable method for evaluating the extent of pit drawdown considering the heterogeneous nature of glacial till and the underlying low-permeability bedrock. Even when the pit water level is well below the top of bedrock, the low-permeability bedrock limits the amount of surficial groundwater that can drain downward into the pit and there is sufficient recharge to the surficial unit to generally maintain water levels. The analog method used all available relevant data.
1854 4	1854	ES Executive Summary	Table 1., Row: Aquatic Species	42	In the Combined Proposed Action Column, "Decreases in Mercury Loading" is listed. This suggests there will be an overall decrease in mercury loading due to the Combined Proposed Action compared to the No Action Alternative. This should be explained within the document, likely under subsection NorthMet Project Effects on Biological Resources (ES-31) for Class 2 (aquatic life) water quality standards, so it is understood how and why the proposed project would decrease mercury loading. There is only mention of how the proposed project will be below the mercury standard (ES-30).	The bullet relating to mercury decreases has been deleted. Detailed information on potential impacts to aquatic species is provided in Section 5.2.6.

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**Tribal Comments and Co-lead Agencies' Dispositions**

**8/19/13**

**Chapter 1**

## Chapter 1

Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
FDL 7	FDL	1.4.4 Other Permits And Requirements		Table 1.4-	The Hydromet Residue Facility should be permitted as a hazardous waste facility. There is no evidence that it would exempt under the Bevill Amendment. There should be a RCRA citation for the required permit.	No text edit. MPCA has reviewed App B of RS33/RS65, Feb 21 2007 and determined that the waste as represented in that document is not hazardous waste. MPCA expects updated information on the waste that would be deposited in the Hydrometallurgical cell.
GP 16	GP	1.1 Overview		1-1	The Bands did not prepare or write the SDEIS, we have provided comments when we were allowed to do so, and will be providing major differences of opinion.	Edit made per suggestion, removed "in cooperation with the U.S. Environmental Protection Agency (USEPA) Region 5, Bois Forte Band of Chippewa (Bois Forte), Grand Portage Band of Lake Superior Chippewa (Grand Portage), and the Fond du Lac Band of Lake Superior Chippewa (Fond du Lac)"
GP 17	GP	1.2.2 Cooperating Agencies	Along with the US EPA, Bois Forte, Grand Portage and Fond du Lac have been invited by the Co-Lead Agencies to participate as Cooperating Agencies. The mine site, plant site, federal lands and non-federal land exchange lands are all located within the 1854	1-9	The limited Bands have been allowed participate in a very limited capacity, so the Co-leads perspective on our role as Cooperating Agencies should be more clearly articulated.	Text has been added regarding the process of including the Bands as Cooperating Agencies, including the MOU and CCP development.
1854 5	1854	1.1.2 Land Exchange	2nd paragraph	1-5	A value to value land exchange may result in loss of federal lands within 1854 Ceded Territory. Also, one large tract being exchanged for several smaller tracts. This information should be mentioned.	Edit made per discussion with the USFS. Added "See Section 3.3.2 for a detailed description of the Land Exchange Proposed Action. "
1854 6	1854	1.4.3 Land Exchange Requirements	1st paragraph	1-13	Is the USFS mandated to go through a land exchange to allow such projects? Please provide more detail.	Text edited as suggested per the USFS.

## Chapter 1

Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 30	GLIFWC	1.1.2 Land Exchange	Figure 1-2		Map is misleading. The area labeled Mesabi Iron Range / Historic mining district encompasses areas that have never been mined and are outside the geologic formations where iron mines have operated. It suggests that the NorthMet mine site is part of a mined area which is not correct. The GIS layer depicting all the mine features on the range (pits, tailings basins, etc) should be used instead.	Map is intended to show general area of the Mesabi Iron Range. Figure Key edited to now read, "General Mesabi Iron Range - Historic Mining"
GLIFWC 34	GLIFWC	1.2.2 Cooperating Agencies			Please insert the following text for GLIFWC participation: GLIFWC staff did not participate in the development of the language in the SDEIS or the referenced technical documents.	Text edit made. New text reads "The Great Lakes Indian Fish and Wildlife Commission (GLIFWC) and the 1854 Treaty Authority have assisted the Bands in their roles as Cooperating Agencies"
GLIFWC 31	GLIFWC	1.3 Purpose And Need	Purpose and need statements		The first 4 bullets are the mining companies' purpose and need and not the purpose and need of the agencies involved. A title is needed making this clear. Question: This is a document from the lead agencies. Does the applicants purpose belong here?	The Co-lead Agencies developed this language for insertion into the SDEIS. As such, it is appropriately placed.
GLIFWC 32	GLIFWC	1.7 Pollutants Of Interest	second bullet		There is absolutely no scientific doubt that GHG in the atmosphere have, and will continue to change climate conditions. Text should be corrected.	Text not edited, use of "may" and "can" is intended to be consistent with the rest of this section.
GLIFWC 33	GLIFWC	1.7 Pollutants Of Interest	Sulfate bullet		There is absolutely no scientific doubt that sulfate has, and will continue to negatively impact wild rice. There is absolutely no scientific doubt that sulfate has, and will continue to contribute to mercury methylation. Correct the text.	Text not edited, use of "may" and "can" is intended to be consistent with the rest of this section.

**NorthMet Mining Project and Land Exchange PSDEIS (ver. 2)**

**Tribal Comments and Co-lead Agencies' Dispositions**

**8/19/13**

**Chapter 2**

## Chapter 2

Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 18	GP	2.2.2	2-2	Additional issues were also considered but eliminated from detailed analysis in the DEIS because they were determined to be immaterial or had been adequately discussed in the EAW. These issues included land use conflicts, water related land use management, surface water use, geologic hazards, and soil conditions, traffic, and odors.	The Band were not included in scoping and the MN DNR/US ACE determined without any evaluation or consultation with the Bands during scoping that there would be no effect to usufructary rights or natural resources of importance to the Bands.	Per Item 3.2.10 in the FSDD, "The EIS will include a description of tribal rights reserved as part of the 1854 Ceded Territory. Impacts to these tribal rights as result of the project will be evaluated and mitigation proposed as needed." No text edit.
GP 19	GP	2.3.2.1	2-5	In 2010, the MPCA issued staff recommendations on the site specific application of the wild rice standard, which states that 10 milligrams per liter of sulfate be applied to waters used for the production of wild rice; this standard applies from April 1st-August 31st each year for the Partridge and Embarrass river systems. The recommendations were updated in March and June 2011. The MPCA guidance also included tailings basin performance requirements regarding seepage discharges, limitations to sulfate contributions in surface waters, and monitoring requirements.	The seasonal application of the wild rice standard has not been demonstrated to actually be protective of wild rice.	All information provided was considered when the MPCA made their recommendation. No text edit.
GP 20	GP	2.3.2.1	2-5	Topic focused workgroups were established to discuss key issues that needed to be closely examined in the SDIES. These workgroups included representatives from the Co-Lead agencies, Cooperating agencies, other regulating agencies, and PolyMet. These groups participated in impact assessment planning process, which led to the development of workplans for data packages and management plans. The workgroups discussed evaluation criteria, methodologies for analysis, potential effects, and possible mitigation measures. Topics addressed by the workgroups included geotechnical stability, wetlands, air resources, and water resources. The water resources group was further divided into four sub-groups to address evaluation criteria, groundwater issues, surface water issues, and geochemistry. A socioeconomics workgroup was also established to address Tribal concerns regarding potential socioeconomic effects on the Bands from the proposed NorthMet project.	The Bands were not allowed to participate in the Geochemistry or Geotechnical workgroups. Initially, we were allowed to listen. The Bands did not participate in the sub group to develop evaluation criteria, either.	SDEIS text has been revised to reflect the Bands participation in the IAP workgroups.

## Chapter 2

Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 21	GP	2.3.2.1	2-5	A workgroup was also established to discuss issues related to the project modifications, alternatives ( predominately the mine site and tailings basin alternatives addressed in the DEIS), the wild rice standard and various mitigation measures identified by the topic focused workgroups.	Did not include the Bands.	Added, "(primarily including Co-lead Agency representatives)"
1854 7	1854	2.3.2.1	2-5	3rd paragraph	No scientific basis exists for applying standard seasonally only April 1 through August 31. Also, the wild rice standard is currently being evaluated including further research managed by MPCA. Application of the standard may change from the current recommendation in PSDEIS.	All information provided was considered when the MPCA made their recommendation. Should the application of the standard change, it will be addressed at that time. No text edit.

**NorthMet Mining Project and Land Exchange PSDEIS (ver. 2)**

**Tribal Comments and Co-lead Agencies' Dispositions**

**8/19/13**

**Chapter 3**

## Chapter 3

Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 22	GP	3.1.1 Northmet Project Proposed Action Overview	Closure and post-closure maintenance would occur after mining and would include infrastructure removal and final land reclamation, maintenance, monitoring, and transitioning from mechanical to passive water treatment.	3-1	Sentence should say: ...transitioning from mechanical to passive water treatment "if possible," so this statement doesn't contradict later statements in the EIS.	Added "if or when possible"
GLIFWC 35	GLIFWC	3.1.1.3 Mine Operations Overview			Describes the NorthMet deposit as low-medium quality. We disagree with this characterization. The deposit had a low ore grade compared to most other ore bodies in the Great Lakes region. It should be characterized only as low quality.	It is ERM's professional judgment that the NorthMet Deposit should be classified as low-medium grade. Classification of the ore-body in simplified terms is relative and subjective and does not have any implications to the economic viability of the resource, nor does it influence the environmental evaluation presented in Chapter 5. Full description of the mineral resource may be found in PolyMet's 43-101 document. No changes to text.
GLIFWC 46	GLIFWC	3.2.2.4 Financial Assurance			EPA recommends that 10 to 25% of financial assurance be made available as cash. This should be added to the section. In addition, an explanation of how the state will financially assure a perpetual treatment project is required. Specifically, the state must financially assure in perpetuity: 2 RO water treatment plants, perpetual monitoring of water quality for the 2 tailings basins, west pit outflow, and groundwater points of compliance. Perpetual maintenance would be required at both tailings facilities for water quality, water capture, flow augmentation system, and geotechnical stability, the Cat 1 stockpile and the water level controls at the west pit.	Financial assurance costs, instruments, and duration will be determined in the MDNR Permit to Mine permitting process. Financial assurance can be required indefinitely and can include self-sustaining instruments such as trust funds.

## Chapter 3

Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 37	GLIFWC	3.1.2 Land Exchange Overview	third paragraph		Information in this paragraph is incorrect. As previously commented, federal lands are not within the historic mesabi range. Federal lands are not surrounded by private lands. Rather they are connected to other Superior National Forest lands on the south and east. Finally, the land exchange would unite surface and mineral rights for the mine site lands but not for the parcels that would enter the federal estate. Those surface and mineral ownerships would still be severed. The text should be clarified.	Edited sentences... "The federal lands are located adjacent to historic mining projects on the Mesabi Iron Range and are almost surrounded by privately held land used for mining and other industrial purposes; portions of the east and southwest areas of the federal lands are bordered by Superior National Forest lands."  "in the area" to "on the federal lands"
1854 8	1854	3.1.2 Land Exchange Overview	4th paragraph	3-5	A value to value land exchange may result in net loss of federal/public lands within 1854 Ceded Territory. One large tract being exchanged for several smaller tracts. Changes to and loss of public ownership is impact on the exercise of treaty rights. The project is also a permanent loss/impact to natural resources regardless of ownership. Please include these details.	USFS requested that the following statement be added here as well. <i>The final proposed configuration of land will be determined after the market value of the parcels is determined by appraisals and will be presented in the Record of Decision.</i>
GLIFWC 40	GLIFWC	3.2.2.1.9 Water Management			Information on the length of time that the facility would need to operate should be included	This section is specific to the operational phase of mining. Long term management is discussed in section 3.2.2.1.10
GLIFWC 38	GLIFWC	3.2.2.1.7 Overburden And Waste Rock Management	Table 3.2-7		Should state that Cat 1 stockpile will require some maintenance in perpetuity.	Table 3.2-7 states that from Year 20+ there would be maintenance. Maintenance activities would continue throughout reclamation and post-reclamation, for as long as necessary to meet regulatory standards.

## Chapter 3

Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
1854 9	1854	3.2.2.1.7 Overburden And Waste Rock Management	Table 3.2-8	3-45	There is no mention of how well these different categories of waste rock can be separated. Any details regarding the potential of having mixed categories of waste rock within each stockpile and for construction material should be included.	Classification of the waste rock during operations would be based blast hole sampling and frequent updates to a mine block model. Each stockpile has engineering controls to capture and treat contact water regardless of the actual geochemical properties of the stockpiles (containment system around Category 1 Stockpile and liners for Category 2/3 and 4 Stockpiles). Construction material would be required to be pre-approved by the MDNR. Text added to section to reflect this.
GLIFWC 39	GLIFWC	3.2.2.1.8 Engineered Water Controls			Throughout the section, information on post closure maintenance needs and length of time operation is needed should be included for all engineering controls.	This section is specific to the operational phase of mining. Long term management is discussed in section 3.2.2.1.10
1854 10	1854	3.2.2.1.8 Engineered Water Controls	6th paragraph	3-46	Please include analysis of effectiveness, and discuss long-term operation and maintenance.	Analysis of effectiveness is discussed in Section 5.2.2.  Have added to section: "The geologic conditions are favorable due to the presence of low permeability bedrock. Performance modeling of the containment systems performed by PolyMet and reviewed by the Co-Leads provides strong evidence that the capture efficiency will be greater than 90 percent."  This section is specific to the operational phase of mining. Long term management is discussed in section 3.2.2.1.10.
GP 42	GP	3.2.2.4.1 Cost Coverage And Estimation	Reasonable assessment of the costs to execute the contingency reclamation plan.	3-135	How do you estimate reasonable costs for mitigation of a problem that likely won't surface for 400 to thousands of years?	The MDNR Permit to Mine permitting process will determine reasonable costs and financial assurance instruments to address long term obligations.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 23	GP	3.2.2.1.9 Water Management	Once covered, storm water from the category 1 stockpile would be considered non-contact water and would not require treatment.	3-53	Later in the document the PSDEIS lists a major source of pollution as "background run-off" at the mine site. What exactly is "background run-off" if it is not "non-contact" water.	"Background run-off" is referring to the background or existing surface water conditions at the site, pre-disturbance. It the same as non-contact water. Text will use "non-contact" and wont refer to "background run-off".
FDL 8	FDL	3.2.2.1.6 Haulage Storage And Transport Of Ore	Overburden	p 3-44	"Peat (organic soils) and unsaturated overburden that cannot be used in immediate construction and reclamation would be stored in unlined overburden stockpiles at the Overburden Storage and Laydown Area." This material has a high potential for uncontrolled release of methylmercury to the environment.	Storm water from the Overburden Storage and Laydown Area would be directed to process water ponds and to the Plant Site for mineral processing make up water, or to the Mine Site WWTF for treatment. Reference to this will be added to the water management section 3.2.2.1.9
GLIFWC 42	GLIFWC	3.2.2.1.10 Reclamation And Long-term Closure Management			Last paragraph should explicitly state that erosion repair, and removal of woody species from the stockpile cover system would need to be perpetual. This would also include monitoring and inspections of the facility.	Maintenance activities would continue throughout reclamation and post-reclamation, for as long as necessary to meet regulatory requirements.
FDL 9	FDL	3.2.2.3.5 Tailings Management		Fig 3.2-25	With bentonite applied to the walls of the tailings basin and the bottom of the tailings pond, there is potential for significant subsidence throughout the TB as water seeps through the bottom.	Bentonite will reduce the rate of water seep into the Tailings Basin but is intended to maintain (relatively) the phreatic surface. Geotechnical stability of the proposed Tailings Basin is evaluated in section 5.2.14.
GLIFWC 50	GLIFWC	3.2.2.1.10 Reclamation And Long-term Closure Management			Insert text stating that water quality modeling suggests water treatment would need to occur for over 500 years in order to meet water quality standards.	The Closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory requirements at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site. While long-term, this time frame for water treatment is not necessarily perpetual. Added text to section 3.2.2.1.10 to this effect.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
1854 16	1854	3.2.2.4.1 Cost Coverage And Estimation	table 3.2-15	3-135	Please provide more detail on cost analysis for closure activities for financial assurance.	the section describes the activities to be covered under financial assurance. Reference document Foth 2013 provides details on the assumptions for the provided costs in the table. Further information will be provided for the permitting process.
GP 24	GP	3.2.2.1.10 Reclamation And Long-term Closure Management	Lime could be added to the east pit during east pit backfilling, as needed, in order to maintain circumneutral pH in the pit pore water.	3-65	How much lime? Cite effectiveness from another project.	The volume of lime would be determined through monitoring. Added sentence to end of paragraph... "The volume of lime required would be determined through monitoring."
GP 25	GP	3.2.2.1.10 Reclamation And Long-term Closure Management	The ore in the ore surge pile would be processed as operations wind down, and any remaining material would be relocated to west pit after operations cease. Material may still remain in the overburden storage and laydown area, but the area would be graded to stable conditions and reclaimed.	3-65	Later in the document the PSDEIS lists a major source of pollution as "background run-off" at the mine site. What exactly is "background run-off"? Is one of the sources of pollution from "background run-off" the OSLA?	"Background run-off" is referring to the background or existing surface water conditions at the site, pre-disturbance (also known as non-contact water). Surface runoff from the Overburden Storage and Laydown Area is considered "Process Water," and would be captured in an unlined pond (Pond PW-OSLA) and monitored for quality. If the Overburden Storage and Laydown Area water was of sufficient quality, it would be pumped to the CPS and discharged to the East Pit or the Tailings Basin. If water in Pond PW-OSLA required treatment, it would be pumped to the WWTF for treatment prior to delivery to the CPS.
GP 26	GP	3.2.2.1.10 Reclamation And Long-term Closure Management	Upon full reclamation of the category 1 stockpile, run-off from the top and sides of the stockpile would be classified as non-contact stormwater and would be routed through a system of ditches prior to being discharged into the natural drainage system.	3-66	Later in the document the PSDEIS lists a major source of pollution as "background run-off" at the mine site. What exactly is "background run-off" if it is not "non-contact" water.	"Background run-off" is referring to the background or existing surface water conditions at the site, pre-disturbance.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 27	GP	3.2.2.1.10 Reclamation And Long-term Closure Management	Ditches would be filled or rerouted during reclamation to direct non-contact stormwater into the west pit for flooding.	3-71	This could be a large source of Hg and sulfate to the west pit.	Disagree. This is storm runoff. After reclamation, storm runoff would not contact ore or waste rock.
GP 28	GP	3.2.2.1.10 Reclamation And Long-term Closure Management	All ponds-including the five stormwater ponds, overburden storage and laydown area process water pond, the four haul road process water ponds, and all stockpile sumps and overflow ponds-would either be filled or converted into wetlands.	3-71	Another source of Hg, sulfate, and other metals and metalloids?	Disagree. The ponds would be filled and the wetlands would be configured using native materials. Mercury and metals loading would not be any different than what occurs in natural areas.
GP 29	GP	3.2.2.1.10 Reclamation And Long-term Closure Management	In addition, water from the tailings basin would be pumped to the west pit to flood the pit faster and allow the tailings basin to be reclaimed. In the final years of the reclamation phase, water from the west pit would be pumped to the WWTF, treated and returned to the west pit. The objective of treating the west pit water would be to manage water quality within the pit prior to groundwater outflow from the pit lake via the surficial aquifer.	3-72	Although this may reduce pollution concentrations prior to outflow via the surficial aquifer, it will do little to reduce the concentrations of pollutants leaving the pit via the bedrock aquifer.	Disagree. Bedrock is not an "aquifer". Site data and information from nearby mines clearly indicate that the bedrock unit has very low hydraulic conductivity and site-scale groundwater flow rates in bedrock are correspondingly small. Chemical migration in bedrock is too slow to affect bedrock groundwater concentrations at the Evaluation Locations. Also, groundwater discharge from bedrock to surface water is too small to affect surface water quality.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 30	GP	3.2.2.1.10 Reclamation And Long-term Closure Management	Once the west pit is full (approximately year 40), discharge of treated water from the WWTP and the WWTF would be terminated. The WWTF would be upgraded to RO and include evaporator/crystallizers to convert the RO reject concentrate to residual solids, which would be disposed of at appropriate off-site facilities. The WWTF would continue to treat water collected by the category 1 stockpile groundwater containment system, as well as water from the west pit, to ensure that the discharge met applicable water quality discharge limits.	3-72	Again, this is only for the discharge via the surficial aquifer. Pit lakes are stratified with the greatest concentrations of metals near the bottom.	Disagree. If higher concentrations occur near the pit bottom, it would have the potential to access only bedrock groundwater. Site data and information from nearby mines clearly indicate that the bedrock unit has very low hydraulic conductivity and site-scale groundwater flow rates in bedrock are correspondingly small. Chemical migration in bedrock is too slow to affect bedrock groundwater concentrations at the Evaluation Locations. Also, groundwater discharge from bedrock to surface water is too small to affect surface water quality. This section of the SDEIS has been clarified.
GP 31	GP	3.2.2.1.10 Reclamation And Long-term Closure Management	The ultimate objective of long-term closure would be to transition from the mechanical treatment provided by the WWTF and WWTP to non-mechanical treatment, if proven to be successful through demonstration projects within the NorthMet project area.	3-72	It seems unlikely that a passive system could be demonstrated to be successful treating the bedrock aquifer plume from the mine site features including the pit, particularly if the plume isn't predicted to reach any evaluation location for thousands of years. Please explain.	The objective of the demonstration projects would not be to demonstrate that water quality criteria will be met in the future at Evaluation Locations. That can only be done with predictive modeling. The purpose of demonstration projects / pilot testing would be to show that a non-mechanical treatment technology can replace mechanical systems used in the WWTF and WWTP. From this perspective, a successful demonstration would show that a non-mechanical system can produce an effluent water quality, which is shown by modeling, to achieve future water quality criteria at Evaluations Locations. The text has been edited to reflect this clarification.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 32	GP	3.2.2.1.10 Reclamation And Long-term Closure Management	PolyMet has committed to conduct demonstration projects during the life of mine and reclamation to establish non-mechanical water treatment systems to be used at the mine site.	3-79	How can demonstrations during the life of the mine establish that non-mechanical treatment can treat a plume of water that won't reach evaluation points for thousands of years, or in the case of the surficial aquifer hundreds of years?	The objective of the demonstration projects would not be to demonstrate that water quality criteria will be met in the future at Evaluation Locations. That can only be done with predictive modeling. The purpose of demonstration projects / pilot testing would be to show that a non-mechanical treatment technology can replace mechanical systems used in the WWTF and WWTP. From this perspective, a successful demonstration would show that a non-mechanical system can produce an effluent water quality, which is shown by modeling, to achieve future water quality criteria at Evaluations Locations. The text has been edited to reflect this clarification.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
1854 11	1854	3.2.2.1.10 Reclamation And Long-term Closure Management	West Pit	3-65	Effectiveness of water treatment and seep collection are vital to the project meeting standards. Analysis and design detail are lacking in the PSDEIS (plan seems to get the project up and running, and figure out water treatment later). Concern exists over the need for long-term treatment and also for the regulatory ability to allow for it. More detail is needed on water treatment and seep collection, including long-term operation/maintenance, since they are essential components of the project meeting environmental standards.	Groundwater containment with slurry walls and permeable trenches has been routinely performed at mine and industrial sites over the last 50 years. There are hundreds of currently operating systems. When geologic conditions are favorable (particularly the presence of a low permeability basal unit that can be keyed into), it is typical to achieve greater than 90 percent groundwater capture. At the Mine and Plant Sites, the geologic conditions are favorable due to the presence of low permeability bedrock. Performance modeling of the containment systems performed by PolyMet and reviewed by the Co-Leads provides strong evidence that the capture efficiency will be greater than 90 percent. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. Additional detail would be provided for permitting.
1854 12	1854	3.2.2.1.10 Reclamation And Long-term Closure Management	2nd full paragraph	3-66	Please explain why non-native species would be used. Please also include habitat considerations for wildlife.	Added text to end of paragraph... "Preference would be given to the establishment of native plant communities, and the introduction of invasive plant species would be avoided to the extent that such a practice would not interfere with the timely and effective accomplishment of the primary objectives for establishing vegetation."

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
1854 13	1854	3.2.2.1.10 Reclamation And Long-term Closure Management	Water Management - 2nd paragraph	3-72	Effectiveness of water treatment and seep collection are vital to the project meeting standards. Analysis and design detail are lacking in the PSDEIS. Concern exists over the need for long-term treatment and also for the regulatory ability to allow for it. More detail is needed on water treatment and seep collection, including long-term operation/maintenance, since they are essential components of the project meeting environmental standards.	Groundwater containment with slurry walls and permeable trenches has been routinely performed at mine and industrial sites over the last 50 years. There are hundreds of currently operating systems. When geologic conditions are favorable (particularly the presence of a low permeability basal unit that can be keyed into), it is typical to achieve greater than 90 percent groundwater capture. At the Mine and Plant Sites, the geologic conditions are favorable due to the presence of low permeability bedrock. Performance modeling of the containment systems performed by PolyMet and reviewed by the Co-Leads provides strong evidence that the capture efficiency will be greater than 90 percent. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. Additional detail would be provided for permitting.
GLIFWC 51	GLIFWC	3.2.2.2.4 Use During Operations			We disagree with the characterization that ore dust releases from rail cars is not a significant issue. See GLIFWC rail car attachment.	Air quality for the NorthMet Project is evaluated in Section 5.2.7. Due to the size of the ore rock being transported, the design of the railcars, and the short distance of transport from the Mine Site to the Plant Site, the ore fines are expected to be coarse in nature. Thus, no significant reactive airborne fugitive dust from the rail transport is expected

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 36	GLIFWC	3.1.1.7 Project Closure Overview			This section states that post closure monitoring and maintenance would continue until features were "deemed environmentally acceptable in a self sustaining and stable condition" Water treatment and facility maintenance at the site are perpetual. Therefore this statement would never happen. It is misleading to suggest otherwise.	Text edited to reflect that the closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. The owning company would be held accountable to maintenance and monitoring required under permit and would not be released until all conditions have been met.
GP 33	GP	3.2.2.3.5 Tailings Management	Rock buttress material would be from MNDNR approved sources. Material from former LTVSMC area 5 would be a likely source for the rock buttress and fill material, but other sources could also be considered.	3-103	How much Hg and SO4 will Area 5 rocks contribute to the surrounding waters and tailings basin?	Water modeling (Section 5.2.2) assumed the rock buttress would have similar material characteristics to Category 1 waste rock. The rock to be used for the buttress would be required to be from an MDNR-approved source.
GP 34	GP	3.2.2.3.6 Hydrometallurgical Process	Hydrometallurgical process water would contain substantial levels of chloride relative to the water in the milling and floatation circuits.	3-113	Without prior knowledge of brines this could be an indication of uncontrolled mine waste.	All process water would be reused or run through the WWTP prior to any discharge. The WWTP would be designed so that chemical concentrations in the effluent meet applicable water quality discharge standards for the site.
GLIFWC 53	GLIFWC	3.2.2.3.9 Transport Of Consumables And Products			There is no information provided on outgoing rail routes from the mine site. A map of these rail routes is requested.	The railway between the Mine Site and Plant Site is shown in Figure 3.2-4 and 3.2-20. Railway beyond the project area is outside of the scope of the SDEIS

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 43	GP	3.2.3.1.3 Northmet Project Alternatives Analyzed In The SDEIS	As a result of screening and analysis, the NorthMet no action alternative (IE, the NorthMet proposed action would not occur) the only alternative to the NorthMet project proposed action evaluated in detail in the SDEIS.	3-139	The no action alternative has not been modeled, in fact only the continuation of pollution levels as they are now has been modeled.	The environmental consequences of the NorthMet Project No Action Alternative are evaluated in accordance with NEPA and MEPA in the respective sections of Chapter 5. Edits have been made to Section 5.2.2 to clarify what scenarios have been modeled for impact analysis.
GLIFWC 54	GLIFWC	3.2.2.3.10 Engineered Water Controls			Section indicates that a water containment system exists on the south side. Please add that system to figure 3.2-27	Removed south side containment system from text.
GLIFWC 55	GLIFWC	3.2.2.3.10 Engineered Water Controls	figure 3.2-28		Legend should be updated to describe the red and yellow lines on the outside of the berm.	The red and yellow lines do not add value to the figure and have been removed

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 35	GP	3.2.2.3.10 Engineered Water Controls	Along the eastern side of the tailings basin, high bedrock eliminates groundwater seepage. Along the southern side, surface features result in all seepage emerging at a surface seep. A cutoff berm and trench placed approximately 200 – 250 feet downstream of the seepage face would collect the seepage.	3-117	There has not been any information provided regarding weathering in the “high bedrock”. Since it has been exposed to the elements over time, it seems likely that groundwater seepage could occur through the bedrock. An estimate of the volume of water that may seep into the bedrock would be helpful.	Hydrologic characterization data for the Mine and Plant Sites do not indicate the presence of any pervasive fractures or fracture zones that could operate as high permeability conduits over long distances. Characterization data further indicate that the <i>bulk</i> hydraulic conductivity of bedrock is very low so that site-scale groundwater flow rates within the unit are correspondingly small. There is no evidence to indicate that bedrock on the eastern side of the Basin differs from this characterization. In moderately wet conditions such as those existing at the Site, weathering typically produces clays, which tend to decrease bulk hydraulic conductivity rather than increase it.
GP 36	GP	3.2.2.3.10 Engineered Water Controls	All groundwater and surface water seepage collected in the containment system around the tailings basin and all seepage from the overflow system would be pumped back into the tailings basin pond or to the WWTP.	3-117	How? What percentage can actually be achieved? not all of the water can be captured.	Groundwater containment with slurry walls and permeable trenches has been routinely performed at mine and industrial sites over the last 50 years. There are hundreds of currently operating systems. When geologic conditions are favorable (particularly the presence of a low permeability basal unit that can be keyed into), it is typical to achieve greater than 90 percent groundwater capture. At the Mine and Plant Sites, the geologic conditions are favorable due to the presence of low permeability bedrock. Performance modeling of the containment systems performed by PolyMet and reviewed by the Co-Leads provides strong evidence that the capture efficiency will be greater than 90 percent. additional text has been added to the section to reflect this.
GP 37	GP	3.2.2.3.10 Engineered Water Controls	The double liner system described above would virtually eliminate liner leakage to groundwater.	3-123	All liners leak eventually. The double liner would drastically reduce leakage to groundwater.	The double liner would reduce and virtually eliminate liner leakage to groundwater.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
1854 14	1854	3.2.2.3.10 Engineered Water Controls	last paragraph	3-117	Effectiveness of water treatment and seep collection are vital to the project meeting standards. Analysis and design detail are lacking in the PSDEIS. Concern exists over the need for long-term treatment and also for the regulatory ability to allow for it. More detail is needed on water treatment and seep collection, including long-term operation/maintenance, since they are essential components of the project meeting environmental standards.	Groundwater containment with slurry walls and permeable trenches has been routinely performed at mine and industrial sites over the last 50 years. There are hundreds of currently operating systems. When geologic conditions are favorable (particularly the presence of a low permeability basal unit that can be keyed into), it is typical to achieve greater than 90 percent groundwater capture. At the Mine and Plant Sites, the geologic conditions are favorable due to the presence of low permeability bedrock. Performance modeling of the containment systems performed by PolyMet and reviewed by the Co-Leads provides strong evidence that the capture efficiency will be greater than 90 percent. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. Additional detail would be provided for permitting.
GP 44	GP	3.2.3.2 Northmet Project No Action Alternative	At the Brown Field Plant Site, cliffs erie would be required to complete closure and reclamation activities under an existing MDNR-and MPCA-approved reclamation program. This would include completing activities for the localized affected areas under the Minnesota Voluntary Investigation and clean up (VIC) program, removal of the formal plant site, and management of the seepage at the tailings basin embankment.	3-140	And, mitigation for seepage of area pit 5 water pollution.	That is true, however, the discussion is limited to how the No Action alternative would apply to the NorthMet Project area, which pit 5 is outside of. The management of pit 5 area is likely to occur regardless of the NorthMet Project. No changes to the SDEIS text.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 44	GLIFWC	3.2.2.3.12 Reclamation And Long-term Closure Management			It should be clearly stated that inspection and periodic water collection at the hydrometallurgical residue facility would need to be perpetual.	The Closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. Text has been added to section 3.2.2.3.12 to reflect this.
FDL 10	FDL	3.2.2.3.12 Reclamation And Long-term Closure Management	Water Management	p. 3-133	"The ultimate objective of long-term closure would be to transition from the mechanical treatment provided by the WWTP to non-mechanical treatment." This statement recurs throughout the SDEIS, but it is clear that this proposed action will require perpetual treatment, with significant O & M regardless of whether that treatment remains mechanical or transitions to non-mechanical. This issue remains a substantial and significant impact, and the SDEIS should clearly identify it as such. There is no supporting evidence of effective non-mechanical treatment for the volumes and concentrations of pollutants that will result from extraction and beneficiation and persist for centuries.	The Closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. Text has been added to section 3.2.2.3.12 to reflect this.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 45	GLIFWC	3.2.2.3.12 Reclamation And Long-term Closure Management	post-reclamation activities		A clear statement that perpetual water treatment, either active or passive, is required for the project to comply with water quality standards. In addition, the section should state that passive treatment is speculative.	The Closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. Text has been added to section 3.2.2.3.12 to reflect this.
GLIFWC 56	GLIFWC	3.2.2.3.12 Reclamation And Long-term Closure Management			Include information about long term maintenance needs and length of time that water treatment is needed.	The Closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. Text has been added to section 3.2.2.3.12 to reflect this.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 41	GP	3.2.2.3.12 Reclamation And Long-term Closure Management	However, the WWTP would remain operational until water quality monitoring results meet permit requirements without the need for mechanical treatment.	3-133	More than a thousand years? More than 400 years?	The Closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. Text has been added to section 3.2.2.3.12 to reflect this.
GP 40	GP	3.2.2.3.12 Reclamation And Long-term Closure Management	During the long-term phase, after the tailings basin has been reclaimed and hydrology has stabilized, the WWTP would be upgraded to include an evaporator and tailings basin seepage would be collected and discharged via the WWTP until non-mechanical treatment has been demonstrated to provide appropriate treatment... The objective of the tailings basin cover would be to manage the constituent load from the tailings....The WWTP would operate as long as necessary and would be financially assured.	3-133	Can financial assurance be in perpetuity?	Financial assurance costs, instruments, and duration will be determined in the MDNR Permit to Mine permitting process. Financial assurance can be required indefinitely and can include self-sustaining instruments such as trust funds.

**Chapter 3**

Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 47	GLIFWC	3.2.2.4.3 Cessation Of Financial Assurance			The NorthMet project is a perpetual maintenance and water treatment project. This should be clearly stated in this section. Therefore, there is a significant financial assurance component that the applicant will never be able to recover. Finally, a clear statement that the state of Minnesota will ultimately be responsible for conducting any long term maintenance and/or cleanup because it is not realistic to assume that this mining company will exist past closure.	The Closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. Text has been added to section 3.2.2.3.12 to reflect this.  Financial assurance can be required indefinitely and can include self-sustaining instruments such as trust funds.

## Chapter 3

Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
1854 15	1854	3.2.2.3.12 Reclamation And Long-term Closure Management	Water Management - 3rd paragraph	3-133	Effectiveness of water treatment and seep collection are vital to the project meeting standards. Analysis and design detail are lacking in the PSDEIS. Concern exists over the need for long-term treatment and also for the regulatory ability to allow for it. More detail is needed on water treatment and seep collection, including long-term operation/maintenance, since they are essential components of the project meeting environmental standards.	Groundwater containment with slurry walls and permeable trenches has been routinely performed at mine and industrial sites over the last 50 years. There are hundreds of currently operating systems. When geologic conditions are favorable (particularly the presence of a low permeability basal unit that can be keyed into), it is typical to achieve greater than 90 percent groundwater capture. At the Mine and Plant Sites, the geologic conditions are favorable due to the presence of low permeability bedrock. Performance modeling of the containment systems performed by PolyMet and reviewed by the Co-Leads provides strong evidence that the capture efficiency will be greater than 90 percent. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. Additional detail would be provided for permitting.
GLIFWC 41	GLIFWC	3.2.2.1.10 Reclamation And Long-term Closure Management			Description of long term maintenance needs for the west pit lift station is needed.	The West Pit Lift station would be maintained as per needed in accordance with the reclamation plan, similarly as the WWTF would. Appropriate details would be provided for permitting
GLIFWC 49	GLIFWC	3.2.2.1.10 Reclamation And Long-term Closure Management			Describe long term maintenance and monitoring needs for the stormwater ponds and outlet control structures next to the Dunka Rd.	The detailed maintenance and monitoring needs for outlet structures would be provided in the Reclamation Plan as required for permitting
GLIFWC 52	GLIFWC	3.2.2.1.10 Reclamation And Long-term Closure Management			A table describing in detail the long term maintenance, monitoring, and treatment needs is requested.	The following section provide more detail that what could be portrayed in a table. Please refer to the text.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 43	GLIFWC	3.2.2.3.10 Engineered Water Controls			How long would the tailings basin water collection and treatment system operate in post closure?	The Closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. Text has been added to section 3.2.2.3.12 to reflect this.
GP 38	GP	3.2.2.3.12 Reclamation And Long-term Closure Management	Asbestos – containing materials	3-127	(this section does not include waste rock and tailings where chrysotile is likely to be found)	Reclamation of the Tailings Basin is described in the "Tailings Basin Reclamation" Section. Fugitive dust would be controlled on the upland areas by mulching and vegetation. Waste rock management is considered in the reclamation section for the Mine site. No text edits needed.
GP 39	GP	3.2.2.3.12 Reclamation And Long-term Closure Management	The ultimate of the objective of long-term closure would be to transition from the mechanical treatment provided by the WWTP to non-mechanical treatment.	3-133	Major difference of opinion regarding the possibility of transition.	The Closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 48	GLIFWC	3.2.3.3 Development Of The Northmet Project Proposed Action	table 3.2-16 third bullet under environmental consequences		"capture and treatment of virtually all groundwater..." is not realistic or correct. Change to capture and treatment of "most" groundwater...	Groundwater containment with slurry walls and permeable trenches has been routinely performed at mine and industrial sites over the last 50 years. There are hundreds of currently operating systems. When geologic conditions are favorable (particularly the presence of a low permeability basal unit that can be keyed into), it is typical to achieve greater than 90 percent groundwater capture. At the Mine and Plant Sites, the geologic conditions are favorable due to the presence of low permeability bedrock. Performance modeling of the containment systems performed by PolyMet and reviewed by the Co-Leads provides strong evidence that the capture efficiency will be greater than 90 percent. the bullet point has been updated to reflect this.
GP 45	GP	3.2.3.4 Reconsideration Of Previously Eliminated Alternatives	In response to a change in applicability of water quality impact criteria, Polymet further revised the NorthMet project proposed action to include collection of substantially all tailings basin surface and ground water seepage from the existing LTVSMC tailings basin and the proposed NorthMet tailings basin by a vertical hydraulic barrier constructed from the ground surface down to the top of bedrock...This combination of the wet cap option along with collection and treatment engineering controls were shown in modeling to meet water quality criteria.	3-145	Is there an example of the effectiveness of these mitigations in real-life, or is this simply modeled effectiveness?	Groundwater containment with slurry walls and permeable trenches has been routinely performed at mine and industrial sites over the last 50 years. There are hundreds of currently operating systems. When geologic conditions are favorable (particularly the presence of a low permeability basal unit that can be keyed into), it is typical to achieve greater than 90 percent groundwater capture. At the Mine and Plant Sites, the geologic conditions are favorable due to the presence of low permeability bedrock. Performance modeling of the containment systems performed by PolyMet and reviewed by the Co-Leads provides strong evidence that the capture efficiency will be greater than 90 percent.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
FDL 11	FDL	3.2.3.4.1 Underground Mining Alternative	para 1, para 3	p 3.2.3.4.	Para 1 states that the underground mining alternative "was eliminated from further consideration in the DEIS as it was determined that it would not offer substantial environmental or socioeconomic benefits compared to the NorthMet Project Proposed Action." The entirety of para 3 defines substantial environmental benefits from the underground mining alternative. Inconsistent.	The statement relates to how the alternative was considered in the DEIS released in 2009. For the SDEIS, the alternative was further considered and the potential environmental benefits of an Underground Mine are recognized in section 3.2.3.4.1; however, these are moot if an underground mine is not economically viable as there would be no action. The SDEIS reflects the findings of the Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange Environmental Impact Statement (MDNR et al. 2013a)
GLIFWC 59	GLIFWC	3.2.3.4.1 Underground Mining Alternative			GLIFWC staff disagree with the lead agency position paper on the underground alternative. See GLIFWC underground mining attachment for more information (will be provided by July 3rd)	The Co-leads have eliminated the Underground Mining Alternative based on the rationale provided in section 3.2.3.4.1.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 46	GP	3.2.3.4.1 Underground Mining Alternative	The underground mining alternative was considered but eliminating as alternative E7 in Table 3.2-4 of the DEIS. It was eliminated from further consideration in the DEIS as it was determined that it would not offer substantial environmental or socioeconomic benefits compared to the NorthMet project proposed action.	3-146	Underground mining would offer substantial environmental benefits.	The statement relates to how the alternative was considered in the DEIS released in 2009. For the SDEIS, the alternative was further considered and the potential environmental benefits of an Underground Mine are recognized in section 3.2.3.4.1; however, these are moot if an underground mine is not economically viable as there would be no action. The SDEIS reflects the findings of the Co-lead Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange Environmental Impact Statement (MDNR et al. 2013a)
1854 17	1854	3.2.3.4.1 Underground Mining Alternative	5th paragraph	3-146	Project itself may not be viable, but the economic assessment for underground mining alternative only looks at one side of the equation, and does not look at costs for environmental benefits.	The potential environmental benefits of an Underground Mine are listed in section 3.2.3.4.1; however these are moot if an underground mine is not economically viable as there would be no action.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
FDL 12	FDL	3.2.3.4.2 West Pit Backfill	West Pit Backfill	p 3-147, 1	states: "Furthermore, the DEIS noted that there are additional mineral resources in the West Pit that would effectively be lost if the pit was used for waste rock and/or tailings disposal." and "Backfilling the West Pit would encumber private mineral resources that are deeper than the proposed West Pit. Such an encumbrance is in conflict with the terms of PolyMet's current private mineral leases." Inconsistent with the earlier determination that the private mineral resources accessed through underground mining are not economically feasible.	The conclusions made are not inconsistent. Lease conditions are separate to viability of an underground mine. The underground mining alternative considered (among other screen criteria) the economic viability of an underground mine as reasonable based on current site and market conditions.
FDL 13	FDL	3.2.3.4.2 West Pit Backfill	West Pit Backfill	p 3-148	"The cost of physically backfilling the West Pit and other associated costs, including those for additional mechanical water treatment (required to treat increased constituent loads) and financial assurance requirements, could affect the ability of PolyMet to secure financing." why would constituent loads from subaqueous disposal of Cat. 1 waste be increased relative to their proposed treatment as a capped stockpile?	Handling and exposing the waste rock to elements when backfilling into the West Pit may liberate constituents resulting in a more rapid constituent loading and therefore needing increased treatment rates. Because the comment relating to the costs of backfilling does not add value to the outcome of screening the alternative, it has been deleted from the section.
GLIFWC 60	GLIFWC	3.2.3.4.2 West Pit Backfill			GLIFWC staff disagree with the lead agency position paper on the west pit backfill alternative. See GLIFWC backfill attachment for more information (will be provided by July 3rd)	The Co-leads have eliminated the West Pit Backfill Alternative based on the rationale provided in section 3.2.3.4.2.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 47	GP	3.2.3.4.2 West Pit Backfill	In response to the Bands request, the co-lead agencies reconsidered the option to back fill the west pit against the same screening criteria used for all potential alternatives. Further consideration concluded that the west pit would have sufficient capacity to accept all of the Category 1 stockpile material, but for safety and operational reasons under the proposed mine plan, the west pit would not be available for back filling until the end of mining, still included a pit lake approximately 105 feet deep. Therefore, the full category 1 stockpile would still be required for the 20 year life of mine. As such, throughout operations of the mine, compared to the NorthMet project proposed action, there would be no change to: ...potential long term pit water constituent loading to groundwater, and eventually to the Partridge River, would likely be increased under the back filled condition.	3-147	This is inconsistent with other sections of the EIS.	The Co-leads have eliminated the West Pit Backfill Alternative based on the rationale provided in section 3.2.3.4.2. The Category 1 Stockpile would be managed to capture and treat contact water during and after the development of the stockpile, and limit water contact (capping) after it is constructed. Backfilling that material into the west pit may liberate and increase constituent loads in that water body, still requiring long term treatment. Screening identified that because of the temporal effect that the Category 1 Stockpile would have, those effects would be required to be mitigated regardless of future backfilling or not. Furthermore, the potential environmental benefit is moot or outweighed because encumbrance is not allowed in PolyMet's private mineral leases and because the costs associated with backfilling may affect the ability of PolyMet to secure financing and thus render it economically infeasible (USACE et al. 2013).

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 48	GP	3.2.3.4.2 West Pit Backfill	Further more, the potential environmental benefit is moot or outweighed because incumberance is not allowed in PolyMet's private mineral leases and because the cost associated with back filling may affect the ability of PolyMet to secure financing and thus render it economically infeasible.	3-148	This is the first time we have heard anything about the cost associated with back fill, or the ability of PolyMet to secure financing connected to back filling the west pit? Please clarify or remove this statement.	The SDEIS discussion (including cost) is consistent with the Interagency memo on West Pit Backfill Alternative (USACE et al. 2013) . No change
GP 49	GP	3.2.3.5 Identification Of New Alternatives	Table 3.2-17 line E20 SDEIS screening outcome (disposal of waste rock in the west pit) continues to be eliminated. Reconsidered but would not offer substantial environmental benefit.	3-149	Would offer substantial environmental benefit.	Section outlines that opportunity to reclaim wetlands/vegetation on Category 1 Stockpile footprint is only environmental benefit, but outweighed by temporal effect.
1854 18	1854	3.3.1 Overview	1st paragraph	3-151	A value to value land exchange may result in net loss of federal/public lands within 1854 Ceded Territory. One large tract being exchanged for several smaller tracts. Changes to and loss of public ownership is impact on the exercise of treaty rights. The project is also a permanent loss/impact to natural resources regardless of ownership. Please include these details.	Add sentence... "The final proposed configuration of land will be determined after the market value of the parcels is determined by appraisals and the environmental analysis has been completed. This information will be presented in the Record of Decision."

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 57	GLIFWC	3.3.2.1 Federal Lands Proposed For Exchange	third paragraph		As previously commented, the mine site is not located within the historic mesabi iron range and the property is not surrounded by industrial lands. Correct the text.	Edited sentences... "The federal lands are located adjacent to historic mining projects on the Mesabi Iron Range and are almost surrounded by privately held land used for mining and other industrial purposes; portions of the east and southwest areas of the federal lands are bordered by Superior National Forest lands."  "in the area" to "on the federal lands"
GLIFWC 61	GLIFWC	3.3.2.1 Federal Lands Proposed For Exchange	third paragraph		As previously commented, the federal lands are not within the historic mining district and are not surrounded by private land used for mining	Edited sentences... "The federal lands are located adjacent to historic mining projects on the Mesabi Iron Range and are almost surrounded by privately held land used for mining and other industrial purposes; portions of the east and southwest areas of the federal lands are bordered by Superior National Forest lands."  "in the area" to "on the federal lands"
GLIFWC 58	GLIFWC	3.3.2.2 Non-federal Lands Proposed For Exchange			Section should indicate that all lands that would enter the federal estate have severed mineral and surface ownership.	Added sentence... "All of the non-federal lands except Tract 4 have severed mineral and surface ownership."
GLIFWC 62	GLIFWC	3.3.2.2 Non-federal Lands Proposed For Exchange			Section should state that the lands entering the federal estate would still have severed surface and mineral ownership and therefore future mining cannot be ruled out.	Added sentence... "All of the non-federal lands except Tract 4 have severed mineral and surface ownership."
GLIFWC 63	GLIFWC	3.3.3.3.6 Underground Mining Alternative			GLIFWC disagrees with the elimination of the underground alternative for further consideration in the SDEIS. The only reason for a land exchange is the fact that the applicant has chosen a surface mining operation. The development of an underground project that takes advantage of the entire mineralized zone should be analyzed. See GLIFWC underground mine attachment for more detail.	Feasibility analysis of an underground mining alternative was based on the mineralized zone as defined in accordance with National Instrument 43-101. The Underground Mining Alternative was eliminated from further analysis because it would not be economically viable and would not meet the purpose and need.

**NorthMet Mining Project and Land Exchange PSDEIS (ver. 2)**

**Tribal Comments and Co-lead Agencies' Dispositions**

**8/19/13**

**Chapter 4.2**

## Chapter 4.2

Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
4.2.1 Land Use						
FDL 14	FDL	4.2.1.1 Regulatory Considerations		4.2.1.1.2	should cite Fond du Lac and 1854 CT Conservation Code	Edited as requested.
FDL 15	FDL	4.2.1.4 Plant Site	Legacy Contamination	4.2.1.4.2	"At mine closure, all historic and any potentially operational AOCs would be investigated and remediated as necessary." Does this mean that PolyMet will defer investigation and remediation of existing/legacy contamination until their project concludes?	Edited to indicate that any <i>remaining</i> AOCs would be dealt with after closure. Sentence now says (added text in bold), "At mine closure, all historic and any potentially operational AOCs not already addressed during construction and operations would be investigated and remediated as necessary."
GP 50	GP	4.2.1.4.2 Legacy Contamination	Cliffs Erie received a permit ( SW-625) in 2006 from MPCA to locate two individual land treatment sites within cell 2w of the existing LTVSMC tailings basin. This facility is being used to land farm petroleum-contaminated (I.E., diesel fuel) soils excavat	4.2.1-13	Will PolyMet tailings cover the "farm" of petroleum contaminated soil?	The NorthMet Proposed Action tailings basin would not cover Cell 2W. No text edit.
4.2.2 Water						
GP 79	GP	4.2.2.3.1 Groundwater Resources	There is no East flowpath because bedrock outcrops prevent flow to the surficial aquifer in this direction.	4.2.2-73	A connection to the bedrock aquifer has been arbitrarily ruled out rather than investigated. It seems likely that ponded water from the tailings basin would have "leaked " into the bedrock outcrop through fractures.	Hydrologic characterization data for the Mine and Plant Sites do not indicate the presence of any pervasive fractures or fracture zones in bedrock that could operate as high permeability conduits over long distances. Characterization data further indicate that the <i>bulk</i> hydraulic conductivity of bedrock is very low so that site-scale groundwater flow rates within the unit are correspondingly small.
GP 81	GP	4.2.2.3.1 Groundwater Resources		4.2.2-83	See comments above regarding table 4.2.2-23 Existing Pond Water and Groundwater Quality at the Tailings Basin.	Additional water quality samples will be taken from the LTV tailings pond to confirm its water quality and the results included in the EIS.
GP 87	GP	4.2.2.3.2 Surface Water Resources	...PM 13 which is located downstream of these and all NorthMet Project sources of pollution. Higher concentrations of several parameters, especially aluminum and sulfate are found at PM 13 relative to PM 12.	4.2.2-94	Again, likely the result of previous mining operations that must be mitigated. The mitigation must be part of the no action alternative evaluation.	Higher sulfate concentrations, and possibly aluminum, at PM-13 relative to PM-12 are likely attributable to previous mining as very high sulfate concentrations are coming from Pit 5NW, as discussed on page 4.2.2-94. Discussion of this source will be included in a revised No Action Alternative in the SDEIS.
GP 55	GP	4.2.2.1.3 Wild Rice	Water clarity-clear to moderately colored (stained) water is preferred as dark as stained water can limit sunlight penetration and hinder early plant development	4.2.2-11	Where is this citation from? I have seen abundant wild rice in highly stained water.	Reference will be added.
1854 19	1854	4.2.2.1.3 Wild Rice	last paragraph	4.2.2-11	Please mention that the MPCA is overseeing a variety of studies relating to sulfate and wild rice, with the goal of informing decisions about state water quality standards.	All information provided was considered when the MPCA made their recommendation. Should the application of the standard change, it will be addressed at that time. No text edit

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
1854 20	1854	4.2.2.1.3 Wild Rice	Regulations Applying to Waters...	4.2.2-12	Disagreement exists over application of the standard. No scientific basis exists for seasonal application of standard from April 1 through August 31. Wild rice exists upstream in both rivers from the draft MPCA staff recommended definitions of water used for production of wild rice (compliance points). Application of this standard may be evolving/changing as research is ongoing and the standard will be evaluated. These issues should be clearly addressed in the PSDEIS.	All information provided was considered when the MPCA made their recommendation. Should the application of the standard change, it will be addressed at that time. No text edit
1854 21	1854	4.2.2.1.3 Wild Rice	last paragraph	4.2.2-13	Disagreement exists over application of the standard. Wild rice exists upstream in both rivers from the draft MPCA staff recommended definitions of water used for production of wild rice (compliance points). In the Partridge River, the 2009 survey identified rice near SW-004b. It is arbitrary to define how much rice presence is required, especially given the lack of long-term monitoring data on a water. Application of this standard may be evolving/changing as research is ongoing and the standard will be evaluated. These issues should be clearly addressed in the PSDEIS.	All information provided was considered when the MPCA made their recommendation. Should the application of the standard change, it will be addressed at that time. No text edit
1854 22	1854	4.2.2.1.3 Wild Rice	Figure 4.2.2-3	4.2.2-15	The map only shows wild rice survey results from 2011. Please include all survey results (2009-2012) to indicate rice presence in those years. A one year or few year look at wild rice is only a small snapshot in time, and may not provide an accurate picture of an annual plant like wild rice.	Figure deleted. Was originally included as example only and did not add value to the description in text.
GP 64	GP	4.2.2.2.1 Groundwater Resources	Results based on vegetation species, percent areal cover of sphagnum mosses (high sphagnum cover is associated with bogs), and pH and salinity (bogs tend to have lower pH and salinity that hydraulically connected wetlands) indicated that approximately 50% of the wetlands within the NorthMet project area are probably ombrotrophic.....based on the ground water elevations within the surficial aquifer, groundwater at the mine site generally flows to the south with the major component from the northwest direction to the south east (perpendicular to the strike of the bedrock geologic formations) toward the Partridge River, which is the major discharge point for the area.	4.2.2-26	These results conflict with other professionals that have published peer reviewed analysis of hydrology in peatlands. Few, if any of the sites identified as ombrotrophic at PolyMet had solely black spruce and no tamarack growing, and the landforms were mostly concave not convex.	Criteria used to identify ombrotrophic was based on site specific conditions and defined in the Eggers 2011 memo (this is the Eggers 2011a reference). The text has been edited to reflect this.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 73	GP	4.2.2.2.2 Surface Water	There are limited water quality data available from the mainstem of the Partridge River that predate the operation of the North Shore Mine in 1956 that can be used to characterize relatively "undisturbed conditions". There are, however, 6 samples collected during the regional copper-nickel study in 1976 and 1979 along the south branch of the Partridge River at the US gaging station #4015455. These samples were unaffected by mining and most potential significant sources of contamination, thus they can provide some insights on "undisturbed condition" water quality in the Partridge River for several key parameters.	4.2.2-52	Lack on characterization does not mean natural. Groundwater in the surficial and bedrock aquifer has been polluted by previous and existing taconite mines in the area. Mesabi Nugget demonstrated a bedrock connection between pits 1 and 9, 9S and the St. James Pit . These pits are all within the old LTVSMC mining site.	As stated in the text, samples from USGS Gaging Station #4015455 (Figure 4.2.2-1) were unaffected by mining and most potential significant sources of contamination, thus they can provide some insights on "undisturbed condition" water quality in the Partridge River for several key parameters.
GP 74	GP	4.2.2.2.2 Surface Water	Upper Partridge River Tributary Streams ... In terms of surface water quality, Wetlegs creek and Longnose creek drain to relatively undisturbed watersheds; where as Wyman creek drains an area previously mined by LTVSMC, including area 3 and area 5s pits. ...	4.2.2-54	Again, this does not appear to be natural, but the result of decades of taconite mining, even in "relatively" undisturbed watersheds.	As stated in the text, samples from USGS Gaging Station #4015455 (Figure 4.2.2-1) were unaffected by mining and most potential significant sources of contamination, thus they can provide some insights on "undisturbed condition" water quality in the Partridge River for several key parameters.
GP 85	GP	4.2.2.3.2 Surface Water Resources	Table 4.2.2-28 NPDES/SDS Discharges to the Embarrass River Watershed Pit 1 dewatering discharge to Wynne Lake	4.2.2-93	Pit 1 Discharges to Second Creek and Pit 2WX, does it also discharge to Wynne Lake?	There is no current discharge Pit 1 to Wynne Lake
GLIFWC 104	GLIFWC	4.2.2 Water Resources	Table 4.2.2-29	94	the values in this table for PM-12 are different than the values used in "Calibration of the Existing Natural Watershed at the Plant Site v4 MAR2012", why? For example SO4 in Table 4.2.2-29 gives average So4 as 6.9 mg/L while "Calibration of the Existing Natural Watershed at the Plant Site v4 MAR2012" page 38 reports 4.34 mg/L. Manganese in Table 4.2.2-29 reports an average of 365 mg/L while "Calibration of the Existing Natural Watershed at the Plant Site v4 MAR2012" page 36 reports 158 mg/L. Why?	The values in Table 4.2.2-29 will be confirmed and updated as appropriate in the SDEIS.

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GLIFWC 72	GLIFWC	4.2.2.3.2 Surface Water Resources	Embarras River WQ section		The first section is not correct. The river is on the draft 2012 303d list. See GLIFWC figure 3 in wild rice attachment. The section should also indicate that the wild rice standard is being exceeded in the Embarras river because of effluent from the tailings basin and area 5 pits.	Text revised to clarify the current status of 303(d) listings.
GLIFWC 68	GLIFWC	4.2.2.2.2 Surface Water			The XP-SWMM modeling is fatally flawed and not suitable for use in the SDEIS. See GLIFWC hydrology attachment.	We believe the XP-SWMM modeling is acceptable for use in the SDEIS. The 20 year old data is acceptable as there haven't been any significant changes within the watershed. We believe the assumptions used were reasonably conservative. Additional detail is provided in the water sections of the SDEIS, and further rationale is provided in the Water Data Packages.
GLIFWC 69	GLIFWC	4.2.2.2.2 Surface Water			Section states that the old gauge represents current flows. We disagree. The hydrology of the Partridge river is incorrectly characterized because of the fatal flaws of XP-SWMM.	We believe the XP-SWMM modeling is acceptable for use in the SDEIS. The 20 year old data is acceptable as there haven't been any significant changes within the watershed. We believe the assumptions used were reasonably conservative. Additional detail is provided in the water sections of the SDEIS, and further rationale is provided in the Water Data Packages.
GLIFWC 96	GLIFWC	4.2.2 Water Resources	Table 4.2.2-9 & paragraph on pg.44		yes, Northshore dewater into partridge. So simply subtract the flow from the RR tracks from the flow measures further downstream. Result: 2.3 cfs at SW-003, not the 0.51cfs predicted by XP-SWIMM. p.s. I think Table 4.2.2-9 values from XP-SWIMM are obsolete values (see table 4.2.2-8).	We believe the XP-SWMM modeling is acceptable for use in the SDEIS. The 20 year old data is acceptable as there haven't been any significant changes within the watershed. We believe the assumptions used were reasonably conservative. Additional detail is provided in the water sections of the SDEIS, and further rationale is provided in the Water Data Packages. XP-SWMM values in Table 4.2.2-9 have been revised.
GLIFWC 100	GLIFWC	4.2.2 Water Resources	table 4.2.2-15	55	high SO4 water of Wyman Cr. is entering the rice waters of the Partridge river. Given that the Partridge is already 9.1 mg/L at SW-005 the addition of high sulfate water by Wyman Cr. almost certainly causes the Partridge R. to exceed 10 mg/L. Does this exceedance influence the Polymet project in any way?	No. Under Minnesota Rules chapter 7050 discharges, either direct or indirect, must not cause violation of water quality standards in the immediate receiving waters, but also must not cause exceedances in downstream waters that have more stringent water quality standards. No discharges are planned from the Mine Site during operations and reclamation. During long-term closure, West Pit water will be pumped to the Mine Site WWTF, the effluent from which will require an NPDES/SDS permit to discharge to the Partridge River. The WWTF, when it starts discharging to the PR, will be designed to meet an effluent target of <10 mg/L SO4 (RC)

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GLIFWC 101	GLIFWC	4.2.2 Water Resources	text and table 4.2.2-23	83	Tailings pond water quality was measured in 2001-2004 and has not been measured since 2004. The claim, used in the No-Action or Current Condition models that water level and quality at the basins has stabilized, can not be confirmed or refuted with such a limited & old data set. Current data on water quality in the tailings pond must be collected to verify if the tailings basins are currently hydrologically stable. It seems unlikely that the pond water quality would stay the same over the last 9 years given that the only water input to the system has been rainwater.	Additional water quality samples will be taken from the LTV tailings pond to confirm its water quality and the results included in the EIS.
GLIFWC 102	GLIFWC	4.2.2 Water Resources	Legacy Groundwater Quality Issues	87	the title of these two paragraphs suggest that it is a discussion of general contamination, yet the text only addresses organics. The text must be expanded to discuss groundwater contamination of all types.	The discussion under Legacy Groundwater Quality Issues will be expanded to include other constituents.
GLIFWC 64	GLIFWC	4.2.2.1.3 Wild Rice	third bullet	4.2.2-11	There is no question that wild rice is affected by sulfate. The text should state that healthy and natural stands of wild rice are found in waters of 10 ppm sulfate or less. See GLIFWC wild rice attachment.	The text already states that 'Some research has indicated that natural wild rice thrives better in low sulfate waters.'. No text edit.
GLIFWC 65	GLIFWC	4.2.2.1.3 Wild Rice	First paragraph of section		States that "current scientific understanding of its habitat requirements is limited". This is not correct, the habitat requirements are well known. Correct your work.	Text clarified.
GLIFWC 93	GLIFWC	4.2.2 Water Resources	1st full paragraph	20	"consequently, the 10 mg/L water quality standard for sulfate would not apply to this portion of the river (MPCA 2011b)." the "not" appears to be incorrect	Disagree. According to MPCA 2011a, the 10 mg/L water quality standard would not apply to this portion of the river.
GLIFWC 94	GLIFWC	4.2.2 Water Resources	last sentence on pg26 and 1st paragraph on 27		a 2010 field survey is mentioned. The pH and "salinity" data reported in Eggers 2011a, I believe to be data I collected. No "salinity" measures were collected. The data appears to have been misunderstood. Please contact me (john coleman) concerning this data.	Text revised to remove reference to salinity and be more consistent with Eggers 2011a.
GLIFWC 98	GLIFWC	4.2.2 Water Resources	table 4.2.2-14	53	SW-005 shows a mean value of 9.11 mg/l of SO4. an average of 9.11 probably indicates that at times the SO4 10mg/L is exceeded at SW-005. The underlying data needs to be referenced and available.	The surface water quality data used to support the water quality modeling is in Barr 2013b (Technical Memorandum: Ongoing data collection for the NorthMet water quality modeling, aka Data Sufficiency Document, Version 3. February 25, 2013), as stated under the table.

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GLIFWC 99	GLIFWC	4.2.2 Water Resources	many data tables		need sample size for the averages. otherwise the averages communicate very little information.	Tables 4.2.2-12, 4.2.2-14, 4.2.2-15, and 4.2.2-29 have been revised to include columns with detection and range data. The surface water quality data used to support the water quality modeling is in Barr 2013b (Technical Memorandum: Ongoing data collection for the NorthMet water quality modeling, aka Data Sufficiency Document, Version 3. February 25, 2013), as stated under the table.
GLIFWC 103	GLIFWC	4.2.2 Water Resources	Table 4.2.2-29	94	Sulfate exceeds the 10mg/L standard for a substantial stretch of the Embarrass between Hwy 135 to Sabin Lake. Average SO4 at PM-13 is 31.8. Again sample size is needed in order to evaluate the information in the table. This reported average is very different than the modeled P50 (existing condition) value in figure 5.2.2-49, why?	Table 4.2.2-29 has been modified to include the number of samples for both locations. Original data is available in Barr 2013b. The calibrated water quality model PM-13 (Embarrass R. below all Mine Site loads) overestimates mean sulfate concentrations for existing conditions relative to measured values, apparently because the model does not incorporate removal of sulfate by chemical reduction processes (Barr 2012j, Section 2.2). The overall calibration of the No Action Model was approved by the Co-lead Agencies.
GLIFWC 105	GLIFWC	4.2.2 Water Resources	table 4.2.2-29	94	the existing water quality at PM-13 reported in this table is substantially different than the P50 values reported as (continuation of existing conditions) in chapter 5 (e.g. fig. 5.2.2-49) and substantially different from the P50 values reported as No-Action model in the modeling data package (Water Modeling Data Package Vol 2-Plant Site v9 MAR2013.pdf). This suggests that the model is poorly calibrated and unlikely to accurately predict project impacts.	The surface water quality model was calibrated to conditions in the Embarrass River at a location above where mining had effected water quality (i.e., location PM-12), and conditions at down-stream locations were then estimated by adding known loads (for existing conditions model) and/or possible new loads (for Proposed Action model). The predicted model range for monthly concentrations over the 200-year simulation in the Embarrass R. below all Plant Site Area loads (i.e., minimum P10 to maximum P90 concentrations at location PM-13 ) brackets average measured concentrations for most constituents reported in Table 4.2.2-49. The model does overestimate mean sulfate concentrations for existing conditions at PM-13 relative to measured values, apparently because the model does not incorporate removal of sulfate by chemical reduction in the river and wetlands (Barr 2012j, Section 2.2). The accuracy of this Embarrass River water-quality model, as calibrated to existing conditions, was approved by the Co-lead Agencies as adequate to support the NorthMet SDEIS.

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GLIFWC 106	GLIFWC	4.2.2 Water Resources	table 4.2.2-14	53	the existing water quality in the Partridge reported in this table is substantially different than the P50 values reported as "continuation of existing conditions" in chapter 5 and substantially different from the P50 values reported as No-Action model in the modeling data package (e.g. Fig. K-06-24.2[SO4] and Fig. K-06-25.2 [Thallium], Water Modeling Data Package Vol 2-Plant Site v9 MAR2013.pdf . This suggests that the model is poorly calibrated and unlikely to accurately predict project impacts.	The surface water quality model was calibrated to conditions in the Embarrass River at a location above where mining had effected water quality (i.e., location PM-12), and conditions at down-stream locations were then estimated by adding known loads (for existing conditions model) and/or possible new loads (for Proposed Action model). The predicted model range for monthly concentrations over the 200-year simulation in the Embarrass R. below all Plant Site Area loads (i.e., minimum P10 to maximum P90 concentrations at location PM-13 ) brackets average measured concentrations for most constituents reported in Table 4.2.2-49. The model does overestimate mean sulfate concentrations for existing conditions at PM-13 relative to measured values, apparently because the model does not incorporate removal of sulfate by chemical reduction in the river and wetlands (Barr 2012j, Section 2.2). The accuracy of this Embarrass River water-quality model, as calibrated to existing conditions, was approved by the Co-lead Agencies as adequate to support the NorthMet SDEIS.
GLIFWC 116	GLIFWC	4.2.2 Water Resources	Table 4.2.2-34	99	the means shown here for seeps at the toe of the basins are very different from the No-Action (continuation of existing conditions) values modeled in Water Modeling Data Package Vol 2-Plant Site v9 MAR2013.pdf. For example, Table 4.2.2-34 reports PM-10 (on the north toe) as having a mean Mn value of 100,192 mg/L, whereas Figure F-01-18.1 shows "continuation of existing conditions" as an annual maximum of 390 ug/L. at the north toe. Aluminum is reported in Table 4.2.2-34 as a mean of 39.6 ug/L at PM-10 yet reported as a maximum for existing conditions at the north toe as 11 ug/L in Figure F-01-02.1. These discrepancies between observed values at the north toe and the modeled existing conditions at the north toe suggests that the Goldsim model is poorly calibrated and unlikely to accurately predict project impacts.	The NorthMet Plant Site water-quality model used the composition of water in monitoring locations GW001, GW006, GW007, GW012, SD004, and SD026 as concentration targets for the GoldSim model (and PolyMet 2013L, Section 10.2.1 and Large Figure 5; see Figure 4.2.2-13 in this SDEIS). The overall calibration of the No Action Model was approved by the Co-lead Agencies.
GLIFWC 66	GLIFWC	4.2.2.1.3 Wild Rice	Regulations section		we disagree with the MPCA's interpretation of the points of compliance. See GLIFWC wild rice attachment.	All information provided was considered when the MPCA made their recommendation.

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GLIFWC 67	GLIFWC	4.2.2.2.1 Groundwater Resources	end of page		The 2010 field survey of wetlands focused on vegetation and plant lists. This information does not yield conclusive information on the effects that groundwater drawdown would have on a wetland. See GLIFWC wild rice attachment.	No change to SDEIS text.
GLIFWC 70	GLIFWC	4.2.2.2.2 Surface Water			The section should state that Wyman creek has elevated sulfate at PM-5 which is likely a direct result of past mine impact. What is the effect of Wyman creek water on the wild rice standard compliance?	The fact that Wyman Creek drains an area previously mined by LTVSMC is discussed in the text preceding Table 4.2.2-15.
GLIFWC 71	GLIFWC	4.2.2.3.1 Groundwater Resources			There is no question that historic contamination from the LTV tailings basin has been the most important factor in water quality in the area. Discussing natural processes and ignoring the tailings basin effluent in the discussion of existing water quality values is not appropriate.	Water quality affected by the LTV tailings is listed in Table 4.2.2-3. The baseline water quality sought wells that displayed minimal effect of LTV tailings seepage so that effects of the proposed action could be most easily compared to pre-mining conditions.
GLIFWC 73	GLIFWC	4.2.2.3.2 Surface Water Resources	top of page	4.2.2-97	Uses an outdated point of compliance for the wild rice sulfate standard. Correct the text	The text will be consistent with the most recent MPCA recommendation.
GLIFWC 74	GLIFWC	4.2.2.3.2 Surface Water Resources		4.2.2-101	same comment as above.	The text will be consistent with the most recent MPCA recommendation.
GLIFWC 90	GLIFWC	4.2.2 Water Resources	last paragraph	13	"the portion of Upper Partridge River from river mile approximately 22 just upstream of the railroad bridge near Allen Junction, " from where to where?"	Text edited.
GLIFWC 92	GLIFWC	4.2.2 Water Resources	Table 4.2.2-14	53	the values in Table 4.2.2-14 are referenced to (Barr 2008f) i.e. RS74A but in that document "Table 5-3: Average baseline concentrations observed in the Partridge River" in that document shows different values. RS63 (Draft PolyMet Mining Baseline Surface Water Quality Information Report) shows individual values from 2004 but these are yet different. Where did the values in Table 4.2.2-13 come from?	Table 4.2.2-14 references Barr 2013b (Technical Memorandum: Ongoing data collection for the NorthMet water quality modeling, aka Data Sufficiency Document, Version 3. February 25, 2013), which is the cumulative repository for surface and groundwater quality data measured for the NorthMet Project. Table 4.2.2-13 cites as its source" MPCA, 2013a," <a href="http://www.pca.state.mn.us/index.php/water/index.html">http://www.pca.state.mn.us/index.php/water/index.html</a> , which is the MPCA's web site to access water quality data.

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GLIFWC 91	GLIFWC	4.2.2 Water Resources	table 4.2.2-12	52	sulfate is nearly exceeded by the mean at station SW-005, some readings exceed the standard. The rice standard applies there but no numeric rice standard is shown in the table	Agree. Text is revised
GLIFWC 95	GLIFWC	4.2.2 Water Resources	mid-paragraph	39	yes, there is inadequate flow data for the upper Partridge. however there has been a gage on the upper Partridge at the Dunka Rd. ( <a href="http://www.dnr.state.mn.us/waters/csg/site_report.html?mode=get_site_report&amp;site=03155002">http://www.dnr.state.mn.us/waters/csg/site_report.html?mode=get_site_report&amp;site=03155002</a> ) for over 2 years now. The spot flow measurements and data from that gage help clarify flow in the Partridge. Those measures show substantially more baseflow than that predicted by XP-SWIMM. The recent data needs to be used and the models (SP-SWIMM, Modflow & Goldsim) need to be calibrated to the more accurate flow data now available. (see GLIFWC Hydrology attachment for more information)	The difference in the base flows are very small (indistinguishable from a stage standpoint). We believe the assumptions used were reasonably conservative in terms of water quantity.
GLIFWC 97	GLIFWC	4.2.2 Water Resources	1st paragraph, last sentence	51	yes, there is uncertainty in the Northshore discharges. The DNR must require better reporting or else install a gage near Northshore's discharge. The lack of adequate reporting of discharges and flows in the upper Partridge prevents the adequate evaluation of upper Partridge hydrology.	Northshore is meeting the statutory requirements.
FDL 17	FDL	4.2.2.1.3 Wild Rice	Table 4.2.2-9	P 4.2.2-43	Modeled baseflow in the Partridge River is underestimated by an order of magnitude. Tribal cooperating agencies have identified this as an area of substantial disagreement, and will be providing addition supporting analysis. See also GLIFWC comments.	We believe the assumptions used were reasonably conservative.
FDL 16	FDL	4.2.2.1.3 Wild Rice	wild rice	4.2.2-12,	Fond du Lac disagrees with the determination of waters used for the production of wild rice within the Embarrass River watershed; there is documented existing, albeit diminished, wild rice much further upstream.	All information provided was considered when the MPCA made their recommendation.
GP 86	GP	4.2.2.3.2 Surface Water Resources	Immediately downstream from PM 12, Spring Mine Creek flows into the Embarrass River....Spring Mine Creek receives water from Pit 5NW....This discharge has a sulfate concentration of 1,042 mg/l.	4.2.2-94	The sulfate standard for the production of wild rice is 10 mg/l and applies in the Embarrass River. Major difference of opinion where the standard applies.	The SDEIS relies on the MPCA draft staff recommendation regarding the location of waters supporting the production of wild rice.

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GP 71	GP	4.2.2.2.2 Surface Water	The Rosgen field survey found the Partridge River to be stable with no evidence of erosion except in its headwaters....the limited erosion and / channel widening found in the head waters may be attributable to pit dewatering discharges from the North Shore mine, which has a maximum permitting discharge rate of 29 cfs, and a historic straightening of the river channel for construction of a railroad.	4.2.2-44	This should be listed as a cumulative impact for the Partridge River.	Text edited in Section 6.2.3.3.
GP 52	GP	4.2.2.1.2 Water Resource Use Classifications	All NorthMet project area waters are also designated outstanding international resource waters. (Minnesota rules, part 7050.04607052.0300).	4.2.2-6	An antidegradation analysis is required prior to permitting.	This will be addressed during the permitting process.
GP 54	GP	4.2.2.1.3 Wild Rice	The historic range of natural wild rice is believed to have encompassed all of Minnesota (Moyle 1945), although it was most common in areas of glacial moraines in central and northern Minnesota. Based on a recent inventory, natural wild rice is still found in 55 counties in Minnesota.	4.2.2-10	(Albert Jenks, 1908) Wild rice was found in every tributary to the St. Louis River and the St. Louis River.	Paragraph has been deleted (see response to GP 56 and 57).
GP 59	GP	4.2.2.1.3 Wild Rice	Table 4.2.2-3 Upper Partridge River of Colvin Creek to Colby Lake - Not Surveyed.	4.2.2-19	This area needs to surveyed and additional information provided regarding the historic and current presence of wild rice.	This area was surveyed and the MPCA determined a portion to be waters for the production of wild rice.
GP 60	GP	4.2.2.1.4 Mercury	All samples had less than average concentrations in precipitation, so most mercury appears to be sequestered in the LTVSMC tailings.	4.2.2-20	I am not aware of any surface water within Northeastern Minnesota that has average mercury concentrations even approaching the average concentration of mercury in precipitation. Therefore, all sediments may be able to sequester mercury.	Text edited. Deleted last sentence of paragraph.
GP 69	GP	4.2.2.2.2 Surface Water	Table 4.2.2-9 Comparison of MDNR Winter 2011 Base Flow Gagings with modeled 30 low-flow.	4.2.2-43	The comparison of measured baseflow with modeled flow demonstrates that the modeled flow is five times less than the measured baseflow in the upper Partridge River, and less than half the measured baseflow at CR666.	We believe the assumptions used were reasonably conservative.
GP 70	GP	4.2.2.2.2 Surface Water	For all locations along the Partridge River, the XP-SWMM-estimated baseflow is less than the MDNR-measured winter flow. This disparity is believed to occur because the XP-SWMM model was calibrated to low flow conditions when there was no dewatering from the North Shore mine pit (January and February 1985); however, the North Shore mine was dewatered during the MDNR measurements.	4.2.2-44	Major difference of opinion. Modeling baseflows that are less than one fifth of the measured flows creates a project that is not predicted to have groundwater impacts for hundreds of years.	We believe the assumptions used were reasonably conservative.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 77	GP	4.2.2.3.1 Groundwater Resources	Since the existing LTVSMC tailings basin was built up over time a ground water mound formed beneath the basin due to seepage from the ponds located within the various cells. Surface seeps initially occurred on the south, west, and north sides of the tailings basin; however, the seeps have dried out since January 2001 when LTVSMC terminated deposition in the basin. The east side of the tailings basin is bounded by low permeability bedrock uplands and there is likely little or no water seeps out of this direction	4.2.2-73	(unlikely to have no seepage on the east side of the tailings basin)	Text edited. The east side of the Tailings Basin is bounded by low-permeability bedrock uplands and there is likely little water that seeps out in this direction.
GP 78	GP	4.2.2.3.1 Groundwater Resources	Recent groundwater seepage from the existing LTVSMC tailings basin to the north to the Embarrass River was estimated to be approximately 2,020 gpm. This seepage rate exceeds the capacity of the surficial aquifer to transmit water resulting in an upwelling to the surface of approximately 1,811 gpm of ground water. This upwelling in conjunction with surface seeps (that are also likely the result of tailings basin seepage) has inundated some wetlands immediately down gradient of the existing LTVSMC tailings basin.	4.2.2-73	(that are also likely the result of tailings basin seepage)	Text edited. New text in bold: ". . . This seepage rate exceeds the capacity of the surficial aquifer to transmit water, resulting in upwelling to the surface of approximately 1,811 gpm of groundwater. This upwelling and seepage from the LTVSMC tailings <b>created or expanded wetlands immediately down-gradient of the LTVSMC Tailings</b> , and then inundated these same wetlands (see Section 4.2.3).
GP 80	GP	4.2.2.3.1 Groundwater Resources	The manganese levels were within the range of baseline concentrations found by MPCA in Northeast Minnesota (MPCA 1999) and in the Regional Copper-Nickel study, but aluminum and iron values were above the concentrations found in these two studies. Aluminum, iron and manganese concentrations are heavily influenced by natural processes....	4.2.2-81	These are also constituents that are elevated around taconite operations from air scrubbers and process water. See: Metals Emissions from Taconite Ore Processing Facilities in Minnesota, Hongming Jiang, Chun Yi Wu, and Todd Biewen, Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, MN 55155, U.S.A.	The cited paper ( <a href="http://www.pca.state.mn.us/index.php/view-document.html?gid=2323">http://www.pca.state.mn.us/index.php/view-document.html?gid=2323</a> ) discusses particulate emissions, but not effects on groundwater quality. Dissolved concentrations of aluminum, iron, and manganese reflect specific geochemical conditions more than total solid-phases concentrations, as discussed in the cited section of the PSDEIS.
GP 82	GP	4.2.2.3.1 Groundwater Resources	The limited amount of pond water quality data generally show fluoride concentrations that are elevated relative to groundwater evaluation criteria. This could be attributable to the historic use of wet scrubbers for emission control at the former LTVSMC furnaces.	4.2.2-84	See: Metals Emissions from Taconite Ore Processing Facilities in Minnesota, Hongming Jiang, Chun Yi Wu, and Todd Biewen, Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, MN 55155, U.S.A.	Citation added to the PSDEIS to support scrubbers as a source of fluoride in tailings pond water. Revised text in bold: ". . . These scrubbers removed highly soluble hydrogen fluoride gas ( <b>Jiang et al., Undated</b> ), resulting in elevated fluoride concentrations in the scrubber water, which was . . . "

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 83	GP	4.2.2.3.1 Groundwater Resources	Groundwater quality monitoring at several wells completed in the surficial aquifer at or near the toe of the tailings basin found neutral to basic pH and elevated concentrations for several parameters. As with the baseline wells these wells exhibited elevated aluminum, iron, and manganese concentrations, but also exhibited elevated sulfate, fluoride, molybdenum, and TDS.	4.2.2-84	See: Metals Emissions from Taconite Ore Processing Facilities in Minnesota, Hongming Jiang, Chun Yi Wu, and Todd Biewen, Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, MN 55155, U.S.A.	The cited paper ( <a href="http://www.pca.state.mn.us/index.php/view-document.html?gid=2323">http://www.pca.state.mn.us/index.php/view-document.html?gid=2323</a> ) discusses particulate emissions, but not effects on groundwater quality. Dissolved concentrations of aluminum, iron, and manganese reflect specific geochemical conditions more than total solid-phase concentrations, as discussed in the cited section of the PSDEIS.
GP 84	GP	4.2.2.3.1 Groundwater Resources	In terms of the residential wells located farther from the tailings basin, the samples from several wells indicated that manganese concentrations exceeded groundwater evaluation criteria.	4.2.2-85	See: Metals Emissions from Taconite Ore Processing Facilities in Minnesota, Hongming Jiang, Chun Yi Wu, and Todd Biewen, Minnesota Pollution Control Agency, 520 Lafayette Road North, St. Paul, MN 55155, U.S.A.	The cited paper ( <a href="http://www.pca.state.mn.us/index.php/view-document.html?gid=2323">http://www.pca.state.mn.us/index.php/view-document.html?gid=2323</a> ) discusses particulate emissions, but not effects on groundwater quality. Dissolved concentrations of aluminum, iron, and manganese reflect specific geochemical conditions more than total solid-phase concentrations, as discussed in the cited section of the PSDEIS.
GP 88	GP	4.2.2.3.2 Surface Water Resources	...existing LTVSMC tailings basin had at least 33 locations where tailings water was seeping through the embankment to surface waters.	4.2.2-96	Creating many of the seeps contributing water to the Embarrass River and its tributaries in the vicinity of the tailings basin.	No change to SDEIS text.
GP 89	GP	4.2.2.3.2 Surface Water Resources	The average surface sulfate concentration in Sabin Lake was 12.4 mg/l with concentrations increasing with depth....Wynne Lake is subject to 10 mg/l sulfate standard...average concentration 16.0 mg/l... Embarrass Lake also subject to 10 mg/l sulfate...average sulfate concentration 19.9 mg/l.	4.2.2-101	Therefore, all of the segments of the Embarrass River identified as wild rice waters by MPCA are impaired due to water quality exceedances of sulfate.	No change to SDEIS text.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 65	GP	4.2.2.2.1 Groundwater Resources	Groundwater divides generally coincide with surface water divides.	4.2.2-31	(true only for surficial aquifer)	Text edited. Because of the shallow water table and the generally thin nature of the surficial aquifer, flow paths within the surficial deposits are generally thought to be short, with the recharge areas being very near the discharge areas. The water table in the surficial aquifer is generally a "subdued replica" of the topographic surface, and as a result, groundwater divides generally coincide with surface water divides (PolyMet 2013i, Section 4.3.3.1). Groundwater flow in the surficial aquifer is interrupted by bedrock outcrops, which force deviations in the groundwater flow field (Siegel and Ericson 1980). However, because the bedrock is hydraulically connected with the overlying surficial aquifer, groundwater in the bedrock flows in a similar direction as groundwater in the overlying surficial aquifer (PolyMet 2013i, Section 4.3.3.2), and topographic divides in the bedrock that are expressed in surface outcrop are expected to approximate the locations of flow divides in bedrock groundwater.
GP 75	GP	4.2.2.2.2 Surface Water	Minnesota Power Monitoring (2002-2003) found occasional exceedances of copper and arsenic.	4.2.2-60	This is downstream of Peter Mitchell, but may be related to use of coal to produce electricity.	No change to SDEIS text.
GP 76	GP	4.2.2.3.1 Groundwater Resources	Most of the area between the tailings basin and the Embarrass River is covered by extensive groundwater fed wetlands and minor surface water features which are assumed to represent surficial expressions of the water table.	4.2.2-69	From tailings basin inundation.	Text is modified to indicate that LTV tailings seepage has affected groundwater and wetlands. New text in bold: ". . . represent surficial expressions of the water table (Barr 2009b), <b>and reflect at least in part the increase in groundwater and surface water flow from LTV tailings seepage.</b> "
GP 51	GP	4.2.2.1.2 Water Resource Use Classifications	It is the policy of the state of Minnesota to consider the actual or potential use of groundwater for potable water supply as constituting the highest priority use and, as such, to provide maximum protection to all underground waters. Therefore, all groundwater is considered to have one beneficial use, domestic consumption (Class 1).	4.2.2-5	It may be a policy, but it is also a law, the 7060 rule.	Text clarified. Edited text: "Following Minnesota Rules 7060.0200 it is the policy of the State of Minnesota to consider the actual or potential use of groundwater for potable water supply as constituting the highest priority use and, as such, to provide maximum protection to all underground waters."
GP 53	GP	4.2.2.1.3 Wild Rice	Despite the advance of cultivated wild rice, natural wild rice still remains an important component of local and tribal communities of Minnesota.	4.2.2-10	Please remove this sentence, or rewrite without "despite the advance of cultivated wild rice" as it appears to have no bearing on anything discussed.	Edited text: "Natural wild rice is an important component of tribal and local economies in Minnesota"
GP 56	GP	4.2.2.1.3 Wild Rice	Some research has indicated that natural wild rice thrives better in low sulfate waters.	4.2.2-11	This is irrelevant. The MPCA water quality standard for water used for the production of wild rice is 10 mg/L sulfate.	Last paragraph deleted as suggested.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 57	GP	4.2.2.1.3 Wild Rice		4.2.2-11	Final paragraph should be deleted. The studies cited were not peer reviewed.	Deleted last paragraph as suggested.
GP 58	GP	4.2.2.1.3 Wild Rice		4.2.2-12	First paragraph should be deleted. The MPCA water quality standard for water used for the production of wild rice is 10 mg/L sulfate.	Deleted paragraph as suggested.
GP 61	GP	4.2.2.2.1 Groundwater Resources	The mine site would retain about a 100 foot separation from the Biwabik Iron formation.	4.2.2-25	This separation, because the Biwabik Iron Formation (BIF) is below the Duluth Complex at the PolyMet site, may not prevent contamination of the aquifer in the BIF particularly after blasting and shoveling the ore diminish its competency.	Excavation and dewatering of the NorthMet deposit will induce water flow into the pits during and after mining, and water quality modeling considers the transport, fate, and impact of soluble pollutants carried from blasted ore and waste rock. No text edit.
GP 62	GP	4.2.2.2.1 Groundwater Resources	Extensive drilling with in the Partridge River intrusion (over 1,100 drill holes) has identified seven layered troctolitic igneous rock units dipping southeast in the NorthMet deposit.	4.2.2-25	Troctolitic rock is known to be comprised of high concentrations of chloride. Groundwater often has the chemical make-up of the parent material, in this case troctolitic rock...therefore there is great likelihood that brackish water will be encountered.	The deepest point excavated under the NorthMet Mine plan is ~500-ft above the depth where saline water has been identified, but if brackish of saline water is encountered in pit inflow or dewatering, it will be managed to comply with discharge requirements (Section 5.2.2, Saline Groundwater). No text edit.
GP 63	GP	4.2.2.2.1 Groundwater Resources	Near the ground surface, groundwater in the bedrock is thought to be hydraulically connected with the overlying surficial aquifers resulting in similar flow directions.	4.2.2-26	Flow direction of the bedrock aquifer is not known, only hypothesized. Greater characterization of the entire Partridge River watershed and mine site needs to be conducted.	The bedrock flow paths are based on interpretation of available geologic and hydrologic information for the Mine and Plant Sites. The interpreted bedrock flow paths are reasonable and consistent with the way bedrock flow is interpreted at similar locations in Minnesota.
GP 66	GP	4.2.2.2.1 Groundwater Resources	... Elevated concentrations of aluminum (total and dissolved), beryllium (total), iron (total), and manganese (total). Overall pH levels tended toward basic (mean of 7.2). The metals exceeded ground water evaluation criteria in the surficial aquifer probably reflect natural conditions because there is no record of any historic activities at the mine site that could have contributed to these constituents.	4.2.2-31	The Peter Mitchell Pit is upstream of the mine site, and the LTV processing plant was to NE of the mine site. Taconite operations are known to cause water quality exceedances of the same constituents being identified as "natural". Evaluation criteria is not equivalent to water quality standards.	The Co-leads disagree that Peter Mitchell Pit would impact surficial aquifer at NorthMet Project, since ground water gradients do not slope that direction. We agree that evaluation criteria are not equivalent to water quality standards.
GP 67	GP	4.2.2.2.1 Groundwater Resources	The aluminum and iron concentrations found at the mine site were considerably higher than those found in the regional copper nickel study. SIGEL and ERICSON (1980) noted that higher concentrations correlated with proximity to the mineralized contact zone between the Duluth complex and older rocks, as in the case with the NorthMet project area, and is probably related to the oxidation of sulfide minerals.	4.2.2-32	Taconite operations are known to cause elevated concentrations of aluminum, iron, manganese and fluoride in process water and wet scrubbers. The Peter Mitchell Pit has been blasted and shoveled since the 1950's. It seems a likely source of the elevated concentrations of aluminum and iron in the NorthMet project area.	Solutes released to the Peter Mitchell Pit are in the discharge water that enters the Partridge River above the NorthMet Project area, and the water quality modeling to assess the effects from the NorthMet Project include these solutes as part of the baseline water quality conditions. No text edit.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 68	GP	4.2.2.2.1 Groundwater Resources	The average water quality in the bedrock at the mine site was generally found to meet groundwater evaluation criteria except for aluminum, iron, and manganese....Occasionally exceedences of beryllium, nickel, and sulfate water quality standards were detected. Ammonia was detected in two samples, which is unusual because ammonia is not typically found in bedrock aquifers...the lack of any nitrite or nitrate indicates the ammonia was recently introduced and there is no on going source of ammonia. ....The permit authorizes North Shore Mining Company to withdraw up to 36,000 gpm of which a maximum of 23,000 gpm can be discharged to the Dunka River watershed at a maximum of 13,000 gpm (29 cfs) can be discharged to the Partridge River.	4.2.2-38	Taconite operations are known to cause elevated concentrations of aluminum, iron, manganese and fluoride in process water and wet scrubbers. The Peter Mitchell Pit has been blasted and shoveled since the 1950's. It seems a likely source of the elevated concentrations of aluminum and iron in the NorthMet project area. Not only ammonia was detected, tritium was also found meaning the groundwater was surface water during nuclear testing.	Solutes released to the Peter Mitchell Pit are in the discharge water that enters the Partridge River above the NorthMet Project area, and the water quality modeling to assess the effects from the NorthMet Project include these solutes as part of the baseline water quality conditions. No text edit.
GP 72	GP	4.2.2.2.2 Surface Water	Comparing 1970's data from the regional copper nickel study with recent (post 2000) PolyMet data collected at 3 monitoring stations common to both data sets shows that some parameters appear to have decreased in concentrations (E.G., sulfate and copper), while others have increase (E.G., iron, manganese, and zinc).	4.2.2-52	The parameters that have increased since the 1970's are associated with taconite mining, not natural conditions.	The PSDEIS text notes that there "are limited water quality data available from the mainstem of the Partridge River that predate the operation of the Northshore Mine in 1956 that can be used to characterize relatively 'undisturbed' conditions." No text edit.
4.2.3 Wetlands						
GLIFWC 75	GLIFWC	4.2.3 Wetlands	table 4.2.3.1	table 4.2.3.1	Text discussing limitations of the classification system should be provided. In particular, the issue of "lumping" different bog wetland types together in the Eggers and Reed system overlooks the range of connectivity that bog wetlands have with the aquifer. This oversimplification leads to masking of the effects of drawdown on bog wetlands. See GLIFWC wetland attachment.	Footnote added: All wetland classification systems have some limitations; however, wetlands identified as open bogs or coniferous bogs under the Eggers and Reed (1997) classification system were further subcategorized as either ombrotrophic (hydrology and mineral inputs entirely from direct precipitation) or somewhat minerotrophic (some degree of mineral inputs from groundwater and/or surface water runoff) (Eggers 2011a; PolyMet 2013b). Please refer to Section 4.2.3.1.2 and Section 5.2.3 for more information.
GLIFWC 76	GLIFWC	4.2.3.1.2 Hydrology Wetland Vegetation And Community Types	first sentence	4.2.3-16	We disagree with the first sentence. The effect of construction, operations, reflooding and subsequent dewatering of the Northshore pits have never been investigated. Therefore the conclusion in the first sentence is not supportable.	Vegetation types at the site are indicative of pre-settlement conditions and lack hydrologic disturbance, the wetlands at mine site are stable. Following sentence was added: The vegetation types located at the Mine Site are indicative of pre-settlement conditions and lack hydrologic disturbance.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 77	GLIFWC	4.2.3.1.2 Hydrology Wetland Vegetation And Community Types	first paragraph	4.2.3-16	There is no hydrologic data that shows that wetlands are perched. The lead agencies and the applicant have resisted suggestions by tribal agencies that the connectivity between wetland hydrology and surficial aquifer be assessed.	ERM, USACE, and Barr held a conference call to talk about the data. ERM also reviewed the source documents and added additional text on the connectivity question.
GLIFWC 78	GLIFWC	4.2.3.1.2 Hydrology Wetland Vegetation And Community Types	first paragraph	4.2.3-16	The "stability" of the wetlands not affected by the Northshore pits may be due to the factors listed. However the main reason for the stability is the absence of major hydrologic stressors - such as mine pits.	We disagree as groundwater would need to flow uphill for Northshore Pits to impact the surficial aquifer. Furthermore, this section is on existing conditions and the potential impact from NM project to wetlands is discuss in Chapter5.
GLIFWC 79	GLIFWC	4.2.3.1.2 Hydrology Wetland Vegetation And Community Types	second paragraph	4.2.3-16	The last sentence is not necessarily true and is an unsupported assumption. While groundwater may not be an important part of the hydrology at the surface of some wetlands at this time, that could change once stressors are introduced into the system.	Text added to refer reader to chapter 5.2.3
GLIFWC 80	GLIFWC	4.2.3.1.2 Hydrology Wetland Vegetation And Community Types	first bullet	4.2.3-17	We disagree with the conclusion in the last sentence. There has been no data collected in these wetlands that looks at the connectivity of the surficial aquifer to the water at the surface. It is not defensible to assume that all ombotrophic wetlands at the site are perched and/or would remain perched under mine induced drawdown conditions.	See comment GLIFWC 77  According to Eggers 2011a memo, ombrotrophic peatlands (hydrology entirely from direct precipitation) would likely not be impacted by groundwater drawdown associated with mining operations.  No text edit.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 81	GLIFWC	4.2.3.1.2 Hydrology Wetland Vegetation And Community Types	second bullet	4.2.3-17	The first sentence is not supported. As indicated in the paragraph, the pump test did show some connectivity. Furthermore, a 30 day pump test does not produce the same degree of drawdown pressure as a 20 year mine project with 600 feet deep pits. Finally, the effects are likely to differ from one wetland to another. The sweeping conclusions in the bullet should be removed.	Edit bullet point... "• There is a general lack of connectivity between the shallow water table in the wetlands and the deeper bedrock aquifer. The depth of soil and till overlying the bedrock ranges up to 33 ft, with bedrock outcrops present that alter local groundwater flow paths. A pumping and isotope test conducted in 2006 indicated that the majority of the groundwater pumped during a 30-day pump test from a 610-ft-deep well drilled into the Virginia Formation was derived from aquifer recharge rather than surface water seepage from surface water features such as the Northshore Pit or wetlands. The variability of the bedrock and soil surface, along with the location of the surface water divide, creates localized, short, surficial groundwater flow paths within the watersheds on the Mine Site."  Also see information provided in GLIFWC 77 that was added to beginning of section.
GLIFWC 82	GLIFWC	4.2.3.1.2 Hydrology Wetland Vegetation And Community Types	third and fourth bullets	4.2.3-17	The discussion in these bullets represent observations of current conditions in wetlands that are not under hydrologic stress from mine induced drawdown. Once dewatering of the aquifer occurs, the situation is likely different. The text should be clarified.	This is existing conditions being discussed and not the potential effects of the project. No text edits.
GLIFWC 83	GLIFWC	4.2.3.1.2 Hydrology Wetland Vegetation And Community Types	third paragraph	4.2.3-18	It should be noted in the text that according to scientific literature, ombrotrophic wetlands can be affected by groundwater drawdown. See GLIFWC wetlands attachment.	Following sentence was added: Wetlands can be either groundwater or precipitation fed.
GP 90	GP	4.2.3.1.1 Wetland Delineation And Classification	...indirect hydrologic wetland effects using Eggers and Reed community classification system...	4.2.3-2	The Bands recommended using the MN DNR Native Plant Communities of Minnesota, The Laurentian Mixed Forest Province because Eggers and Reed classify all peatlands as bogs, so hydrology cannot be discerned from the Eggers and Reed classification system.	This classification is not practical or warranted at this site. No text edit.

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GP 91	GP	4.2.3.1.2 Hydrology Wetland Vegetation And Community Types	There is a lack of connectivity between the shallow water table in the wetlands and the deeper bedrock aquifer.	4.2.3-17	RS 10 made clear there is a connection, and a rather significant connection based on both ammonia and tritium being found in the deep bedrock aquifer. Mesabi Nugget also demonstrated a bedrock connection in several of the mine pits on their portion of the LTVSMC property.	Edit bullet point... "• There is a general lack of connectivity between the shallow water table in the wetlands and the deeper bedrock aquifer. The depth of soil and till overlying the bedrock ranges up to 33 ft, with bedrock outcrops present that alter local groundwater flow paths. A pumping and isotope test conducted in 2006 indicated that the majority of the groundwater pumped during a 30-day pump test from a 610-ft-deep well drilled into the Virginia Formation was derived from aquifer recharge rather than surface water seepage from surface water features such as the Northshore Pit or wetlands. The variability of the bedrock and soil surface, along with the location of the surface water divide, creates localized, short, surficial groundwater flow paths within the watersheds on the Mine Site."  Also see information provided in GLIFWC 77 that was added to beginning of section.
GP 92	GP	4.2.3.1.2 Hydrology Wetland Vegetation And Community Types	4.2.3-17 The Hydrographs in monitored black spruce and tamarack dominated wetlands (coniferous bogs) exhibited fluctuations indicative of saturated, precipitation driven hydrology.  4.2.3-18 Coniferous bog and open bog communities....Hydrologically, this complex is characterized by a relatively stable water table.	4.2.3-17	Page 18 contradicts page 17.	Re-worded sentences/paragraphs
4.2.4 Vegetation						
FDL 18	FDL	4.2.4.2.1 Cover Types	Vegetation. MN Biological Surver	P 4.2.4-5	"Two native plant communities, black spruce-jack pine woodlands (FDn32c; 34 percent of Mine Site) and rich black spruce swamp (FPn62a; 7 percent of Mine Site), have been characterized by the MBS as "imperiled/vulnerable" and "vulnerable," respectively (MDNR 2008b)". 41% of the mine site consists of imperiled/vulnerable communities, but there is no proposed mitigation.	No known mitigation policy for MBS sites. Under Land Exchange Proposed Action, Tract 1 contains proposed "Outstanding" ranked MBS Site of Biodiversity Significance, while other non-federal lands have "Moderate" and "High" rankings that would help balance the exchange. Provided percentage of NPC affected within subsection to more clearly state effects in 5.2.4.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
FDL 19	FDL	4.2.4.2.2 Invasive Non-native Plants	Vegetation. Invasive non-native plants	P 4.2.4-6	"No known occurrences of invasive species on the federal lands are listed in the Superior National Forest invasive plant geodatabase (USFS 2010a). The majority of representative wetland locations surveyed on the federal lands yielded 100 percent native plants with no occurrences of non-native species according to MnRAM 3.2 worksheets (AECOM 2011d)." The proposed action will result in the introduction of invasive non-native spp.	This is not addressed in the existing conditions chapter, but chapter 5 does discuss effects from introducing invasive non-native species. No edits required.
GP 93	GP	4.2.4.3.1 Cover Types	There are two MBS sites of high biodiversity significance (18.8 acres) located within the transportation and utility corridor including the 100 mile swamp (2% of the corridor) and the upper Partridge River (13% of the corridor)	4.2.4-21	Upper Partridge River may dry up as a result of mine pit dewatering devastating the MBS site in its vicinity.	The models (MODFLOW and XP-SWMM) discussed in Section 5.2.2 indicate there would be no significant effects on groundwater or surface water hydrology; thus the MBS sites would likely not be affected by hydrological changes.
GP 94	GP	4.2.4.4.1 Cover Types	The most upstream portion of the Embarrass River watershed classified as water used for the production of wild rice is from MN-135 highway bridge to the inlet of sabin lake. .... No wild rice was observed in Spring Mine Creek, Tremble Creek, or Unnamed Creek.	4.2.4-25	Major difference of opinion. Waters where no wild rice was found all exceed the 10 mg/L sulfate standard and therefore should be on the impaired waters list because it is known that wild rice previously grew in these waters.	Section 5.2.2 indicates that sulfate loadings would be reduced in the Embarrass River. All information provided was considered when the MPCA made their recommendation on waters used for the production of wild rice. Should the MPCA recommendation change in the future, it will be addressed at that time. No text edit.
1854 23	1854	4.2.4.4.1 Cover Types	Culturally Important Plants	4.2.4-25	Disagreement exists over application of the standard. Wild rice exists upstream in both rivers from the draft MPCA staff recommended definitions of water used for production of wild rice (compliance points). In the Partridge River, the 2009 survey identified rice near SW-004b. It is arbitrary to define how much rice presence is required, especially given the lack of long-term monitoring data on a water. Application of this standard may be evolving/changing as research is ongoing and the standard will be evaluated. These issues should be clearly addressed in the PSDEIS.	the MPCA Waters Used for Production of Wild Rice document indicates these are not "waters used for production of wild rice"
4.2.5 Wildlife						
FDL 20	FDL	4.2.5.1.1 Federally And State-listed Species And Species Of Special Concern		p 4.2.5-2	Should note that USFWS observed lynx tracks at the mine site in 2010	Edited per suggestion. Text added, "Lynx tracks were observed at the Mine Site in 2010, and there have been multiple observations of lynx sign within 5 miles of the Federal lands."
4.2.6 Aquatic Species						

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
1854 24	1854	4.2.6.1.4 Special Status Fish And Macroinvertebrates	Lake sturgeon - 3rd paragraph	4.2.6-18	Fond du Lac may have captured sturgeon above the dam. They should be contacted to verify.	Identified reference for this statement and added statement that LS have been observed in the SL river system; Confirmed with co-leads. Fond du Lac Resource Management personnel have reported occurrences of lake sturgeon upstream of Floodwood, MN (Bill Johnson, MDNR, Pers. Comm., July 22, 2013)
FDL 21	FDL	4.2.6.1.4 Special Status Fish And Macroinvertebrates	Aquatic Species. Lake Sturgeon	P 4.2.6-18	numerous lake sturgeon have been captured and tracked by FDL Resource Management Division staff in the St. Louis River upstream of the MN Power dams, through the Fond du Lac Reservation and upstream. FdL continues to monitor, stock and protect this species, along with other tribal, state and federal biologists. Natural reproduction of stocked sturgeon in the SLR Estuary has been documented in 2011 and 2013.	Identified reference for this statement and added statement that LS have been observed in the SL river system; Confirmed with co-leads. Fond du Lac Resource Management personnel have reported occurrences of lake sturgeon upstream of Floodwood, MN (Bill Johnson, MDNR, Pers. Comm., July 22, 2013)
FDL 22	FDL	4.2.6.3.3 Aquatic Biota Studies	Aquatic Species. Embarrass River fish communities	P 4.2.6-23	"The results indicated that no measurable effects were present in the aquatic biota within these streams compared to the control site. This indicates that minimal aquatic species habitat degradation has occurred as a result of the historical mining activities in the area (Barr 2011b, c, and d). Abundance and diversity of the fish species sampled in all of these Embarrass River streams are likely normal for as compared to other similar size streams in the region." These statements are inconsistent with MPCA intensive monitoring and assessment, which led to the Embarrass River being listed on the draft 2012 Impaired Waters list for impaired fish communities.	Review of available data and updated fish species tolerance classifications is indicative of a degraded habitat for the tributaries of the Embarrass River. Edited text to reflect this conclusion.
GLIFWC 84	GLIFWC	4.2.6.4 Mercury Concentrations In Fish	4.2.6-26		The discussion of 303d listing is not correct because the Embarrass River is on the 2012 303d list. See GLIFWC map of 303d waters in the wild rice attachment (figure 3). Sulfate has a link to mercury methylation which is directly related to mercury contamination in fish. This should be noted here.	Text revised to clarify the current status of 303(d) listings. The Embarrass River is on the 303d list as impaired for Fishes Bioassessment, a category not related to mercury.
GP 100	GP	4.2.6.2 Whitewater Reservoir And Colby Lake	Colby Lake water quality... include water quality exceedances for aluminum, iron, and manganese.	4.2.6-20	These are pollutants from Taconite Mining.	It is unclear if the source of these metals is variable and naturally occurring or caused by historical human impacts; however, the possibility does exist that they are caused by historical mining impacts. Text now states state that aluminum, iron, and manganese are metals potentially associated with historical mining activities.
GP 101	GP	4.2.6.3.2 Existing Water Quality		4.2.6-22	Maps with sampling points are needed for reference.	Consideration will be given to this topic and the text will be revised accordingly if appropriate. No text edit.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 102	GP	4.2.6.3.2 Existing Water Quality	Water quality evaluation criteria exceedances were found for aluminum and mercury at most locations and elevated concentrations for sulfate especially at Spring Mine Creek.	4.2.6-22	These exceedances of pollutants are due to previous mining activity at the site.	Consideration will be given to this topic and the text will be revised accordingly if appropriate. No text edit.
GP 103	GP	4.2.6.3.3 Aquatic Biota Studies	Sampling location PM-20 (Bear Creek) was used for a reference...	4.2.6-23	Maps need to show a larger area around points especially reference points.	Figure to slightly change extent to better show sampling station PM-20
GP 95	GP	4.2.6 Aquatic Species	Water bodies within the vicinity of the NorthMet Project area with fish consumption advisories include Colby Lake, White Water reservoir, and the St. Louis River. No advisories have been issued for the stream features within the NorthMet Project area; ho	4.2.6-1	There are mercury advisories for the Embarrass River.	The MDH web site does not list the Embarrass R itself, but does list Sabin, Wynne and Embarrass Lakes (through which the Embarrass R flows). The SDEIS text has been edited to reflect this.
GP 96	GP	4.2.6.1.3 Aquatic Biota Studies	Table 4.2.6-5 Composition of Macroinvertebrate assemblages	4.2.6-12	It would be helpful to see the full data set. This table simply demonstrates the percent riffle habitat of the sample .	Level of detail not applicable for this report. References are provided for additional information. No text edit.
GP 97	GP	4.2.6.1.3 Aquatic Biota Studies	It is unlikely that the SGCN-designated black sand shell occurs in the NorthMet Project area given it's absence from the sample sites and the lack of its typical habitat (riffles or raceways in gravel or firm sand)	4.2.6-13	This contradicts EPT data on previous page.	EPT data referenced taken from streams within Partridge River with boulder or silt dominated substrate. Some gravely/ sandy substrate riffle habitat may exist but data suggests streams dominated by either boulder or silt. The key substrate component for black sand shell is sand or gravely sand. Habitat for this species (riffles or raceways in gravel or firm sand; Cummins and Mayer 1992) likely only exists in small reaches within the NorthMet Project area.
GP 98	GP	4.2.6.1.3 Aquatic Biota Studies	...Sand and gravel were absent or a minor substrate type at the site sampled and is therefore unlikely to exist in the Partridge River watershed.	4.2.6-13	This contradicts EPT data on previous page.	Source data was re-reviewed and based on this review, text was edited. Removed absent from summary.
GP 99	GP	4.2.6.2 Whitewater Reservoir And Colby Lake	A heated water plume (greater than or equal to 100 degrees Fahrenheit at the surface) extended from the Laskin Energy Power plant discharge. ...MDNR investigations through July 2005 indicate that fish abundances have been generally low.	4.2.6-20	Has the temperature plume been mitigated?	Comment does not deal with NorthMet Project; Chapter 4. No text edit.
4.2.7 Air Quality						
None.						
4.2.8 Noise and Vibration						

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 85	GLIFWC	4.2.8.2 Mine Site	4.2.8-3		As with the 2009 DEIS, this document relies on assessing noise impacts on a few receptors instead of discussing the overall area that would be affected. A discussion of noise impacts to all publicly accessible areas is the Superior National Forest is needed. See GLIFWC noise attachment.	A discussion of noise impacts to all publicly accessible areas in the Superior National Forest has been included. As indicated above, the USFS has provided shapefiles for all recreational sites within the project vicinity (family camp grounds, camp sites, boating, fishing, swimming, and family picnic areas). In addition to the residential areas, BWCAW, and wildlife corridors already discussed in the SDEIS, we have also included recreational sites, trails, and closest State wildlife waters (used by tribal members for harvesting purposes) in all the noise and vibration contour maps. A discussion of noise impacts to all publicly accessible areas in the SNF has been included in the text in Section 4.2.8.2. Though not depicted on the noise and vibration figures due to sensitivity regarding cultural resources and locations, a discussion of the nearest archaeological sites (e.g., Spring Lake Sugarbush and Mesabe Widjiu [Laurentian Divide]) within the Project vicinity has been included in the text.
GP 104	GP	4.2.8.2 Mine Site	The closest noise-sensitive receptor to the mine site is the city of Babbitt...	4.2.8-3	What about the Sugar Bush, Spring, trails, and the Laurentian divide?	Though not depicted on the noise and vibration figures due to sensitivity regarding cultural resources and locations, a discussion of the nearest archaeological sites (e.g., Spring Lake Sugarbush and Mesabe Widjiu [Laurentian Divide]) within the Project vicinity has been included in the text. The Laurentian Divide has been included in all noise and vibration contour maps. Portions of the Divide crosses the northeastern end of the Mine Site. The Divide itself is a watershed boundary/geological formation and not a trail or noise sensitive area. The closest trails to the Divide are the 1) Laurentian Snowmobile Trail; 2) Pequaywan Snowmobile Trail; 3) Taconite Trail; and 4) Stony Spur Snowmobile Trail. A few recreational sites are also scattered around these trails. Of the four trails, the Stony Spur Snowmobile Trail (near Babbitt) is the closest to the Mine Site. Though not depicted on the noise and vibration figures due to sensitivity regarding cultural resources and locations, a discussion of the nearest archaeological sites (e.g., Spring Lake Sugarbush and Mesabe Widjiu [Laurentian Divide]) within the Project vicinity has been included in the text. The Laurentian Divide and the closest trails and recreational sites identified near the Divide and within the project vicinity have been included in all the noise and vibration figures (Figure 4.2.8-1, Figure 4.3.8-1, 5.2.8-1 to 5.2.8-6).

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 105	GP	4.2.8.3 Plant Site	The closest vibration-generating activity is blasting at the Northshore Mine which is 9 miles northeast of the plant site.	4.2.8-7	No sound generation from heavy equipment or blast furnace at Mesabi Nugget?	The commenter is correct. The Mesabi Phase I Plant in Hoyt Lakes is closer to the Plant Site (2 miles west-southwest) than the Northshore Mine (9 miles northeast). The closest vibration-generating sources are the coal and flux pulverizer and rotary hearth furnace at the Mesabi Phase I Plant. Since noise and vibration diminish with distance, the noise and vibration impact would be limited to the immediate vicinity of that Phase I Plant facility. The text in Section 4.2.8.3 has been revised to indicate that the closest noise and vibration-generating sources are the coal and flux pulverizer and rotary hearth furnace at the Mesabi Phase I Plant in Hoyt Lakes, which is approximately 2 miles west-southwest of the Plant Site.
<b>4.2.9 Cultural Resources</b>						
BF 1	BF	4.2.9.1.4 Tribal Consultation	first full paragraph	5	Bois Forte was first band contracted to do interviews. Efforts to identify historic properties are not completed but are ongoing.	Bois Forte added to list of Bands in first sentence of paragraph. No change regarding status of identification of historic properties.
BF 4	BF	4.2.9.1.4 Tribal Consultation	second paragraph	6	water levels-are direct effects	Removed specific discussion of indirect effects on groundwater and surface water quality in second sentence. Groundwater and surface water is addressed at the end of the paragraph.
GP 106	GP	4.2.9.1.4 Tribal Consultation	Efforts to identify historic properties have been completed.	4.2.9-5	Efforts have begun but have not been concluded.	See response to BF 1.
BF 3	BF	4.2.9.2.1 Area Of Potential Effects	bottom paragraph	10	cultivated wild rice-Why is this here? How does this pertain to wild rice and ojibwe?	Not found in Cultural Resources section. Similar comment was made in the water section (4.2.2) and the text was edited to "Natural wild rice is an important component of tribal and local economies in Minnesota"
BF 5	BF	4.2.9.2.1 Area Of Potential Effects	second paragraph	11	no explanation of sample size.	Text being revised to further explain the acreage area.
BF 6	BF	4.2.9.2.1 Area Of Potential Effects	third paragraph	11	models are not data.	No change. Text did not state that models were used as data.
BF 7	BF	4.2.9.2.1 Area Of Potential Effects	fifth paragraph	11	dust predicted to settle based on what data?	No change. Discussion on dust settlement is referenced later in paragraph.
FDL 23	FDL	4.2.9.2.1 Area Of Potential Effects	Cultural Resources	p 4.2.9-11	Fond du Lac disagrees with the determination of the size of the APE for impacts to water resources. Additional analysis will be provided.	No change. No additional analysis has been provided as yet.
GLIFWC 86	GLIFWC	4.2.9.2.1 Area Of Potential Effects	4.2.9-11		Text asserts that compliance with standards suggests there would be no impacts to vegetation or soils. This assumption is incorrect. Significant effects and changes from unimpacted conditions can occur without violation of a standard.	No change. The assumption is based on meeting ambient air quality standards.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 87	GLIFWC	4.2.9.2.1 Area Of Potential Effects	4.2.9-11		The discussion on water quality standards is not complete. The project may not exceed any evaluation criteria but that assumes successful implementation of perpetual water treatment and perpetual maintenance of the features that are left behind (hydromet and flotation tailings basins, cat 1 stockpile). This information should be included anytime the SDEIS makes the claim that all evaluation criteria are met. In addition, evaluation criteria are different from water quality standards. The PSDEIS indicates that water quality standards will not be met for several constituents.	Refer to chapter 5.2 for the environmental analysis of effects of the NorthMet Project Proposed Action.
GLIFWC 88	GLIFWC	4.2.9.2.1 Area Of Potential Effects	4.2.9-11		We disagree with the conclusion that there would be no impacts due to groundwater drawdowns. See GLIFWC wetland attachment.	Refer to chapter 5.2 for the environmental analysis of effects of the NorthMet Project Proposed Action.
GLIFWC 89	GLIFWC	4.2.9.2.1 Area Of Potential Effects	4.2.9-21		The visual area of potential effect should be the viewshed of the existing tailings basin. See GLIFWC map.	Text has been revised for clarity.
GP 107	GP	4.2.9.2.1 Area Of Potential Effects	The NorthMet Project Proposed Action has had a long and dynamic 106 review.	4.2.9-6	Section 106 review did not begin until Brads Johnson began working with the Bands replacing Jon Ahlness. Unless there is more elaboration regarding what this sentence is meant to capture, it should be deleted.	Text has been deleted as appropriate.
GP 108	GP	4.2.9.2.1 Area Of Potential Effects	The co-lead agencies are working on the final APE in consultation with the SHPO.	4.2.9-6	The Bands have been excluded from consultation regarding the final area of potential effects from the project.	This section was revised.
GP 109	GP	4.2.9.2.1 Area Of Potential Effects	In early 2009, the consulting Bands proposed the 1854 ceded territory as a historic property. It was at this time the Bands also expressed concerns about effects on water quality and water quantity, both surface and ground water.	4.2.9-11	Not accurate. We began expressing concerns about water quality and quantity beginning prior to the first preliminary draft EIS in 2007.	Second sentence of paragraph revised to: "It was at this time that the Bands reiterated their concerns about effects on water quality and water quantity, both surface and groundwater."
GP 110	GP	4.2.9.2.1 Area Of Potential Effects	The plan focused on two study areas: the areas around the proposed plant site and mine site. At the time, the direct effects APE for water covered a broad area because the APE based on effects to water was extremely large and beyond what would be required	4.2.9-11	The US ACE insisted on evaluating only two areas that were drawn with two boxes, one in the area of the plant site and one in the area of the mine site. And we were told not to investigate areas outside of the boxes.	No change. These two areas remain the areas where effects are anticipated.
GP 111	GP	4.2.9.2.1 Area Of Potential Effects		4.2.9-11	There are no cumulative effects analysis for air quality effects on water and vegetation.	Refer to chapter 6 for the environmental analysis of cumulative effects of the NorthMet Project Proposed Action.
GP 112	GP	4.2.9.2.1 Area Of Potential Effects	With the proposed design modifications and engineering controls, the goldsim model predicts that the NorthMet Project proposed action would meet all groundwater and surface water quality evaluation criteria at the 90th percentile confidence level...	4.2.9-11	The modeled 90th percentile confidence level was the 90th percentile of the mean. "Evaluation criteria" does not equal a water quality standard. The use of evaluation criteria only demonstrates that violation(s) of water quality standards as a result of the proposed project are planned.	The 90th percentile probability is not the probability of the mean concentration exceeding criteria. A clearer definition of the P90 value will be included in the SDEIS. Refer to chapter 5.2 for analysis of effects.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 113	GP	4.2.9.2.1 Area Of Potential Effects	There are changes to ground water quantity due to ground water draw down resulting from mine pit dewatering are not predicted to occur beyond 3,200 feet from the mine pit.	4.2.9-11	This is a major difference of opinion.	
GP 114	GP	4.2.9.2.1 Area Of Potential Effects	...Because the proposed tailings basin will be, for the most part, coincident with the existing tailings basin and will not extend to an elevation higher than the existing tailings basin.	4.2.9-21	How is this possible when adding a rock buttress for stability and adding tons of additional tailings?	The addition of a rock buttress and additional tailings will increase the height of the east Tailings Basin to match the height of the west Tailings Basin.
GP 115	GP	4.2.9.2.1 Area Of Potential Effects	Blasting noise is not included in the noise level estimates shown in the noise analysis because mine blasting is typically an instantaneous event and would only occur during daytime periods.	4.2.9-21	Blasting could disrupt ceremonies at the Sugar Bush and Overlook.	No change. There is no recent historical evidence of ceremonies at these locations.
BF 8	BF	4.2.9.2.3 Cultural Context	fifth paragraph	25	first published discovery.	Edited per suggestion.
BF 9	BF	4.2.9.2.3 Cultural Context	sixth paragraph	25	not nomadic. (nomadic means aimlessly wandering)	Edited per suggestion.
BF 10	BF	4.2.9.2.3 Cultural Context	fifth paragraph	26	at its height is unclear. At what height?	Edited per suggestion.
BF 11	BF	4.2.9.2.3 Cultural Context	third paragraph	27	ceramic and earthen mounds. What is a ceramic mound? This statement suggests that there are ceramic mounds.	Sentence revised to: "This stage in prehistory is characterized by the initial appearance of earthen mounds and ceramics ..."
BF 12	BF	4.2.9.2.3 Cultural Context	sixth paragraph	28	this is confusing. Is Sandy Lake or Black Duck dated to 1750 AD?	Edited per suggestion.
BF 13	BF	4.2.9.2.3 Cultural Context	sixth paragraph	30	1825 treaty also ceded mineral rights from Ojibwe lands in Minnesota, Michigan and Wisconsin, but no land. Instead of citing GLIFWC 2005, cite treaty.	Edited per suggestion.
BF 14	BF	4.2.9.2.3 Cultural Context	first paragraph	31	cite treaty not GLIFWC.	Edited per suggestion.
BF 15	BF	4.2.9.2.3 Cultural Context	third paragraph	31	citation for Hanchett and Clark	Edited per suggestion.  Hanchett, August , and Thomas Clark 1865 Report of the State geologist, Aug. H. Hanchett, M. D., together with the physical geography, metallurgy, and botany of the northeastern district of Minnesota, by Thomas Clark, assistant geologist. St. Paul.
BF 16	BF	4.2.9.2.3 Cultural Context	third paragraph	31	need to mention use of trails which are documented for iron exploration (Carey 1936, Chester 1902).	Added brief reference of trails used during iron exploration in the trails discussion in results.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
BF 17	BF	4.2.9.2.3 Cultural Context	fourth paragraph	31	better citation than Minnesota Historical Society.	No change to SDEIS text. Reference is in the bibliography
GP 116	GP	4.2.9.2.3 Cultural Context	(Berens and Rasky 2012)	4.2.9-29	Raske is the correct spelling.	Edited per suggestion.
BF 18	BF	4.2.9.3 Results	results	32	why are cultural resource studies not within project and land exchange areas included (first three projects described)?	All of the surveys occurred, at least partially, within the Project and Land Exchange areas. However, the cultural resources identified did not fall within these areas.
BF 2	BF	4.2.9.3.1 Cultural Resources Investigations	last paragraph	37	Goltz did not identify this as vermilion to Beaver Bay trail	Text revised.
BF 19	BF	4.2.9.3.1 Cultural Resources Investigations	third paragraph	37	who made the determination of select landscape features?	Sentence revised to: "The investigation entailed the archaeological survey of select landscape features determined by Hohman-Caine and Goltz to have the highest potential for pre-contact archaeological sites."
BF 20	BF	4.2.9.3.1 Cultural Resources Investigations	first paragraph	38	sentence beginning with "the phase 1... is unclear.	Edited per suggestion.
BF 21	BF	4.2.9.3.1 Cultural Resources Investigations	second paragraph	39	in fact the entire area is eligible as a district.	The Section 106 process is not complete for the NorthMet Project. The Federal Co-lead agencies and Bands are conducting on-going consultation concerning this issue.  The text has been edited to include a brief discussion on the district issue.
BF 22	BF	4.2.9.3.1 Cultural Resources Investigations	last paragraph	39	sentence beginning "Federal co-lead agencies believe..." recommendations by bands as district was ignored.	Consultation is ongoing. Some text edits have been made regarding ongoing consultation.
GP 117	GP	4.2.9.3.1 Cultural Resources Investigations	Shovel testing was completed along the potential historical trail; however, no archeological resources were identified.	4.2.9-37	Other than the trail itself? What about flint chips and Sugar Bush containers?	If the comment is referring to flint chips at the NorthMet site, the area was deemed ineligible in 2010. If the Sugar Bush containers referenced are associated with the Spring Mine Lake Sugar Bush, that site is considered a Historic Property and is being reviewed for effects and discussed in the SDEIS. Outside of the Trail segment forwarded as eligible, no additional archaeological resources were identified.

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GP 118	GP	4.2.9.3.1 Cultural Resources Investigations	The federal co-lead agencies believed that the historic property identification efforts completed in the NorthMet Project area are "reasonable" and have been completed in "good faith," as stipulated in 36 CFR 800.4 (B)(1).	4.2.9-39	Property identification has only occurred within or near the two boxes that were drawn by US ACE staff with no background in historic preservation section 106. Within this limited area we agree that there has been reasonable effort.	No change. The two study areas remain the areas where effects could be anticipated. To Co-lead Agencies agree that reasonable, good faith efforts to identify historic properties in these areas have been conducted. Additional historic property identification efforts have been completed outside the study areas.
BF 23	BF	4.2.9.3.3 Properties Of Traditional Cultural Significance	seventh paragraph	42	"specific criteria would need to be present..." what specific criteria do you mean?	Sentence was revised to: "...the federal Co-lead Agencies believe that certain wild rice beds would need to meet specific NRHP criteria to be considered as TCPs." Move this paragraph to the end of 4.2.9.1.2.
FDL 24	FDL	4.2.9.3.3 Properties Of Traditional Cultural Significance	Properties of Traditional Cultural Significance	P 4.2.9-42	"Although the federal Co-lead Agencies recognize the importance of natural wild rice beds as both ecological communities and as important traditional cultural resources for the Ojibwe people, the federal Co-lead Agencies believe that specific criteria would need to be present for such locations to be considered as TCPs. Consultation conducted to date has not led to the identification of these types of historic properties in the potentially affected area. The federal Co-lead Agencies have, however, analyzed the presence of and potential effects posed to wild rice and other natural resources in other resource-specific sections of the SDEIS and below in Section 4.2.9.4 and in Section 5.2.9." The federal agencies have not compiled information on the cumulative loss of wild rice waters due to direct and indirect mining impacts.	This is a work in progress and the USACE and USFS are working with the Bands. Potential cumulative impacts to wild rice are discussed in Section 6.2.3.3.4.
GP 119	GP	4.2.9.3.3 Properties Of Traditional Cultural Significance	For properties associated with these resources to be relevant to NHPA, they would need to have an integral relationship to traditional cultural practices or beliefs, as well as showing a continuation of use with the culture and location.	4.2.9-41	Continuous use is not required for properties of significance to tribes.	Text has been revised.
GP 120	GP	4.2.9.3.3 Properties Of Traditional Cultural Significance	These conditions include the ongoing use of a discrete site area in spiritual practice or other traditional activities.	4.2.9-42	This sentence and any other sentence that list ongoing or continuous use by tribal members is incorrect and should be stricken from the document.	Text has been revised.
BF 24	BF	4.2.9.3.4 Identified Cultural Resources	first paragraph	44	section does not contain all cultural resources reported. example, Wild rice locations, waterways.	No change. All known identified cultural resources within the APE are identified in Table 4.2.9-1.
BF 25	BF	4.2.9.3.4 Identified Cultural Resources	first paragraph	45	...basswood wedges(sic) or paddles..	Edited per suggestion.

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BF 26	BF	4.2.9.3.4 Identified Cultural Resources	last sentence in first paragraph	45	basswood is not used for "wedges" (taps)	Edited per suggestion.
BF 27	BF	4.2.9.3.4 Identified Cultural Resources	second paragraph	46	replace band members with band elders.	Edited per suggestion.
BF 28	BF	4.2.9.3.4 Identified Cultural Resources	third paragraph	46	references to trails include Carey 1936, Chester 1902, Van Brunt 1922.	No change for SDEIS. Additional references will be reviewed and used as appropriate.
BF 29	BF	4.2.9.3.4 Identified Cultural Resources	second paragraph	47	the entire trail is significant.	The Section 106 process is not complete for the NorthMet Project. The Federal Co-lead agencies are forwarding one segment to the trail and an eligible property, however, future consultation with the Bands is anticipated. The SDEIS has been edited.
BF 30	BF	4.2.9.3.4 Identified Cultural Resources	third paragraph	47	we concur on the eligibility but these would be better included as a district.	The Section 106 process is not complete for the NorthMet Project. The Federal Co-lead agencies and Bands are conducting on-going consultation concerning this issue.
BF 31	BF	4.2.9.3.4 Identified Cultural Resources	first paragraph	48	missing is a discussion of why this area is not considered a district.	The Section 106 process is not complete for the NorthMet Project. The Federal Co-lead agencies and Bands are conducting on-going consultation concerning this issue.
GP 121	GP	4.2.9.3.4 Identified Cultural Resources	Despite mention in the historic record, the trails themselves, and the role they played at transportation systems prior to development of railroad transportation in the region, are underrepresented in the literature.	4.2.9-46	The literature search was paid for by PolyMet to a contractor who did not do a reasonable literature search and therefore, missed numerous publications that discuss use of the trails by Native Americans and mineral and lumber prospectors. Not only are the trails well represented in literature, many historic people used the trails as documented in those literature sources. This sentence should be deleted wherever it appears.	No change. In the context of the paragraph, the trails are underrepresented in available literature. The Co-lead Agencies agree that the NorthMet Cultural Landscape Report lacked appropriate historic context for trails. However, the Co-lead Agencies bolstered the context with independent research.
GP 122	GP	4.2.9.3.4 Identified Cultural Resources	(Berens and Rasky)	4.2.9-47	Raske.	Edited per suggestion.
GP 123	GP	4.2.9.4.1 Perspectives On The Environment	Cultural important resources would not necessarily be represented by these ecologically based systems when applied to the Ojibwe.	4.2.9-48	What do you mean by this?	Edited for clarity.
BF 32	BF	4.2.9.4.2 1854 Treaty Resources	second paragraph	49	"retain hunting and fishing and gathering rights.	Edited per suggestion.
BF 33	BF	4.2.9.4.2 1854 Treaty Resources	second paragraph	52	instead of over time, say "during the past two centuries".	Edited per suggestion.

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BF 34	BF	4.2.9.4.2 1854 Treaty Resources	last paragraph	55	is limited "but not restricted".	Edited per suggestion.
FDL 25	FDL	4.2.9.4.2 1854 Treaty Resources	1854 Treaty Resources		also cite Fond du Lac Ceded Territories Conservation Code	Added a reference to FDL Code as well as GLIFWC info.
GP 124	GP	4.2.9.4.2 1854 Treaty Resources	The mine site is entirely surrounded by private restricted property, roads, and railroads.	4.2.9-55	One forest service access road, the Partridge River, and the trails provide access, therefore, this sentence should be deleted wherever it appears.	Removed "As a result, there is no public access to the Mine Site." Add "There are access points to the NorthMet Project area, however, via a Forest Service road, the Partridge River, and various trails segments.
<b>4.2.10 Socioeconomics</b>						
FDL 26	FDL	4.2.10 Socioeconomics	Socioeconomics		also cite Fond du Lac IMPLAN analysis conducted by Dr. Skurla	This is a new reference that has not been provided. It would be considered when received.
GLIFWC 107	GLIFWC	4.2.10 Socioeconomics	"The study area for socioeconomics extends beyond the area of direct potential project effects to include all of Cook, Lake, and St. Louis counties (see Figure 4.2.10-1)."		IMPLAN modeling played a key role in the SDEIS's socio-economic assessment. IMPLAN modeling and the employment figures derived from the model (i.e. direct, indirect and induced) were for St. Louis County (i.e. NorthMet Economic Impact 2011 Update: Economic Impact of PolyMet's NorthMet Project on St. Louis County, Minnesota Revised April 2012 for PolMet Mining Inc.). The socio-economic study area (i.e. 3 counties) is not consistent with IMPLAN modeling (one county). See GLIFWC socioeconomics attachment for additional information.	Section 5.2.10.1.3 explains why the IMPLAN model focuses on St. Louis County, and how this is consistent with the remainder of the Socioeconomic section. No text edit.
GLIFWC 108	GLIFWC	4.2.10 Socioeconomics	Jobs Held by residents section, Table 4.2.10-9 Employment Status of Study Area Communities, 2009		This table illustrates unemployment rates in 2009 during the worse of the recession. Tables should be updated with unemployment figures for the Counties in 2010, 2011, and 2012 to ascertain impacts of business cycles on regional employment. See GLIFWC socioeconomics attachment for additional information.	No change. Will revisit updating all data (including IMPLAN) for the Final SEIS.
GLIFWC 109	GLIFWC	4.2.10 Socioeconomics	Education Section		A table is needed to provide number of graduates from Mesabi Range Community and Technical College (Virginia and Eveleth); Vermilion Community College (Ely); Hibbing Community College; Fond du Lac Tribal and Community College (Cloquet); and Lake Superior College (Duluth) for the following job categories: 1) Management, 2) Mine Operations - Contract supervision, operators, maintenance, 3) Mine Technical - Geology, grade control, planning, 4) Railroad Operations, 5) Plant Operations, 6) Sample Preparation and analytical laboratory, and 7) Finance, purchasing, marketing, environmental, HR. See GLIFWC socioeconomics attachment for additional information.	Sufficient assumptions have been made about availability of the workforce. No change.

## Chapter 4.2

Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 110	GLIFWC	4.2.10 Socioeconomics	4.2.10.1.6 Subsistence		Subsistence section failed to acknowledge the large number of species that could be harvested off-reservation by tribes. RESOURCES USED - As of 1837 and 1842, the Chippewa exploited virtually every resource in the ceded territory. Among the mammals the Chippewa hunted at treaty time were white-tailed deer, black bear, muskrat, beaver, marten, mink, fisher, snowshoe hare, cottontail rabbit, badger, porcupine, moose, woodchuck, squirrel, raccoon, otter, lynx, fox, wolf, elk, and bison. Among the birds the Chippewa hunted were ducks, geese, songbirds, various types of grouse, turkeys, hawks, eagles, owls, and partridges. Among the fish the Chippewa harvested were, in Lake Superior, whitefish, herring, chubs, lake trout and turbot; and, in-shore, suckers, walleye, pike, sturgeon, muskie, and perch. LAC COURTE OREILLES CHIPPEWA IND. v. STATE OF WIS. NO. 74-C-313. 653 F.Supp. 1420 (1987). See GLIFWC socioeconomics attachment for additional information.	Species list added to Cultural Resources section (4.2.9), and referenced in Section 4.2.10.1.6. Reference to Section 4.2.9 added.
GLIFWC 111	GLIFWC	4.2.10 Socioeconomics	4.2.10.1.6 Subsistence		Subsistence section failed to acknowledge the large number of species that could be harvested off-reservation by tribes. RESOURCES USED - The Chippewa also harvested a large number of plants and plant materials, including: box elder, sugar maple, arum-leaved arrow-head, smooth sumac, stag-horn sumac, wild ginger, common milkweed, yellow birch, hazelnut, beaked hazelnut, nannyberry, climbing bitter-sweet, large-leaved aster, Philadelphia fleabane, dandelion, paniced dogwood, large toothwort, cucumber, Ojibwe squash, large pie pumpkin, gourds, field horsetail, bog rosemary, leather leaf, wintergreen, Labrador tea, cranberry, blueberry, beech, white oak, bur oak, red oak, black oak, corn, wild rice, Virginia waterleaf, shell bark hickory, butternut, wild mint, catnip, hog peanut, creamy vetchling, navy bean, lima bean, cranberry pole bean, lichens, wild onion, wild leek, false spikenard, sweet white water lily, yellow lotus, red ash, white pine, hemlock, brake, marsh marigold, smooth juneberry, red haw apple, wild strawberry, wild plum, pin cherry, sand cherry, wild cherry, choke cherry, highbush blackberry, red raspberry, large-toothed aspen, prickly gooseberry. LAC COURTE OREILLES CHIPPEWA IND. v. STATE OF WIS. NO. 74-C-313. 653 F.Supp. 1420 (1987). See GLIFWC socioeconomics attachment for additional information.	Species list added to Cultural Resources section (4.2.9), and referenced in Section 4.2.10.1.6. Reference to Section 4.2.9 added.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 112	GLIFWC	4.2.10 Socioeconomics	4.2.10.1.6 Subsistence		Subsistence section failed to acknowledge the large number of species that could be harvested off-reservation by tribes. RESOURCES USED -wild black currant, wild red currant, smooth gooseberry, Ojibwe potato, hop, Virginia creeper, river-bank grape, red maple, mountain maple, spreading dog-bane, paper birch, low birch, downy arrowwood, woolly yarrow, white sage, alternate-leaved dogwood, wool grass, great bulrush, scouring rush, sweet grass, Dudley's rush, marsh vetchling, sweet fern, black ash, balsam fir, tamarack, black spruce, jack pine, Norway pine, arbor vitae (white cedar), hawthorn, shining willow, sphagnum moss, basswood, cat-tail, wood nettle, slippery elm, and Lyall's nettle, poison ivy, winterberry, mountain holly, sweet flag, Indian turnip, wild sarsaparilla, ginseng, spotted touch-me-not, blue cohosh, speckled elder, hound's tongue, marsh bellflower, harebell, bush honeysuckle, red elderberry, snowberry, highbush cranberry, white campion, yarrow, pearly everlasting. LAC COURTE OREILLES CHIPPEWA IND. v. STATE OF WIS. NO. 74-C-313. 653 F.Supp. 1420 (1987)	Species list added to Cultural Resources section (4.2.9), and referenced in Section 4.2.10.1.6. Reference to Section 4.2.9 added.
GLIFWC 113	GLIFWC	4.2.10 Socioeconomics	4.2.10.1.6 Subsistence		Subsistence section failed to acknowledge the large number of species that could be harvested off-reservation by tribes. RESOURCES USED -lesser cat's foot, common burdock, ox-eye daisy, Canada thistle, common thistle, daisy fleabane, Joe-Pye weed, tall blue lettuce, white lettuce, black-eyed Susan, golden ragwort, entire-leaved groundsel, Indian cup plant, fragrant golden-rod, tansy, cocklebur, bunch berry, tower mustard, marsh cress, tansy mustard, squash, wild balsam-apple, hare's tail, wood horsetail, prince's pine, flowering spurge, golden corydalis, giant puffball, wild geranium, rattlesnake grass, blue flag, wild bergamot, heal-all, marsh skullcap, white sweet clover, reindeer moss, northern clintonia, Canada mayflower. LAC COURTE OREILLES CHIPPEWA IND. v. STATE OF WIS. NO. 74-C-313. 653 F.Supp. 1420 (1987) See GLIFWC socioeconomics attachment for additional information.	Species list added to Cultural Resources section (4.2.9), and referenced in Section 4.2.10.1.6. Reference to Section 4.2.9 added.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 114	GLIFWC	4.2.10 Socioeconomics	4.2.10.1.6 Subsistence		Subsistence section failed to acknowledge the large number of species that could be harvested off-reservation by tribes. RESOURCES USED -small Solomon's seal, star-flowered Solomon's seal, carrion flower, twisted stalk, large flowered bellwort, ground pine, Canada moonseed, heart-leaved umbrella-wort, yellow water lily, great willow herb, evening primrose, Virginia grape fern, yellow ladies' slipper, rein orchis, adder's mouth, bloodroot, white spruce, common plantain, Carey's persicaria, swamp persicaria, curled dock, shield fern, female fern, sensitive fern, red baneberry, Canada anemone. LAC COURTE OREILLES CHIPPEWA IND. v. STATE OF WIS. NO. 74-C-313. 653 F.Supp. 1420 (1987). See GLIFWC socioeconomics attachment for additional information.	Species list added to Cultural Resources section (4.2.9), and referenced in Section 4.2.10.1.6
GLIFWC 115	GLIFWC	4.2.10 Socioeconomics	4.2.10.1.6 Subsistence		Subsistence section failed to acknowledge the large number of species that could be harvested off-reservation by tribes. RESOURCES USED - thimble-weed, wild columbine, gold thread, bristly crowfoot, cursed crowfoot, purple meadow rue, agrimony, large-leaved aven, rough cinquefoil, marsh five-finger, smooth rose, high bush blackberry, meadow-sweet, steeple bush, goose grass, small cleaver, small bedstraw, prickly ash, balsam poplar, large toothed aspen, quaking aspen, crack willow, bog willow, pitcher-plant, butter and eggs, cow wheat, wood betony, mullein, moosewood, musquash root, cow parsnip, sweet cicely, wild parsnip, black snakeroot, Canada violet, American dog violet, speckled alder, sweet gale, goldthread, bluewood aster, horseweed, Canada hawkweed, fragrant goldenrod, shin leaf, sessile-leaved bellwort, slender ladies' tresses, and starflower. The Chippewa harvested other miscellaneous resources, such as turtles and turtle eggs.COURTE OREILLES CHIPPEWA IND. v. STATE OF WIS. NO. 74-C-313. 653 F.Supp. 1420 (1987). See GLIFWC socioeconomics attachment for additional information.	Species list added to Cultural Resources section (4.2.9), and referenced in Section 4.2.10.1.6. Reference to Section 4.2.9 added.
4.2.11 Recreation and Visual Resources						

## Chapter 4.2

Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 125	GP	4.2.11.1.2 Visual Resources	There are no major trails within the Superior Natural Forest adjacent to the mine site that would expose recreational users to views of the mine on a regular basis.	4.2.11-3	Except the Trygg map trails.	Clarified that this sentence refers to recreational trails. Added text to describe some of the cultural features potentially with views of the Mine Site. Added to end of paragraph: however, as described in Section 4.2.9 and 5.2.9, several cultural resources and locations adjacent to or potentially within sight of the Mine Site, such as the Spring Lake Mine Sugarbush, Trygg Trail Corridor, and Mesabe Widjiu.
GP 126	GP	4.2.11.3.2 Visual Resources	The closest visual receptors to the tailings basin are residences along Beckman Road and Sailor Road, approximately 1.5 and 2.5 miles north of the tailings basin respectively.	4.2.11-4	This does not include the Overlook, Sugar Bush, and Spring which are all closer.	Clarified that the homes in question are the closest residences, and added: Some of the culturally-important locations described above and in Section 4.2.9 are closer: the Sugarbush is approximately one-half mile from the Plant Site; the Mesabe Widjiu intersects the Plant Site and is less than two miles from the Mine Site; and portions of the Trygg Map Trail Corridor cross both the Mine Site and Plant Site.
4.2.12 Wilderness and Other Special Designations						
GP 127	GP	4.2.12.1.5 National Historic Landmark		4.2.12-6	Height of the Land Portage by the Embarrass River is not included in the list of national historic landmarks in the text.	The section is discussing designated NHL. Height of Land Portage is not a NHL. No change.
GP 128	GP	4.2.12.1.7 National Recreation Trail		4.2.12-7	National recreation trails are listed in the text as having local and regional significance, however, the historic Trygg trails are not mentioned as being significant in any way.	NRTs are federally defined entities. While the Trygg trails have historic and regional significance, they do not carry this federal designation, which is the focus of Section 4.2.12. No text edit.
4.2.13 Hazardous Materials						
None.						
4.2.14 Geotechnical Stability						
None.						

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
<b>4.3.1 Land Use</b>						
FDL 27	FDL	4.3.1.2 Non-federal Lands	Tract 2 Lake County Lands	4.3.1-12	"A review of mineral resources on Tract 2 indicates a low potential for exploration or development of bedrock or surficial deposits (Barr 2011c)." We are aware of ongoing mineral exploration in this immediate area.	No change to SDEIS text.
GP 129	GP	4.3.1.2 Non-federal Lands	Tract 1 appears to have a low potential for exploration or development of bedrock or surficial deposits.	4.3.1-11	How is the value estimated compared to surface tracts with high mineral value?	Each tract is evaluated on its own merits. This type of comparison is not needed. No text edit.
GP 130	GP	4.3.1.2 Non-federal Lands	Mineral rights to tract 5 are outstanding but deeds do not appear to waive the right to subjacent support.	4.3.1-17	What does this mean?	Means that deed conditions require that surface be able to support itself, even if minerals are removed underneath. Edited to clarify definition.
<b>4.3.2 Water</b>						
GP 131	GP	4.3.2.1.1 Land Exchange Proposed Action	The Duluth Complex which immediately underlies the glacial material is the least fractured of the bedrock units in the area and therefore has the poorest aquifer characteristics.	4.3.2-1	Residents must rely on the Duluth complex aquifer when it is the closest to the surface where residential wells must be used instead of a community water supply system.	No change to SDEIS text.
GP 132	GP	4.3.2.1.2 Land Exchange Alternative B	Regional groundwater quality	4.3.2-2	How come no information from USGS was used other than the regional copper-nickel study?	There are no known, site-specific groundwater quality data for any of the non-federal Land Exchange Proposed Action lands. The two studies used may be used to generally characterize potential groundwater quality at the exchange sites.
GP 133	GP	4.3.2.2.3 Tract 1 – Hay Lake Lands	Figure 4.3.2-1	4.3.2-7	Map needs to expand to the south and west.	Figure edited as suggested.
<b>4.3.3 Wetlands</b>						

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 134	GP	4.3.3.1.1 Land Exchange Proposed Action	Other wetland community types present within the federal lands include open bog, shallow marsh, hardwood swamp, open water, and sedge/wet meadows. The sedge/wet meadows may receive some portion of its hydrology from ground water.	4.3.3-6	A large portion of sedge/wet meadows hydrology is ground water.	Removed the sentence and referred reader to Section 4.2.3.1.2, which provides a discussion on the hydrology, wetland vegetation, and community types of the federal lands
GP 135	GP	4.3.3.1.1 Land Exchange Proposed Action	The shallow marsh community generally results from artificial impoundment by beaver dams, roads and railroads, and is primarily dependent on surface waters for hydrology.	4.3.3-6	False shallow marsh communities whether impounded or not are primarily dependent on ground water for hydrology based on vegetation needs.	Removed the sentence and referred reader to Section 4.2.3.1.2, which provides a discussion on the hydrology, wetland vegetation, and community types of the federal lands
GP 136	GP	4.3.3.1.1 Land Exchange Proposed Action	However, road access to the federal lands surrounded the mine site is only available via a private mine road and is not easily accessible to the general public. Alternate access is overland by foot from USFS roads to the south and east.	4.3.3-7	The alternate access discussed here has not been disclosed in previous sections of the EIS.	Removed reference to alternate access. Added reference to Section 4.3.1 for an access discussion.
4.3.4 Vegetation						
GP 137	GP	4.3.4.2.1 Tract 1 – Hay Lake Lands	Much of Tract 1 (59 percent) is wetlands....	4.3.4-15	Where is Acelor-Mittal's in-pit tailings basin in relation to this Tract? Please provide a map that indicates distance.	See Chapter 6 for more information regarding the proximity of this feature to the Hay Lake parcel.
4.3.5 Wildlife						
None						
4.3.6 Aquatic Species						

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 138	GP	4.3.6.2.1 Tract 1 – Hay Lake Lands	Table 4.3.6-4 Benthic Macroinvertebrate Attributes...	4.3.6-7	Zero caddisfly families, a high percentage of Diptera, and only one mayfly taxa indicate pollution, specifically sedimentation.	The first sentence following Table 4.3.6-4 states "The majority of fish species found at the two sample sites were pollution tolerant species...". It is acknowledged that the species composition indicates pollution however the intent of the text was not to make a definitive conclusion that the sample site is polluted. No text edits.
GP 139	GP	4.3.6.2.1 Tract 1 – Hay Lake Lands	The majority of fish species found at the two sample sites were pollution tolerant species...	4.3.6-7	Again, indicating a polluted condition.	The first sentence following Table 4.3.6-4 states "The majority of fish species found at the two sample sites were pollution tolerant species...". It is acknowledged that the species composition indicates pollution however the intent of the text was not to make a definitive conclusion that the sample site is polluted. No text edits.
GP 140	GP	4.3.6.2.1 Tract 1 – Hay Lake Lands	The attributes collected for macroinvertebrates at this sampling site suggest diverse macroinvertebrate habitats were not present, which may be attributed to the headwater characteristics of the sampling site.	4.3.6-7	Considerably more data would need to be collected/presented to make this assumption. In fact, both fish and macroinvertebrates assemblages indicate a polluted condition.	The first sentence following Table 4.3.6-4 states "The majority of fish species found at the two sample sites were pollution tolerant species...". It is acknowledged that the species composition indicates pollution however the intent of the text was not to make a definitive conclusion that the sample site is polluted. No text edits.
4.3.7 Air Quality						
None.						
4.3.8 Noise and Vibration						
None.						
4.3.9 Cultural Resources						
GP 145	GP	4.3.9.1 Land Exchange Proposed Action	(Berens and Rasky)	4.3.9-2	Raske	Edited per suggestion.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 142	GP	4.3.9 Cultural Resources	general comment		potential effects to the Sugarbush are not presented anywhere in this chapter and the air modeling did not show any effects to the Sugarush. This is a major difference of opinion. Grand Portage Band staff believe there will be adverse effects to the Spring Mine Lake Sugarbush from dust particulates from the plant site. Dust will be monitored. However, we want written assurance that if the Sugarbush is damaged in any way by the project, reforestation with sugar maple will be required.	Based on the modeling, effects aren't predicted to occur at the Sugar Bush. Air quality will be monitored during the duration of the NorthMet Project Proposed Action. Co-lead Agencies will discuss physical monitoring of the Sugar Bush with the Project proponent. Consultation is ongoing.
GP 143	GP	4.3.9 Cultural Resources	general comment		Identifying a trail segment, that will ultimately be destroyed with no attempt at mitigation (including avoidance), to be included in the NRHP seems at best pointless and is not consistent with the law. Visual effects have not been adequately analyzed therefore mitigation cannot be determined.	No change. Mitigation will be developed for the trail segment, and consultation will include the Bands. Mitigation of potential effects is discussed in Chapter 5 of the SDEIS.  Land Exchanges are considered projects that have the potential to adversely affect heritage resources (if present), as the proposed parcels will lose protections afforded under federal cultural resource laws, such as the National Historic Preservation Act, the Archaeological Resource Protection Act, among others.
GP 144	GP	4.3.9 Cultural Resources	general comment		The literature search done by Carol Zellie was grossly inadequate and our concerns regarding the poor quality of this literature search have been voiced many times by tribal staff. The Zellie report was at best inaccurate, with the inaccuracies brought up by the Bands on multiple occasions. Yet, the report was allowed to be finalized by the US ACE.	See response to GP 121.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 141	GP	4.3.9.1 Land Exchange Proposed Action	Despite mention in the historic record, the trails themselves, and the role they played as transportation systems prior to the development of railroad transportation in the region, are underrepresented in the literature.	4.3.9-1	This is simply not true. Carol Zellie did not do a reasonable literature search. Now, the bands are doing her job for her without pay.	Refer to response to GP 121.
GP 146	GP	4.3.9.1.1 Non-federal Lands	The non-federal lands that would be going into federal ownership would not be of primary concern for cultural resources since future management of these lands would be as per the Forest Plan direction for cultural resources. As such, any cultural resource	4.3.9-3	These properties have not been evaluated to determine whether they have any cultural resources beyond wild rice waters, therefore these sentences are irrelevant.	No change. Typically, the incoming federal portion of a land exchange does not include a cultural resources survey of the land, because there is no undertaking under Section 106.
GP 147	GP	4.3.9.1.1 Non-federal Lands	The Land Exchange Proposed Action represents an exchange of private and federal land, but it also represents an exchange of access to natural resources expressed in treaties made between the United States and Bands of Ojibwe Indians in the 19th Century. D	4.3.9-3	Both paragraphs should be removed. This does not in any way relate to the loss of the trails or other significant cultural features within the area to be exchanged out of federal ownership. We view the land exchange as a permanent loss of resources within the area being exchanged out of federal ownership.	With respect to the trail segment, the Co-lead Agencies have addressed effects on the segment and those effects will be mitigated under the Section 106 process.  Although the Co-lead Agencies recognize that there will be a loss of access to resources with the outgoing federal lands, it will be offset by incoming federal parcels.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 148	GP	4.3.9.1.3 Non-federal Lands	The non-federal lands that would be going into federal ownership would not be of primary concern for cultural resources since future management of these lands would be as per the Forest Plan direction for cultural resources. As such, any cultural resource	4.3.9-4	Remove this sentence. While this may be true, it is irrelevant since there has been opportunity to identify any TCPs potentially within the land to be acquired.	See response to GP 146.
GP 149	GP	4.3.9.1.3 Non-federal Lands	The Land Exchange Alternative B represents an exchange of private and federal land, but it is also represents an exchange of access to natural resources expressed in Treaties made between the United States and Bands of Ojibwe Indians in the 19th Century.	4.3.9-4	The 1854 Treaty does not stipulate access. This obfuscates the meaning of the treaty and the value of the land that may be moved out of federal control/oversight. Having access to property that is now in private lands does not in any way diminish the loss of lands that are in federal possession now.	Although the Co-lead Agencies recognize that there will be a loss of access to resources with the outgoing federal lands, it will be offset by incoming federal parcels.
4.3.10 Socioeconomics						
GP 150	GP	4.3.10.2 Recreation	Currently, the federal lands are not easily accessible. The non-federal parcels are all privately owned or otherwise have no official public access. However, evidence of recreational activity has been observed on these parcels. Such activity is discussed	4.3.10-1	This contradicts previous statements that there is no access for recreation or subsistence activities.	Clarified language to say: "Currently, the federal lands are not easily accessible. The non-federal parcels are all privately owned or otherwise have no official public access, although evidence of recreational activity has been observed on some of these parcels. Such activity is discussed in Section 4.2.11."
4.3.11 Recreation and Visual Resources						

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 151	GP	4.3.11.2.2 Regional Recreational Resources	The Superior National Forest, including the BWCAW, and Voyageurs National Park are important recreation areas in northeastern Minnesota. The Superior National Forest includes approximately 3 million acres and provides recreation opportunities for camping,	4.3.11-2	This sentence gives the impression that a trail used for recreation is more significant than the historic Trygg trails.	This section addresses recreational aspects of trails. If the Trygg trails have historic or current recreational use or value, please indicate so. Reference added that the Trygg trails may provide views of the Mine Site and Plant Site. Added text to respond.
4.3.12 Wilderness and Other Special Designations						
None.						
4.3.13 Hazardous Materials						
None.						
4.3.14 Geotechnical Stability						
None.						

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**Chapter 5.2**

## Chapter 5.2

Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
5.2.1 Land Use						
FDL 47	FDL	5.2.1 Land Use	Summary	p 5.2.1-1	"The NorthMet Project Proposed Action would decrease the amount of land available for public access and use, and would decrease portions of the 1854 Ceded Territory available for use by the Bands. However, given the historic use of the federal lands within the Mine Site for mineral exploration and ongoing restrictions on public access (see Section 4.2.11), the NorthMet Project Proposed Action would result in little or no change in actual public use of these lands." Fond du Lac disagrees with this conclusion. The proposed action would without question result in decreased resources within the 1854 CT. "Actual public use" is irrelevant.	The text as written clearly states that treaty rights would be reduced. Public access is a relevant issue for the public at large, although a separate issue from tribal rights. The word "however" implies more connection or equivalency between public access/use and Treaty rights than is desirable in this document. The text has been refined to emphasize this separation. Deleted "However, "
FDL 48	FDL	5.2.1.2.3 Areas Of Concern	Areas of Concern	p 5.2.1-2	It is unclear when the remaining areas of concern will be addressed.	Assuming this comment refers to the "33 AOCs that are designated as the responsibility of parties other than PolyMet", then the EIS is not able to disclose more specificity than currently existing in the Consent Decree, although Section 4.2.1.4.2 does describe current status. No text edit.
GP 152	GP	5.2.1.3 Northmet Project No Action Alternative	There would be no effects relative to baseline conditions as a result of the NorthMet Project No Action Alternative.	5.2.1-2	This is incorrect and should be changed throughout the text wherever it appears. Baseline conditions will change as a result of actions required by the Consent Decree including clean-up and closure remediation activities already occurring at the site. The no action alternative appears to be used to hide from the reader the existing pollution and clean-up requirements that are in place now.	The Consent Decree is currently in place and therefore is part of the existing management at the site. It exists irrespective and independently of the proposed NorthMet Project, and thus, if the NorthMet Project does not occur, the existing affected areas would continue to be managed in accordance with the Consent Decree.
5.2.2 Water						
1854 39	1854	5.2.2.3.3 Embarrass River Watershed	1st paragraph	5.2.2-144	Can the seep collection system be designed for 100% capture (90% modeled capture)? Please provide more details, examples, analysis, calculations, etc. Effective seep collection is important component of project meeting standards, and concern if this type of assumption is accurate.	The following paragraph has been edited in Section 5.2.2.3 - Contaminant Release from the Tailings Basin: GoldSim is programmed with algorithms for estimating the release of chemicals from the tailings sources areas. For the NorthMet Project Proposed Action, a groundwater and surface water containment system would be constructed at the beginning of operations along the northeast, north, and west perimeter of the Tailings Basin to intercept affected water seeping from the facility. The facility would be designed to collect all tailings seepage that flows as surface water and this is programmed into the GoldSim model. For the surficial (unconsolidated) unit, GoldSim has been programmed to assume that 90 percent of the approaching groundwater is collected and 10 percent (21 gpm) bypasses the system and continues to migrate toward the Embarrass River. The programmed 90 percent collection of groundwater is conservative in that performance modeling of the containment system (PolyMet 2013f, Attachment C), predicts that a capture percentage greater than 90 percent would be achieved. Due to the very low hydraulic conductivity of bedrock and because the slurry trench would be keyed into bedrock, the GoldSim model assumes that groundwater by-pass via bedrock is negligible compared to that occurring in the surficial unit.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
1854 40	1854	5.2.2.3.3 Embarrass River Watershed	Tailings Basin Groundwater Containment System	5.2.2-147	Can the seep collection system be designed for 100% capture (90% modeled capture)? Please provide more details, examples, analysis, calculations, etc. Effective seep collection is important component of project meeting standards, and concern if this type of assumption is accurate.	The following paragraph has been edited in Section 5.2.2.3 - Contaminant Release from the Tailings Basin: GoldSim is programmed with algorithms for estimating the release of chemicals from the tailings sources areas. For the NorthMet Project Proposed Action, a groundwater and surface water containment system would be constructed at the beginning of operations along the northeast, north, and west perimeter of the Tailings Basin to intercept affected water seeping from the facility. The facility would be designed to collect all tailings seepage that flows as surface water and this is programmed into the GoldSim model. For the surficial (unconsolidated) unit, GoldSim has been programmed to assume that 90 percent of the approaching groundwater is collected and 10 percent (21 gpm) bypasses the system and continues to migrate toward the Embarrass River. The programmed 90 percent collection of groundwater is conservative in that performance modeling of the containment system (PolyMet 2013f, Attachment C), predicts that a capture percentage greater than 90 percent would be achieved. Due to the very low hydraulic conductivity of bedrock and because the slurry trench would be keyed into bedrock, the GoldSim model assumes that groundwater by-pass via bedrock is negligible compared to that occurring in the surficial unit.
1854 41	1854	5.2.2.3.3 Embarrass River Watershed	Waste Water Treatment Plant	5.2.2-147	Effectiveness of water treatment is vital to the project meeting standards. Analysis and design detail are lacking in the PSDEIS. Once a project is built and operating, operations must meet standards and not be allowed to be out of compliance. More detail is needed on water treatment and long-term operation/maintenance since they are essential components of the project meeting environmental standards.	In Section 5.2.2 - Summary, new text has been added to describe the water treatment and seep collection facilities. Also, references have been added that describe in detail the analysis, design, and pilot testing of these facilities.
1854 42	1854	5.2.2.3.3 Embarrass River Watershed	2nd paragraph	5.2.2-175	The discussion of aluminum concentrations in the Embarrass River minimizes the projects role of increasing the aluminum concentration/loading. Even if some of the load concentration increase is due to using Colby Lake water for stream augmentation, it is still due to the project.	Clarified to acknowledge the concentration due to augmentation.
1854 43	1854	5.2.2.3.3 Embarrass River Watershed	Sulfate in Surface Water in the Embarrass River	5.2.2-177	Disagreement exists over application of the standard. Wild rice exists upstream in the Embarrass River from the draft MPCA staff recommended definitions of water used for production of wild rice (compliance points). It is arbitrary to define how much rice presence is required, especially given the lack of long-term monitoring data on a water. Application of this standard may be evolving/changing as research is ongoing and the standard will be evaluated. These issues should be clearly addressed in the PSDEIS.	All information provided was considered when the MPCA made their recommendation. Should the application of the standard change, it will be addressed at that time.
FDL 60	FDL	5.2.2.3.4 Mercury		p 5.2.2-19	"Overall, the NorthMet Project is not expected to increase the potential for mercury methylation either at the NorthMet Project area or downstream in the Partridge River, Embarrass River, or St. Louis River; in fact the project could be expected to reduce mercury methylation because of the overall significant reduction in sulfate loadings relative to existing conditions." Fond du Lac disagrees with this conclusion; it is not supported by the limited data and analysis. Additional information will be provided; see also GLIFWC comments.	Sentence deleted.
FDL 59	FDL	5.2.2.3.4 Mercury	Table 5.2.2-49	p 5.2.2-18	Does not include Hg contributions from the OSLA; mass balance is incomplete	Surface runoff from the Overburden Storage and Laydown Area is considered "Process Water," and would be captured in an unlined pond (Pond PW-OSLA) and monitored for quality prior to further use or dispositions.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 195	GLIFWC	5.2.2.3.4 Mercury	first paragraph of 5.2.2-186		There is a general lack of understanding of mercury dynamics in the St. Louis River Watershed. See the supplemental document "Great Lakes Indian Fish and Wildlife Commission (GLIFWC) Comments Related to Mercury" [Comment 1] for details.	The Co-leads agree that the mercury dynamics are complex; however, the analysis as presented indicated that there was minimal potential for a downstream increase in mercury loading.
GLIFWC 197	GLIFWC	5.2.2.3.4 Mercury	Throughout		The conclusion that mercury will not increase in the environment or exceed applicable environmental evaluation criteria is based on several assumptions. One such assumption is that mercury methylation will not increase because the amount of sulfate being released to the environment will actually be reduced by the project. This assumption is not justified. See the supplemental document "Great Lakes Indian Fish and Wildlife Commission (GLIFWC) Comments Related to Mercury" [Comment 3] for details.	Text will be edited to remove this statement. Similar sentences will also be removed.
GLIFWC 198	GLIFWC	5.2.2.3.4 Mercury	First two paragraphs		The conclusion that mercury will not increase in the environment or exceed applicable environmental evaluation criteria is based on several assumptions. One such assumption is that the Northmet project would have minor effects on flows in the Partridge and Embarrass Rivers or their tributaries and is thus not expected to result in increases in flow fluctuations that promote mercury methylation. This assumption is not justified. See the supplemental document "Great Lakes Indian Fish and Wildlife Commission (GLIFWC) Comments Related to Mercury" [Comment 4] for details.	The modeling does not suggest that flow fluctuations should be any greater than existing conditions.
GLIFWC 200	GLIFWC	5.2.2.3.4 Mercury	Throughout		There is a potential for the overflow from the West Pit (after year 40) to exceed the Great Lakes Initiative (GLI) standard for mercury of 1.3 ng/L. This has not been considered when concluding the Proposed Action would not exceed applicable environmental evaluation criteria. See the supplemental document "Great Lakes Indian Fish and Wildlife Commission (GLIFWC) Comments Related to Mercury" [Comment 6] for details.	Both an analog approach and a mass balance were conducted for evaluating the potential for the West Pit lake water quality to exceed the GLI standard for mercury of 1.3 ng/L. Both analyses concluded the potential for an exceedance was unlikely. Further, West Pit overflow water is first treated at the WWTF before discharge, which would further reduce mercury concentrations in the effluent.
1854 44	1854	5.2.2.3.4 Mercury	Summary - 3rd paragraph	5.2.2-195	Disagree with assumption that the NorthMet Project could be expected to reduce mercury methylation. This statement should be removed. As stated on page 5.2.2-192, mercury methylation is a complicated process. One can't assume that mercury methylation could be expected to decrease because the modeling estimated slightly lower sulfate loading.	Text will be edited to remove this statement. Similar sentences will also be removed.
GLIFWC 173	GLIFWC	5.2.2.3.5 Proposed And Recommended Mitigation Measures			The section on proposed action design changes and fixed engineering controls are no longer mitigation measures as they are now part of the proposed project. These changes have already been described in other sections of the PSDEIS. It appears that the list of mitigations is being padded. These sections should be removed.	This section acknowledges measures taken to avoid, minimize, or mitigate impacts to water resources. Just because a measure is included as part of the proposed project does not mean it does not serve to mitigate impacts.
GLIFWC 174	GLIFWC	5.2.2.3.5 Proposed And Recommended Mitigation Measures	5.2.2-196		The notion of fine material being segregated in the center of the rail cars is not credible. See GLIFWC rail car attachment.	Discussion of fine material being segregated in the center of rail cars has been removed.

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GLIFWC 175	GLIFWC	5.2.2.3.5 Proposed And Recommended Mitigation Measures	5.2.2-198		Because the hydrology of surface and groundwater for the Partridge River is poorly understood, this section should give information on the maximum capacity for the WWTF. GLIFWC staff believe that this facility will have to treat significantly greater amounts of water than the applicant proposes based on field baseflow data.	As stated on page 5.2.2-109, "The WWTF equalization basins are designed for the spring snowmelt when the Mine Site would be at its maximum area. In the event of an extreme event (e.g., 100-year storm), excess water would remain in the mine pits, which essentially have unlimited storage capacity, with mine operations in the pits temporarily shut down (see Mine Site Water Management Plan)."  The WWTF is being designed such that additional capacity may be added if required as per the adaptive water management plan
GLIFWC 176	GLIFWC	5.2.2.3.5 Proposed And Recommended Mitigation Measures	5.2.2-198		Says that the Category 1 stockpile cover design could be updated but it does not say how. The rest of the text is simply a restatement of the proposed project.	Text added. Design options, which would need to be approved by the MPCA and MDNR, include: increased or decreased thickness of the geomembrane material to modify the potential for defects to be created during installation and to modify the life of the geomembrane; increased or decreased soil cover thickness above the geomembrane material to modify water storage capacity; increased or decreased soil hydraulic conductivity of the granular drainage layer above the geomembrane to modify lateral drainage capacity; increased or decreased uninterrupted slope length to modify lateral drainage capacity; modified soil type and/or thickness below the geomembrane to modify leakage rate through potential geomembrane defects; and/or including a geosynthetic clay liner below the geomembrane to modify leakage rate through potential geomembrane defects. After installation of the cover system, post-installation adjustments, such as modifying vegetation density and erosion of the cover system, could be made if approved by the MPCA and MDNR (PolyMet 2013g).
GLIFWC 177	GLIFWC	5.2.2.3.5 Proposed And Recommended Mitigation Measures	5.2.2-198 third bullet		This is a restatement of the bentonite cover that is part of the proposed project. This is not a mitigation measure. How exactly can the cover system be modified? What part of the cover design is adaptive?	Text added to clarify. Prior to installation, the design of the pond bottom cover system could be adjusted to modify performance. Design options include: increasing or decreasing the thickness of the bentonite amendment, and/or increasing the percent of bentonite, and/or a combination of increasing/decreasing the thickness and increasing/decreasing the percent bentonite. After installation, the design of the installed pond bottom cover system could also be adjusted to modify performance by these same methods. In addition, the bentonite amended layer could be excavated from portions of the pond bottom. Any design modifications would need to be approved by the MPCA and MDNR (PolyMet 2013g).
GLIFWC 178	GLIFWC	5.2.2.3.5 Proposed And Recommended Mitigation Measures	5.2.2-200		Describe the long term maintenance needs for PRB's including replacement frequency (expected effective timeperiod)	The Proposed Action relies on mechanical treatment to achieve water quality objectives. Non-mechanical treatment (including PRBs) is described as a goal, but is not specifically part of the Proposed Action. It is beyond the scope of the SEIS to describe non-mechanical systems in detail. For interested readers, information on non-mechanical systems is referenced in the SDEIS (PolyMet, 2013g).
GLIFWC 179	GLIFWC	5.2.2.3.5 Proposed And Recommended Mitigation Measures	5.2.2-200		As previously commented, other sections of the PSDEIS state that the applicant is not seeking a seasonal application of the wild rice standard. Yet, the west pit overflow non mechanical treatment system relies on a seasonal discharge to comply with the standard. This non-mechanical treatment option should be eliminated from the project as it does not meet the stated goals of compliance with water quality standards.	The Proposed Action relies on mechanical treatment to achieve water quality objectives. Non-mechanical treatment (including PRBs) is described as a goal, but is not specifically part of the Proposed Action. It is beyond the scope of the SEIS to describe non-mechanical systems in detail. For interested readers, information on non-mechanical systems is referenced in the SDEIS (PolyMet, 2013g).

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1854 45	1854	5.2.2.3.5 Proposed And Recommended Mitigation Measures	Contingency Mitigation	5.2.2-198	Research has indicated that planned/expected impacts from mining operation are almost always inaccurate. Impacts are typically greater. Mining operations also change over time (ex. longer mine life), affecting initial plans. Contingency mitigation can probably be expected in some form, and the company must be held responsible for this. The PSDEIS states that contingency mitigation will not be included initially in the financial assurance package. Financial assurance must be monitored and updated as the project proceeds to properly cover site cleanup and closure.	Chapter 3 (Section 3.2.2.4) indicates that "reclamation and post-reclamation costs are required, under the Permit to Mine, to be updated on an annual basis to account for the proceeding year's activities. This requires estimating the contingency funds required for closure and post-closure activities in the event of unplanned closure during the course of the year. Revisions would capture annual changes in contingency reclamation activities and costs..."
1854 46	1854	5.2.2.3.5 Proposed And Recommended Mitigation Measures	first paragraph	5.2.2-200	Effectiveness of water treatment and seep collection are vital to the project meeting standards. Analysis and design detail are lacking in the PSDEIS. Concern exists over the need for long-term treatment and also for the regulatory ability to allow for it. More detail is needed on water treatment and seep collection, including long-term operation/maintenance, since they are essential components of the project meeting environmental standards.	In Section 5.2.2 - Summary, new text has been added to describe the water treatment and seep collection facilities. Also, references have been added that describe in detail the analysis, design, and pilot testing of these facilities.
1854 47	1854	5.2.2.3.5 Proposed And Recommended Mitigation Measures	West Pit Overflow Non-Mechanical Treatment System	5.2.2-200	Other location(s) in PSDEIS (page 5.2.2-19) mentions that PolyMet will not be pursuing seasonal discharge for wild rice standard. However, seasonal discharge would be used in the non-mechanical water treatment. No scientific basis exists for seasonal application of standard, even given the current MPCA staff recommendation. Application of this standard may be evolving/changing as research is ongoing and the standard will be evaluated.	All information provided was considered when the MPCA made their recommendation. Should the application of the standard change, it will be addressed at that time.
1854 48	1854	5.2.2.3.5 Proposed And Recommended Mitigation Measures	Flotation Tailings Basin Non-Mechanical Treatment System	5.2.2-200	If this is interpreted correctly, this method of non-mechanical treatment will allow a total flow going out to the affected tributaries to be 1,200 gpm (page 5.2.2-201). According to Table 5.2.3-11, this is just above the minimal flow required for wetlands (total 1,191 gpm after drainage swale is constructed). Since the estimated flow from this method of non-mechanical treatment barely meets the "minimum" requirement for flow to wetlands, there should be revisions made to this proposed method to ensure wetlands are protected.	1,200 gpm is the estimated flow rate of non-mechanical treated water near the toes of the Tailings Basin. Downstream of the toes, there will be additional surface and subsurface water in the system due to storm runoff, snow melt, and meteoric recharge. Combining these water sources with the non-mechanical treated discharge will be sufficient to be protective of wetlands.
GLIFWC 202	GLIFWC	5.2.2.3.6 Monitoring	Throughout		It is not apparent whether mercury monitoring is included within the water quality monitoring of the Mine Site or Plant Site. If it is, this should be specified. If it is not, it should be added to the monitoring activities.	Water quality monitoring would be finalized during permitting, but in general, mercury monitoring would be included within the water quality monitoring.

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GLIFWC 180	GLIFWC	5.2.2.4 Northmet Project No Action Alternative			This section describes the flaw in the PSDEIS of assuming that the no action alternative is equivalent to existing conditions. We agree that they are not the same thing. A true no action alternative should be modeled as required by NEPA. See GLIFWC hydrology attachment for more information.	Description of the No Action Alternative will be clarified.
GLIFWC 117	GLIFWC	5.2.2 Water Resources			As previously commented, the mine site is not located within the historic iron/taconite mining district. It is in a separate geology altogether in an mostly undisturbed area known as the 100 mile swamp. Correct the text.	Text edited.
GLIFWC 118	GLIFWC	5.2.2 Water Resources	bottom of page		The negative effects of sulfate on wild rice are well understood and scientifically documented. Edit the text as outlined in the GLIFWC wild rice attachment.	All information provided was considered when the MPCA made its recommendation. The text already states that 'Some research has indicated that natural wild rice thrives better in low sulfate waters.'. No text edit.
GLIFWC 119	GLIFWC	5.2.2 Water Resources	middle of third paragraph		The paragraph has a discussion comparing the NorthMet project to other sulfide mines. The goal appears to be the minimization of impact discussion prior to any information presented on the impact analysis itself. If this type of information is to be presented, additional discussion about the water quality contamination that these other mines have caused, their location and ore grade is necessary.	No change to SDEIS text.
GLIFWC 120	GLIFWC	5.2.2 Water Resources	top of page		why is the term wild rice bed in quotes? Remove the quotes.	Quotes removed.
GLIFWC 121	GLIFWC	5.2.2 Water Resources	middle of the page		The discussion on water treatment should state that both active and passive treatment systems would need to operate successfully in perpetuity.	Text edited to reflect that the Closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. The owning company would be held accountable to maintenance and monitoring required under permit and would not be released until all conditions have been met.
GLIFWC 122	GLIFWC	5.2.2 Water Resources	bottom of page		The discussion of model results and compliance with evaluation criteria assumes perpetual water treatment and perpetual maintenance of the facilities. This should be clearly stated. Also, evaluation criteria are different from standards. The PSDEIS does say that standards would be exceeded for several constituents.	Text edited. As described in the SDEIS, the evaluation criteria do use the standards, but interpret the standards from a probabilistic perspective. The P90 approach is a reasonable method for applying the results of probabilistic modeling for EIS impact assessment. In this context, it is not appropriate to say that "a constituent will exceed a water quality standard". It is more accurate to say that "there is at least a 90 percent probability that a constituent will not exceed a standard (or up to a 10 percent probability that it will)". These quoted statements are very different.
GLIFWC 196	GLIFWC	5.2.2 Water Resources	First full paragraph	5.2.2-3	The conclusion that mercury will not increase in the environment or exceed applicable environmental evaluation criteria is based on several assumptions. One such assumption is that the tailings basin will function as a mercury sink. This assumption is not justified. See the supplemental document "Great Lakes Indian Fish and Wildlife Commission (GLIFWC) Comments Related to Mercury" [Comment 2] for details.	Co-leads disagree. Tailings Basins in general are a sink for mercury.

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GLIFWC 221	GLIFWC	5.2.2 Water Resources	Figure 5.2.2-35	136	The No-Action, P50 model (continuation of current conditions) for As shows annual maximum values (~0.5 ug/L), substantially less than those shown as mean existing water quality in Table 4.2.2-18 (mean As is 0.78 to 1.4 ug/L depending on the data set).	Baseline data is presented in Table 4.2.2-18 which is different to what was modeled for the Continuation of Existing Conditions Scenario.
GLIFWC 222	GLIFWC	5.2.2 Water Resources	Table 5.2.2-34	139	the travel times to the Partridge River depend on the basic hydrology of the mine site. As we comment elsewhere, the baseflow assumed for the Partridge is not supported by data from the Dunka Rd. gage. Incorporating the higher baseflow indicated by the gage data into modeling assumptions and calibration would result in a more conductive site and therefore, faster transport times.	Groundwater travel times are related to river baseflow estimates. We believe the baseflow estimates are reasonable. Higher baseflows would likely result in a more conductive site and faster transport times, but this would not necessarily result in higher solute concentrations in either groundwater or surface water; in fact we believe higher baseflows would result likely result in lower concentrations. The GoldSim model duration was 200 years, which was sufficient to capture the peak concentration of all solutes along all surficial groundwater flow paths; therefore, the GoldSim model does not need faster transport times to capture peak solute concentrations.
GLIFWC 223	GLIFWC	5.2.2 Water Resources	Table 5.2.2-37	155	The evaluation point at the toe of the basins is omitted from the table. Without that information it is impossible to evaluate the need for and the effectiveness of the seep capture system. Given that the seep capture system can not be operated indefinitely, it is important to report the character of the water that will be exiting the basins. A figure showing the water character at the toe of the basins should be added. Figures from Water Modeling Data Package Vol 2-Plant Site v9 MAR2013.pdf such as Figure F-01-04.1 or Figure F-01-18.1 or Figure F-01-24.1 would be suitable.	Although we agree that the evaluation locations at the toe of the tailings basin are valuable in terms of ongoing monitoring and early warning of potential water quality issues, we do not see any real benefit to including these additional evaluation locations in the SDEIS as the GoldSim model was run for sufficient durations that the peak of seepage from all contamination sources reaches the evaluation locations currently included in the SDEIS.
GLIFWC 123	GLIFWC	5.2.2.1.1 Groundwater	top of page		The conclusion that there are no significant hydrologic affects of the project cannot be supported. It is based on fatally flawed modelling in XP-SWMM using antiquated data from far downstream. See GLIFWC hydrology attachment.	We believe the XP-SWMM modeling is acceptable for use in the SDEIS. The 20 year old data is acceptable as there haven't been any significant changes within the watershed. We believe the assumptions used were reasonably conservative. Additional detail is provided in the water sections of the SDEIS, and further rationale is provided in the Water Data Packages.
GLIFWC 124	GLIFWC	5.2.2.1.1 Groundwater			The discussion of groundwater evaluation criteria is incomplete. The evaluation point at the Dunka road needs to be discussed and all results displayed in a table. This is because there are 2 alternatives for the land exchange and a preferred alternative is not yet chosen. This section, and all other sections of chapter 5 must not assume a property boundary in the text. Finally, figure 5.2.2-4 appears to depict the Dunka Rd. evaluation point. the text should also.	Although we agree that the evaluation locations along Dunka Road are valuable in terms of ongoing monitoring and early warning of potential water quality issues, we do not see any real benefit to including these additional evaluation locations in the SDEIS as the GoldSim model was run for sufficient durations that it captures the peak solute concentrations along all flow paths at the evaluation locations currently included in the SDEIS.
GLIFWC 125	GLIFWC	5.2.2.1.1 Groundwater	figure 5.2.2-4		The location of the groundwater evaluation point for the ore surge pile flowpath should be moved to the section of the property boundary closest to the pile itself. Does the modeling use this incorrect evaluation point?	The evaluation point for the OSP is the Partridge River because the river is located slightly further upgradient (northwest) than the mine property boundary. The distance from the OSP to the evaluation point is about 1100 meters which is consistent with Figure 5.2.2-4.
GLIFWC 126	GLIFWC	5.2.2.1.2 Surface Waters	Hydrologic Alterations...		The evaluation criteria values for the project are taken from XP_SWMM modeling That model is fatally flawed and produces results that conflict with measured data. The results cannot be used. See GLIFWC hydrology attachment	We believe the XP-SWMM modeling is acceptable for use in the SDEIS. The 20 year old data is acceptable as there haven't been any significant changes within the watershed. We believe the assumptions used were reasonably conservative. Additional detail is provided in the water sections of the SDEIS, and further rationale is provided in the Water Data Packages.
GLIFWC 127	GLIFWC	5.2.2.1.2 Surface Waters	5.2.2-15		GLIFWC disagrees with MPCA interpretation of areas of wild rice production. See GLIFWC wild rice attachment.	The SDEIS uses MPCA's draft determination regarding the locations of water used for the production of wild rice.
GLIFWC 128	GLIFWC	5.2.2.1.2 Surface Waters	5.2.2-19		GLIFWC disagrees with MPCA seasonal application of the wild rice standard. See GLIFWC wild rice attachment.	The SDEIS uses MPCA's draft determination regarding the seasonal application of the wild rice standard.

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GLIFWC 129	GLIFWC	5.2.2.1.2 Surface Waters	5.2.2-19		Section states that PolyMet is not seeking application of a seasonal wild rice standard. This is in conflict with other sections of the PSDEIS. See GLIFWC wild rice attachment.	All information provided was considered when the MPCA made their recommendation. Should the application of the standard change, it will be addressed at that time.
GLIFWC 194	GLIFWC	5.2.2.1.2 Surface Waters	Second paragraph of 5.2.2-15		There is a general lack of understanding of mercury dynamics in the St. Louis River Watershed. See the supplemental document "Great Lakes Indian Fish and Wildlife Commission (GLIFWC) Comments Related to Mercury" [Comment 1] for details.	The Co-leads agree that the mercury dynamics are complex; however, the analysis as presented indicated that there was minimal potential for a downstream increase in mercury loading.
GLIFWC 130	GLIFWC	5.2.2.2.3 Water Quality Modeling (goldsim)	5.2.2-46		There is a comparison of sulfur content with other mines. Fundamentally, it does not matter if S levels are lower or higher compared to other mines. NorthMet would be located in a wet environment with complex hydrology where other mines are located in arid or arctic environments with little hydrologic connectivity. All mines are different and this language makes the attempt to minimize the risks of this particular mine. Remove the language.	Caveat added to discussion.
GLIFWC 131	GLIFWC	5.2.2.2.3 Water Quality Modeling (goldsim)	5.2.2-48		XP-SWMM model is fatally flawed and should not be used in impact assessment. See GLIFWC hydrology attachment	The difference in the baseflows are very small (indistinguishable from a stage standpoint). We believe the XP-SWMM modeling is acceptable for use in the SDEIS. The 20 year old data is acceptable as there haven't been any significant changes within the watershed. We believe the assumptions used were reasonably conservative. Additional detail is provided in the water sections of the SDEIS, and further rationale is provided in the Water Data Packages.
GLIFWC 132	GLIFWC	5.2.2.2.3 Water Quality Modeling (goldsim)	5.2.2-67		There is a statement that the no action alternative is a continuation of existing conditions. GLIFWC staff fundamentally disagree with this approach. This flawed assumption leads to errors in water quality model outputs. NEPA requires an analysis of the no action alternative so that the effects of the proposed action can be understood in a larger context. See GLIFWC hydrology attachment.	We believe the assumptions used were reasonably conservative. The description of the No Action Alternative and Continuation of Existing Conditions will be further clarified in the SDEIS.
GLIFWC 133	GLIFWC	5.2.2.3.1 Northmet Project Proposed Action Water Budget Overview	figure 5.2.2-15		This map, or a new map are needed with the location of the west pit level control structure, the outfall location, and the potential location of facilities described in the AWMP.	Figure 5.2.2-15 will be edited to include the west pit level control structure & the outfall location.
GLIFWC 134	GLIFWC	5.2.2.3.1 Northmet Project Proposed Action Water Budget Overview	5.2.2.73		Section states that figure 5.2.2-15 has the location of a wetland and outlet control structure OS-5. It does not. Figure should also include the tributary channel that would connect the outfall to the Partridge River.	Figure 5.2.2-15 will be edited to include the west pit level control structure & the outfall location.
GLIFWC 135	GLIFWC	5.2.2.3.1 Northmet Project Proposed Action Water Budget Overview	5.2.2-74		Discussion on the hydromet tailings facility should clearly state that the periodic pumping and water collection activities would be perpetual.	The Closure objective is to provide water management activities at the hydrometallurgical facility for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. While described as long-term, the time frame for these activities is not necessarily "perpetual". Chapter 3 describes closure of the Hydrometallurgical Residue Facility. Once the facility is drained and reclaimed (covered), no further pumping would be required. As such, there would not be periodic or perpetual pumping of water from the Hydrometallurgical Residue Facility post closure.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 136	GLIFWC	5.2.2.3.1 Northmet Project Proposed Action Water Budget Overview	5.2.2-74 - Mine site section		The section should clearly state for how long water collection and treatment of Category 1 stockpile seepage would be needed. It should also state that the length of time the WWTP would operate in order to comply with water quality standards is perpetual	Text edited to reflect that the Closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. The owning company would be held accountable to maintenance and monitoring required under permit and would not be released until all conditions have been met.
GLIFWC 137	GLIFWC	5.2.2.3.1 Northmet Project Proposed Action Water Budget Overview	5.2.2.-77 - top of page		States that the goal is to transition to non mechanical water treatment. The fact that all water treatment (mechanical and/or non mechanical) would need to occur in perpetuity. It should also clearly state that a transition to non mechanical treatment may not be possible.	Text edited (see GLIFWC 136: maintenance and monitoring long term required)
GLIFWC 138	GLIFWC	5.2.2.3.1 Northmet Project Proposed Action Water Budget Overview	5.2.2-77 - plant site		First paragraph should state that treatment and capture of water needs are perpetual.	Text edited (see GLIFWC 136: maintenance and monitoring long term required)
GLIFWC 139	GLIFWC	5.2.2.3.1 Northmet Project Proposed Action Water Budget Overview	5.2.2-77 second paragraph		States that long term closure activities will continue until the various facility features are deemed environmentally acceptable, in a self sustaining and stable condition. This is a misleading statement because the maintenance and water treatment needs are perpetual. A stable and self sustaining site will never occur.	Text edited to reflect that the Closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. The owning company would be held accountable to maintenance and monitoring required under permit and would not be released until all conditions have been met.
GLIFWC 140	GLIFWC	5.2.2.3.1 Northmet Project Proposed Action Water Budget Overview	5.2.2-77 third paragraph		Non mechanical treatment options would still require maintenance and monitoring in perpetuity to ensure effectiveness.	Text edited to reflect that the Closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. The owning company would be held accountable to maintenance and monitoring required under permit and would not be released until all conditions have been met.
GLIFWC 199	GLIFWC	5.2.2.3.1 Northmet Project Proposed Action Water Budget Overview	Fifth paragraph of 5.2.2-68 and fourth paragraph of 5.2.2-73		There is no discussion of the impacts on mercury from the construction of wetlands over the East Pit and at the perimeter of the tailings bason during reclamation. See the supplemental document "Great Lakes Indian Fish and Wildlife Commission (GLIFWC) Comments Related to Mercury" [Comment 5] for details.	These wetlands are not expected to be sources of mercury nor have elevated mercury concentrations. The water used to augment flows north of the tailings storage facility would have significantly lower sulfate concentrations than current conditions. Therefore we do not expect these wetlands to function as any more of a source of methyl mercury than the current wetlands found in these locations.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 141	GLIFWC	5.2.2.3.2 Partridge River Watershed	5.2.2-79 to 5.2.2-81		The entire section is fatally flawed because it relies on the Canisteo Pit analog method. GLIFWC staff have objected to the use of this method since it was proposed (See GLIFWC wetland attachment). This analog approach is not scientifically defensible.	The analog approach is considered a reasonable method for evaluating the extent of pit drawdown considering the heterogeneous nature of glacial till and the underlying low-permeability bedrock. Even when the pit water level is well below the top of bedrock, the low-permeability bedrock limits the amount of surficial groundwater that can drain downward into the pit and there is sufficient recharge to the surficial unit to generally maintain water levels.
GLIFWC 142	GLIFWC	5.2.2.3.2 Partridge River Watershed	table 5.2.2-18		Chemical mechanisms column for the west pit should include water level fluctuations in the pit with wetting and drying of pit walls. This fluctuation is likely if a non-mechanical treatment option is used in order to meet the MPCA seasonal wild rice standard.	This factor will be addressed in future analysis of the passive system.
GLIFWC 143	GLIFWC	5.2.2.3.2 Partridge River Watershed	5.2.2-88 to 5.2.2-89		Placing peat and unsaturated overburden in an unlined area would create a significant pulse of mercury. This mercury release does not seem to be accounted for in the mercury sections. The mercury, once released would travel the groundwater flow path and constitute an untreated discharge into the Partridge River. This is a particular concern because of the applicants failure to model mercury.	Surface runoff from the Overburden Storage and Laydown Area is considered "Process Water," and would be captured in an unlined pond (Pond PW-OSLA) and monitored for quality, including mercury. If the Overburden Storage and Laydown Area water was of sufficient quality, it would be pumped to the CPS and discharged to the East Pit or the Tailings Basin. If water in Pond PW-OSLA required treatment, it would be pumped to the WWTF for treatment prior to delivery to the CPS.  The potential release of mercury from the decomposition of overburden materials is included in the mercury mass balance (Section 5.2.2.3.4).
GLIFWC 144	GLIFWC	5.2.2.3.2 Partridge River Watershed	5.2.2-92		The no action alternative is not the same as existing conditions. An accurate no action alternative needs to be modeled in order to compare impacts under NEPA.	The SDEIS text regarding the No Action Alternative and "Continuation of Existing Conditions" will be clarified.
GLIFWC 145	GLIFWC	5.2.2.3.2 Partridge River Watershed	5.2.2-92		All statements indicating that evaluation criteria would be met must include the caveat that perpetual water capture and treatment must be done to make that happen. We disagree that all water quality standards would be met. Water quality will be exceeded for several constituents.	Text edited. As described in the SDEIS, the evaluation criteria do use the standards, but interpret the standards from a probabilistic perspective. The P90 approach is a reasonable method for applying the results of probabilistic modeling for EIS impact assessment. In this context, it is not appropriate to say that "a constituent will exceed a water quality standard". It is more accurate to say that "there is at least a 90 percent probability that a constituent will not exceed a standard (or up to a 10 percent probability that it will)". These quoted statements are very different.
GLIFWC 146	GLIFWC	5.2.2.3.2 Partridge River Watershed	table 5.2.2-21		Title is not correct because there is no property boundary yet. In addition, the table should provide the 90th percentile concentration values for both land exchange alternatives.	Table title will be revised. In this section, the SDEIS is evaluating the Proposed Action. See Section 5.3.2 for a discussion of the land exchange alternative.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 147	GLIFWC	5.2.2.3.2 Partridge River Watershed	5.2.2-99		The first paragraph is not correct. The Copper Nickel study from 1979 states "Highly saline groundwater has been encountered in some bedrock areas in the study area...The source and spatial distribution of this water in the Study Area is unknown. The Superior National Forest technical memorandum No. 4 Brackish Groundwater within the SNF states that In 1976, brackish waters were encountered at the AMAX site which is in the same geology as the NorthMet project. In 2012 elevated chloride levels were found at mineral exploration drill locations near the South Kawishiwi River. The text should be corrected in light of available data from the SNF.	We disagree - applicable data is discussed.
GLIFWC 148	GLIFWC	5.2.2.3.2 Partridge River Watershed	5.2.2-103		XP-SWMM model is fatally flawed and should not be used in imoact assessment. See GLIFWC hydrology attachment.	We believe the XP-SWMM modeling is acceptable for use in the SDEIS. The 20 year old data is acceptable as there haven't been any significant changes within the watershed. We believe the assumptions used were reasonably conservative. Additional detail is provided in the water sections of the SDEIS, and further rationale is provided in the Water Data Packages.
GLIFWC 149	GLIFWC	5.2.2.3.2 Partridge River Watershed	5.2.2-107		Pit seepage is a long term untreated discharge. The section should clearly state this.	The following edit has been made to the text: These untreated pit discharges to groundwater in the West Pit Surficial Flow Path and the East Pit Category 2/3 Surficial Flowpath would occur in perpetuity. Groundwater in these flowpaths would flow down gradient and eventually discharge to the Partridge River.
GLIFWC 150	GLIFWC	5.2.2.3.2 Partridge River Watershed	5.2.2-126		The discussion in the fourth bullet states that sulfate exceedances would be "exclusively limited to the low flow winter months" This explanation is only relevant if the applicant is seeking a seasonal application of the sulfate standard. Other sections of the PSDEIS have stated that they are not. This conflict should be resolved.	PolyMet Is not seeking seasonal application for the Proposed Project. Any future request for a seasonal application would require MPCA approval.
GLIFWC 151	GLIFWC	5.2.2.3.2 Partridge River Watershed	5.2.2-126		The entire discussion of sulfate being exceeded during low flows is colored by the fact that there is very little understanding of hydrology in the upper Partridge River. The XP-SWMM model used to interpolate flow data is fatally flawed and does not produce reliable data. The net effect is that the PSDEIS cannot reliably state wether the sulfate standard will be met or not.	We believe the XP-SWMM modeling is acceptable for use in the SDEIS. The 20 year old data is acceptable as there haven't been any significant changes within the watershed. We believe the assumptions used were reasonably conservative. Additional detail is provided in the water sections of the SDEIS, and further rationale is provided in the Water Data Packages.
GLIFWC 152	GLIFWC	5.2.2.3.2 Partridge River Watershed	5.2.2-126		The last bullet states that the no action alternative is assumed to be the same as existing conditions. This is not correct as it ignores the intermittent dewatering of the Northshore pits. A realistic no action alternative needs to be modeled.	The description of the No Action Alternative and Continuation of Existing Conditions will be further clarified in the SDEIS.
GLIFWC 153	GLIFWC	5.2.2.3.2 Partridge River Watershed	5.2.2-125		The conclusion that sulfate concentrations at 200 years would be less than 10 mg/l may not be supportable by modeling. It assumes that the no action alternative is the same as existing conditions and that is not the case.	The GoldSim model results do suggest that sulfate concentrations in the Partridge River at SW-005 would be less than 10 mg/L.
GLIFWC 154	GLIFWC	5.2.2.3.2 Partridge River Watershed	5.2.2-126		The discussion relies on dilution to meet the sulfate standard. Because hydrology at the mine site is not understood, there is no basis to make this claim.	We believe the XP-SWMM modeling is acceptable for use in the SDEIS. The 20 year old data is acceptable as there haven't been any significant changes within the watershed. We believe the assumptions used were reasonably conservative. Additional detail is provided in the water sections of the SDEIS, and further rationale is provided in the Water Data Packages.
GLIFWC 155	GLIFWC	5.2.2.3.2 Partridge River Watershed	5.2.2-128		The first paragraph describes a situation where the wild rice sulfate standard "would be exceeded anyway". This is an acknowledgement that the standard is, at least at some times, bein exceeded through cumulative impacts of other operations. If this is the case, the Clean Water Act does not allow Polymet to contribute any load to that exceedance regardless of dilution.	The Co-leads recognize this is a major difference of opinion.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 156	GLIFWC	5.2.2.3.2 Partridge River Watershed	5.2.2-129		GLIFWC staff disagree that effective mitigation for sulfate exceedences are identified. There is conjecture about the dilutive effects of treated waste water but no modeling or analysis to demonstrate that effect.	The text has been edited to include possible contingency measures that could be implemented. Given that the identified contingency measures are based on engineered facilities that can be pilot tested, there is reasonable likelihood that contingency measures could be implemented (if needed) to prevent exceedance of the 10 mg/L sulfate standard in Partridge River surface water.
GLIFWC 157	GLIFWC	5.2.2.3.2 Partridge River Watershed	5.2.2-129		GLIFWC staff disagree with the characterization of dust from the rail corridor as minor. See GLIWC rail car attachment.	This section acknowledges the dust issue and refers the reader to section 5.2.3.2.2. There is no other discussion or characterization of dust in this section. Discussion of fine material being segregated in the center of rail cars has been removed.
GLIFWC 158	GLIFWC	5.2.2.3.2 Partridge River Watershed	5.2.2-137		As previously stated, XP_SWMM is fatally flawed and therefore flow information cannot be used to show that standards are met through dilution. Therefore, the conclusions on arsenic in Colby lake cannot be supported.	We believe the XP-SWMM modeling is acceptable for use in the SDEIS. The 20 year old data is acceptable as there haven't been any significant changes within the watershed. We believe the assumptions used were reasonably conservative. Additional detail is provided in the water sections of the SDEIS, and further rationale is provided in the Water Data Packages.
GLIFWC 159	GLIFWC	5.2.2.3.2 Partridge River Watershed	5.2.2-138		perpetual water treatment would be needed in to avoid violating standards in Colby Lake.	No change to SDEIS text.
GLIFWC 160	GLIFWC	5.2.2.3.2 Partridge River Watershed	5.2.2-139		The last paragraph correctly discusses perpetual treatment needs. The improvements in water quality in the west pit are speculative and do not change the fact that perpetual treatment is necessary. Therefore the paragraph should indicate that while non-mechanical treatment options may be possible at some point in time, that non-mechanical treatment would also have to be perpetual for standards to be met.	Water quality changes in the pits are not speculative, but are predicted based on flow/chemical modeling with reasonable assumptions. Text clarified.
GLIFWC 161	GLIFWC	5.2.2.3.2 Partridge River Watershed	Figures 5.2.2-37 through 5.2.2-39		Need to indicate the appropriate water quality standard	The West Pit is not considered an evaluation location so a water quality standard does not apply. Water quality standards would apply to the WWTF (which treats the West Pit overflow) discharge.
GLIFWC 162	GLIFWC	5.2.2.3.2 Partridge River Watershed	5.2.2-142		States that water quality in the permanent mine features left behind is expected to improve over time. This is misleading because the model was not run long enough to predict when that would be. It is clear that, using sulfate as an example, the west pit would be a perpetual source with the potential of contaminating downstream beds in perpetuity.	The flow/chemical modeling does predict that water quality will improve over the modeled time frame of 200 years. Text has been modified.
GLIFWC 163	GLIFWC	5.2.2.3.2 Partridge River Watershed	5.2.2-142		Why was water quality modeling terminated after 200 years?	Before 200 years, the maximum chemical loading in affected groundwater is predicted to reach the Partridge River.
GLIFWC 201	GLIFWC	5.2.2.3.2 Partridge River Watershed	Final paragraph of 5.2.2-88 and first two paragraphs of 5.2.2-89		There is no consideration of the likely mercury pulse to the Partridge River resulting from placement of the stripped peat and unsaturated overburden into the unlined Overburden Storage and Laydown Area. See the supplemental document "Great Lakes Indian Fish and Wildlife Commission (GLIFWC) Comments Related to Mercury" [Comment 7] for details.	Surface runoff from the Overburden Storage and Laydown Area is considered "Process Water," and would be captured in an unlined pond (Pond PW-OSLA) and monitored for quality. If the Overburden Storage and Laydown Area water was of sufficient quality, it would be pumped to the CPS and discharged to the East Pit or the Tailings Basin. If water in Pond PW-OSLA required treatment, it would be pumped to the WWTF for treatment prior to delivery to the CPS.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 164	GLIFWC	5.2.2.3.3 Embarrass River Watershed	5.2.2-144 to 5.2.2-145		States that the seepage capture system is not expected to have an effect on groundwater downgradient of wetlands because ponded water at the surface is expected to infiltrate and replace groundwater. This is a circular argument. The ponded water downgradient of the tailings basin is mostly tailings basin water that has been seeping over decades saturating the aquifer and flooding wetlands. The seepage capture system would reduce that water source and that capture system is likely perpetual. It is not reasonable to assume that the ponded water will be able to replace groundwater captured by the containment system in perpetuity because the tailings basin is the water source for both the ponds and the groundwater. What are the impacts to groundwater levels and wetlands outside the containment system once the pond water at the surface runs out?	The text has been changed to reflect the decrease in groundwater seepage would not be expected to have a significant effect on groundwater down gradient of the groundwater containment system because there would be sufficient natural recharge to maintain saturation in the surficial (unconsolidated) unit.
GLIFWC 165	GLIFWC	5.2.2.3.3 Embarrass River Watershed	5.2.2-147		How long would the groundwater capture system need to operate? How long would the WWTP need to operate?	Modeling predicts that groundwater capture and mechanical (WWTP) or non-mechanical water treatment would need to occur for a minimum of 500 years. Capture and treatment would continue after that time until water quality monitoring at groundwater and surface water evaluation locations indicate that these measures are no longer needed.
GLIFWC 166	GLIFWC	5.2.2.3.3 Embarrass River Watershed	Figure 5.2.2-40		Figure is misleading. Edit the figure to indicate that the long term does not end at year 45 but rather extends into perpetuity.	The figure will be edited.
GLIFWC 167	GLIFWC	5.2.2.3.3 Embarrass River Watershed	5.2.2-152		The no action alternative is not the same as existing conditions. This assumption ignores ongoing VIC work and the Cliffs Erie consent decree that would improve water quality over time. It also ignores the fact that rain will fall on the tailings basin, percolate through the tailings and flush constituents. Over time this effect will reduce the source term of the facility. An accurate no action alternative needs to be modeled in order to compare impacts under NEPA. See GLIFWC attachment.	Description of the No Action Alternative will be clarified.
GLIFWC 168	GLIFWC	5.2.2.3.3 Embarrass River Watershed	5.2.2-159		The discussion on TDS is not correct. The no action alternative is not the same as existing conditions. It does not matter that the exceedances from the tailings basin were caused by historic operations. PolyMet assumes responsibility for those exceedances if the project goes forward.	Description of the No Action Alternative will be clarified.
GLIFWC 169	GLIFWC	5.2.2.3.3 Embarrass River Watershed	5.2.2-159		With respect to the TDS exceedances. How long before the model shows that groundwater criteria are met? And how does that differ from information in the consent decree?	The NorthMet Proposed Project water quality model indicates that the 90th percentile value for TDS in the Plant Site groundwater would drop below the 500-mg/l groundwater evaluation criteria at ~55 years after start of mining, as illustrated in Figure 5.2.2-44. Because the No Action condition for the LTVSMC Tailings Basin is represented in the GoldSim model without implementation of any mitigation measures, model predictions do not show a reduction in Plant Site groundwater TDS under the No Action conditions, also illustrated in Figure 5.2.2-44.
GLIFWC 170	GLIFWC	5.2.2.3.3 Embarrass River Watershed	5.2.2-165		Flow in the tributary streams will change as effluent from the tailings basin changes over time under a no action scenario. The assumption that existing conditions is the same as the no action scenario is not supported. A no action alternative should be modeled.	The description of the No Action Alternative and Continuation of Existing Conditions will be further clarified in the SDEIS.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 171	GLIFWC	5.2.2.3.3 Embarrass River Watershed	5.2.2-167		The section should indicate that the assumption of meeting evaluation criteria depends on perpetual water capture, water treatment, and tailings facility maintenance. We disagree that water quality standards would be met. The PSDEIS states that standards would be exceeded for several constituents.	Text edited. As described in the SDEIS, the evaluation criteria do use the standards, but interpret the standards from a probabilistic perspective. The P90 approach is a reasonable method for applying the results of probabilistic modeling for EIS impact assessment. In this context, it is not appropriate to say that "a constituent will exceed a water quality standard". It is more accurate to say that "there is at least a 90 percent probability that a constituent will not exceed a standard (or up to a 10 percent probability that it will)". These quoted statements are very different.
GLIFWC 172	GLIFWC	5.2.2.3.3 Embarrass River Watershed	5.2.2-178		As previously commented, the no action alternative is not the same as existing conditions.	The description of the No Action Alternative and Continuation of Existing Conditions will be further clarified in the SDEIS.
FDL 49	FDL	5.2.2 Water Resources	Summary		It is not clear why the co-leads selected the 90th percentile confidence interval as their evaluation threshold for determining whether water quality constituents would meet evaluation criteria. Fond du Lac does not believe that is sufficiently predictive of the range of potential concentrations, or the potential to exceed standards.	The rationale supporting the selection of the 90th percentile probability level will be clarified in the SDEIS
FDL 50	FDL	5.2.2 Water Resources	summary	p 5.2.2-2	"With the proposed design modifications and engineering controls, the GoldSim model predicts that the NorthMet Project Proposed Action would meet all groundwater and surface water quality evaluation criteria at the 90th-percentile confidence level, or result in decreases in concentrations for a few solutes that exceed the criteria under existing conditions, for all of the 28 solutes modeled at all of the 26 evaluation locations over the 200-year (Mine Site) to 500-year (Plant Site) model duration." Fond du Lac disagrees with this conclusion. Additional information will be provided.	No change to SDEIS text.
FDL 51	FDL	5.2.2 Water Resources	Summary	p 5.2.2-3	"Additionally, the NorthMet Project Proposed Action is not predicted to result in any significant effects on groundwater or surface water hydrology." Fond du Lac disagrees with this conclusion. Additional information will be provided.	The sentence has been edited to reflect that outside the mine property boundaries, the NorthMet Proposed Action is not predicted to result in any significant changes to groundwater and surface water flows when compared to existing conditions
FDL 52	FDL	5.2.2.1.2 Surface Waters	Downstream WQS	5.2.2-14	To date there has not been an antidegradation demonstration that shows the proposed action will not result in exceedences of Fond du Lac's narrative and numeric WQS. Fond du Lac's limited water column Hg data shows some exceedences of the GLI wildlife criterion, and fish tissue data exceeds our safe consumption guidelines. For that reason we are engaged in an ongoing TMDL study to address this impairment.	See text on page 5.2.2-186. Antidegradation demonstration will be resolved in permitting process.
FDL 53	FDL	5.2.2.1.2 Surface Waters	waters used for the production of wild rice	5.2.2-19	"PolyMet is not seeking application of the seasonal component of this standard for the NorthMet Project Proposed Action." However, the AWMP v. 5 makes it clear that the seasonal application of the sulfate criterion is crucial for compliance.	PolyMet is not seeking seasonal application for the Proposed Project. AWMP ver5 includes adaptive mitigation options which may include passive treatment. Any future request for a seasonal application would require MPCA approval.
FDL 54	FDL	5.2.2.3.1 Northmet Project Proposed Action Water Budget Overview	Water Budget overview		runoff from the OSLA has not been adequately predicted for Hg, methyl Hg	We disagree. The potential release of mercury from the decomposition of overburden materials is included in the mercury mass balance (Section 5.2.2.3.4).

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FDL 55	FDL	5.2.2.3.1 Northmet Project Proposed Action Water Budget Overview	Long term closure	p 5.2.2-77	"The ultimate objective of long-term closure is to transition from the mechanical treatment provided by the WWTF and WWTP to non-mechanical treatment. Transitions to the non-mechanical treatment systems would begin after the performance of the non-mechanical treatment methods have been proven." It is not clear that there is existing non-mechanical treatment technology that can meet performance standards. However, it is clear that the proposed action will require significant and substantial perpetual treatment and management.	Text edited for clarity
FDL 56	FDL	5.2.2.3.2 Partridge River Watershed	Extent of pit drawdown	p 5.2.2-79	Fond du Lac disagrees with the conclusions in the PSDEIS. Additional information will be provided.	The analog approach is considered a reasonable method for evaluating the extent of pit drawdown considering the heterogeneous nature of glacial till and the underlying low-permeability bedrock. Even when the pit water level is well below the top of bedrock, the low-permeability bedrock limits the amount of surficial groundwater that can drain downward into the pit and there is sufficient recharge to the surficial unit to generally maintain water levels.
GP 153	GP	5.2.2 Water Resources	Mine-related blasting and excavation dramatically increases the oxidation rate of these minerals by increasing the surface area and porosity of the rock, which allows rapid introduction of atmospheric oxygen and flushing of solutes by water.	5.2.2-1	Though well-documented in literature, this has not been articulated in modeling bedrock aquifer transport of pollutants from the mine pit to surface water features.	Text has been changed to reflect that mine-related blasting, excavation, and placement of ore and waste rock in stockpiles increases the oxidation rate of these minerals by increasing the surface area and porosity of the rock, which allows rapid introduction of atmospheric oxygen and flushing of solutes by meteoric water. Within the pit walls, the blasting effects are limited and do not have much effect on rock oxidation or long-distance chemical migration in bedrock.
GP 154	GP	5.2.2 Water Resources	The host silicate minerals in the deposit would help neutralize some acid generated by the sulfide minerals, such that the Category 1 Stockpile and the Tailings Basin are predicted to remain at neutral pH. Where the pore water pH remains near-neutral, metal mobility can be limited as some metals released by oxidation are removed from solution by adsorption or co-precipitation.	5.2.2-1	Metalloids are released at neutral and basic pH, so although metal mobility may be decreased, metalloid mobility will be increased.	Metalloids, such as arsenic and antimony, exist as anions when dissolved in water under most ambient environmental conditions. These constituents do tend to have less adsorption to surfaces and greater mobility in groundwater with increasing pH. Because metal release from NorthMet rock and tailings during oxidative weathering has been estimated using empirical leach tests (humidity cells tests), acid neutralization by silicate minerals and the associated effect of these reactions on pore-water pH and metalloid solubility have been incorporated into the water quality models.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 155	GP	5.2.2 Water Resources	Existing sulfate concentrations in these "wild rice beds" along the Partridge and Embarrass rivers already exceed the 10 mg/L standard, so the NorthMet Project Proposed Action must demonstrate that it can meet this standard or at least show that it would not increase sulfate concentrations.	5.2.2-2	Not consistent with the Clean Water Act.	We disagree. No change to SDEIS text.
GP 156	GP	5.2.2 Water Resources	The Co-lead Agencies have selected the 90th percentile probability as its evaluation threshold in determining whether the model results meet established evaluation criteria (i.e., there is a 90 percent probability that the actual concentration would be either at or below the criteria during the entire model duration).	5.2.2-2	The 90th percentile probability is actually the 90th percentile probability of the mean concentration exceeding criteria, not the 90th percentile probability of the 90th percentile of pollutant concentrations exceeding criteria. This needs clarification wherever it appears in the text, or it should be deleted entirely.	Text edited. As described in the SDEIS, the evaluation criteria do use the standards, but interpret the standards from a probabilistic perspective. The P90 approach is a reasonable method for applying the results of probabilistic modeling for EIS impact assessment. In this context, it is not appropriate to say that "a constituent will exceed a water quality standard". It is more accurate to say that "there is at least a 90 percent probability that a constituent will not exceed a standard (or up to a 10 percent probability that it will)". These quoted statements are very different.
GP 157	GP	5.2.2 Water Resources	Additionally, the NorthMet Project Proposed Action is not predicted to result in any significant effects on groundwater or surface water hydrology.	5.2.2-3	Major difference of opinion. Bands will provide our major difference of opinion in the appendix.	The description of the No Action Alternative and Continuation of Existing Conditions will be further clarified in the SDEIS.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
1854 25	1854	5.2.2 Water Resources	1st full paragraph	5.2.2-2	Effectiveness of water treatment and seep collection are vital to the project meeting standards. Analysis and design detail are lacking in the PSDEIS. Concern exists over the need for long-term treatment and also for the regulatory ability to allow for it. More detail is needed on water treatment and seep collection, including long-term operation/maintenance, since they are essential components of the project meeting environmental standards.	Groundwater containment with slurry walls and permeable trenches has been routinely performed at mine and industrial sites over the last 50 years. There are hundreds of currently operating systems. When geologic conditions are favorable (particularly the presence of a low permeability basal unit that can be keyed into), it is typical to achieve greater than 90 percent groundwater capture. At the Mine and Plant Sites, the geologic conditions are favorable due to the presence of low permeability bedrock. Performance modeling of the containment systems performed by PolyMet and reviewed by the Co-Leads provides strong evidence that the capture efficiency will be greater than 90 percent. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. Additional detail would be provided for permitting.
1854 26	1854	5.2.2 Water Resources	1st full sentence	5.2.2-3	The PSDEIS states that the project "is not predicted to result in any significant effects on groundwater or surface water hydrology". Suggest to revise or remove this statement. The document provides details on such impacts in other sections (necessary to augment stream flows, groundwater likely impacted from constructing pits, backfilling, pit lake, etc.)	The sentence has been edited as follows: Outside the mine property boundaries, the NorthMet Proposed Action is not predicted to result in any significant changes to groundwater and surface water flows when compared to existing conditions.
GP 158	GP	5.2.2.1.1 Groundwater	There are currently no evaluation criteria for change in groundwater levels.	5.2.2-3	Wetland effects as documented by the US ACE for the Crandon project are evaluation criteria for change in groundwater levels.	Text has been edited as follows: There are no State or Federal regulatory standards for the maximum allowable change in groundwater levels.
GP 159	GP	5.2.2.1.1 Groundwater	Natural (unaffected) groundwater concentrations for aluminum and iron at the Mine Site and Plant Site are greater than secondary drinking water standards.	5.2.2-4	Peter Mitchell Pit is in the headwaters of the mine site. Aluminum and iron exceedances are known to be caused by pollution from taconite mining. Even the bedrock aquifer at the mine site shows signs of pollution from taconite mining (e.g. tritium found in a deep bedrock monitoring well at the mine site along with ammonia demonstrating a connection to the surface water and mine pollution).	The evidence presented is by no means definitive in making the inference that there is a connection between deep bedrock groundwater and mine pollution.
GP 160	GP	5.2.2.1.1 Groundwater	For example, concentrations above the aluminum sMCL (200 µg/L) may result in colored water and concentrations above the iron sMCL (300 µg/L) may result in rusty color, metallic taste, and reddish or orange staining.	5.2.2-5	At concentrations higher than the secondary drinking water standards many pollutants like manganese and aluminum have severe human health effects.	There are no toxic-based regulatory standards or MCLs for Al and Fe. GP is correct that there is a health based standard for manganese; manganese is discussed later in the SDEIS text.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 161	GP	5.2.2.1.1 Groundwater	Natural (unaffected) groundwater concentrations for beryllium, manganese, and thallium (bedrock unit only) at the Mine Site and beryllium and manganese at the Plant Site are greater than secondary drinking water standards and/or the HRL; this issue was identified by USEPA for consideration in the EIS.	5.2.2-5	It has not been demonstrated that these exceedances are "natural" and not caused by taconite mining pollution.	The concentrations are consistent with the overlying surficial aquifer water quality and other constituents that may be considered indicators of mining pollution (e.g., chloride) are not elevated, therefore we have no reason to believe these elevated concentrations for beryllium, manganese, and thallium at caused by anything other than natural conditions.
GP 162	GP	5.2.2.1.1 Groundwater	These elevated concentrations are consistent with concentrations seen elsewhere in the Iron Range and northeast Minnesota.	5.2.2-5	This is exactly my point. Historic and present day mining are the likely causes of these exceedances and no work has been done to demonstrate the exceedances are "natural".	The concentrations are consistent with the overlying surficial aquifer water quality and other constituents that may be considered indicators of mining pollution (e.g., chloride) are not elevated, therefore we have no reason to believe these elevated concentrations for beryllium, manganese, and thallium at caused by anything other than natural conditions.
GP 163	GP	5.2.2.1.1 Groundwater	Table 5.2.2-1 Beryllium, Manganese, and Thallium Evaluation Criteria	5.2.2-5	Evaluation criteria are high enough to cause human health impacts and evaluation criteria are not equal to or a substitute for water quality standards compliance.	The evaluation criteria are based on statistical evaluation of background values. No change to SDEIS text.
GP 164	GP	5.2.2.1.1 Groundwater		5.2.2-7	Bedrock flowpaths are imaginary. There has been no investigation sufficient to determine even one bedrock flowpath.	Enough analysis was done for a reasonable assessment of the flowpaths.
GP 165	GP	5.2.2.1.2 Surface Waters	The USEPA has also established secondary drinking water standards (40 CFR 143) for 15 contaminants that are intended to assist public water systems in managing their drinking water for aesthetic considerations, such as taste, color, and odor. These contaminants are not considered a risk to human health.	5.2.2-10	These contaminants are not considered a risk to human health at the concentrations listed for aesthetic considerations, however many can have severe human health effects at concentrations higher than the secondary standard.	There are no toxic-based regulatory standards or MCLs for Al and Fe. GP is correct that there is a health based standard for manganese; manganese is discussed later in the SDEIS text.
1854 27	1854	5.2.2.1.2 Surface Waters	Last paragraph	5.2.2-8	Should explain here that "no action" refers to "continuation of existing conditions".	The SDEIS text regarding the No Action Alternative and "Continuation of Existing Conditions" will be clarified.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
1854 28	1854	5.2.2.1.2 Surface Waters	Waters Used for Production of Wild Rice Evaluation Criteria	5.2.2-15	Disagreement exists over application of the standard. Wild rice exists upstream in both rivers from the draft MPCA staff recommended definitions of water used for production of wild rice (compliance points). In the Partridge River, the 2009 survey identified rice near SW-004b. It is arbitrary to define how much rice presence is required, especially given the lack of long-term monitoring data on a water. Application of this standard may be evolving/changing as research is ongoing and the standard will be evaluated. These issues should be clearly addressed in the PSDEIS.	All information provided was considered when the MPCA made their recommendation. The MPCA is overseeing a variety of studies relating to sulfate and wild rice, with the goal of informing decisions about state water quality standards. Should the application of the standard change, it will be addressed at that time. Please note that the survey results for the upper Partridge R for 2009 likely includes numerous instances where other aquatic vegetation was misidentified as wild rice, and thus the 2009 survey likely 'overstates' the presence of WR in that stream segment.
1854 29	1854	5.2.2.1.2 Surface Waters	1st paragraph	5.2.2-19	Disagreement exists over application of the standard. No scientific basis exists for seasonal application of standard from April 1 through August 31. Application of this standard may be evolving/changing as research is ongoing and the standard will be evaluated. Further, PolyMet is seeking seasonal application of the standard during non-mechanical water treatment after closure (see page 5.2.2-200). Please revise text accordingly. If seep collection and water treatment do not work as planned (substantial assumptions without a lot of detail), the seasonal discharge may become a larger issue. These issues should be clearly addressed in the PSDEIS.	All information provided was considered when the MPCA made their recommendation. The MPCA is overseeing a variety of studies relating to sulfate and wild rice, with the goal of informing decisions about state water quality standards. Should the application of the standard change, it will be addressed at that time. Please note that the survey results for the upper Partridge R for 2009 likely includes numerous instances where other aquatic vegetation was misidentified as wild rice, and thus the 2009 survey likely 'overstates' the presence of WR in that stream segment.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 166	GP	5.2.2.1.3 Application Of Evaluation Criteria To Probabilistic Modeling Results	The predicted 90th-percentile (referred to herein as the P90 value) model concentration of a solute is used as the threshold for determining if the evaluation criteria at evaluation locations are exceeded during the entire model duration. In other words, if the modeled P90 value was exactly equal to the evaluation criterion, there is a 90 percent probability that the actual concentration would be below the criterion, and a 10 percent chance that the actual concentration would exceed the criterion.	5.2.2-19	The 90th percentile that the mean concentration won't exceed water quality standards.	Text edited. As described in the SDEIS, the evaluation criteria do use the standards, but interpret the standards from a probabilistic perspective. The P90 approach is a reasonable method for applying the results of probabilistic modeling for EIS impact assessment. In this context, it is not appropriate to say that "a constituent will exceed a water quality standard". It is more accurate to say that "there is at least a 90 percent probability that a constituent will not exceed a standard (or up to a 10 percent probability that it will)". These quoted statements are very different.
GP 167	GP	5.2.2.2.1 Groundwater Hydrologic Modeling (modflow)	Model calibration was performed by varying input hydraulic conductivities and recharge so that the model-simulated hydraulic heads were a reasonable match to water levels measured in monitoring wells and model-simulated discharges to the Partridge River were consistent with estimated baseflows at stations SW002, SW003, and SW004 taken from the XP-SWMM model.	5.2.2-21	Major difference of opinion.	The difference in the baseflows are very small (indistinguishable from a stage standpoint). We believe the XP-SWMM modeling is acceptable for use in the SDEIS. The 20 year old data is acceptable as there haven't been any significant changes within the watershed. We believe the assumptions used were reasonably conservative. Additional detail is provided in the water sections of the SDEIS, and further rationale is provided in the Water Data Packages.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 168	GP	5.2.2.2.1 Groundwater Hydrologic Modeling (modflow)	Due to the generally low hydraulic conductivity of bedrock, independent calculations and GoldSim results indicate that groundwater transport in bedrock is minimal and does not affect chemical concentrations at the evaluation locations. Bedrock flowpaths and evaluation locations are also programmed into GoldSim, but because the bedrock (primarily the Duluth Complex) is highly competent with extremely low hydraulic conductivities (see Table 5.2.2-7), very little groundwater transport occurs within the bedrock flowpaths and travel times to evaluation locations are predicted to be in the thousands of years.	5.2.2-27	Major difference of opinion. As stated in the PSDEIS: "(B)lasting and excavation dramatically increases the oxidation rate by increasing the surface area and porosity of the rock, which allows rapid introduction of atmospheric oxygen and flushing of solutes by water." Modeled results of how concentrated the load of pollutants from the mine pit may be when they reach the evaluation locations would be helpful in the discussion of potentially transitioning to a passive treatment wastewater treatment system.	The GoldSim model includes assumptions relating to increased oxidation along the pit walls and floor.
GP 169	GP	5.2.2.2.3 Water Quality Modeling (goldsim)	Where the pore water pH remains near-neutral, metal mobility can be limited as some metals released by oxidation are removed from solution by adsorption or co-precipitation.... chemical reactions, including mineral precipitation and surface adsorption, would limit the concentration of many contaminants in non-acidic waste-rock effluent and thus would reduce the rate at which contaminants are released; and ...	5.2.2-45	metalloids are released in near-neutral and basic pore water.	Metalloids, such as arsenic and antimony, exist as anions when dissolved in water under most ambient environmental conditions. These constituents do tend to have less adsorption to surfaces and greater mobility in groundwater with increasing pH. Because metal release from NorthMet rock and tailings during oxidative weathering has been estimated using empirical leach tests (humidity cells tests), acid neutralization by silicate minerals and the associated effect of these reactions on pore-water pH and metalloid solubility have been incorporated into the water quality models.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 170	GP	5.2.2.2.3 Water Quality Modeling (goldsim)	The only NorthMet waste rock that would contain greater than 1 percent sulfide is the Virginia Formation, which has an average sulfide S concentration of 2.43 percent and which would comprise about 1.8 percent of the total NorthMet Deposit waste rock.	5.2.2-46	And a pit wall.	A portion of the East Pit wall would be composed of Virginia Formation rock. The presence of this higher sulfide rock in the East Pit wall is accounted for in the GoldSim model.
GP 171	GP	5.2.2.2.3 Water Quality Modeling (goldsim)	Time-varying surface water flow rates were taken either from the XP-SWMM results or were estimated from stream gauging data.	5.2.2-48	The gaging data is more than twenty years old and twenty miles downstream. Modeled flows based on the same old and distant data is used to generate XP-SWMM results. Major difference of opinion on validity of data used to model Partridge River flow.	We believe the XP-SWMM modeling is acceptable for use in the SDEIS. The 20 year old data is acceptable as there haven't been any significant changes within the watershed. We believe the assumptions used were reasonably conservative. Additional detail is provided in the water sections of the SDEIS, and further rationale is provided in the Water Data Packages.
GP 172	GP	5.2.2.2.3 Water Quality Modeling (goldsim)	The attenuation effect resulting from sorption is significant enough that, in the GoldSim model of the Mine Site, none of these four contaminants is predicted to travel from the source areas to evaluation locations (property boundary or Partridge River) within the 200-year model simulation period....The model results show that at the end of the 200-year modeling period, antimony concentrations would still be increasing at Dunka Road and would not yet reach the Partridge River. PolyMet conducted a separate 1,000-year model simulation for antimony at the West Pit Flowpath.	5.2.2-49	“(B)lasting and excavation dramatically increases the oxidation rate by increasing the surface area and porosity of the rock, which allows rapid introduction of atmospheric oxygen and flushing of solutes by water.” This estimation of pollutant travel time is based on the Duluth Complex being highly competent with extremely low hydraulic conductivities (before blasting) and very little groundwater transport occurring within the bedrock flowpaths (based on approximately 0.25 percent of the actual baseflow measured in the Partridge River) resulting in travel times to evaluation locations that are predicted to be in the thousands of years. This is a major difference of opinion.	The text on this page refers to chemical migration in the surficial aquifer flowpaths, not the bedrock flow paths. The hydraulic and chemical transport properties of the Duluth Complex are not relevant to the text referenced by the comment.
GP 173	GP	5.2.2.2.3 Water Quality Modeling (goldsim)	While the system is designed for 100 percent capture of affected groundwater, it is assumed in the GoldSim model that 10 percent of the approaching groundwater (21 gpm) bypasses the system and continues to migrate toward the Embarrass River.	5.2.2-54	Throughout the text, please provide consistent measures of flow for all waters, either cfs or gpm, not both. 100 percent capture, even 90 percent capture seems unrealistic. Are there any real-life examples of existing tailings basins with a seep capture system similar to PolyMet's proposal that can demonstrate a 90 percent seepage capture rate? If not, perhaps the text should be clarified.	It is traditional to express surface water flows in cfs and groundwater flows in gpm. In the glossary, we will indicate that 1 cfs = 449 gpm. Groundwater containment with slurry walls and permeable trenches has been routinely performed at mine and industrial sites over the last 50 years. There are hundreds of currently operating systems. When geologic conditions are favorable (particularly the presence of a low permeability basal unit that can be keyed into), it is typical to achieve greater than 90 percent groundwater capture. At the Mine and Plant Sites, the geologic conditions are favorable due to the presence of low permeability bedrock. Performance modeling of the containment systems performed by PolyMet and reviewed by the Co-Leads provides strong evidence that the capture efficiency will be greater than 90 percent.

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GP 174	GP	5.2.2.2.3 Water Quality Modeling (goldsim)	The containment system is assumed to be 90 percent efficient, which means that 10 percent of the approaching groundwater bypasses the system and continues to migrate toward the Embarrass River via the surficial groundwater flowpaths. The containment system's assumed efficiency in intercepting groundwater has been raised by the Band representative(s) as an issue for consideration in the EIS.	5.2.2-58	If there are no real-life examples, what is the assumed capture rate based on?	See comment response for GP 173.
GP 175	GP	5.2.2.2.3 Water Quality Modeling (goldsim)	As shown, travel times at the evaluation locations range from 190 to 240 years, and arrival at the Embarrass River or its tributaries takes about 300 years.	5.2.2-59	The travel times appear to be unrealistically slow.	The travel time estimates are based on a standard equations used in groundwater hydrology; that is, Darcy's law. The calculations use P50 values for hydraulic conductivity, hydraulic gradient, and effective porosity of the surficial unit. If the commenter believes that calculations are in error, he/she should provide an alternate calculation.
GP 176	GP	5.2.2.2.3 Water Quality Modeling (goldsim)	This No Action (continuation of existing conditions) model was intended to represent a continuation of existing conditions and is needed in order to properly assess the impacts of the NorthMet Project Proposed Action.	5.2.2-67	This does not help properly assess impacts of the NorthMet project as it doesn't consider mitigation required by law as part of the no action alternative.	The SDEIS text regarding the No Action Alternative and "Continuation of Existing Conditions" will be clarified.
GP 177	GP	5.2.2.2.3 Water Quality Modeling (goldsim)	Modeling both the Proposed Action and No Action (continuation of existing conditions) allows for a direct assessment of the extent to which the Proposed Action would result in changes in existing water quality.	5.2.2-67	No action, or continuation of existing conditions, is completely fictitious and appears to be used to mask the extent to which the Project would cause excursions from water quality standards.	The SDEIS text regarding the No Action Alternative and "Continuation of Existing Conditions" will be clarified.

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1854 30	1854	5.2.2.2.3 Water Quality Modeling (goldsim)	Contaminant Release from the Tailings Basin - 2nd paragraph	5.2.2-54	Can the seep collection system be designed for 100% capture (90% modeled capture)? Please provide more details, examples, analysis, etc. Effective seep collection is important component of project meeting standards, and concern if this type of assumption is accurate.	Groundwater containment with slurry walls and permeable trenches has been routinely performed at mine and industrial sites over the last 50 years. There are hundreds of currently operating systems. When geologic conditions are favorable (particularly the presence of a low permeability basal unit that can be keyed into), it is typical to achieve greater than 90 percent groundwater capture. At the Mine and Plant Sites, the geologic conditions are favorable due to the presence of low permeability bedrock. Performance modeling of the containment systems performed by PolyMet and reviewed by the Co-Leads provides strong evidence that the capture efficiency will be greater than 90 percent. additional text has been added to the section to reflect this
1854 31	1854	5.2.2.2.3 Water Quality Modeling (goldsim)	Contaminant Transport from the Tailings Basin - 2nd paragraph	5.2.2-58	Can the seep collection system be designed for 100% capture (90% modeled capture)? Please provide more details, examples, analysis, etc. Effective seep collection is important component of project meeting standards, and concern if this type of assumption is accurate.	Groundwater containment with slurry walls and permeable trenches has been routinely performed at mine and industrial sites over the last 50 years. There are hundreds of currently operating systems. When geologic conditions are favorable (particularly the presence of a low permeability basal unit that can be keyed into), it is typical to achieve greater than 90 percent groundwater capture. At the Mine and Plant Sites, the geologic conditions are favorable due to the presence of low permeability bedrock. Performance modeling of the containment systems performed by PolyMet and reviewed by the Co-Leads provides strong evidence that the capture efficiency will be greater than 90 percent. additional text has been added to the section to reflect this
GP 178	GP	5.2.2.3.1 Northmet Project Proposed Action Water Budget Overview	Along the east side of the Tailing Basin, high bedrock eliminates groundwater seepage.	5.2.2-69	"High bedrock eliminates groundwater seepage" has never been investigated and is only a hypothesis.	The available information on bedrock in the area suggests that bedrock hydraulic conductivity is very low and greatly reduces the potential groundwater flow.

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GP 179	GP	5.2.2.3.1 Northmet Project Proposed Action Water Budget Overview	Along the south side, geologic features result in all seepage emerging as surface seeps.	5.2.2-69	(what features? Second Creek?)	Text in Section 5.2.2 - Summary has been modified to provide example features such as bedrock topography
1854 32	1854	5.2.2.3.1 Northmet Project Proposed Action Water Budget Overview	1st paragraph and last paragraph	5.2.2-73	Effectiveness of water treatment and seep collection are vital to the project meeting standards. Analysis and design detail are lacking in the PSDEIS. Concern exists over the need for long-term treatment and also for the regulatory ability to allow for it. More detail is needed on water treatment and seep collection, including long-term operation/maintenance, since they are essential components of the project meeting environmental standards.	In Section 5.2.2 - Summary, new text has been added to describe the water treatment and seep collection facilities. Also, references have been added that describe in detail the analysis, design, and pilot testing of these facilities. Groundwater containment with slurry walls and permeable trenches has been routinely performed at mine and industrial sites over the last 50 years. There are hundreds of currently operating systems. When geologic conditions are favorable (particularly the presence of a low permeability basal unit that can be keyed into), it is typical to achieve greater than 90 percent groundwater capture. At the Mine and Plant Sites, the geologic conditions are favorable due to the presence of low permeability bedrock. Performance modeling of the containment systems performed by PolyMet and reviewed by the Co-Leads provides strong evidence that the capture efficiency will be greater than 90 percent. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. Additional detail would be provided for permitting.
1854 33	1854	5.2.2.3.1 Northmet Project Proposed Action Water Budget Overview	Plant Site - 3rd paragraph	5.2.2-77	Design, analysis, effectiveness, and long-term operation/maintenance of non-mechanical water treatment are not clear in PSDEIS. Assumptions of meeting water quality standards are important for long-term treatment and also for the regulatory ability to allow for it. The PSDEIS should discuss these issues.	In Section 5.2.2 - Summary, new text has been added to describe the water treatment and seep collection facilities. Also, references have been added that describe in detail the analysis, design, and pilot testing of these facilities. Groundwater containment with slurry walls and permeable trenches has been routinely performed at mine and industrial sites over the last 50 years. There are hundreds of currently operating systems. When geologic conditions are favorable (particularly the presence of a low permeability basal unit that can be keyed into), it is typical to achieve greater than 90 percent groundwater capture. At the Mine and Plant Sites, the geologic conditions are favorable due to the presence of low permeability bedrock. Performance modeling of the containment systems performed by PolyMet and reviewed by the Co-Leads provides strong evidence that the capture efficiency will be greater than 90 percent. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. Additional detail would be provided for permitting.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 180	GP	5.2.2.3.2 Partridge River Watershed		5.2.2-80-8	Major difference of opinion. The analog data that was used was "cherry-picked" to result in this conclusion regarding drawdown.	The analog approach is considered a reasonable method for evaluating the extent of pit drawdown considering the heterogeneous nature of glacial till and the underlying low-permeability bedrock. Even when the pit water level is well below the top of bedrock, the low-permeability bedrock limits the amount of surficial groundwater that can drain downward into the pit and there is sufficient recharge to the surficial unit to generally maintain water levels.
GP 181	GP	5.2.2.3.2 Partridge River Watershed	It would not have a liner, but would be surrounded by a groundwater containment system consisting of a cutoff wall (i.e., low-permeability hydraulic barrier) and a subsurface drain that would collect nearly all (approximately 93 percent) of the seepage from the stockpile.	5.2.2-88	Is there a "real-life" example of the effectiveness of this containment system? If so, please cite.	Groundwater containment with slurry walls and permeable trenches has been routinely performed at mine and industrial sites over the last 50 years. There are hundreds of currently operating systems. When geologic conditions are favorable (particularly the presence of a low permeability basal unit that can be keyed into), it is typical to achieve greater than 90 percent groundwater capture. At the Mine and Plant Sites, the geologic conditions are favorable due to the presence of low permeability bedrock. Performance modeling of the containment systems performed by PolyMet and reviewed by the Co-Leads indicates that the capture efficiency will be greater than 90 percent.
GP 182	GP	5.2.2.3.2 Partridge River Watershed	This, in combination with the cycling of pit water through the WWTF, results in a dramatic decrease in solute concentrations by year 20 (again see Figure 5.2.2-18 as a representative example).	5.2.2-88	Only if pit water in-flow is at the low rate predicted will there be a dramatic decrease in solute concentrations.	The decreases in solute concentration are predicted by the probabilistic GoldSim model, which considers a reasonable range of inflows rates to the West Pit.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GP 183	GP	5.2.2.3.2 Partridge River Watershed	Predicted water quality in the bedrock was reviewed; however, the contaminant load had not yet reached the evaluation locations at the end of the 200-year model run because the estimated travel time for groundwater between the mine pits and the bedrock evaluation locations is so long (i.e., over 1,000 years). The effect of the NorthMet Project Proposed Action on bedrock groundwater is considered negligible because groundwater contribution to bedrock from the pits is predicted to be very small (0.09 gpm from the East Pit and 0.08 gpm from the West Pit) and the contaminant load is relatively low and expected to improve over time as the water quality in the pits improves.	5.2.2-99	This baseflow or groundwater contribution is far below the measured baseflows in the Partridge River. Baseflow must be characterized using data collected at the mine site rather than simply modeling the desired result.	The baseflow in the Partridge River reflects both surficial aquifer and bedrock contributions. These flows referenced only reflect bedrock contributions.
1854 34	1854	5.2.2.3.2 Partridge River Watershed	3rd paragraph-analog data used	5.2.2-80	There is disagreement on the exclusion of some of the available analog data regarding groundwater drawdown from pit dewatering and the conclusion of the resulting impact zones. Well data used in GLIFWC's Analysis of Indirect Wetland Impacts from Groundwater Drawdown should be considered for a more complete analysis to estimate these impact zones.	The analog approach is considered a reasonable method for evaluating the extent of pit drawdown considering the heterogeneous nature of glacial till and the underlying low-permeability bedrock. Even when the pit water level is well below the top of bedrock, the low-permeability bedrock limits the amount of surficial groundwater that can drain downward into the pit and there is sufficient recharge to the surficial unit to generally maintain water levels. The analog method used all available relevant data.
1854 35	1854	5.2.2.3.2 Partridge River Watershed	Sulfate in the Partridge River	5.2.2-124	Disagreement exists over application of the standard. Wild rice exists upstream in both rivers from the draft MPCA staff recommended definitions of water used for production of wild rice (compliance points). In the Partridge River, the 2009 survey identified rice near SW-004b. It is arbitrary to define how much rice presence is required, especially given the lack of long-term monitoring data on a water. Application of this standard may be evolving/changing as research is ongoing and the standard will be evaluated. These issues should be clearly addressed in the PSDEIS.	All information provided was considered when the MPCA made their recommendation. Should the application of the standard change, it will be addressed at that time.
1854 36	1854	5.2.2.3.2 Partridge River Watershed	1st paragraph	5.2.2-126	Sulfate releases and loading is a concern year round, even in the winter. No scientific basis exists for seasonal application of standard, even given the current MPCA staff recommendation. Application of this standard may be evolving/changing as research is ongoing and the standard will be evaluated.	All information provided was considered when the MPCA made their recommendation. Should the application of the standard change, it will be addressed at that time.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
1854 37	1854	5.2.2.3.2 Partridge River Watershed	2nd paragraph	5.2.2-128	The PSDEIS states that contingency mitigation "could be" implemented if sulfate exceedances are indicated by monitoring. The project must meet water quality standards, so suggest a revision to strengthen this language in the document.	Disagree. Sentence states that contingency mitigation could be implemented if future modeling predicts exceedances of applicable evaluation criteria for sulfate. No text edits necessary.
1854 38	1854	5.2.2.3.2 Partridge River Watershed	last paragraph	5.2.2-139	Effectiveness of water treatment is vital to the project meeting standards. Analysis and design detail are lacking in the PSDEIS. Concern exists over the need for long-term treatment and also for the regulatory ability to allow for it. More detail is needed on water treatment and long-term operation/maintenance since they are essential components of the project meeting environmental standards.	In Section 5.2.2 - Summary, new text has been added to describe the water treatment and seep collection facilities. Also, references have been added that describe in detail the analysis, design, and pilot testing of these facilities. Groundwater containment with slurry walls and permeable trenches has been routinely performed at mine and industrial sites over the last 50 years. There are hundreds of currently operating systems. When geologic conditions are favorable (particularly the presence of a low permeability basal unit that can be keyed into), it is typical to achieve greater than 90 percent groundwater capture. At the Mine and Plant Sites, the geologic conditions are favorable due to the presence of low permeability bedrock. Performance modeling of the containment systems performed by PolyMet and reviewed by the Co-Leads provides strong evidence that the capture efficiency will be greater than 90 percent. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. Additional detail would be provided for permitting
FDL 57	FDL	5.2.2.3.2 Partridge River Watershed	Overburden and OSLA	p 5.2.2-88	There are no provisions for treating Hg in runoff from the OSLA.	Surface runoff from the Overburden Storage and Laydown Area is considered "Process Water," and would be captured in an unlined pond (Pond PW-OSLA) and monitored for quality. If the Overburden Storage and Laydown Area water was of sufficient quality, it would be pumped to the CPS and discharged to the East Pit or the Tailings Basin. If water in Pond PW-OSLA required treatment, it would be pumped to the WWTF for treatment prior to delivery to the CPS.
FDL 58	FDL	5.2.2.3.3 Embarrass River Watershed	Table 5.2.2-41	p 5.2.2-16	Why is there no applicable standard for hardness?	The applicable standard for hardness will be included in the SDEIS.
5.2.3 Wetlands						

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 182	GLIFWC	5.2.3.1.2 Potential Indirect Wetland Effects Methodolog y And Evaluation Criteria	5.2.3-3 to 5.2.3-4		The indirect impact analysis is fatally flawed. The analog approach is not scientifically defensible and further, it uses cherry picked data to reach conclusions. See GLIFWC wetland analysis attachment.	<p>Per the Final Wetlands IAP Summary Memo, the Co-lead Agency position was that the assessment of potential indirect wetland impacts at the mine site should be conducted based upon an interpretation of the general analog guidelines regarding groundwater drawdown analog information provided by the Water Resources IAP Workgroup in accordance with the guidance provided in the attachment to this summary memo. The Co-lead Agencies believe that even with additional groundwater data collection and additional groundwater modeling, there would still be a high level of uncertainty regarding groundwater model outputs. Therefore, the Co-lead Agencies believe that the analog guideline method of estimating glacial aquifer groundwater drawdown near the proposed mine is reasonable and appropriate for this site and do not recommend that additional field data collection and groundwater modeling be conducted for the purpose of estimating glacial aquifer groundwater drawdown.</p> <p>Some Wetland IAP Workgroup members disagree with the Co-lead Agency position. They believe that additional field data collection and additional groundwater modeling are necessary to provide groundwater drawdown cone of depression information near the open pit mine. That position was an earlier recommendation of the Wetland IAP Workgroup and was supported by Workgroup members from the Fond du Lac Band, Grand Portage Band, Great Lakes Indian Fish and Wildlife Service, U.S. Fish and Wildlife Service, 1854 Treaty Authority, Minnesota Pollution Control Agency and the U.S. Environmental Protection Agency. However; it was not supported by Workgroup members from the Co-lead Agencies, Environmental Resources Management, or Barr Engineering. In addition, some Workgroup members believe that the Co-lead Agency position is contrary to standard analysis that mining companies have to conduct as part of sulfide mine EIS processes across the country. In addition, the Grand Portage Band believes that the geology of the analog sites appear to be non-analogous with the geology of the proposed mine site.</p>
GLIFWC 185	GLIFWC	5.2.3.1.2 Potential Indirect Wetland Effects Methodolog y And Evaluation Criteria	5.2.3-6		As commented previously, the modeling done to assess changes in Partridge River flow is fatally flawed and does not yield usable results.	The Co-lead Agencies have concluded that the use of lateral effect equations for ditches is not suitable for use in determining glacial aquifer drawdown near open pit mines, and that method should not be used to estimate groundwater drawdown near the NorthMet project open pits. There was no disagreement among any of the Workgroup members.
GLIFWC 188	GLIFWC	5.2.3.2.2 Mine Site And Transportati on And Utility Corridor Indirect Wetland Effects	5.2.3-21		The section on changes in hydrology due to drawdown is scientifically indefensible and fatally flawed. See GLIFWC wetland attachment.	See GLIFWC 182

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 189	GLIFWC	5.2.3.2.2 Mine Site And Transportati on And Utility Corridor Indirect Wetland Effects	5.2.2-50		The XP-SWMM model used for assessing impacts t Partridge River flow is fatally flawed and should not be used in the PSDEIS. See GLIFWC hydrology attachment	We believe the XP-SWMM modeling is acceptable for use in the SDEIS. The 20 year old data is acceptable as there haven't been any significant changes within the watershed. We believe the assumptions used were reasonably conservative. Additional detail is provided in the water sections of the SDEIS, and further rationale is provided in the Water Data Packages.
GLIFWC 190	GLIFWC	5.2.3.2.2 Mine Site And Transportati on And Utility Corridor Indirect Wetland Effects	5.2.3-51		Presents an incorrect characterization of the impacts of dust emissions along the rail line. The section states that the air IAP did not identify any air quality effects. This issue was raised in the water quality IAP and the lead agencies moved it to air quality. We maintain that this is a water quality issue. The lead agencies have refused to fully address the issue and have chosed to simply monitor the waters near the rail line in order to detect impacts after they have already occurred.	The Co-leads position on the potential for contamination along the rail line is discussed in 5.2.2 and 5.2.3.
GLIFWC 191	GLIFWC	5.2.3.2.2 Mine Site And Transportati on And Utility Corridor Indirect Wetland Effects	5.2.3-58		Same comment a page 5.2.3-51. In addition the statement that deposition along the rail line would be minimal because of the coarse nature of the ore. This is incorrect. Relatively small ammounts of fine ore dust can create large water quality impacts as evidenced by the clean water act violations at the Flambeau mine in Wisconsin.	The Co-leads position on the potential for contamination along the rail line is discussed in 5.2.2 and 5.2.3.
1854 51	1854	5.2.3.2.2 Mine Site And Transportati on And Utility Corridor Indirect Wetland Effects	Changes in Hydrology Due to Drawdown- 1st paragraph	5.2.3-21	There is disagreement on the Partridge River acting as a "natural barrier" to the cone of depression, which suggests that the riparian zone of the Partridge River will not be affected by groundwater drawdown. If there is groundwater drawdown below the Partridge River, this could reduce groundwater flows to the river and impact the riparian zone. Refer to GLIFWC's Analysis of Indirect Wetland Impacts from Groundwater Drawdown. If there is evidence suggesting otherwise, it should be provided and compared to GLIFWC's analysis.	The analog approach is considered a reasonable method for evaluating the extent of pit drawdown considering the heterogeneous nature of glacial till and the underlying low-permeability bedrock. Even when the pit water level is well below the top of bedrock, the low-permeability bedrock limits the amount of surficial groundwater that can drain downward into the pit and there is sufficient recharge to the surficial unit to generally maintain water levels.  Also see response to GLIFWC 182.
1854 53	1854	5.2.3.2.2 Mine Site And Transportati on And Utility Corridor Indirect Wetland Effects	last paragraph	5.2.3-35	Estimation of indirect impacts are a point of disagreement among cooperating agencies. GLIFWC has done some additional analysis that should be considered.	A wetland monitoring plan would be developed and implemented if the NorthMet project is permitted. The plan would require wetland hydrology monitoring, vegetation monitoring, and wetland water quality monitoring to identify if indirect wetland impacts occur during implementation of the project. If indirect wetland impacts resulting from the project are determined by the monitoring program, compensatory wetland mitigation would be required for those indirect wetland impacts.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 192	GLIFWC	5.2.3.3 Northmet Project Proposed Action Avoidance Minimization Mitigation And Monitoring Measures			We disagree that all efforts to avoid impacts have been made. For example the underground mine alternative was eliminated because of cost and because the applicant has made an agreement with the owners of mineral rights immediately to the southwest of the west pit that they could access their minerals using the west pit as a portal. A responsible mine plan that attempts to access all ore in the area through underground methods was never seriously considered. A second example is backfilling the west pit with category 1 stockpile. This would allow on site wetland mitigation to occur. This alternative has not been considered because of the same reasons given for eliminating the underground mine alternative.	We believe that the project has made efforts to avoid and minimize the effects to wetlands based on the revised project description.
1854 56	1854	5.2.3.3.2 Wetland Mitigation	last paragraph	5.2.3-82	It is important to understand direct and indirect wetland impacts before project, along with monitoring during project. Estimation of indirect impacts are a point of disagreement among cooperating agencies. GLIFWC has done some analysis indicating about 5920 acres of severe wetland impact.	A wetland monitoring plan would be developed and implemented if the NorthMet project is permitted. The plan would require wetland hydrology monitoring, vegetation monitoring, and wetland water quality monitoring to identify if indirect wetland impacts occur during implementation of the project. If indirect wetland impacts resulting from the project are determined by the monitoring program, compensatory wetland mitigation would be required for those indirect wetland impacts.
FDL 61	FDL	5.2.3 Wetlands		p 5.2.3-2	There are no mitigation requirements defined for the 7000 acres of indirect wetland impacts.	A wetland monitoring plan would be developed and implemented if the NorthMet project is permitted. The plan would require wetland hydrology monitoring, vegetation monitoring, and wetland water quality monitoring to identify if indirect wetland impacts occur during implementation of the project. If indirect wetland impacts resulting from the project are determined by the monitoring program, compensatory wetland mitigation would be required for those indirect wetland impacts. Text revised throughout the mitigation/monitoring discussions to address comment.
GLIFWC 181	GLIFWC	5.2.3 Wetlands	5.2.3-2		Some wetlands in the indirect impact category are severely affected by drawdown, fragmentation, watershed destruction and dust deposition. These effects are well understood and so the Corps should require up front mitigation for these wetland impacts. See GLIFWC wetland attachment for additional analysis and information.	A wetland monitoring plan would be developed and implemented if the NorthMet project is permitted. The plan would require wetland hydrology monitoring, vegetation monitoring, and wetland water quality monitoring to identify if indirect wetland impacts occur during implementation of the project. If indirect wetland impacts resulting from the project are determined by the monitoring program, compensatory wetland mitigation would be required for those indirect wetland impacts. Text revised throughout the mitigation/monitoring discussions to address comment.
1854 49	1854	5.2.3 Wetlands	last paragraph, bullets	5.2.3-1	The project would result in 912.5 acres of direct wetland impact. More information on approval process from USACE and other regulatory agencies would be beneficial (is approval ever not granted if impacts are too large?). Much of the proposed mitigation is outside of the watershed and 1854 Ceded Territory. This is a permanent loss, and should be discussed in the document. Mitigation options should be re-visited. Proper compensation ratios are important.	Compensatory mitigation ratios go up if not in-place, in-kind, in-advance. Therefore, if outside the watershed/Ceded Territory, then ratios increase.  There is no threshold to impacts under USACE or WCA.  Additional information on mitigation process was added into the narrative.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
1854 50	1854	5.2.3 Wetlands	4th paragraph	5.2.3-2	The project would result in 6498-7413 acres of indirect wetland impact according to the PSDEIS. More information on approval process from USACE and other regulatory agencies would be beneficial (is approval ever not granted if impacts are too large?). Estimation of indirect impacts are a point of disagreement among cooperating agencies. GLIFWC has done some analysis indicating about 5920 acres of severe wetland impact. Additional mitigation may be required up front. Detailed monitoring during the project will be necessary to understand actual impacts.	Compensatory mitigation ratios go up if not in-place, in-kind, in-advance. Therefore, if outside the watershed/Ceded Territory, then ratios increase.  There is no threshold to impacts under USACE or WCA.  Additional information on mitigation process was added into the narrative.  No compensatory mitigation for indirect wetland effects. There will be monitoring required for potential indirect impacts and if indirect impacts show an adverse affect, then mitigation would be required.
1854 57	1854	5.2.3.3.2 Wetland Mitigation	1st full paragraph	5.2.3-90	Much of the proposed mitigation is outside of the watershed and 1854 Ceded Territory. This is a permanent loss, and should be further discussed in the document. Mitigation options should be re-visited. Proper compensation ratios are important.	Compensatory mitigation ratios go up if not in-place, in-kind, in-advance. Therefore, if outside the watershed/Ceded Territory, then ratios increase.  There is no threshold to impacts under USACE or WCA.  Additional information on mitigation process was added into the narrative.
GLIFWC 193	GLIFWC	5.2.3.3.4 Monitoring	5.2.3-100		The section on monitoring for indirect effects, specifically the 4 goals, are exactly the type of analysis that is required for a federal EIS. This information should have been an integral part of the effects analysis for this project and GLIFWC staff have been advocating for this approach for years. This information, collected after the fact, cannot be used in impact assessment and thus cannot help mitigate the effects of the proposed project.	A wetland monitoring plan would be developed and implemented if the NorthMet project is permitted. The plan would require wetland hydrology monitoring, vegetation monitoring, and wetland water quality monitoring to identify if indirect wetland impacts occur during implementation of the project. If indirect wetland impacts resulting from the project are determined by the monitoring program, compensatory wetland mitigation would be required for those indirect wetland impacts.
GLIFWC 216	GLIFWC	5.2.3.3.2 Wetland Mitigation	5.2.3.3.2 Wetland Mitigation and Contingency Mitigation		In discussing Financial Assurances there is no mention of the perpetual pump and treatment costs or liabilities for the mine. In reviewing various sections discussing Financial Assurances in no portion of the PSDEIS did authors identify: 1) annual projected operating costs for pollution control once the mine is closed including operation of the reverse osmosis system; 2) capital replacement costs and life cycle for pollution control infrastructure including piping, pumps, etc (i.e. What would have to be replaced every 10, 25, 50, 75 years and what would be the costs?); 3) and Net Present Value of the Financial Assurances (i.e. comparing the value of a dollar today to the value of that same dollar in the future). See GLIFWC socioeconomics attachment for additional information.	This comment appears to be addressing financial assurance in general and not just wetlands. Section 3 has a discussion on the project financial assurance. The level of detail provided in the SDEIS has been agreed upon by Co-Leads and with EPA. The details of the assurance will be developed during permitting.  Section 3.2.2.4 provides a discussion of the financial assurance for the NorthMet Project Proposed Action.
GLIFWC 184	GLIFWC	5.2.3.1.2 Potential Indirect Wetland Effects Methodology And Evaluation Criteria	5.2.3-5		The wetland sensitivity tables developed for the Crandon project in Wisconsin relied on a detailed understanding of the relationship between the surficial aquifer and the bottom of the wetland. That basic hydrologic information was never collected for this project therefore the significance criteria table is not necessarily applicable to NorthMet wetlands and its use in this context is not appropriate. See GLIFWC wetland attachment for additional information.	The wetland sensitivity tables in the Crandon mine project were used, though the Crandon project has different soils and hydrology than NorthMet, since it was decided and agreed upon in the IAP workgroup meetings. There is a general understanding on the NorthMet Project Mine Site of the general lack of connectivity of the surficial and bedrock aquifers, the soils present, the hydraulic conductivities, and the bedrock types (Barr 2006c; Barr 2008h; Barr 2010d). No text edit.

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GLIFWC 187	GLIFWC	5.2.3.2.2 Mine Site And Transportati on And Utility Corridor Indirect Wetland Effects	5.2.3-17		Based on information in the wetlands data package, we disagree with the assumptions used in defining if a wetland is fragmented or not. The method used in the PSDEIS would allow wetlands that have over 50% of their area filled to be classified as unimpacted by assuming that all of their hydrology depends on rainfall. This is not acceptable because filling a large percentage of a wetland disrupts the internal hydrologic regime and fragments the vegetation community in the wetland.	Fragmented wetlands are classified as indirect impact; however, fragmented wetlands are included in upfront mitigation. Total upfront mitigation is for the 912.5 acres of direct effects and 26.4 acres of fragmented wetlands (indirect effect). Tables have been revised to reflect this.
1854 52	1854	5.2.3.2.2 Mine Site And Transportati on And Utility Corridor Indirect Wetland Effects	Changes in Hydrology Due to Drawdown- 2nd paragraph	5.2.3-21	The exclusion of ombrotrophic bogs from wetlands that will be impacted from drawdown should be reconsidered. GLIFWC cites several sources (Murphy et al. 2009, Grootjans et al. 2009, Jaatinen et al. 2006 and Vassander 1995) that discuss impacts to ombrotrophic bogs (vegetation changes). These sources and other available information should be considered before excluding ombrotrophic bogs from the wetland impacts analysis.	<p>The articles were reviewed.</p> <p>The PSDEIS assumes that ombrotrophic bogs – given that they are raised above the water table and are supported by precipitation alone – would not be impacted by lowering of the water table underneath them. Water table monitoring of ombrotrophic bogs within the proposed project site would confirm or refute this assumption. If this assumption is incorrect and appreciable adverse impacts occur, additional compensatory mitigation could be warranted.</p> <p>The three journal articles confirm what is already included as wetland impacts by the PSDEIS. Dewatering of the root zone in peatlands results in shifts in the composition and structure of plant communities. The journal articles note that trees increase in both above- and below-ground biomass at the expense of herbs and shrubs. Increased shading by the increase in tree canopy cover in drained peatlands also reduces the cover by Sphagnum mosses. For the NorthMet site, this indicates that tamarack and/or black spruce would likely increase in above- and below-ground biomass.</p>
1854 54	1854	5.2.3.2.4 Plant Site Indirect Wetland Effects	1st paragraph	5.2.3-71	Can the seep collection system be designed for 100% capture (90% modeled capture)? Please provide more details, examples, analysis, calculations, etc. Effective seep collection is important component of project meeting standards, and concern if this type of assumption is accurate.	The following paragraph has been edited in Section 5.2.2.3 - Contaminant Release from the Tailings Basin: GoldSim is programmed with algorithms for estimating the release of chemicals from the tailings sources areas. For the NorthMet Project Proposed Action, a groundwater and surface water containment system would be constructed at the beginning of operations along the northeast, north, and west perimeter of the Tailings Basin to intercept affected water seeping from the facility. The facility would be designed to collect all tailings seepage that flows as surface water and this is programmed into the GoldSim model. For the surficial (unconsolidated) unit, GoldSim has been programmed to assume that 90 percent of the approaching groundwater is collected and 10 percent (21 gpm) bypasses the system and continues to migrate toward the Embarrass River. The programmed 90 percent collection of groundwater is conservative in that performance modeling of the containment system (PolyMet 2013f; Attachment C), predicts that a capture percentage greater than 90 percent would be achieved. Due to the very low hydraulic conductivity of bedrock and because the slurry trench would be keyed into bedrock, the GoldSim model assumes that groundwater by-pass via bedrock is negligible compared to that occurring in the surficial unit.
1854 55	1854	5.2.3.2.4 Plant Site Indirect Wetland Effects	Water Quality Changes	5.2.3-74	Effectiveness of water treatment and seep collection are vital to the project meeting standards. Analysis and design detail are lacking in the PSDEIS. Concern exists over the need for long-term treatment and also for the regulatory ability to allow for it. More detail is needed on water treatment and seep collection, including long-term operation/maintenance, since they are essential components of the project meeting environmental standards.	In Section 5.2.2 - Summary, new text has been added to describe the water treatment and seep collection facilities. Also, references have been added that describe in detail the analysis, design, and pilot testing of these facilities.

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GLIFWC 183	GLIFWC	5.2.3.1.2 Potential Indirect Wetland Effects Methodology And Evaluation Criteria	5.2.3-3 to 5.2.3-4		The heading "Potential Indirect Wetland Effects Resulting from Changes in Hydrology" appears in both pages. Edit the title to specify how the sections are different.	Edited as suggested.
GLIFWC 186	GLIFWC	5.2.3.2.1 Mine Site And Transportation And Utility Corridor Direct Wetland Effects	5.2.3-11		Backfill of category 3 and 4 waste rock does not minimize or avoid wetland fill. That waste rock will be on the site for over 10 years and the wetlands in the footprint of the stockpile would be destroyed. What backfill does accomplish is provide an opportunity to create new wetlands in those locations. However, the high quality character of the existing wetlands will likely not be replaced.	Sentence revised. PolyMet proposes to mitigate wetland effects by placing waste rock back into the East Pit and Central Pit after year 11, thereby reducing the need for additional surface stockpile areas that would otherwise affect wetlands.
GLIFWC 204	GLIFWC	5.2.3.3.4 Monitoring	Last four paragraphs		It appears that wetland monitoring following restoration is only vegetative and hydrologic in nature. Total and methyl mercury should be monitored pre-project through post-reclamation to collect information on mercury levels and methylation rates and identify any necessary remedial actions.	Wetland monitoring following restoration would be vegetative and hydrologic in nature.  Reference to water monitoring discussed in Section 5.2.2.3.6 was added. Water quality will be monitored downstream and piezometers will be located in the wetlands.
5.2.4 Vegetation						
1854 58	1854	5.2.4.2.1 Mine Site	Culturally Important Plants	5.2.4-3	Effectiveness of water treatment and seep collection are vital to the project meeting standards. Analysis and design detail are lacking in the PSDEIS. Concern exists over the need for long-term treatment and also for the regulatory ability to allow for it. More detail is needed on water treatment and seep collection, including long-term operation/maintenance, since they are essential components of the project meeting environmental standards.	In Section 5.2.2 - Summary, new text has been added to describe the water treatment and seep collection facilities. Also, references have been added that describe in detail the analysis, design, and pilot testing of these facilities.
1854 59	1854	5.2.4.2.1 Mine Site	Effects of Invasive Non-native Plants	5.2.4-6	Planting invasive plants should not be an option.	Text describes invasive would be avoided being planted to the extent that it wouldn't interfere with meeting vegetation guidelines. Edited the following sentence "Preference would be given to establishing..." to say "According to the PolyMet Reclamation Seeding and Mulching procedure (PolyMet 2012n), preference would be given to establishing native plant communities, and the introduction of invasive plant species would be avoided to the extent that such a practice would not interfere with the timely and effective accomplishment of the primary objectives for establishing vegetation."
5.2.5 Wildlife						
GLIFWC 205	GLIFWC	5.2.5 Wildlife	Throughout		The Wildlife Section (5.2.5) does not discuss mercury contamination. Similarly the Aquatic Species Section (5.2.6) does not discuss direct health impacts to aquatic species due to mercury. These impacts must be considered. See the supplemental document "Great Lakes Indian Fish and Wildlife Commission (GLIFWC) Comments Related to Mercury" [Comment 11] for further discussion.	The Open Water discussion in Section 5.2.5.2.3 has been expanded to include discussion of the potential for wildlife exposure to mercury.

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1854 60	1854	5.2.5 Wildlife	Wildlife	5.2.5-1	This section does not contain information on game species such as moose, deer, grouse, waterfowl, furbearers, etc. These species are important to the Bands and public in general. Specific concern over moose given the declining population and closure of state hunting season. Analysis on these species is needed. (Effects on wildlife species important to the Bands are discussed in section 5.2.9. However, no analysis on these game species is included there either.)	Section 5.2.5.2.5 has been expanded to further discuss affects to game species and species of importance to the Bands.
GLIFWC 207	GLIFWC	5.2.5.2.3 Species Of Greatest Conservation Need	Paragraphs 2 and 3		The PSDEIS dismisses the possibility of waterfowl and waterbirds utilizing the tailings basin despite the fact that common waterfowl and waterbirds have been observed at the LTVSMC tailings basin during migration. The wetlands to be constructed over the East Pit and at the perimeter of the tailings basin are also not considered as potential waterbird/fowl habitat. We believe that there is a significant potential pathway of mercury exposure to these species from utilizing these sites. See the supplemental document "Great Lakes Indian Fish and Wildlife Commission (GLIFWC) Comments Related to Mercury" [Comment 12] for further discussion.	The Open Water discussion in Section 5.2.5.2.3 has been expanded to more accurately describe the potential wildlife use of the Tailings basin, as well as the potential for exposure to mercury.
1854 61	1854	5.2.5.2.3 Species Of Greatest Conservation Need	Increased Human Activity - 2nd paragraph	5.2.5-7	The PSDEIS states that "effects related to hunting and trapping are unlikely because public access would be restricted." Loss of public lands, loss of access, and permanent resource impacts are large impacts to hunting and trapping for the public and exercise of treaty rights. Please revise text, and further analysis should be included (public lands available for exercise of rights, loss from this project, permanent resource impacts/loss, etc.)	This discussion in 5.2.5.2.3 was intended to address affects to wildlife due to hunting and trapping. As now referenced in the chapter, impacts to hunting are addressed in section 5.2.11.2.1. Paragraph now reads, "Effects to wildlife due to trapping and hunting are minimal because public access would be restricted. Through the Land Exchange Proposed Action, NorthMet Project area lands would enter into private ownership and would not be accessible for public use. As discussed in Section 5.2.11.2.1, public access is limited and would remain limited to non-NorthMet Project Proposed Action-related activities during mining operations and following mine closure. As such, wildlife species are not likely to be affected by changes in hunting and trapping activity."
1854 62	1854	5.2.5.2.3 Species Of Greatest Conservation Need	Other Wildlife Species	5.2.5-14	Analysis needed for moose in particular due to concern over declining population and closure of hunting season. Other game species such as deer, grouse, waterfowl, furbearers, etc. should also be included because important to exercise of treaty rights and public in general. (Effects on wildlife species important to the Bands are discussed in section 5.2.9. However, no analysis on these game species is included there either.)	Section 5.2.5.2.5 has been expanded to further discuss affects to game species and species of importance to the Bands.
<b>5.2.6 Aquatic Species</b>						
1854 63	1854	5.2.6 Aquatic Species	Summary - 3rd paragraph	5.2.6-1	There is disagreement that the riparian zone of the Partridge River will not be affected. If there is groundwater drawdown below the Partridge River, this could reduce groundwater flows to the river and impact the riparian zone. Refer to GLIFWC's Analysis of Indirect Wetland Impacts from Groundwater Drawdown. If there is evidence suggesting otherwise, it should be provided and compared to GLIFWC's analysis.	At the core of this comment is the potential loss of wetlands adjacent to dewatered mine pits. In the general vicinity of the PolyMet site, there are numerous case histories of dewatered mine pits in wetland areas. The historical information clearly indicates that there has not been extensive loss (drying up) of wetlands next to these pits except perhaps within a hundred feet or so of the pit rim. This may be explained by the hydrogeology, which typically consists of a thin and moderately permeable surficial unit overlying low-permeability bedrock. Even when the pit water level is well below the top of bedrock, the low-permeability bedrock limits the amount of surficial groundwater that can drain downward into the pit and there is sufficient recharge to the surficial unit to maintain wetland conditions. It is anticipated that riparian zones (wetlands) adjacent to the Partridge River would experience the same lack of loss from groundwater drawdown, particularly coupled with minimal surface water flow change due to the proposed project.

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1854 64	1854	5.2.6.2.1 Partridge River	2nd paragraph	5.2.6-10	Should explain whether the project will result in a net decrease of mercury loading to the Partridge River when air deposition (and any other means of mercury deposition resulting from the project) is included. Air deposition should be included when referring to the net mercury loading from the project to the Embarrass River as well.	Mercury loading is discussed in water quality and air sections.
GLIFWC 206	GLIFWC	5.2.6 Aquatic Species	Throughout		The Wildlife Section (5.2.5) does not discuss mercury contamination. Similarly the Aquatic Species Section (5.2.6) does not discuss direct health impacts to aquatic species due to mercury. These impacts must be considered. See the supplemental document "Great Lakes Indian Fish and Wildlife Commission (GLIFWC) Comments Related to Mercury" [Comment 11] for further discussion.	Mercury effects are being considered by the Co-leads and the SDEIS will be revised.
GLIFWC 208	GLIFWC	5.2.6 Aquatic Species	Paragraphs 2 through 4		PSDEIS states there will be effects on flow in the Partridge R. and Embarrass R. tributaries, but that they are not expected to influence habitat. We feel that the water level fluctuations may be sufficient to impact habitat which could lead to changes in species composition or relative abundance which could in turn impact mercury foodweb dynamics. See the supplemental document "Great Lakes Indian Fish and Wildlife Commission (GLIFWC) Comments Related to Mercury" [Comment 13] for further discussion.	The text of Paragraph 2 on page 5.2.6-1 has been revised to clarify why the proposed projects flow reductions are not expected to lead to community alterations citing a 2013 USGS document that indicates that streamflow modifications below 25% are used as a baseline study and that affects on algae, fisheries, and macroinvertebrates would not be measurable at this flow reduction rate.
GLIFWC 209	GLIFWC	5.2.6.2.2 Embarrass River Watershed			Many lakes and rivers in the area are classified as "impaired waters" by the MPCA due to elevated fish mercury. All additional increases in mercury contributions to the environment therefore constitute a risk to human and ecosystem health. There are numerous aspects of the proposed action cited in the PSDEIS that will lead to increased mercury releases to the environment, increasing human and ecosystem risk. Further, the PSDEIS documents and increased risk (i.e., risk quotient) to human fish consumers as a direct result of the project. See the supplemental document "Great Lakes Indian Fish and Wildlife Commission (GLIFWC) Comments Related to Mercury" [Comment 14] for further discussion.	Mercury effects are being considered by the Co-leads and the SDEIS will be revised.
5.2.7 Air Quality						
FDL 37	FDL	5.2.7.1 Methodology And Evaluation Criteria			Were Council on Environmental Quality guidelines on GHG emissions followed, as well?	Yes, these guidelines were also used and was documented in the Greenhouse Gas Emissions Inventory and Energy and Efficiency Analysis (Barr 2012).
FDL 36	FDL	5.2.7.1.3 Proposed Action Emissions	Table 5.2.7-6	p 5.2.7-10	Footnote says that values in Table 5.2.7-7 reflect nickel emissions, but that table is for greenhouse gas emissions. Did you mean Table 5.2.7-6?	Agreed. The footnote will be modified to reflect Table 5.2.7-6.
FDL 38	FDL	5.2.7.1.3 Proposed Action Emissions	Table 5.2.7-8 and Table 5.2.7-9	p 5.2.7-11	Calculation of Potential Indirect Emissions is not clear. Please give more details as to what this category includes and how emissions were calculated. Why is this category footnoted in Table 5.2.7-9 but not in Table 5.2.7-8?	The footnote in Table 5.2.7-9 will be modified to clarify indirect sources for this project. In addition, the expanded footnote in Table 5.2.7-9 will be also be provided in Table 5.2.7-8.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
FDL 46	FDL	5.2.7.2 Northmet Project Proposed Action	Section 5.2.7.2.3	Various	Please include OSHA requirements for on-site workers to see how these assumptions and requirements compare with the analysis performed for the general public.	The analysis conducted for this project have been intended to reflect off-site impacts within the SEIS. Thus, comparison with any onsite occupational worker requirements or standards (and in this case would be the Mining Safety and Health Administration - MSHA) would not have any meaningful comparisons, since they are based upon different populations. In addition, the assessment of onsite workers within the Mine Site and Plant Site boundaries not within the scope of the SEIS.
FDL 39	FDL	5.2.7.2.1 Naaqs And Prevention Of Significant Deterioratio n Increment Impact Analysis	Table 5.2.7-12	p 5.2.7-18	The predicted exceedances for the 1-hour SO2 NAAQS and the 1-hour NOx NAAQS need to be resolved as soon as possible. Since this is a sensitive, high profile project, the Band asks that these issues be resolved before issuance of NorthMet's air permit.	The modeled exceedances of the ambient 1-hour NO2 and 1-hour SO2 concentrations from the Proposed Project Action sources, other nearby sources and ambient background does not constitute a non-attainment area; only monitored concentrations can affect that determination. Since the project is a synthetic minor and is not culpable for the modeled exceedances, the permits can be issued without addressing the modeled exceedances. However, the MPCA has taken actions to reduce emissions from existing sources within the area as part of administrative orders and the Long Term Strategy contained in Minnesota's Regional Haze SIP. The text will be modified to include specific language addressing this issue, as provided by MPCA.
FDL 40	FDL	5.2.7.2.3 Potential Estimated Human Health Risk From The Plant And Mine Sites			"CFPE" is not defined. Please address this.	Based upon a review of the section, CFPE was not identified in the text, however, CFE is identified and is defined on page 5.2.7-32, first paragraph.
FDL 41	FDL	5.2.7.2.3 Potential Estimated Human Health Risk From The Plant And Mine Sites	Table 5.2.7-20	p 5.2.7-34	Potential Cancer Effects for farmers through multipathway exposure from the Mine Site is at the guideline level of 1 E-05.	Based upon the AERA guidance, "Sometimes after using the refinements to the quantitative analysis described by this guide, the sum of the individual chemical screening level cancer risks may be greater than 1E-05 or the sum of the individual chemical screening level hazard quotients (i.e., screening hazard index) may be greater than 1. Alternatively, the quantitative analysis may show risk estimates below these values, but qualitative factors may suggest that environmental or human health issues remain. In those cases, the MPCA will discuss the analysis with the project proposer to consider appropriate courses of action. The risk summary memorandum will be prepared for this discussion, so that issues identified can be described as: Issues that might be further clarified or resolved using a more refined, focused risk analysis, or Issues exist for which a refined analysis would not provide more useful information for decision-making. ". Also in the guidance, "If using conservative emission estimates or dispersion factors results in total facility screening level risk estimates above the risk management thresholds of 1E-05 cancer risk and hazard index of 1 (see Figure 1), it is highly recommended that project-proposers continue to refine the information to the extent possible using the AERA modeling tools.". In addition, included in the AERA spreadsheet, it states, "A risk estimate that exceeds a guideline triggers further careful consideration". As such, since the cancer risk estimate did not exceed 1 E-05, no further action would be required.

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FDL 42	FDL	5.2.7.2.3 Potential Estimated Human Health Risk From The Plant And Mine Sites	Table 5.2.7-22	p 5.2.7-36	Potential Non-Cancer Effects through inhalation exposure (acute and chronic) from the Plant Site are at the guideline level of 1. Also, Potential Cancer Effects for both inhalation and multipathway exposure at the mine site and for farmers are at the guideline value of 1 E-05. The Band remains concerned about these values. While the guideline values do not have any regulatory actions associated with them, the Band finds the concurrency of these values troubling. The issue of whether these values should be rounded down came up during the review phase of this project. The Band's view remains that these values should be rounded up to be conservative. There were instances where rounding up would have driven these numbers above the guideline values.	Based upon the AERA guidance, as described in comment # FDL 41, the project does not exceed the acute and chronic hazard indices of 1 nor the cancer risk of 1 E -5, therefore, no further action is required. Relative to rounding, the guidelines are based on an accuracy of one digit, thus, via standard rounding procedures a cancer risk value of 1.5 E -5 or greater would be rounded to 2 E -5. Similarly, a hazard index of 1.5 or greater would be rounded to 2 for comparison with the guidelines. Proper rounding techniques were applied to the calculated cancer risks and hazard indices and presented in the tables. The stepping up to the next digit is beyond the accuracy of the overall calculations.
FDL 45	FDL	5.2.7.2.3 Potential Estimated Human Health Risk From The Plant And Mine Sites	Section 5.2.7.2.3	pg 5.2.7-3	I didn't see where "MEI" and "RME-OSW" are defined. Without a definition of "RME-OSW", it is hard to tell if 25 years is a long enough period of time to assess hypothetical risks.	The definition of MEI and RME-OSW are defined on page 5.2.7-31. It should be noted that the last paragraph on this page will be modified as noted in Comment # MPCA 161.
FDL 43	FDL	5.2.7.2.5 Mercury Deposition Impact Analysis	Cumulative Mercury		FdL remains concerned that there has been no "ground-truthing" of the estimated deposition rates for the various forms of mercury that are being emitted. To our knowledge, no studies have been performed on the Range that explain why fish tissue mercury levels are so high if the sources in the area mainly emit "non-locally polluting" forms of mercury.	The analysis conducted was based upon the increase in impacts from existing conditions of the waters and fish tissue data. The issue of the existing conditions having high levels of mercury is complex and involves the combination of mercury emissions from existing sources, sulfate loading, and influent flow concentrations. As such, there are no assumptions associated local existing sources emitting "non-locally polluting" mercury. with the deposition rates associated with existing sources. The analysis conducted for the SDEIS provided two scenarios that represent a likely case and a conservative case for comparative range of results.
FDL 44	FDL	5.2.7.2.5 Mercury Deposition Impact Analysis	Cumulative Mercury		No analysis of additional mercury contribution to local rivers was performed.	Risk evaluations were conducted on lakes that feed both the Embarrass and Partridge river systems. Typically, risk assessments are conducted relative to lakes do to limited study areas and data availability. As such, the lakes selected, due to their locations, provide a conservative estimate of the mercury contribution relative to these river systems.
GLIFWC 203	GLIFWC	5.2.7.2.5 Mercury Deposition Impact Analysis	Last paragraph		The estimate of air emissions of mercury as a result of the project (4.6 lbs/yr) does not take into account emissions from electricity generation for the site or from the burning of fuel by mining vehicles or other equipment. This should be quantified and included in the analysis.	Mercury emissions were calculated for mining vehicles and included in the emission inventory. In addition, emissions from electric generation have been incorporated within the TMDL development, by reference. Thus, these emissions have been taken into account for MPCA's evaluation and determination that the Project mercury emissions will not impede the reduction goals.
GLIFWC 210	GLIFWC	5.2.7.2.5 Mercury Deposition Impact Analysis	Fourth paragraph (excluding bulleted paragraphs)		According the PSDEIS, "the MPCA has conducted a review of the NorthMet Project Proposed Action mercury emissions and has determined that it will not impede the reduction goals." The mercury TMDL for the St. Louis River has not yet been established due to insufficient understanding of mercury dynamics in the watershed. It is known that the statewide TMDL is insufficient for reducing mercury to acceptable levels in fish of the SLR. Since there is no SLR mercury TMDL available, the impact of the project's mercury emissions on reduction goals in the area cannot be adequately assessed.	It is agreed that there is no specific TMDL for the St. Louis River system, however, until a specific TMDL is developed for this body of water, the Statewide TMDL is the driving regulation for all other water bodies within the state, including the St. Louis River.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
FDL 31	FDL	5.2.7.5 Amphibole Mineral Fibers			While controlling PM2.5 can control fibers from some operations, fugitive emissions from blasting operations and stockpiles will not be controlled to the degree that other sources are. While conventional wisdom holds that larger particles will settle out, this does not address what will happen to fine particles emitted from these fugitive sources that may contain fibers (the PSDEIS states that about 95% of the mineral fibers identified in samples were 3 microns or smaller in size, with most being less than 2 microns in size). While a dust management plan will be put into action, this is not a foolproof method, as PM exceedances from tailings basins have occurred at other mines in the area.	It is true that some operations have the proper geometry and characteristics to capture and implement higher levels of controls. Fugitive emissions, by their very nature, are not able to be collected and controlled to the same degrees controlled emission sources. However, the development and implementation of a dust management plan that incorporates best management practices that is the most effective in minimizing fugitive emissions including the PM2.5 fraction. In addition, all production blasts at the mine would be conducted in accordance with the requirements set forth in the Nonferrous Metallic Mining Rules (MN Chapter 6132).
FDL 34	FDL	5.2.7.5 Amphibole Mineral Fibers	Overall		The Duluth Complex consists of mostly ultramafic rock, which describes how much magnesium is found in the rock. The more "mafic" the rock, the more "primitive" the rock, meaning that lots of different minerals can form out of the basic rock structure. Again, this means that the mineralogy of the rock is unpredictable, and that more than one year of monitoring would be prudent in case fibers exist in portions of the rock that were not sampled or at depths that were not sampled.	The length and duration of the post-construction ambient monitoring program may be negotiated with MPCA in the permitting process, which could include an evaluation after one year to determine final monitoring duration.
FDL 35	FDL	5.2.7.5 Amphibole Mineral Fibers	5.2.7.5 and 5.2.7.2.3		Neither this section nor the section on potential estimated human health risks addresses risks that could occur with regard to cancer of the gastrointestinal tract and exposure to asbestos-like fibers in drinking water. The city of Hoyt Lakes tests for chrysotile fibers in their drinking water due to scientific literature that points to digestive tract cancers resulting from ingestion of these fibers. A literature search turns up a number of related documents including: Cancer of the gastrointestinal tract and exposure to asbestos in drinking water among lighthouse keepers (Norway). Cancer Causes Control. 2005 Jun;16(5): 593-8. Kjaerheim K., Ulvestad B., Martinse JI., Andersen A. See also Chrysotile Asbestos - National Library of Medicine HSDDB from toxnet.nlm.nih.gov/cgi-bin/sis/search/. See also US EPA, IRIS - Asbestos (CASRN 1332-21-4).	Colby Lake is the only lake in the area used for drinking water by the City of Hoyt Lakes. The USEPA has developed drinking water standards for asbestos which drinking water utilities must comply with (EPA website: <a href="http://water.epa.gov/drink/contaminants/basicinformation/asbestos.cfm">http://water.epa.gov/drink/contaminants/basicinformation/asbestos.cfm</a> ). The asbestos drinking water standard is 7 million fibers per liter (MCL). The EPA has provided proven methods of water treatment to meet the 7 MCL requirement, including coagulation/filtration, direct and diatomite filtration, and corrosion control. Currently, the City of Hoyt Lakes utilizes sand filters, coagulation and settling and has been in compliance with the asbestos standards. The design of the NorthMet Proposed Project WWTF in post closure is to utilize a greensand filter, prefilters, and an RO system. These physical and chemical technologies are capable of removing asbestos from water to below the EPA drinking water standard and are conventional technologies used in full-scale operations. Therefore, the discharge of water to the Partridge River from the WWTF would meet the EPA drinking water standard for asbestos.
FDL 28	FDL	5.2.7.5.1 Environmental Consequences	First paragraph	5.2.7-44	Please include info on how close the Biwabik Iron Formation is to the Duluth Complex at the location of the Polymet proposed mine. This will help readers gauge the likelihood that amphibole fibers may be contacted during mining.	Text will be added to discuss the relationship of the Biwabik Iron Formation and the Duluth Complex and to describe relative distances of the Biwabik Iron Formation to the proposed site.

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FDL 29	FDL	5.2.7.5.1 Environmental Consequences	5.2.7.5.1, Other Considerations	5.2.7-47,4	Sampling done at the mine site was done with a focus on finding minerals for economic utilization. Were the areas sampled also expected to be worst-case examples of where amphibole fibers could potentially be found? For example, samples gathered at the Peter Mitchell Mine to survey for asbestos in the ore targeted areas "where there appeared to be geological faults and shear zones, looking for slip fibers along limbs of tight folds...the amphibole minerals within these types of rock are particularly susceptible to a geological process called weathering" (from Risk Assessment due to environmental exposures to fibrous particulates associated with taconite ore, Regulatory Toxicology and Pharmacology 52 (2008) S232-S245. Available online 28 November 2007)	According to the 2011 Bedrock Geologic Map of Minnesota, the age of the last major deformation event (Penokean orogeny) to produce the shear and tight fold structures referenced in the comment pre-dated the intrusion of the Duluth Complex by approximately 700,000,000 years. The later tectonic activity associated with the Keweenawan mid-continent rift, which is roughly contemporaneous with the Duluth Complex, did not result in the types of features and associated mineral development referred to in the comment. The Peter Mitchell mine is an iron ore mine development in the older Biwabik iron formation and the structural regime is different than in the younger Duluth Complex rock. The Duluth Complex is characterized as having minimal shear structures or limbs and tight folds. There is no way to quantify the amount of fibers expected to be emitted to the environment based on ore body sampling. For this reason, the MPCA acted conservatively and is requiring the best available controls and a rigorous fugitive dust plan.
FDL 30	FDL	5.2.7.5.1 Environmental Consequences	5.2.7.5.1, Other Considerations	5.2.7-47,4	Without a statewide standard for fibers, it is impossible to predict whether the quantity of fibers found (about 9%) will be too high. The MPCA should set a statewide standard as soon as possible. Also, the Band does not believe that 9% is a number that can be considered "small".	The MPCA agrees that a health-based standard should be developed, however, there are no standards to date. Thus, relative to this EIS, there can be no health-based criteria to determine the basis for significant fibers. However, the text will be modified to eliminate the term "small". To be clear, the 9% refers to the amount of amphibole fibers identified from <u>all fibers</u> collected from the samples, not the percent of the original sample itself. The percent of amphibole fibers as a percentage of the ore, tailings, or process water is not documented.
GP 184	GP	5.2.7.5.1 Environmental Consequences	They found that there was no statistically significant increase in either lung cancer or mesothelioma from exposure to taconite mining.	5.2.7-147	Current study indicates miners are 300 times more likely to contract mesothelioma compared to the public. Newest information should be used.	Text in this subsection will be updated to acknowledge the ongoing taconite worker health study as identified in Comment # FDL 32.
FDL 32	FDL	5.2.7.5.2 Evaluation Criteria	5.2.7.5.2, Evaluation Criteria		The most recent report from the University of Minnesota's Workers Health Study states that at least 82 Iron Range residents have died in recent years from mesothelioma (the PSDEIS states that 58 cases have been found), and that the rate of mesothelioma on the Range is almost 3 times higher than that of the general population in MN (the PSDEIS states that the rate is "more than two times greater"). It would be helpful to add the fact that each year that a worker spent in the industry increased the risk of mesothelioma by 3%. This most recent report from the U of M was released in April, 2013. It is unclear why this report was not referenced in the PSDEIS.	Text in this subsection will be updated to acknowledge the ongoing taconite worker health study as identified in Comment # FDL 32.
FDL 33	FDL	5.2.7.5.3 Northmet Project Proposed Action	5.2.7.5.3 NorthMet Project Proposed Action		As previously discussed with the MPCA, the Band does not believe that one year of post-construction monitoring for fibers is adequate. The Band has agreed to discuss this issue with the MPCA at the permitting stage, but wants to make note of this concern again. With a mine that plans to operate for 20 years in an area that is so close to the Biwabik Formation, where fibers have been encountered in the past, with the advice of a number of geologists that this area is expected to have varying and unpredictable mineralogy, we believe that one year of monitoring is completely inadequate.	The duration of the post-construction ambient monitoring program may be negotiated with MPCA in the permitting process, which could include a condition to evaluate monitored data to establish the need for additional monitoring.

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1854 65	1854	5.2.7.5.3 Northmet Project Proposed Action	Last paragraph	5.2.7-51	Ambient air monitoring for mineral fibers should be conducted for the duration of the mining operation (20+ years) and not just for one year. Throughout mining there will be changes in the rock encountered due to changes in depth and pit location (west, east, central). Ultramafic rock has a lot of variability when it comes to containing asbestos-like fibers, so throughout mining the chances of encountering these fibers can change.	The duration of the post-construction ambient monitoring program may be negotiated with MPCA in the permitting process, which could include a condition to evaluate monitored data to establish the need for additional monitoring.
FDL 81	FDL	5.2.7.5	First paragraph	5.2.7-44	Please include info on how close the Biwabik Iron Formation is to the Duluth Complex at the location of the Polymet proposed mine. This will help readers gauge the likelihood that amphibole fibers may be contacted during mining. The article titled "Geology of the Biwabik Iron Formation and Duluth Complex", Mark A. Jirsa, James D. Miller, G.B. Morey, Regulatory Toxicology and Pharmacology, vol. 52, no. 1, pp. S5-S10, 2008, states "The effects of metamorphism are most pronounced within a few kilometers of the contact, and decrease progressively away from it". By our estimate, the mine site is roughly three miles from the area where fibers were found previously.	Text will be added to discuss the relationship of the Biwabik Iron Formation and the Duluth Complex and to describe relative distances of the Biwabik Iron Formation to the proposed site.
FDL 82	FDL	5.2.7.5	5.2.7.5.1, Other Considerations	Various	Sampling done at the mine site was undertaken with a focus on finding minerals for economic utilization. Were the areas sampled also expected to be worst-case examples of where amphibole fibers could potentially be found? For example, samples gathered at the Peter Mitchell Mine to survey for asbestos in the ore targeted areas "where there appeared to be geological faults and shear zones, looking for slip fibers along limbs of tight folds...the amphibole minerals within these types of rock are particularly susceptible to a geological process called weathering" (from <a href="#">Risk Assessment due to environmental exposures to fibrous particulates associated with taconite ore</a> , Regulatory Toxicology and Pharmacology 52 (2008) S232-S245. Available online 28 November 2007).	Duplicate comment. See Comment # FDL 29.
FDL 83	FDL	5.2.7.5	5.2.7.5.1, Other Considerations	pg 5.2.7-48	Without a statewide standard for fibers, it is impossible to predict whether the quantity of fibers found (about 9%) will be too high. The MPCA should set a statewide standard as soon as possible. Also, the Band does not consider 9% to be "small" when addressing a substance that could potentially cause dangerous health effects.	Duplicate comment. See Comment # FDL 30.
FDL 84	FDL	5.2.7.5.3		pg 5.2.7-50	While controlling PM2.5 can control fibers from some operations, fugitive emissions from blasting operations and stockpiles will not be controlled to the degree that other sources are. While conventional wisdom holds that larger particles will settle out, this does not address what will happen to fine particles emitted from these fugitive sources that may contain fibers (the PSDEIS states that about 95% of the mineral fibers identified in samples were 3 microns or smaller in size, with most being less than 2 microns in size). While a dust management plan will be put into action, this is not a foolproof method, as PM exceedances from tailings basins have occurred at other mines in the area.	Duplicate comment. See Comment # FDL 31.

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FDL 85	FDL	5.2.7.5	5.2.7.5.2, Evaluation Criteria	pg 5.2.7-50	The most recent report from the University of Minnesota's Workers Health Study states that at least 82 Iron Range residents have died in recent years from mesothelioma (the PSDEIS states that 58 cases have been found), and that the rate of mesothelioma on the Range is almost 3 times higher than that of the general population in MN (the PSDEIS states that the rate is "more than two times greater"). It would be helpful to add the fact that each year that a worker spent in the industry increased the risk of mesothelioma by 3%. This most recent report from the U of M was released in April, 2013. It is unclear why this report was not referenced in the PSDEIS. This report also states that elevated rates of mesothelioma were found only in workers, not their spouses. This indicates that exposure to mining dust is harmful. Again, not all sources of fugitive dust at Polymet will have controls. The report also shows that levels of heart disease are elevated on the Range. How was this addressed during health impacts analysis?	Duplicate comment. See Comment # FDL 32.
FDL 86	FDL	5.2.7.5	5.2.7.5.3 NorthMet Project Proposed Action	pg 5.2.7-51	As previously discussed with the MPCA, the Band does not believe that one year of post-construction monitoring for fibers is adequate. The Band has agreed to discuss this issue with the MPCA at the permitting stage, but wants to make note of this concern again. With a mine that plans to operate for 20 years in an area that is so close to the Biwabik Formation, where fibers have been encountered in the past, with the advice of a number of geologists that this area is expected to have varying and unpredictable minerology, we believe that one year of monitoring is completely inadequate.	Duplicate comment. See Comment # FDL 33.
FDL 87	FDL	5.2.7.5	Overall	pg 5.2.7-51	The Duluth Complex consists of mostly ultramafic rock, which describes how much magnesium is found in the rock. The more "mafic" the rock, the more "primitive" the rock, meaning that lots of different minerals can form out of the basic rock structure. Again, this means that the minerology of the rock is unpredictable, and that more than one year of monitoring would be prudent in case fibers exist in portions of the rock that were not sampled or at depths that were not sampled.	Duplicate comment. See Comment # FDL 34.
FDL 88	FDL	5.2.7.5	5.2.7.5 and 5.2.7.2.3	Various	Neither this section nor the section on potential estimated human health risks addresses risks that could occur with regard to cancer of the gastrointestinal tract and exposure to asbestos-like fibers in drinking water. The city of Hoyt Lakes tests for chrysotile fibers in their drinking water due to scientific literature that points to digestive tract cancers resulting from ingestion of these fibers. A literature search turns up a number of related documents including: <a href="#">Cancer of the gastrointestinal tract and exposure to asbestos in drinking water among lighthouse keepers</a> (Norway). Cancer Causes Control. 2005 Jun;16(5): 593-8. Kjaerheim K., Ulvestad B., Martinse JI., Andersen A. See also Chrysotile Asbestos - National Library of Medicine HSDDB from <a href="http://toxnet.nlm.nih.gov/cgi-bin/sis/search/">toxnet.nlm.nih.gov/cgi-bin/sis/search/</a> . See also US EPA, IRIS - Asbestos (CASRN 1332-21-4).	Duplicate comment. See Comment # FDL 35.
FDL 89	FDL	5.2.7	Table 5.2.7-6	pg 5.2.7-10	Footnote says that values in Table 5.2.7-7 reflect nickel emissions, but that table is for greenhouse gas emissions. Did you mean Table 5.2.7-6?	Duplicate comment. See Comment # FDL 36.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
FDL 90	FDL	5.2.7	Sources for emission factors and estimation methods	pg 5.2.7-11	Were Council on Environmental Quality guidelines on GHG emissions followed, as well?	Duplicate comment. See Comment # FDL 37.
FDL 91	FDL	5.2.7	Table 5.2.7-8 and Table 5.2.7-9	pg 5.2.7-11	Calculation of Potential Indirect Emissions is not clear. Please give more details as to what this category includes and how emissions were calculated. Why is this category footnoted in Table 5.2.7-9 but not in Table 5.2.7-8?	Duplicate comment. See Comment # FDL 38..
FDL 92	FDL	5.2.7	Table 5.2.7-12	pg 5.2.7-18	The predicted exceedances for the 1-hour SO <sub>2</sub> NAAQS and the 1-hour NO <sub>x</sub> NAAQS need to be resolved as soon as possible and memorialized in a SIP action. Since this is a sensitive, high profile project, the Band asks that these issues be resolved before issuance of NorthMet's air permit.	Duplicate comment. See Comment # FDL 39.
FDL 93	FDL	5.2.7.2.3		pg 5.2.7-32	"CFPE" is not defined. Please address this.	Duplicate comment. See Comment # FDL 40.
FDL 94	FDL	5.2.7.2.3	Table 5.2.7-20	pg 5.2.7-34	Potential Cancer Effects for farmers through multipathway exposure from the Mine Site is at the guideline level of 1 E-05.	Duplicate comment. See Comment # FDL 41.
FDL 95	FDL	5.2.7.2.3	Table 5.2.7-22	pg 5.2.7-36	Potential Non-Cancer Effects through inhalation exposure (acute and chronic) from the Plant Site are at the guideline level of 1. Also, Potential Cancer Effects for both inhalation and multipathway exposure at the mine site and for farmers are at the guideline value of 1 E-05. The Band remains concerned about these values. While the guideline values do not have any regulatory actions associated with them, the Band finds the concurrency of these values troubling. The issue of whether these values should be rounded down came up during the review phase of this project. The Band's view remains that these values should be rounded up to be conservative. There were instances where rounding up would have driven these numbers above the guideline values.	Duplicate comment. See Comment # FDL 42.
FDL 96	FDL	5.2.7	Cumulative Mercury	general	Fdl remains concerned that there has been no "ground-truthing" of the estimated deposition rates for the various forms of mercury that are being emitted. To our knowledge, no studies have been performed on the Range that explain why fish tissue mercury levels are so high if the sources in the area mainly emit "non-locally polluting" forms of mercury.	Duplicate comment. See Comment # FDL 43.
FDL 97	FDL	5.2.7	Cumulative Mercury	general	No analysis of additional mercury contribution to local rivers was performed.	Duplicate comment. See Comment # FDL 44.
FDL 98	FDL	5.2.7.2	Section 5.2.7.2.3	pg 5.2.7-31	I didn't see where "MEI" and "RME-OSW" are defined. Without a definition of "RME-OSW", it is hard to tell if 25 years is a long enough period of time to assess hypothetical risks.	Duplicate comment. See Comment # FDL 46.
FDL 99	FDL	5.2.7.2	Section 5.2.7.2.3	Various	Please include OSHA requirements for on-site workers to see how these assumptions and requirements compare with the analysis performed for the general public.	Duplicate comment. See Comment # FDL 45.
FDL 100	FDL	5.2.7.2		Various	Fibers on the Range are mainly cummingtonite-grunerite (80%), also known as "amphiboles". Amphiboles do appear to have documented health effects in humans (presentation by Philip M. Cook, Ph.D. "Can Amphibole Fibers/Particles Contribute to Mesothelioma and Other Asbestos Related Diseases in Northeast Minnesota?"). The long lag time between exposure to asbestos-like fibers and when health effects could be expected to appear, along with the historically high death rate due to mesothelioma among Iron Range miners makes this a topic that deserves further attention.	See Comment # FDL 32 for related response.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
FDL 101	FDL	5.2.7.2		Various	See attached table "Mortality Rates (ATSDR, NIOSH)" from presentation by Dr. Philip M. Cook (EPA). Table shows that deaths per million due to asbestosis are elevated on the Iron Range.	See Comment # FDL 32 for related response.
FDL 102	FDL	5.2.7.2		Various	Attached presentation by Dr. Philip M Cook (EPA) lists "Loci of Cancers Associates with Asbestos Fiber Exposures" as cancers of the lung, pleura(mesothelioma), peritoneum (mesothelioma), gastrointestinal tract, and kidney. Lag times from low dose exposure are from 30-40 years. In studies published in 1982 (Toxicology Letters, Cook et al), (Toxicology Letters, Coffin et al) rat lungs were shown to retain fiber concentrations for over 800 days and were shown to split longitudinally in the rats' lungs over time. The study suggests that ferroactinolite may be particularly potent in terms of carcinogenicity equivalence. In light of this study, please provide further information as to exactly what types of fibers may be expected at the site and explain why the samples already collected are adequate for this analysis (i.e. how did the expected mineralogy of the site lead to the selection of sampling sites).	See Comment # FDL 32 for related response.
FDL 103	FDL	5.2.7.2		Various	Attached presentation by Dr. Philip M Cook (EPA) titled "Can Amphibole Fibers/Particles Contribute to Mesothelioma and Other Asbestos Related Diseases in Northeast Minnesota?", states a number of conclusions that suggest the need for further analysis by the scientific community. One conclusion states "Toxicology data for amphiboles, including the detailed data for ferroactinolite, support the historical concerns for amphibole fibers and the need to account for the contributions of the short fibers which predominate in most exposure data". Also, "The biological and physical-chemical bases for assertions that cleavage fragments lack potency are very weak. However, if the cleavage fragment distinction is valid, effects associated with taconite may have to be attributed to a few particles out of many respired". These conclusions seem to indicate that we cannot brush off concerns about these fibers, but need to take seriously the possibility that these fibers, perhaps when found in conjunction with certain other particles (quartz is mentioned in previous slides), could cause serious health effects.	See Comment # FDL 32 for related response.
FDL 104	FDL	6.2.3.8			A cumulative AERA analysis is completely missing from the document. Although Section 5.2.7.2.3 contains an analysis of Polymet alone, emissions from other sources need to be considered, as well. This review was done previously, it is unclear how an entire section could be omitted.	Duplicate comment. See Comment # FDL 62 and 104 in Section 6 comments.
5.2.8 Noise and Vibration						

## Chapter 5.2

Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 214	GLIFWC	5.2.8 Noise And Vibration	general comment		There is no cumulative analysis for noise vibration and airblast in the PSDEIS. Activities at existing facilities (Mesabi Nugget, Northshore) should be looked at in conjunction with the proposed NorthMet project. See GLIFWC noise and vibration attachment for more information.	In the absence of measured ambient sound data for receptors in the immediate vicinity of the Mine Site and Plant Site (except BWCAW), literature values from the USEPA Levels guideline document (USEPA 1974) were used to represent baseline levels in the areas (measured data have been provided for the BWCAW). Since the Northshore Mine is an existing facility, the ambient Leq assumed for receptors outside the Mine Site area (Figure 4.2.8-1 and Table 4.2.8-3) account for existing noise from the Northshore Mine located approximately 2 miles north of the Mine Site (see Section 4.2.8-2). The vibration associated with blasting at the Northshore mine is also already accounted for under baseline conditions. Similarly, the baseline noise and vibration conditions of all identified receptors near the Plant Site already capture or account for noise and vibration from the Mesabi Phase I Plant, which is an existing facility. Noise and vibration diminish with distance i.e., the impacts are reduced as the receptor distance to the source increase. The Mesabi Nugget Plant is approximately 1 mile and 8 miles away from the Plant Site and Mine Site respectively. Similarly, the Northshore Mine is approximately 2 miles and 11 miles away from the Mine Site and Plant Site, respectively. Project related noise plus baseline levels (which accounts for noise from other nearby existing sources/facilities) are provided in Table 5.2.8-7.
GLIFWC 212	GLIFWC	5.2.8.1.1 Noise			The methods used in the PSDEIS limit the analysis to selected locations defined as sensitive to noise. While these locations may in fact be sensitive, concentrating on those few places for the analysis inappropriately eliminates an impact assessment of other areas. See GLIFWC noise attachment for more information.	A discussion of noise impacts to all publicly accessible areas in the Superior National Forest has been included. The USFS has provided shapefiles for all recreational sites within the project vicinity (family camp grounds, camp sites, boating, fishing, swimming, and family picnic areas). In addition to the residential areas, BWCAW, and wildlife corridors already discussed in the SDEIS, we have also included recreational sites, trails, and closest State wildlife waters (used by tribal members for harvesting purposes) in all the noise and vibration contour maps. A discussion of noise impacts to all publicly accessible areas in the SNF (i.e., recreational sites) has been included in the text in Section 4.2.8.2. Though not depicted on the noise and vibration figures due to sensitivity regarding cultural resources and locations, a discussion of the nearest archaeological sites (e.g., Spring Lake Sugarbush and Mesabe Widjiu [Laurentian Divide]) within the Project vicinity has been included in the text.
GLIFWC 213	GLIFWC	5.2.8.2 Northmet Project Proposed Action	5.2.8.2		A discussion of applicable standards is appropriate. However, significant impacts from a project can occur without violating standards if the change from baseline condition is large enough. A discussion of this type of impact is needed.	A discussion of impacts based on change from baseline condition is discussed in Section 5.2.8.2.3, Total Noise Effects from NorthMet Project Proposed Action Operations. See sub sections titled "Daytime Operations (7 p.m. to 10 p.m.)" and "Nighttime Operations (10 p.m. to 7 a.m.)." Text regarding noise change from baseline conditions in Section 5.2.8.2.3 have been revised to accommodate the new noise modeling results that accounts for reduced baseline noise levels at BWCAW and audibility limits for the BWCAW.
5.2.9 Cultural Resources						
GLIFWC 211	GLIFWC	5.2.9 Cultural Resources	Throughout		Increased mercury, especially in fish, could negatively impact cultural resources, especially for local Native American tribes who rely on fish as a major source of subsistence food and who view fishing and fish consumption as vitally important cultural and spiritual activities. This is not acknowledge in the PSDEIS. Further, fish harvest is a treaty reserved right of these tribes. The presence of mercury in fish at levels that restrict consumption threaten the ability of the tribes to exercise this treaty right.	The Co-lead Agencies recognize that mercury accumulation in fish is an important issue to the Bands. The effects of mercury in fish are acknowledged in the SDEIS; please refer to the discussions in Sections 4.2.6, 4.2.10, 5.2.6, and 5.2.10. Additional text has been added to section 5.2.9.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 220	GLIFWC	5.2.9.2.2 Treaty Resources	"There is little specific information concerning the use of natural resources by the Bands in the NorthMet Project area. This likely reflects limited subsistence gathering in the NorthMet Project area due to general inaccessibility. This lack of data also		The authors make assumptions that because there is no written record of tribal use that no use takes place. To access potential socioeconomic impacts, all treaty resources [i.e. animals, fish and plants identified in LAC COURTE OREILLES CHIPPEWA IND. v. STATE OF WIS. NO. 74-C-313. 653 F.Supp. 1420 (1987)] need to be assessed on lands being transferred to the Forest Service and Forest Service lands being sold including: 1) presence and absence, 2) distribution, and 3) population density. See GLIFWC socioeconomic attachment for additional information.	The Co-lead Agencies disagree with the assertion that there was a focus only on the written record. Oral interviews, field surveys, consultation, and other sources were used when determining contemporary tribal use of the proposed NorthMet Project area.
GP 185	GP	5.2.9.2.2 Treaty Resources	There is little specific information concerning the use of natural resources by the Bands in the NorthMet Project area. This likely reflects limited subsistence gathering in the NorthMet Project area due to general inaccessibility. This lack of data also	5.2.9-7	The 1854 Treaty states that Band members retain the right to hunt, fish and gather within the ceded territory. Usufructuary rights cannot be abrogated while the treaty is in effect and extend to public and private lands with access to the latter requiring permission of the landowner. There are no constraints on when or how often Band members may use a location. From a cultural perspective, an area where treaty rights are exercised may be used weekly, seasonally, annually or sporadically or remain unused for a generation or more, but as long as even one Band member recalls that setting, the landscape is in use.	The Co-lead Agencies consulted with the Bands concerning contemporary tribal use of the proposed NorthMet Project area. The SDEIS reflects the information provided through this consultation.
GP 186	GP	5.2.9.2.2 Treaty Resources	Currently, there is also likely limited subsistence gathering at these sites due to them being largely inaccessible.	5.2.9-8	The 1854 Treaty states that Band members retain the right to hunt, fish and gather within the ceded territory. Usufructuary rights cannot be abrogated while the treaty is in effect and extend to public and private lands with access to the latter requiring permission of the landowner. There are no constraints on when or how often Band members may use a location. From a cultural perspective, an area where treaty rights are exercised may be used weekly, seasonally, annually or sporadically or remain unused for a generation or more, but as long as even one Band member recalls that setting, the landscape is in use.	The Co-lead Agencies consulted with the Bands concerning contemporary tribal use of the proposed NorthMet Project area. The SDEIS reflects the information provided through this consultation.
GP 187	GP	5.2.9.2.2 Treaty Resources	A good faith effort was made on the part of the Co-lead Agencies to identify use areas in or adjacent to the NorthMet Project area; however, those efforts resulted in little specific information concerning historic subsistence use and no information regar	5.2.9-12	The 1854 Treaty states that Band members retain the right to hunt, fish and gather within the ceded territory. Usufructuary rights cannot be abrogated while the treaty is in effect and extend to public and private lands with access to the latter requiring permission of the landowner. There are no constraints on when or how often Band members may use a location. From a cultural perspective, an area where treaty rights are exercised may be used weekly, seasonally, annually or sporadically or remain unused for a generation or more, but as long as even one Band member recalls that setting, the landscape is in use.	The Co-lead Agencies consulted with the Bands concerning contemporary tribal use of the proposed NorthMet Project area. The SDEIS reflects the information provided through this consultation.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
1854 66	1854	5.2.9.2.2 Treaty Resources	Wildlife	5.2.9-9	This section does not contain information on game species such as moose, deer, grouse, waterfowl, furbearers, etc. These species are important to the Bands for the exercise of treaty rights. Specific concern over moose given the declining population and closure of state hunting season. Analysis on these species is needed. This section also contains language about "1854 Treaty Authority-regulated species". Suggest removing or altering this language. The Fond du Lac Band also exercises treaty rights in the 1854 Ceded Territory. Further, the 1854 Treaty Authority maintains seasons and limits on some species, but these are not the only species of importance.	The Co-lead Agencies have considered effects on game species such as moose, deer, grouse, waterfowl, furbearers, etc. The text references the discussions in Sections 4.2.5 and 5.2.5.  The Co-lead Agencies recognize that the Fond du Lac are not governed by the 1854 Treaty Authority. However, 1854 Treaty Authority-regulated species were used as a reference for effects analysis in the SDEIS because specific information about species of importance to the Bands was not provided.
1854 67	1854	5.2.9.2.2 Treaty Resources	Overall Effects on 1854 Treaty Resources	5.2.9-12	This sections begins saying that the project "could have" effects on 1854 Treaty Resources. This statement should be revised to "will have". The project will result in permanent impacts on and changes to resources. These impacts, along with changes in ownership, will affect the exercise of treaty rights.	Edited per suggestion.
5.2.10 Socioeconomics						
GLIFWC 215	GLIFWC	5.2		Entire Section	**It is essential that throughout the SDEIS authors need to repeatedly state that Indirect and Induced Effect employment numbers are calculated by IMPLAN and may be temporary, part-time, full-time, long-term or short term jobs. It is also critical to acknowledge estimates for full-time employment were provided by NorthMet. See GLIFWC socioeconomics attachment for additional information.	Section 5.2.10.1.3 contains this statement about type of jobs. Added a statement regarding the source of direct employment.
GLIFWC 217	GLIFWC	5.2 Northmet Project Proposed Action	"PolyMet estimates that as many as 338 of the 360 new direct operations-phase positions (94 percent of these positions) could be filled by study area residents (PolyMet 2012k)... For purposes of this analysis, the SDEIS assumes that approximately 75 per		The Draft Environmental Impact Statement (DEIS) prepared in 2009 stated, "Due to the estimated 20-year operating life of the facility, it is estimated that approximately 55% of labor for the operations would be non-local and would be relocated to the east range; 20% would commute daily or weekly from centers such as Duluth; and the remaining labor would be local" DEIS (page 4.10-15). These two statements related to the same project give readers entirely different perspectives on this project. This confusion is caused by including 3 counties in the "study area". Since the most recent IMPLAN modeling done in April 2012 was restricted to a single county (Lake), this section should be re-written to reflect the estimated labor that would be relocated to the east range and the estimated labor that would commute from Duluth as done in the earlier DEIS for the estimated 360 direct operations-phase positions. Again authors need to state that Indirect and Induced Effect employment numbers are calculated by IMPLAN may be temporary, part-time, full-time, long-term or short term jobs. See GLIFWC socioeconomics attachment for additional information.	The DEIS definition of "local" appears to be limited to the East Range, essentially the nearby towns and cities in St. Louis County alone. By comparison, the PSDEIS clearly states that "local" workers--those who would commute daily or weekly--would come from a very wide area, given the willingness of workers in this region to commute relatively long distances. The definitions of "local" are very different; therefore, no change is needed.
1854 68	1854	5.2.10 Socioeconomics	Summary - 2nd paragraph	5.2.10-1	The analysis included only looks at the benefits of the project, and not the environmental "costs" and impacts. The PSDEIS should address this with further analysis or description.	Added subsection under 5.2.10.1.4.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 218	GLIFWC	5.2.10.2.1 Population And Population Trends	"For purposes of this analysis, the SDEIS assumes that approximately 75 percent of direct and indirect operations phase employees would be local residents who would not need to relocate as a result of employment."		IMPLAN Modeling estimated that 112 of the 330 indirect jobs (i.e. temporary, part-time, full-time, long-term or short-term) would be in custom computer programming services (i.e. page 13, April 2012 IMPLAN report). Is it realistic to project 75 percent of the direct and indirect operations phase employees would be local residents given 33.9% of indirect jobs are in custom computer programming services? The basis for these estimates need to be explained and references used to base these estimates cited. See GLIFWC socioeconomics attachment for additional information.	Recall that "local" in this case is the commute-shed for the Project, which covers a wide area and several cities (Duluth, Hibbing, Virginia, etc.). As a high-level estimate, this is not unreasonable. No text edit.
GLIFWC 219	GLIFWC	5.2.10.2.1 Population And Population Trends	Operations		The PSDEIS fails to provide a table entitled Anticipated Steady State Operation Employment Levels as provided in the 2009 Draft Environmental Impact Statement (DEIS) - see pages 4.10-17 and 4.10-18 Table 4.10-13. This table was provided for the 448 direct jobs originally projected and categorized employment by: 1) Management, 2) Mine Operations - Contract supervision, operators, maintenance, 3) Mine Technical - Geology, grade control, planning, 4) Railroad Operations, 5) Plant Operations, 6) Sample Preparation and analytical laboratory, and 7) Finance, purchasing, marketing, environmental, HR. A similar table is needed that would detail PolyMet's projected 360 full time direct jobs in the categories above. Without this data, it is impossible to evaluate the accuracy of the PSDEIS projections on employment and local hiring. See GLIFWC socioeconomics attachment for additional information.	The referenced table was produced by BBER as part of the IMPLAN model exercise. While useful to help explain the assumptions of the IMPLAN model, the table detailing the distribution of jobs by type is not a key finding of the SDEIS itself. Indeed, inclusion of the referenced table in the body of the SDEIS is not appropriate because it would distract the reader from the document's key findings about overall employment and other socioeconomic impacts of the NorthMet Proposed Project. This information is included in the IMPLAN report. Reference to IMPLAN report included.
GP 188	GP	5.2.10.2.6 Environmen tal Justice And Subsistence	addition, the Bands operate four casinos in or near the study area (the Fond-du-Luth Casino in Duluth, operated by the Fond du Lac Band; the Black Bear Casino in Carlton, operated by the Fond du Lac Band; the Fortune Bay Resort Casino in Tower, operated b	5.2.10-16	If there is only expected to be a 1% increase in population it seems unlikely that the project would have any meaningful or measurable effect on Casino revenues. This should be eliminated from the text.	Disagree. It is the increase in population AND disposable income that could potentially affect casino revenues. No text edit.
GP 189	GP	5.2.10.2.6 Environmen tal Justice And Subsistence	As described in the construction phase discussion, there is no evidence of subsistence activity within the federal lands, and the federal lands are not readily accessible.	5.2.10-17	The 1854 Treaty states that Band members retain the right to hunt, fish and gather within the ceded territory. Usufructuary rights cannot be abrogated while the treaty is in effect and extend to public and private lands with access to the latter requiring permission of the landowner. There are no constraints on when or how often Band members may use a location. From a cultural perspective, an area where treaty rights are exercised may be used weekly, seasonally, annually or sporadically or remain unused for a generation or more, but as long as even one Band member recalls that setting, the landscape is in use.	Simplified text in Construction and Operations to state that the Mine Site would be unavailable for subsistence use. Removed text related to access or actual use.
1854 69	1854	5.2.10.2.6 Environmen tal Justice And Subsistence	Construction - last paragraph	5.2.10-16	Please remove or revise final sentence. Construction and operation of the project would result in permanent impacts, loss, and change to resources. This ultimately impacts the exercise of treaty rights.	See response to GP 189

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
1854 70	1854	5.2.10.2.6 Environmental Justice And Subsistence	Operations - 4th paragraph	5.2.10-17	Please remove or revise second sentence. Construction and operation of the project would result in permanent impacts, loss, and change to resources. This ultimately impacts the exercise of treaty rights.	See response to GP 189
<b>5.2.11 Recreation and Visual Resources</b>						
None.						
<b>5.2.12 Wilderness and Other Special Designations</b>						
None.						
<b>5.2.13 Hazardous Materials</b>						
None.						
<b>5.2.14 Geotechnical Stability</b>						
None.						

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**Chapter 5.3**

## Chapter 5.3

Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
5.3.1 Land Use						
1854 71	1854	5.3 Land Exchange	Land Use - 1st paragraph	5.3.1	Depending on the value to value land exchange, it is possible to have a net loss of public land acreage. The proposed exchange loses one large tract of public land for several smaller tracts. The project also results in permanent impacts and changes to the resources regardless of ownership. These issues should be clearly identified in the document.	The following text was added to Chap 3 per discussions with the USFS to address the process of the Land Exchange: The final proposed configuration of land will be determined after the market value of the parcels is determined by appraisals and will be presented in the Record of Decision.
1854 72	1854	5.3.1.2.1 Forest Available For Public Access And Use	Forest Available for Public Use and Access - 1st paragraph	5.3.1-2	Land exchanges are done on a value to value basis, not an acreage to acreage basis. The proposed action could result in a net loss of acreage in the Superior National Forest. The document cannot say that there will be a net increase of 579.5 acres (this is not known yet, depends on valuation of proposed lands in exchange). Please revise text and make these issues clear in the document.	See 1854 71.
1854 73	1854	5.3.1.2.1 Forest Available For Public Access And Use	1st paragraph	5.3.1-3	The PSDEIS puts too much emphasis on the current lack of access to the Forest Service lands. This is seemingly done to minimize the impact of losing it. It does not take into consideration past or future use and access. Access can always change. Suggest revision of text.	Added sentence to clarify that the net result of the Land Exchange would be a net increase in 1854 Ceded Territory land. Lack of access is an important point for the general public, and is considered in this EIS as separate from Treaty rights. We note that the introductory paragraph under 5.3.1 did refer to "tribal use", and this reference has been eliminated.
1854 74	1854	5.3.1.2.1 Forest Available For Public Access And Use	2nd paragraph	5.3.1-3	Land exchanges are done on a value to value basis, not an acreage to acreage basis. The proposed action could result in a net loss of acreage in the Superior National Forest. The document cannot say that there will be a net increase of acres (this is not known yet, depends on valuation of proposed lands in exchange). Please revise text and make these issues clear in the document.	See 1854 71.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
5.3.2 Water						
None.						
5.3.3 Wetlands						
None.						
5.3.4 Vegetation						
1854 75	1854	5.3.4.2.1 Cover Types	Culturally Important Plants	5.3.4-4	Access to public waters and wild rice is currently available, and adjacent land ownership is not direct impact to this access. Wild rice is in public waters, so not an accurate picture to say there is currently no opportunity to harvest wild rice directly on the federal lands. Please revise.	Currently no wild rice is known to exist on the federal lands; whereas, wild rice is known to exist on Tract 1. Edited sentence... "As a result, the public would have better opportunities for wild rice harvesting on Tract 1, where there is currently no opportunity to harvest wild rice directly on the federal lands (no known wild rice populations) despite the public water access onto the federal lands."
5.3.5 Wildlife						
1854 76	1854	5.3.5 Wildlife	3rd paragraph	5.3.5-1	Perhaps misleading to say that the project and proposed land exchange would increase habitat availability. Even with land exchange, the overall result of the project is permanent impacts, loss, and changes to the resources of northeastern Minnesota and 1854 Ceded Territory.	Clarification regarding the increase to the federal estate, not an overall increase, has been added. A reference was added to see Section 5.2.5 for discussion of effects due to the NorthMet Project.
1854 77	1854	5.3.5 Wildlife	4th paragraph	5.3.5-1	Land exchanges are done on a value to value basis, not an acreage to acreage basis. The proposed action could result in a net loss of acreage in the Superior National Forest. The document cannot say that there will be a net increase of 579.5 acres (this is not known yet, depends on valuation of proposed lands in exchange). Please revise text and make these issues clear in the document.	Clarification regarding the increase to the federal estate, not an overall increase, has been added throughout the section.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
1854 78	1854	5.3.5.2.5 Other Wildlife Species	Other Wildlife Species	5.3.5-9	No mention here, in cultural resource section, or in wildlife section effects on game species such as moose, deer, grouse, waterfowl, furbearers, etc. Moose is of particular concern given the declining population and closure of state hunting season. Analysis should be included. Also, habitat for wildlife would not increase as a result of the project as a whole. Even with a land exchange, a permanent impact, loss, and change to the resources of northeastern Minnesota and the 1854 Ceded Territory results. Please clarify this.	Clarification regarding the increase to the federal estate, not an overall increase, has been added throughout the section. Section 5.2.5 has a description of impacts specific to moose and their population decline, and Section 5.3.5.2 discussed Other Wildlife Species in more detail than was provided in previous versions of the SDEIS.
<b>5.3.6 Aquatic Species</b>						
1854 79	1854	5.3.6 Aquatic Species	Aquatic Species - 2nd paragraph	5.3.6-1	The project is not increasing surface waters, fish species, SGCN species, etc. As a whole, the project actually results in permanent impact, loss, and changes to the resources of northeastern Minnesota and 1854 Ceded Territory. Language should be revised to clarify this.	Consideration will be given to this topic and the text will be revised accordingly if appropriate.
1854 80	1854	5.3.6.2.1 Surface Water Features (mih 14)	Surface Water Features - 2nd paragraph	5.3.6-2	Surface waters are public waters not owned or managed by USFS. Public waters are not increasing through the proposed action. Language should be revised and clarified.	Consideration will be given to this topic and the text will be revised accordingly if appropriate.
<b>5.3.7 Air Quality</b>						
None.						
<b>5.3.8 Noise and Vibration</b>						
None.						
<b>5.3.9 Cultural Resources</b>						
None.						
<b>5.3.10 Socioeconomics</b>						

**Chapter 5.3**

Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
1854 81	1854	5.3.10 Socioeconomics	Socioeconomics - 2nd bullet	5.3.10-1	The project as a whole, even with the land exchange, is not a positive effect on subsistence activities. A value to value exchange may not result in a net increase of federal land. Further, the project results in permanent impacts, loss, and changes to the resources in northeastern Minnesota and 1854 Ceded Territory.	Understood that because subsistence activity is inherently tied to place and method, change cannot be "calculated." This bullet, and Section 5.3.10.2--Environmental Justice have been revised to reflect this understanding. Bullet and EJ section revised.
<b>5.3.11 Recreation and Visual Resources</b>						
None.						
<b>5.3.12 Wilderness and Other Special Designations</b>						
None.						
<b>5.3.13 Hazardous Materials</b>						
None.						
<b>5.3.14 Geotechnical Stability</b>						
None.						

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**Chapter 6**

## Chapter 6

Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page,fig,t ab_No.	Comment	Co-Lead Disposition
1854 100	1854	6.3.2 Cumulative Forest Service Land Actions	Cumulative Forest Service Land Actions	6-95	Exchange of school trust lands should be a consideration.	Land Exchanges are considered reasonably foreseeable after a feasibility analysis is approved by the Regional Forester. Until then they are not considered for cumulative effects.
1854 101	1854	6.3.4.4.3 Cumulative Effects Assessment	1st paragraph below Table 6.3-7	6-107	The anticipated loss (6,056.4 acres) of MBS sites of High Biodiversity Significance should be reason to re-evaluate the options for the proposed lands to be exchanged with the USFS.	No known mitigation policy for MBS sites. Under Land Exchange Proposed Action, Tract 1 contains proposed "Outstanding" ranked MBS Site of Biodiversity Significance, while other non-federal lands have "Moderate" and "High" rankings that would help balance the exchange.
1854 102	1854	6.3.4.7 Socioeconomics	Socioeconomics	6-114	There is no mention of 1854 Ceded Territory or resources below in section.	Added language to this section to specifically mention treaty rights throughout this section.
1854 82	1854	6.2.2.1.18 United Taconite	United Taconite	6-12	The proposed expansion of the tailings basin should be a consideration (1200 acres of wetland impact).	The Co-lead agencies determined in October 2012 which projects would be included in the SDEIS. These impacts were not included because they are not located in the Partridge or Embarrass River watersheds. No text edit.
1854 83	1854	6.2.2.1.18 United Taconite	United Taconite	6-12	The proposed expansion of the tailings basin should be a consideration (1200 acres of wetland impact).	The Co-lead agencies determined in October 2012 which projects would be included in the SDEIS. These impacts were not included because they are not located in the Partridge or Embarrass River watersheds. No text edit.
1854 84	1854	6.2.3.2.3 Contributing Past Present And Reasonably Foreseeable Actions	Contributing Past, Present, and Reasonably Foreseeable Actions	6-15	The proposed expansion of the United Taconite tailings basin should be a consideration (1200 acres of wetland impact).	The Co-lead agencies determined in October 2012 which projects would be included in the SDEIS. These impacts were not included because they are not located in the Partridge or Embarrass River watersheds. No text edit.
1854 85	1854	6.2.3.3 Water Resources	Water Resources	p 6-16	Disagree with conclusion that the NorthMet project would not have any cumulative affects on groundwater. As mentioned in Chapter 5: Water Resources and Wetlands, there is anticipated groundwater drawdown from pit dewatering. It would add to the effects on groundwater from other mining/industrial projects (cumulative effect). For example, the Northshore Pit is in close proximity to the proposed NorthMet mine site. Pit dewatering from the NorthMet mine pits will likely have a cumulative effect on groundwater drawdown with the Northshore Pit. This should be investigated and addressed in the PSDEIS.	Based on the current predictions regarding the potential for groundwater drawdown from the mine pits, we did not identify any real potential for cumulative effects to groundwater.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page,fig,t ab_No.	Comment	Co-Lead Disposition
1854 86	1854	6.2.3.3.1 Cumulative Effects Assessment Areas	Spatial	p 6-16	Disagree to limiting the cumulative effects analysis for water resources to the Partridge and Embarrass River watersheds. This is too narrow of a focus and there is not a good enough explanation provided to justify it. The analysis should be expanded to the St. Louis River watershed. Both rivers flow to the St. Louis River. The impacts that may occur due to the project could be underestimated (especially since there have been shortcomings in the modeling that have been pointed out) and they would not stop before reaching the St. Louis River. This means any added impact from the project to the St. Louis River will in turn impact Lake Superior, so this should be the scale to analyze cumulative effects.	The proposed project is predicted to meet all water quality evaluation criteria. We believe the key constituents of concern are sulfate and mercury. The Project would have a net effect of reducing sulfate loads to the St. Louis River, so no adverse cumulative effects to the St. Louis River relating to sulfate are expected. A separate mercury assessment was conducted to assess compliance with the FDL mercury water quality standard in the St. Louis River. No additional cumulative effects to the St. Louis River were identified.
1854 87	1854	6.2.3.3.3 Cumulative Effects On Hydrology	1st paragraph- Northshore Mine	p 6-22	This section also needs to include the groundwater drawdown effects from the Northshore Mine pit dewatering and how the added pit dewatering from the NorthMet pits will potentially increase groundwater drawdown in this area.	The Northshore Mine pits within the Partridge River watershed are essentially flooded, so are not contributing to groundwater drawdown. These pit water levels are maintained at a slightly lower than full flood level to minimize water movement to actively mined areas, but this small drawdown would not result in potential cumulative effects on groundwater levels at the NorthMet Project.
1854 88	1854	6.2.3.3.4 Cumulative Effects On Surface Water Quality	2nd paragraph	6-29	Although any increased loading of sulfate is still a concern, the loading indicated assumes effective and long-term seep collection and water treatment. This is a substantial assumption without much detail in PSDEIS. Disagreement also exists on MPCA recommendation of waters used for production of wild rice (compliance points). The project may not meet standards where wild rice is present. Research and review of the standard is ongoing, and application of the standard is evolving and may change. These issues should be addressed in the document.	The following paragraph has been added to Section 5.2.2 - Summary: The Closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual.  the MPCA is overseeing a variety of studies relating to sulfate and wild rice, with the goal of informing decisions about state water quality standards.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page,fig,t ab_No.	Comment	Co-Lead Disposition
1854 89	1854	6.2.3.3.4 Cumulative Effects On Surface Water Quality	2nd paragraph	6-31	Embarrass Lake is considered a water used for the production of wild rice under current MPCA staff recommendations. Water quality is not meeting the sulfate standard here. Wild rice is also found further upstream in the Embarrass River. Research and evaluation of the standard are ongoing, and application of the standard may change. Disagreement exists on the definitions of waters used for the production of wild rice (compliance points for the sulfate standard).	Text will be added, where applicable, stating that the applicability of the 10 mg/L sulfate standard is under study.
1854 90	1854	6.2.3.3.4 Cumulative Effects On Surface Water Quality	4th paragraph	6-31	Reduction of sulfate over existing conditions assumes effective, long-term (perpetual) seep collection and water treatment. This is a significant assumption without much detail in the PSDEIS.	The following paragraph has been added to Section 5.2.2 - Summary: The Closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual.
1854 91	1854	6.2.3.4.2 Cumulative Effects Assessment Area	Spatial	6-33	The wetlands cumulative effects analysis should include the St. Louis River watershed instead of being limited to just the Partridge and Embarrass River watersheds (see comment 4 as this applies to wetlands as well).	The Co-lead agencies believe that the cumulative wetland impact assessment area as defined in the wetlands work plan is sufficient to meet the requirements of NEPA and is appropriate for the NorthMet project EIS because it includes the watersheds in which the proposed direct and indirect wetland impacts would occur. For the NorthMet project, that would be the Embarrass River watershed and the Partridge River watershed. In addition, the Co-lead agencies included direction in the Final Wetland Resources IAP Summary Memo on how to identify the amount of wetland acreage below the OHWM within this part of the St. Louis River and to evaluate the potential for cumulative indirect wetland impacts in those wetlands from changes in flow in the St. Louis River based on the qualitative water flow evaluation to be conducted. No other direct or indirect NorthMet project impacts would occur in the St. Louis River watershed, and the Co-Lead Agencies do not believe that a cumulative wetland impact assessment needs to be conducted for the entire St. Louis River watershed for the environmental review of the Proposed PolyMet NorthMet project. The Co-lead agencies believe that a qualitative evaluation of cumulative wetland impacts on water quality in the Partridge River watershed and the Embarrass River watershed, including impaired waterbodies, should be included in the cumulative water quality impacts section of the SDEIS.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page,fig,t ab_No.	Comment	Co-Lead Disposition
1854 92	1854	6.2.3.4.3 Cumulative Actions	bullet points	6-34	The projects listed are in the Partridge and Embarrass river (and St. Louis River) watersheds. Suggest to add United Taconite tailings basin expansion as a consideration in the St. Louis River watershed. This would be a large wetland impact (1200 acres) and also near one of the proposed mitigation sites for PolyMet project.	The Co-lead agencies believe that the cumulative wetland impact assessment area as defined in the wetlands work plan is sufficient to meet the requirements of NEPA and is appropriate for the NorthMet project EIS because it includes the watersheds in which the proposed direct and indirect wetland impacts would occur. For the NorthMet project, that would be the Embarrass River watershed and the Partridge River watershed. In addition, the Co-lead agencies included direction in the Final Wetland Resources IAP Summary Memo on how to identify the amount of wetland acreage below the OHWM within this part of the St. Louis River and to evaluate the potential for cumulative indirect wetland impacts in those wetlands from changes in flow in the St. Louis River based on the qualitative water flow evaluation to be conducted. No other direct or indirect NorthMet project impacts would occur in the St. Louis River watershed, and the Co-Lead Agencies do not believe that a cumulative wetland impact assessment needs to be conducted for the entire St. Louis River watershed for the environmental review of the Proposed PolyMet NorthMet project. The Co-lead agencies believe that a qualitative evaluation of cumulative wetland impacts on water quality in the Partridge River watershed and the Embarrass River watershed, including impaired waterbodies, should be included in the cumulative water quality impacts section of the SDEIS.
1854 93	1854	6.2.3.4.4 Cumulative Effects Assessment	Future Wetland and Water Resources	6-37	Wetlands that are indirectly impacted from the NorthMet project (and other projects) should be considered for inclusion in the number of wetland acres lost. Even though they were not directly impacted, they are still impacted (reduced acreage, function, altered vegetation, etc.) and should be accounted for in the cumulative acres of wetlands lost.	An analysis was conducted to determine the cumulative effects of direct impacts from all past, present, and reasonably foreseeable future projects to the wetlands, lakes, and deepwater resources located in the Partridge River and Embarrass River watersheds. The number and extent of wetland, lake, and deepwater resources were estimated for three time periods, including pre-settlement, existing, and the foreseeable future per the IAP Wetland Group and Wetlands Work Plan. The Wetlands Work Plan summarizes the methodology used for the cumulative wetland impact analysis. The numbers presented in the tables for wetland cumulative effects are based on using only the direct wetland impacts for each project. The potential indirect wetland impacts are unknown for the other projects. And the indirect wetland impacts are potential so it would not be accurate to include them as a loss in the future since it is not known what if any losses occur without monitoring.

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1854 94	1854	6.2.3.4.4 Cumulative Effects Assessment	Qualitative Analysis...	p 6-39	There is disagreement that the riparian zone of the Partridge River will not be affected. If there is groundwater drawdown below the Partridge River, this could reduce groundwater flows to the river and impact the riparian zone. Refer to GLIFWC's Analysis of Indirect Wetland Impacts from Groundwater Drawdown. If there is evidence suggesting otherwise, it should be provided and compared to GLIFWC's analysis.	According to the analog approach used in the SDEIS, most of the Partridge River is in the no effects expected zone, with a small segment of the uppermost part of the Partridge River in the zone where groundwater drawdown from pit dewatering may occur, but would likely only occur under certain hydrogeological conditions, and may not be discernible from natural variability. Therefore, we do not expect any cumulative effects related to groundwater drawdown affecting flows in the Partridge River.
1854 95	1854	6.2.3.4.4 Cumulative Effects Assessment	Qualitative Analysis...	6-39	United Taconite tailings basin expansion (1200 acres of wetland impact in St. Louis River) should be a consideration.	The Co-lead agencies believe that the cumulative wetland impact assessment area as defined in the wetlands work plan is sufficient to meet the requirements of NEPA and is appropriate for the NorthMet project EIS because it includes the watersheds in which the proposed direct and indirect wetland impacts would occur. For the NorthMet project, that would be the Embarrass River watershed and the Partridge River watershed. In addition, the Co-lead agencies included direction in the Final Wetland Resources IAP Summary Memo on how to identify the amount of wetland acreage below the OHWM within this part of the St. Louis River and to evaluate the potential for cumulative indirect wetland impacts in those wetlands from changes in flow in the St. Louis River based on the qualitative water flow evaluation to be conducted. No other direct or indirect NorthMet project impacts would occur in the St. Louis River watershed, and the Co-Lead Agencies do not believe that a cumulative wetland impact assessment needs to be conducted for the entire St. Louis River watershed for the environmental review of the Proposed PolyMet NorthMet project. The Co-lead agencies believe that a qualitative evaluation of cumulative wetland impacts on water quality in the Partridge River watershed and the Embarrass River watershed, including impaired waterbodies, should be included in the cumulative water quality impacts section of the SDEIS.
1854 96	1854	6.2.3.6 Wildlife	Wildlife	6-45	No analysis here (or in PSDEIS) on moose or other game species important for the exercise of treaty rights and to the public in general.	No text edit made in chapter 6. Impacts to moose and other species of importance to the Bands is addressed in Section 5.2.5.2.5.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page,fig,t ab_No.	Comment	Co-Lead Disposition
1854 97	1854	6.2.3.7.2 Cumulative Effects Assessment Area	Spatial	6-55	For reasons similar to comment 4, the analysis of cumulative effects for aquatic species should be expanded to the St. Louis River watershed. Aquatic species are not limited to just the Partridge and Embarrass River watersheds and can move freely (especially fish species) to the St. Louis River and aquatic species in the St. Louis River can move to the Embarrass and Partridge rivers. Any contaminant loads will also move freely from the Embarrass and Partridge River watersheds to the St. Louis River.	Co-leads are re-assessing the analysis methods and CEAA.
1854 98	1854	6.2.3.8.5 Cumulative Effects Of Acid Deposition On Ecosystems	2nd paragraph- last sentence	6-65	The last sentence of this paragraph is cut off and looks like the missing fragment had important information.	See text edit. Original sentence: Findings from other states and NDPAP (Washington 1990) lead the USEPA to develop the federal Acid Deposition Control Program. New sentence: replace "lead" with "led"
1854 99	1854	6.2.3.9.4 Cumulative Effects Assessment	1854 Treaty Resources	6-80	The project would result in permanent impacts, changes, and loss of resources within the 1854 Ceded Territory. The 1854 Ceded Territory encompasses the entire area within its boundaries, and not just certain or public ownership. The exercise of treaty rights is currently practiced on public lands or private lands with permission. This section essentially contains no detail. Nothing is included on cumulative impacts to wild rice, plants, wildlife, fish, exercise of treaty rights, access, public land availability, etc. USEPA supported the development of a cumulative impacts protocol which provides a guide of things to consider.	Text is being revised regarding this. Cumulative effects analysis has been completed for the CEAA associated with the proposed project.. Refer to the following sections: Exercise of treaty rights/treaty Resources: 6.2.3.9.4 Wild rice: 6.2.3.3.4 Vegetation: 6.2.3.5.4 Wildlife: 6.2.3.6.4 Public land availability/access: 6.3.4.8.3
FDL 104	FDL	6.2.3.8			A cumulative AERA analysis is completely missing from the document. Although Section 5.2.7.2.3 contains an analysis of Polymet alone, emissions from other sources need to be considered, as well. This review was done previously, it is unclear how an entire section could be omitted.	The cumulative risk assessment for mercury deposition and bioaccumulation was presented in the Section 6.2.3.7.4. However, cumulative risk assessment associated effects the mine site and plant site operation with other sources were mistakenly omitted. The cumulative risk assessment will be included as a new subsection 6.2.3.8.11. It will include the impacts from the following sources: the Mine Site, Plant Site, Mesaba Mining Project and the Minnesota Power Laskin Energy Center. The effects will include carcinogenic risk as well as chronic and acute health effects.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page,fig,t ab_No.	Comment	Co-Lead Disposition
FDL 62	FDL	6.0 Cumulative Effects	Chapter 6		A cumulative AERA analysis is completely missing from the document. Although Section 5.2.7.2.3 contains an analysis of Polymet alone, emissions from other sources need to be considered, as well. This review was done by Barr, it is unclear how an entire section could be omitted.	The cumulative risk assessment for mercury deposition and bioaccumulation was presented in the Section 6.2.3.7.4. However, cumulative risk assessment associated effects the mine site and plant site operation with other sources were mistakenly omitted. The cumulative risk assessment will be included as a new subsection 6.2.3.8.11. It will include the impacts from the following sources: the Mine Site, Plant Site, Mesaba Mining Project and the Minnesota Power Laskin Energy Center. The effects will include carcinogenic risk as well as chronic and acute health effects.
FDL 63	FDL	6.2.2 Past Present And Reasonably Foreseeable Actions Or Projects	Past, Present and Reasonably Foreseeable projects		Should include US Steel Minntac Progression, Extension,Expansion: United Taconite Tailings Basin 3	The co-lead agencies determined in October 2012 which projects would be included in the cumulative effects analysis. These projects were not included because they were outside of any cumulative effects assessment areas or had not progressed to the point where they would be considered reasonably foreseeable (i.e., no permit or other action before any agency). No text edit.
FDL 64	FDL	6.2.2.1.18 United Taconite		p 6-12	United Taconite Tailings Basin 3 should be included	The co-lead agencies determined in October 2012 which projects would be included in the cumulative effects analysis. These projects were not included because they were outside of any cumulative effects assessment areas or had not progressed to the point where they would be considered reasonably foreseeable (i.e., no permit or other action before any agency). No text edit.
FDL 65	FDL	6.2.3.2.4 Cumulative Effects Assessment	cumulative effects by resource	p 6-15	"These activities total approximately 2,650 acres" Why aren't the full footprints of existing mine operations accounted for? Cumulative impacts to resources include past and present actions.	The acreage includes land use impacts from past and present actions within the CEAA. No text edit.
FDL 66	FDL	6.2.3.3 Water Resources	Water Resources		Fdl disagrees with the determination that there is no cumulative effect to ground water. Tribal cooperating agencies will be providing additional information.	Based on the current predictions regarding the potential for groundwater drawdown from the mine pits, we did not identify any real potential for cumulative effects to groundwater.
FDL 67	FDL	6.2.3.3.4 Cumulative Effects On Surface Water Quality	cumulative effects to surface water quality - Partridge River - sulfate	p 6-29	"The NorthMet sulfate load to the Partridge River would total an average of about 41 kg/d, which represents a 0.1 percent increase over existing loads." This would be an increased load of sulfate to waters used for the production of wild rice, that are already exceeding the applicable standard. Not permissible.	The GoldSim results do not indicate an exceedance of the waters supporting the production of wild rice sulfate standard pursuant to the MPCA staff recommendation.
FDL 68	FDL	6.2.3.3.4 Cumulative Effects On Surface Water Quality	cumulative effects to surface water quality - mercury	p 6-30	"The NorthMet Project Proposed Action is predicted to result in a net decrease in mercury loadings to the Partridge River from 24.2 grams per year to 23.0 grams per year." Does not account for loadings from OSLA	We disagree. The potential release of mercury from the decomposition of overburden materials is included in the mercury mass balance (Section 5.2.2.3.4).

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FDL 69	FDL	6.2.3.3.4 Cumulative Effects On Surface Water Quality	cumulative effects to surface water quality - Embarrass River - sulfate	p 6-31	Wild rice is found upstream of PM-13	All information provided was considered when the MPCA made their recommendation. Should the application of the standard change, it will be addressed at that time.
FDL 70	FDL	6.2.3.3.4 Cumulative Effects On Surface Water Quality	cumulative effects to surface water quality - mercury	p 6-31	The Embarrass River is on the draft 2012 Impaired Waters List	Text revised to clarify the current status of 303(d) listings.
FDL 71	FDL	6.2.3.3.4 Cumulative Effects On Surface Water Quality		p 6-32	"If the mercury load associated with this redirection is removed, the NorthMet Project Proposed Action would result in a net decrease in NorthMet Project Proposed Action -related mercury load to the Embarrass River." This statement is irrelevant and misleading.	The main point here is that the mercury load associated with the flow redirection would not result in a net increase in mercury in the St. Louis River basin. This will be clarified in the SDEIS.
FDL 72	FDL	6.2.3.3.4 Cumulative Effects On Surface Water Quality	Water Resources	p 6-32	"Therefore, the NorthMet Project Proposed Action would not contribute to cumulative effects on mercury." Fond du Lac disagrees with this conclusion. Further detailed analysis will be provided; see also GLIFWC comments on mercury impacts of the proposed action.	Refer to other comments addressed relating to mercury: GLIFWC 244, FDL 104, FDL 71
FDL 73	FDL	6.2.3.3.4 Cumulative Effects On Surface Water Quality	Table 6.2-5	p 6-30	Footnotes 2 and 3 are not linked to any values	Footnotes will be deleted from Table 6.2-5.
FDL 74	FDL	6.2.3.5.3 Contributing Past Present And Reasonably Foreseeable Actions	Vegetation	p 6-41	Should include US Steel Minntac Progression, Extension,Expansion: United Taconite Tailings Basin 3	The Co-lead agencies determined in October 2012 which projects would be included in the cumulative effects analysis. These projects were not included because they were outside of any cumulative effects assessment areas or had not progressed to the point where they would be considered reasonably foreseeable (i.e., no permit or other action before any agency). No text edit.
FDL 75	FDL	6.2.3.6 Wildlife	Wildlife		Does not include analysis of impacts to moose, which were specifically identified as culturally significant to tribes	Impacts to moose and other species of importance to the Bands is addressed in Section 5.2.5.2.5. No text edit made.

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FDL 76	FDL	6.2.3.7.4 Cumulative Effects Assessment	Aquatic Species	p 6-56	"The NorthMet Project Proposed Action is not predicted to result in any short- or long-term exceedances of surface water chronic standards in the Partridge River, Colby Lake, or the Embarrass River, even under extreme low-flow conditions during operations, as discussed in Section 5.2.6.2. Given that finding no cumulative effects on aquatic resources are predicted within the CEAA." Fond du Lac disagrees with this statement and conclusion. Further analysis will be provided.	The analysis has not been provided by FDL. It would be considered as appropriate when received. No text edit.
FDL 77	FDL	6.2.3.8.10 Climate Change	Climate Change	p 6-74	Analysis only includes emissions inventory; does not account for loss of carbon sequestration due to wetland destruction and deforestation of thousands of acres.	Agreed. The estimated emissions from the wetland and peat excavation is expected to be wetland destruction and peat excavation is approximately 10,000 mtpy. Thus, the total estimate will be 196,342 mtpy. This will be revised in the text on 6-74 and revised in Table 6.2-20 to a value of 0.1963 mtpy.
FDL 78	FDL	6.2.3.9.4 Cumulative Effects Assessment		p 6-80	"Effects on 1854 Treaty resources are difficult to quantify when the effects are within environmental standards yet above current baseline conditions. As such, cultural effects on the Bands would be difficult to quantify in regards to such incremental increases below standards or effects on species where appropriate mitigation is used." Further detailed analysis will be provided by the tribal cooperating agencies.	No further information has been received from the tribal cooperating agencies. When further information is received, the Co-lead Agencies will take it under consideration. No text edit.
FDL 79	FDL	6.3.4.4.3 Cumulative Effects Assessment	Table 6.3-7	p 6-107	the loss of MBS sites of High Biodiversity Significance is clearly a significant impact of the proposed action/land exchange. There is no discussion of mitigation.	No known mitigation policy for MBS sites. Under Land Exchange Proposed Action, Tract 1 contains proposed "Outstanding" ranked MBS Site of Biodiversity Significance, while other non-federal lands have "Moderate" and "High" rankings that would help balance the exchange. No text edit.
FDL 80	FDL	6.3.4.5.3 Cumulative Effects Assessment	Table 6.3-9	p 6-111	"All three actions (Land Exchange Proposed Action, Land Exchange Alternative B, and Land Exchange No Action Alternative), plus other exchanges and acquisitions, would result in a decrease in established road and established snow pack trails available for lynx use." Tribal cooperating agencies have not yet been consulted on impacts to federally endangered species.	The USFWS has attended Sieve List meetings, and the permitting/consultation process is ongoing. No change to SDEIS text.

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GLIFWC 224	GLIFWC	6.2.1 Cumulative Effects Analysis Approach	second paragraph		The post-closure period is not correctly described. Closure in other sections of the document occurs from year 20 to year 40. Post closure is an open ended period after year 40. Because water treatment and facility maintenance needs at this project are perpetual, post-closure should be clearly defined here as year 40 to perpetuity.	For all resources, future temporal boundaries are the expected service life of the mining activities, including closure (years 20 to 40) and post-closure restoration (year 40 and beyond.)
GLIFWC 225	GLIFWC	6.2.2.1.18 United Taconite			United Taconite facility is undergoing additional permit review due to their plans to fill over 1000 acres of wetland to expand the tailings basin. This would also contribute high sulfate water to the St. Louis river. The Corps and MPCA are currently involved in this work. Therefore, all appropriate information on this facility should be included in the cumulative effect analysis.	The Co-lead agencies believe that the cumulative wetland impact assessment area as defined in the wetlands work plan is sufficient to meet the requirements of NEPA and is appropriate for the NorthMet project EIS because it includes the watersheds in which the proposed direct and indirect wetland impacts would occur. For the NorthMet project, that would be the Embarrass River watershed and the Partridge River watershed. In addition, the Co-lead agencies included direction in the Final Wetland Resources IAP Summary Memo on how to identify the amount of wetland acreage below the OHWM within this part of the St. Louis River and to evaluate the potential for cumulative indirect wetland impacts in those wetlands from changes in flow in the St. Louis River based on the qualitative water flow evaluation to be conducted. No other direct or indirect NorthMet project impacts would occur in the St. Louis River watershed, and the Co-Lead Agencies do not believe that a cumulative wetland impact assessment needs to be conducted for the entire St. Louis River watershed for the environmental review of the Proposed PolyMet NorthMet project. The Co-lead agencies believe that a qualitative evaluation of cumulative wetland impacts on water quality in the Partridge River watershed and the Embarrass River watershed, including impaired waterbodies, should be included in the cumulative water quality impacts section of the SDEIS.
GLIFWC 226	GLIFWC	6.2.2.1.21 Speculative Actions			Provide a map of the speculative projects and indicate in the text the potentially affected watershed for each project.	The speculative projects are provided for disclosure purposes only, and the locations of several of these projects are not known. No text edit.
GLIFWC 227	GLIFWC	6.2.3.3 Water Resources			Impacts to dewatered wetlands should be mentioned in this section.	Section 6.2.3.3.3 discusses cumulative effects on hydrology. Section 6.2.3.4 discussed cumulative effects on wetlands.

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GLIFWC 228	GLIFWC	6.2.3.3.1 Cumulative Effects Assessment Areas	Spatial section		The section should state that water quality standards are met only with perpetual water treatment and maintenance.	The following paragraph has been added to Section 5.2.2 - Summary: The Closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual.
GLIFWC 229	GLIFWC	6.2.3.3.1 Cumulative Effects Assessment Areas	Temporal Section		The limited water quantity and quality data has been an issue for 7 years since the beginning of the project. The lead agencies and the applicant have been resistant to fill these data gaps. See GLIFWC hydrology attachment for further detail.	The 20 year old flow data is acceptable as there haven't been any significant changes within the watershed. Additional water quality sampling has been conducted and the results included in this PSDEIS (Section 4.2.2). No text edit.
GLIFWC 230	GLIFWC	6.2.3.3.2 Cumulative Actions			Add United Taconite to the list.	Disagree. The analysis in Section 6.2.3.3 includes existing and potential future actions that have the potential, in combination with the NorthMet Project Proposed Action, to cumulatively affect surface water hydrology and quality within the Partridge River and Embarrass River watersheds. The United Taconite mine is outside the analysis area as the six permitted mine pit dewatering discharges all discharge to the St. Louis River Basin. No text edit.
GLIFWC 231	GLIFWC	6.2.3.3.3 Cumulative Effects On Hydrology	Embarrass River - first paragraph		Should not assume that the passive treatment will prove effective. Change language to "...if passive treatment proves effective..."	No text change needed. The NorthMet Project Proposed Action would rely upon mechanical treatment to achieve water resource objectives as long as needed; however, the goal would be to transition to non-mechanical treatment to ensure attainment of water resources objectives, including compliance with applicable groundwater and surface water standards, during the closure phase.
GLIFWC 232	GLIFWC	6.2.3.3.4 Cumulative Effects On Surface Water Quality	Partridge River section		The section states that all water quality evaluation criteria would be met. The section should clearly state that that assumption is based on the successful operation of water capture and water treatment systems in perpetuity. In addition, evaluation criteria are not the same as water quality standards. Water quality standards would be exceeded for several constituents. The same comment applies to the assumptions in the sulfate and mercury sections.	The SDEIS is comparing water quality predictions against water quality evaluation criteria. We acknowledge that the evaluation criteria could differ from water quality standards.
GLIFWC 233	GLIFWC	6.2.3.3.4 Cumulative Effects On Surface Water Quality	Embarrass River		The river is on the draft 2012 303d list for sulfate. Correct the text.	Text revised to clarify the current status of 303(d) listings.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page,fig,t ab_No.	Comment	Co-Lead Disposition
GLIFWC 234	GLIFWC	6.2.3.3.4 Cumulative Effects On Surface Water Quality			Reduction in sulfate loads depend on perpetual capture and treatment of water. Include this caveat.	The following paragraph has been added to Section 5.2.2 - Summary: The Closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual.
GLIFWC 235	GLIFWC	6.2.3.4.4 Cumulative Effects Assessment	Partridge River watershed section		The section states that lake acreage has increased by 19% compared to pre settlement times. Are these lakes natural, impoundments/flowages, or flooded mine pits? Should specify in the text. If these new waters are mine pits, we disagree with their characterization as "resources" because of their contaminated nature. In addition, many of the impacted wetlands are part of the 100 mile swamp system A detailed discussion of the ecological significance of this wetland complex is needed as well as the overall effect of fragmenting the complex.	Pre-settlement conditions were identified using NWI and GLO survey maps, while existing conditions were determined using delineations, NWI maps, NHD shapefiles, and MDNR Mining features (2009 shapefile). The 19% increase in lakes between pre-settlement and existing conditions stems from the increase in size of White Water Reservoir (increase of 314 acres) and areas classified as lake in the NHD shapefile. When calculating pre-settlement, existing, and future lakes, no deepwater habitats/mine pits were included; these would fall under the deepwater category.  The potential effects to the wetlands within the 100 mile swamp are discussed in Chapter 5.
GLIFWC 236	GLIFWC	6.2.3.3.4 Cumulative Effects On Surface Water Quality	Embarrass river watershed section		Same comments an above for the Partridge River section. In addition, this section should provide a description of the wetlands impacted by seepage from the LTV tailings basin.	Section 6.2.3.3.3 discusses cumulative effects on hydrology. Section 6.2.3.4 discussed cumulative effects on wetlands.
GLIFWC 237	GLIFWC	6.2.3.4.3 Cumulative Actions			The XP-SWMM model uses antiquated data collected from far downstream of the site. The model is fatally flawed and yields unreliable results. The conclusion that no effects would occur on riparian wetlands is not supportable. See GLIFWC hydrology attachment for more detail.	We believe the XP-SWMM modeling is acceptable for use in the SDEIS. The 20 year old data is acceptable as there haven't been any significant changes within the watershed. We believe the assumptions used were reasonably conservative. Additional detail is provided in the water sections of the SDEIS, and further rationale is provided in the Water Data Packages.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page,fig,t ab_No.	Comment	Co-Lead Disposition
GLIFWC 238	GLIFWC	6.2.3.6.4 Cumulative Effects Assessment	Wildlife travel corridors		The corridor southeast of the plant site is characterized as poor. Therefore the discussion in the section is misleading because this is not in fact a viable wildlife corridor. It should then be removed from the corridor list and removed from the map. In addition, cumulative effects from noise and vibration are not analyzed and would have a significant impact on wildlife corridors (See GLIFWC noise attachment for more detail) Finally, the conclusions should be revisited in light of fewer corridors along the range than originally identified.	The Emmons and Oliver report characterizes this corridor as small but important. The Barr Report on wildlife corridors states that the current LTVSMC Tailings Basin is located within the moderate quality habitat corridor. Neither of these studies classifies the corridor as poor quality, though Section 6.2.3.6.4 describes the Tailings Basin, which is within (but not occupying the entire width of the corridor, as being of poor quality for wildlife travel. The text will be edited for additional clarity.
GLIFWC 239	GLIFWC	6.2.3.7.4 Cumulative Effects Assessment	Cumulative water quality effects		The conclusion of no cumulative effect depends on perpetual water capture and treatment as well as perpetual maintenance of the facilities that would remain after the end of mining. We believe that this is not a realistic assumption and that it short-circuits the evaluation of cumulative effects. In addition, evaluation criteria are not the same as water quality standards. Water quality standards would be exceeded for several constituents.	The Closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. Co-leads agree that evaluation criteria are not the same as water quality standards (for some constituents).  The SDEIS is comparing water quality predictions against water quality evaluation criteria. We acknowledge that the evaluation criteria could differ from water quality standards.
GLIFWC 240	GLIFWC	6.2.3.7.4 Cumulative Effects Assessment	Physical habitat effects		As previously stated, the conclusion of no changes to flows in the Partridge River is based on fatally flawed XP-SWMM modeling. This conclusion is not supported.	We believe the XP-SWMM modeling is acceptable for use in the SDEIS. The 20 year old data is acceptable as there haven't been any significant changes within the watershed. We believe the assumptions used were reasonably conservative. Additional detail is provided in the water sections of the SDEIS, and further rationale is provided in the Water Data Packages.
GLIFWC 241	GLIFWC	6.2.3.8.10 Climate Change	Climate change		A discussion of the effects of wetland destruction is needed in this section. The discussion should include the release of carbon to the atmosphere from wetland and peat excavation as well as the loss of carbon sequestration capacity of the existing high quality wetlands.	Agreed. The direct GHG estimated emissions will be revised in the text and in Table 6.2-20 as discussed in Comment # FDL 77.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page,fig,t ab_No.	Comment	Co-Lead Disposition
GLIFWC 242	GLIFWC	6.2.3.8.11 Noise And Vibration	Noise and Vibration		This section does not provide a cumulative assessment of noise impacts. For example the section should identify areas of national forest and forest service roads that would be subjected to noise plus airblast effects. Another example, what acreage of publicly accessible lands would be within the noise and vibration / airblast zone. Reliance on a few receptors is not a proper way to conduct an analysis of noise impacts. See GLIFWC noise attachment for more detail.	The only reasonably foreseeable actions that could interact in such a way as to have a cumulative effect on the receptors identified in Sections 4.2.8 and 5.2.8 is the Mesabi Nugget Phase II Mine Project located approximately 2 miles west of the Plant Site and 10 miles west of the Mine Site. Other reasonable foreseeable projects in the region are 25 to 55 miles away from the NorthMet Project and as such, would have no cumulative effect on nearest receptors (see Figure 6.2.2-1 and Table 6.2-1). Noise from existing industries (logging, mining, etc.) have been accounted for in the baseline noise levels discussed in Section 4.2.8 and 5.2.8. Section 6.2.3.8.11 has been revised to assess the cumulative impact of the Mesabi Phase II Mine Project. The maximum impact area for noise (11,456 acres), ground vibration (11,469 acres), and airblast (11,334 acres) are discussed in Section 5.2.8.
GLIFWC 243	GLIFWC	6.2.3.11.4 Cumulative Effects Assessment	Visual Resources		A calculation of the viewshed for the water vapor plumes and night visibility of tower lights should be developed and included. Are these features visible from public access points?	This comment belongs in Section 5.2.11, not here, since it is a primary impact of the operations themselves, and not cumulative with other resources. Please see response in Recreation/Visual spreadsheet.  Response in this section to be developed based on language to be added to Section 5.2.11.
GLIFWC 244	GLIFWC	6.2.3.3.4 Cumulative Effects On Surface Water Quality	Second paragraph		There is a general lack of understanding of mercury dynamics in the St. Louis River Watershed. See the supplemental document "Great Lakes Indian Fish and Wildlife Commission (GLIFWC) Comments Related to Mercury" [Comment 1] for details.	The Co-leads agree that the mercury dynamics are complex; however, the analysis as presented indicated that there was minimal potential for a downstream increase in mercury loading
GP 190	GP	6.2.3.3.4	The NorthMet Project Proposed Action is predicted to meet all surface water quality evaluation criteria at all evaluation locations for the entire 200-year modeling period, other than for constituents that already exceed the criteria (e.g., aluminum, iron, manganese). The project would degrade water quality by raising ambient concentrations for several parameters, but these concentrations would remain well below surface water evaluation criteria.	6-28	It appears that a 401 certification or 402 certification could not be granted for this project because it will violate water quality standards, and antidegradation rules would be violated.	Non-degradation analysis would be completed during permitting. No text edit.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page,fig,t ab_No.	Comment	Co-Lead Disposition
GP 191	GP	6.2.2.1.18	This is a taconite mine that began operations in 1965 and has an annual capacity of approximately 5.2 million gross tons of taconite pellets. It is located about 27 miles west of the NorthMet Project area. The United Taconite mine has six permitted mine pit dewatering discharges, all of which discharge to the St. Louis River Basin. No changes in mine operations or discharges are anticipated in the foreseeable future.	6.2.2.1.18 United Taconite 6-12	A new tailings basin is planned based on a US ACE 404 permit issued in the 1980's. This tailings basin will directly affect 1,200 acres of wetlands and should be included in the cumulative effects analysis for wetlands lost and water quality and quantity cumulative effects for the St. Louis River watershed, the historic district, and the 1854 ceded territory.	The Co-lead agencies believe that the cumulative wetland impact assessment area as defined in the wetlands work plan is sufficient to meet the requirements of NEPA and is appropriate for the NorthMet project EIS because it includes the watersheds in which the proposed direct and indirect wetland impacts would occur. For the NorthMet project, that would be the Embarrass River watershed and the Partridge River watershed. In addition, the Co-lead agencies included direction in the Final Wetland Resources IAP Summary Memo on how to identify the amount of wetland acreage below the OHWM within this part of the St. Louis River and to evaluate the potential for cumulative indirect wetland impacts in those wetlands from changes in flow in the St. Louis River based on the qualitative water flow evaluation to be conducted. No other direct or indirect NorthMet project impacts would occur in the St. Louis River watershed, and the Co-Lead Agencies do not believe that a cumulative wetland impact assessment needs to be conducted for the entire St. Louis River watershed for the environmental review of the Proposed PolyMet NorthMet project. The Co-lead agencies believe that a qualitative evaluation of cumulative wetland impacts on water quality in the Partridge River watershed and the Embarrass River watershed, including impaired waterbodies, should be included in the cumulative water quality impacts section of the SDEIS. No text edit.
GP 192	GP	6.2.3.2.3	The actions included in this analysis are discussed in Section 6.2.2. Activities specifically associated with potential cumulative effects on land use include permitted mines and other projects in the portions of the Mesabi Iron Range in St. Louis County where future activities are likely to be different from current activities. These projects include: <ul style="list-style-type: none"> <li>• Arcelor Mittal Mines (Laurentian and East Reserve Mines);</li> <li>• Mesaba Energy Project – East Range Site;</li> <li>• Mesabi Mining Project;</li> <li>• U.S. Steel Keetac Mine Expansion Project (in Keewatin); and</li> <li>• U.S. Steel Minntac Mine, Expansion Project.</li> </ul>	6.2.3.2.3 Contributi ng Past, Present, and Reasonab ly Foreseea ble Actions 6-15	U-Tac should be added to this list for the new tailings basin.	The Co-lead agencies determined in October 2012 which projects would be included in the SDEIS. These impacts were not included because they are not located in the Partridge or Embarrass River watersheds. No text edit.

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Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page,fig,t ab_No.	Comment	Co-Lead Disposition
GP 193	GP	6.2.3.3	The Final SDD identified several resources with the potential to be cumulatively affected, including water resources, which would be subjected to a cumulative effects analysis using guidance from the CEQ (CEQ 1997). The Final SDD identified hydrology and water quality as elements with the potential for cumulative effects. The analysis within this SDEIS also identified the potential for cumulative effects on surface water hydrology and water quality. Neither the Final SDD nor this SDEIS identified potential cumulative effects on groundwater. The NorthMet Project Proposed Action would supplant the existing seepage from the existing LTVSMC Tailings Basin and extend the duration of these effects, but these effects are localized and already incorporated in the groundwater quality models. Although the NorthMet Project Proposed Action would affect groundwater levels, this effect would be very limited geographically and temporally (e.g., groundwater levels would be restored once pit dewatering ceases) and not subject to any off-site cumulative effects. The effects of mine pit dewatering are considered in terms of effects on surface water flows. Therefore, the scope of this cumulative effects assessment focuses on the effects of past, present, and reasonably foreseeable future activities on surface water hydrology and quality.	6-16	Major difference of opinion. There is already documented bedrock and surficial groundwater pollution from the Dunka pit , Peter Mitchell pit, area pit 5, the LTV tailings basin, are pit 1, area pit 6, area pit 9S. This is only the documented sources of groundwater pollution from the old LTV site and does not include documented groundwater pollution from Laskin Energy (MN Power), Acelor-Mittal, or US Steel Minntac. Peter Mitchell Pit permit to mine requests backfill of Virginia Formation waste rock for in-pit disposal and therefore should be added as a cumulative effect on both surficial and bedrock groundwater quality. Peter Mitchell is less than one mile from the proposed PolyMet pit.	To the extent any of these potential sources of pollution would affect the same groundwater as the NorthMet Project, these sources are included in baseline groundwater quality. If they do not affect the same groundwater resources, then they are not resulting in cumulative impacts. Neither the Final SDD nor this SDEIS identified potential cumulative effects on groundwater.
GP 194	GP	6.2.3.3.1	...the NorthMet Project Proposed Action is not considered to have the potential for cumulative effects on hydrology and water quality in the St. Louis River. As a result, the CEAA for surface water is defined by the Partridge River and Embarras River watersheds as shown on Figure 6.2.3-1.	6.2.3.3.1 Cumulative Effects Assessment Areas 6-16	Major difference of opinion. The Project will add to the load of pollutants that are already causing an excursion from water quality standards in the St. Louis River and will reduce tributary flow to the river.	The proposed project is predicted to meet all water quality evaluation criteria. We believe the key constituents of concern are sulfate and mercury. The Project would have a net effect of reducing sulfate loads to the St. Louis River, so no adverse cumulative effects to the St. Louis River relating to sulfate are expected. A separate mercury assessment was conducted to assess compliance with the FDL mercury water quality standard in the St. Louis River. No additional cumulative effects to the St. Louis River were identified.
GP 195	GP	6.2.3.3.2	...These large pit dewatering discharges, however, are typically related to either snow melt or large storm events when flows in the Partridge River are high, reducing the significance of these discharges.	6-25	Erosion identified in the headwaters of the Partridge River results from the Peter Mitchell pit discharges. Therefore, large pit dewatering discharges do change the magnitude of impacts from discharging to equal the effect of a one-hundred-year storm event occurring annually (instead of every 100 years). Major Difference of opinion.	The SDEIS will acknowledge that large discharges from pit dewatering would obviously affect stream flow and can contribute to stream erosion.

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GP 196	GP	6.2.3.4.2	The Partridge River and Embarrass River watersheds were used as the spatial boundary for wetland cumulative effects.	6.2.3.4.2 Spatial 6-33	Major difference of opinion. Likely cumulative effects for St. Louis River watershed, especially with U-Tac proposal for 1,200 acres of wetland destruction to build a new tailings basin.	The Co-lead agencies believe that the cumulative wetland impact assessment area as defined in the wetlands work plan is sufficient to meet the requirements of NEPA and is appropriate for the NorthMet project EIS because it includes the watersheds in which the proposed direct and indirect wetland impacts would occur. For the NorthMet project, that would be the Embarrass River watershed and the Partridge River watershed. In addition, the Co-lead agencies included direction in the Final Wetland Resources IAP Summary Memo on how to identify the amount of wetland acreage below the OHWM within this part of the St. Louis River and to evaluate the potential for cumulative indirect wetland impacts in those wetlands from changes in flow in the St. Louis River based on the qualitative water flow evaluation to be conducted. No other direct or indirect NorthMet project impacts would occur in the St. Louis River watershed, and the Co-Lead Agencies do not believe that a cumulative wetland impact assessment needs to be conducted for the entire St. Louis River watershed for the environmental review of the Proposed PolyMet NorthMet project. The Co-lead agencies believe that a qualitative evaluation of cumulative wetland impacts on water quality in the Partridge River watershed and the Embarrass River watershed, including impaired waterbodies, should be included in the cumulative water quality impacts section of the SDEIS. No text edit.
GP 197	GP	801		General	General comment: Cumulative Effects Analysis as a whole is woefully inadequate. US ACE promised to evaluate cumulative effects on the entire 1854 ceded territory as part of the evaluation for the NorthMet Project and has not provided any analysis other than a very cursory look at wetlands.	The cumulative effects study area was determined based on measurable resource effects based on objective evaluation criteria. There were no criteria that could be applied to the entire Ceded Territory. No text edit.

**NorthMet Mining Project and Land Exchange PSDEIS (ver. 2)**

**Tribal Comments and Co-lead Agencies' Dispositions**

**8/19/13**

**Chapter 7**

## Chapter 7

Comment_No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page.fig.tab_No.	Comment	Co-Lead Disposition
GLIFWC 245	GLIFWC	7.2.4 Comparison Of Effects			As previously commented, the PSDEIS does not provide an adequate comparison of effects for water quality and water quantity. The assumption that the no action alternative is equivalent to a continuation of existing conditions leads to errors in water quality modeling. In addition, a lack of usable water quantity and flow data lead to conclusions that cannot be supported.	Refer to the water section and response to comments with respect to the suitability of the water quantity and flow data, and a discussion on the purpose and intent of the water modeling scenarios. Further clarity on these modeling scenarios is provided in Chapter 5.2.2
GLIFWC 246	GLIFWC	7.2.4 Comparison Of Effects	water resources section		99.9% capture is not realistic and is not supported by text in other sections of the SDEIS.	Greater than 90% of water would be captured and treated to meet effluent limits set to meet water quality standards
GLIFWC 247	GLIFWC	7.2.4 Comparison Of Effects	water resources section		GLIFWC staff disagree with second and third bullets of combined proposed action. Standard is exceeded for sulfate and there is not enough information in the document to reach a conclusion on mercury.	The GoldSim results do not indicate an exceedance of the waters supporting the production of wild rice sulfate standard pursuant to the MPCA staff recommendation. Mercury is addressed in the air and water sections (Section 5.2.2 and 5.2.7) as well as in aquatic resources (5.2.6)
GLIFWC 248	GLIFWC	7.2.4 Comparison Of Effects	aquatic species section		The claim of a decrease in mercury loading is not supportable. See GLIFWC mercury attachment	The aquatic species summary points in the SDEIS table have been revised and does no longer include the mercury loading conclusion commented on.
GLIFWC 249	GLIFWC	7.2.4 Comparison Of Effects	air quality and climate change		Combined proposed action would create a pulse of carbon through the exposure of peat. There would also be a loss of carbon sequestration potential due to the destruction of wetlands.	Acknowledge partial loss of carbon sink and release of stored carbon from wetlands destruction. The text has been updated to address carbon release in the wetland summary section of the table
GLIFWC 250	GLIFWC	7.2.4 Comparison Of Effects	noise		Use of receptors to limit analysis is not appropriate. In addition no cumulative assessment is available. See GLIFWC noise attachment for more information.	A discussion of noise impacts to all publicly accessible areas in the Superior National Forest has been included in the noise section of Chapter 5 (Section 5.2.8).
GLIFWC 251	GLIFWC	7.2.4 Comparison Of Effects	socioeconomics		biased information. There is no discussion of expected adverse effects. See GLIFWC socioeconomics attachment.	See discussion in Section 5.2.10.14.
1854 103	1854	7.2.4 Comparison Of Effects	table 7.2.1 - land use, second bullet	7-3	Land exchanges are done value to value, not acre to acre. Further, the 1854 Ceded Territory encompasses all of the area within its boundaries. The 1854 Ceded Territory is not being reduced (it is being impacted), but public land ownership within 1854 Ceded Territory is changing. Please clarify.	Agree with comment. Will correct the bullet point: <ul style="list-style-type: none"> <li>• Access to the federal land within the NorthMet Project would reduce at the NorthMet Project area, but would be replaced with approximately equal acreage through land exchange</li> </ul> and for combined Alternative B: <ul style="list-style-type: none"> <li>• Mostly similar effects as Combined Proposed Action with fewer federal acres exchanged</li> </ul>
1854 104	1854	7.2.4 Comparison Of Effects	table 7.2.1 - water resources, first bullet	7-3	This assumes effective and long-term (perpetual) seep collection and water treatment. It is a substantial and important assumption in the PSDEIS without much supporting detail. These assumptions should be included.	Text edited to reflect that the closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual. The owning company would be held accountable to maintenance and monitoring required under permit and would not be released until all conditions have been met.

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1854 105	1854	7.2.4 Comparison Of Effects	table 7.2.1 - water resources, third bullet	7-3	Disagreement exists over MPCA staff recommendation on waters used for the production of wild rice (compliance points for sulfate standard). Wild rice is found upstream of these recommendations. Application of standard is evolving as research and evaluation of the standard are ongoing. These issues should be mentioned.	All information provided was considered when the MPCA made their recommendation. Should the application of the standard change, it will be addressed at that time.
1854 106	1854	7.2.4 Comparison Of Effects	table 7.2.1 - wetlands, second bullet	7-4	Other analysis (GLIFWC) indicates greater wetland impacts.	<p>Per the Final Wetlands IAP Summary Memo, the Co-lead Agency position was that the assessment of potential indirect wetland impacts at the mine site should be conducted based upon an interpretation of the general analog guidelines regarding groundwater drawdown analog information provided by the Water Resources IAP Workgroup in accordance with the guidance provided in the attachment to this summary memo. The Co-lead Agencies believe that even with additional groundwater data collection and additional groundwater modeling, there would still be a high level of uncertainty regarding groundwater model outputs. Therefore, the Co-lead Agencies believe that the analog guideline method of estimating glacial aquifer groundwater drawdown near the proposed mine is reasonable and appropriate for this site and do not recommend that additional field data collection and groundwater modeling be conducted for the purpose of estimating glacial aquifer groundwater drawdown.</p> <p>Some Wetland IAP Workgroup members disagree with the Co-lead Agency position. They believe that additional field data collection and additional groundwater modeling are necessary to provide groundwater drawdown cone of depression information near the open pit mine. That position was an earlier recommendation of the Wetland IAP Workgroup and was supported by Workgroup members from the Fond du Lac Band, Grand Portage Band, Great Lakes Indian Fish and Wildlife Service, U.S. Fish and Wildlife Service, 1854 Treaty Authority, Minnesota Pollution Control Agency and the U.S. Environmental Protection Agency. However; it was not supported by Workgroup members from the Co-lead Agencies, Environmental Resources Management, or Barr Engineering. In addition, some Workgroup members believe that the Co-lead Agency position is contrary to standard analysis that mining companies have to conduct as part of sulfide mine EIS processes across the country. In addition, the Grand Portage Band believes that the geology of the analog sites appear to be non-analogous with the geology of the proposed mine site.</p> <p>The Co-lead Agencies have concluded that the use of lateral effect equations for ditches is not suitable for use in determining glacial aquifer drawdown near open pit mines, and that method should not be used to estimate groundwater drawdown near the NorthMet project open pits. There was no disagreement among any of the Workgroup members.</p>
1854 107	1854	7.2.4 Comparison Of Effects	table 7.2.1 - cultural resources, last bullet	7-7	The project does affect 1854 Treaty resources and the exercise of treaty rights.	No change to SDEIS text.

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Comment No.	Agency	Section	Specific guidance to where the comment relates (paragraph, column, etc)	Page, figure, tab No.	Comment	Co-Lead Disposition
GLIFWC 252	GLIFWC	7.3.1 Irreversible Or Irretrievable Commitment Of Resources	fourth paragraph		GLIFWC disagrees with the statement indicating no exceedance of water quality standards. The document indicates that standards would be exceeded.	As described in the SDEIS, the evaluation criteria do use the standards, but interpret the standards from a probabilistic perspective. The P90 approach for assessing compliance is a reasonable method for applying the results of probabilistic modeling to regulatory decision making. In this context, it is not appropriate to say that "a constituent will exceed a water quality standard". It is more accurate to say that "there is at least a 90 percent probability that a constituent will not exceed a standard (or up to a 10 percent probability that it will)". These quoted statements are very different.
GLIFWC 253	GLIFWC	7.3.1 Irreversible Or Irretrievable Commitment Of Resources			Section should state that the NorthMet project would require maintenance and water treatment in perpetuity which constitutes and irreversible and irretrievable commitment of resources.	The Closure objective is to provide mechanical and non-mechanical treatment for as long as necessary to meet regulatory standards at evaluation locations in groundwater and surface water. Both mechanical and non-mechanical treatment will require periodic maintenance and monitoring activities. Modeling predicts that treatment activities will be a minimum 200 years at the Mine Site and a minimum of 500 years at the Plant Site. While long-term, these time frames for water treatment are not necessarily perpetual.
GLIFWC 254	GLIFWC	7.3.2 Short-term Uses Versus Long-term Productivity Of The Environment			section does not appear to have been updated from information presented in the 2009 DEIS. It still talks about category 3 and 4 permanent stockpiles. Correct the text.	The section has been updated and does not talk about permanent category 3 and 4 stockpiles. Extra detail has been added to the section to help make it clear that the Category 2/3 and 4 Stockpiles will be removed and backfilled into the East Pit/
GLIFWC 255	GLIFWC	7.3.2 Short-term Uses Versus Long-term Productivity Of The Environment			wetland impacts would not be short term. Restoration of wetlands is not likely to replace the high quality wetlands found at the site. In addition water quality impacts are long term because treatment would be needed in perpetuity.	The sentence commented on has been clarified. The Co-leads consider that the potential wetland impacts as described in the section would be short-term because impacts would be mitigated and monitored. Additional information on impacts, mitigation and monitoring of wetlands is provided in chapter 5.2.3.
GLIFWC 256	GLIFWC	7.3.3 Unavoidable Adverse Effects			GLIFWC staff disagree with the claim that new exceedances of relevant standards would not occur. Water quality standards will be exceeded. Perpetual water treatment and perpetual maintenance needs are residual practical effects of the proposed project.	As described in the SDEIS, the evaluation criteria do use the standards, but interpret the standards from a probabilistic perspective. The P90 approach for assessing compliance is a reasonable method for applying the results of probabilistic modeling to regulatory decision making. In this context, it is not appropriate to say that "a constituent will exceed a water quality standard". It is more accurate to say that "there is at least a 90 percent probability that a constituent will not exceed a standard (or up to a 10 percent probability that it will)". These quoted statements are very different.

## Chapter 7

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GP 198	GP	7.2.4	...Compared to the combined Proposed Action and combined Alternative B, the No Action Alternative would likely result in active but different comprehensive management of water from the existing LTVSMC Tailings Basin. There would be no other measurable effect on other resources compared to their existing conditions.	7.2.4 Comparison of Effects 7-2	The consent decree with Cliffs Erie requires mitigation for water quality exceedances from Area Pit 5, the LTVSMC tailings basin, and the Dunka Pit. Therefore, the no action alternative should cause compliance with all water quality standards and there would be no additional reductions of flow. Major difference of opinion.	The No Action alternative considers the project area and the NorthMet Project would not affect the compliance requirements for Area Pit 5 or Dunka Pit. Therefore there is no difference between the NorthMet Project Proposed Action and the NorthMet Project No Action Alternative in this regard. The remedial actions that would be required at the LTVSMC Tailings Basin under the consent decree and other permits are not established so it is not possible to model those conditions.
GP 199	GP	801		General	General comment: The No Action Alternative has not been reasonably characterized to enable the sharp comparison of alternatives as required by NEPA.	The No Action Alternative is described in Chapter 3 and the environmental consequences are evaluated in the respective section of chapter 5. Text has been updated in these sections to provide improved clarification with the respect to the no action scenario. A comparison of the combined Proposed Action and the No Action Alternative is provided in Table 7.2.1.