

EXHIBIT A

**RGU Consideration of Comments on the Final Environmental Impact Statement
NorthMet Mining Project and Land Exchange**

Exhibit to the Record of Decision on Final Environmental Impact Statement Adequacy

**Minnesota Department of Natural Resources
March 2016**

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Kathleen Whitson	PLEASE do NOT approve the mining. It will profit the owners who do not even live here but can do much damage to our waters and land and air. We are the state noted for our lakes, why would anyone take any chances of harming it. Wisconsin was smart enough to vote NO, why would MN. even consider this. IT IS NOT WORTH IT TO OUR MINNESOTA OR OUR FAMILIES. GOD BLESS YOU AND OUR PEOPLE.	GEN	NS	X	1	
Mark	The environment will eventually be polluted by the NorthMet Mining Project and Land Exchange Project. The project may meet the State of Minnesota's legal requirements, but these requirements are not sufficient to maintain the integrity of the environment. If the project goes forward the developers, investors and other groups benefiting from the project should back environmental cleanup with the entirety of their corporate and personal assets. Failure to do this should stop the project. If at any time the assets of the company and their personal wealth are not sufficient to complete cleanup and restore the area to it's original condition should place the failing parties in prison for life or until the cleanup is complete. Our environment is not for sale.	FIN	NS	X	1	
Bob Woodbury	Have there been other projects of this nature and if so, have they been successful? To what degree? Is that acceptable? If not, the project should be denied. If it has a degree of acceptability, how would that apply to this project?	PER	NS	X	1	
Bob Woodbury	I could go on in this vein, but my point is that we need to rely on what we know. "With the technology we have today..." is not acceptable because the outcome is unknown. No best guesses, no projections based on known facts. Their outcomes are unknown.	PER	NS	X	1	
Bob Woodbury	We need to make a decision on what we know, not what we think we know.	NEPA	NS	X	1	
Bob Woodbury	This is not just a Northern Minnesota concern. It is not just a Minnesota concern. It is not just a mid-west concern. I am in Maine and I am concerned, very concerned, about the outcome. I'm sure you have received concerns from the west coast as well. That makes it a national concern. And this project is not far from the Canadian border and I'm sure many Canadians are concerned, making this an international problem.	NEPA	NS	X	1	
Bob Woodbury	What happens if the project is denied. There will be other, less vulnerable sites, that will be explored and developed. Can we afford even the slightest chance for the destruction of a vital wilderness area, whose existence is at least as valuable in its own right as the proposed project - and to many, many more people. Because of its location, common sense says this project should never have been pursued in the first place. The area is revered by thousands, if not millions, of people from all over the world – an overwhelming majority over the few who want to develop this project and who will benefit from it.	ALT	NS	X	1	
Bob Woodbury	Our lands are vast. This isn't the only place in our country where these metals can be found. There is absolutely no sense of urgency to mine this particular ground.	ALT	NS	X	1	

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John-Marilyn Rossi	It is my understanding that returning the area affected by the mining operations to its full, natural state once mining is concluded is also an option...Full Reclamation. I also understand that doing so would presumably eliminate the need for ongoing water treatment because any remaining waste rock at the site would be placed back underground and covered with overburden and reforested to re-establish habitat. Was full reclamation ever considered...and if not why?	ALT	S	O	8	SDEIS Themes ALT 03, ALT 06, ALT 13
John-Marilyn Rossi	Why is the state of Minnesota not requiring full reclamation? The cost of full reclamation would assuredly be higher, and that might make the project less profitable. Yet if the project isn't economically viable without full reclamation, it should not be up to Northern Minnesota's Environment to pay the price for this and other projects.	ALT	S	O	8	SDEIS Themes ALT 03, ALT 06, ALT 13
Michelle Hensley	But I am informed enough to know that this is a terrible idea.	O	NS	X	1	
Nancy Karjalahti	We need you to protect the waters for future generations. This is a bad thing, look at their track record. What little jobs this will provide will never make up for the amount of money it will take to clean up (if you can) the waters that will be polluted.	WAT	NS	X	1	
Nancy Karjalahti	The health problems that come down from this mining will never get fixed.	HU	NS	X	1	
rayoungsmn@aol.com	This company can just declare bankruptcy and walk away from any clean up at any time. Then we tax payers are stuck with the clean up bill.	MERC	NS	X	1	
rayoungsmn@aol.com	Please see the long-term consequences of polluted fresh water supplies and vote against this and any other proposals that threaten our natural resources.	WAT	NS	X	1	
Jana Guseynova	After reading the changes to the most recent Environmental Impact Statement concerning Polymet's proposed copper-nickel mine in and around the Superior National Forest, I'd like to express my complete opposition to the mine.	NEPA	NS	X	1	
Jana Guseynova	I still feel the risks posed by the proposed mine are too great to the state of Minnesota, and know that this type of mining cannot be done safely.	ALT	NS	X	1	
Jana Guseynova	Part of my coursework concerns water sustainability, and the construction of this mine would jeopardize some of the most important water systems in North America, mainly Lake Superior	WAT	NS	X	1	
Jana Guseynova	I stand with the Duluth Downstream Coalition of businesses in their opposition to any hard metal mining on the North Shore of Minnesota, as well as the countless Outdoor Recreation businesses in around the Boundary Waters that oppose development like this around their homes.	LU	NS	X	1	
Jana Guseynova	Despite the precautions outlined in the FEIS, I'm concerned that the system Polymet has proposed to treat sulfate-latent wastewater is inadequate. Similar wastewater treatment systems were used by every open pit copper-nickel mine ever operated in North America, and each one has polluted.	WAT	NS	X	1	
Jana Guseynova	Each of those mines passed a similar environmental impact statement process, then left unacceptable amounts of pollution to clean up, paid for mostly by taxpayers.	FIN	NS	X	1	
Jana Guseynova	This mine that promises to provide 350 jobs for twenty years has no place jeopardizing the thriving tourism-based economy that sustains 18,000 jobs annually.	SO	NS	X	1	
RONALD & JEANETTE	The waters of northern Minnesota must be kept pristine for future generations. Lake Superior, with 10% of the world's fresh water, must be preserved at all cost.	WAT	NS	X	1	
RONALD & JEANETTE	Jobs are important to Northern Minnesota...they should enhance the beauty of the area	SO	NS	X	1	
Mark Roalson	1. While the FEIS claims PolyMet will treat contaminated water for as long as it takes to keep that water from polluting the environment (during operation and after plant closing), there is no Minnesota mining precedent or model of this "after treatment". As a matter of fact, a recent article in the newspaper Timber Jay brings out the fact that mining companies are incapable of doing this. During the existence of the old LTV mine, copper ore was dug up along with taconite in the Dunka Pit, (now owned and monitored by Cleveland Cliffs and their contractors). Sulfate and heavy metal runoff was supposed to	PD	NS	X	1	

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	be mitigated by the operation of water treatment systems					
Mark Roalson	That particular set of equipment is NOT running at the present time, although it is supposed to be in operation. There have been several documented aquatic life kills in the Dunka watershed and Birch Lake into which it drains. Contractors "monitor" this drainage but there is no enforcement of the water standards. This tells me that the DNR, EPA, MPCA and any other governmental agency chartered to prevent water pollution is incapable of doing this. Enforcement is non-existent. Cleveland Cliffs is only charged with "monitoring", not treatment. What assurance does the public have that this will not happen again with PolyMet? None.	PER	NS	X	1	
Mark Roalson	By court order the mine has sunk two cleanup wells and brings up dirty water and runs it through two reverse osmosis plants to purify dirty water into potable water. 80% of all water can be recovered as usable. 20% of all water is left as an unusable, unmarketable brine of sulfate and heavy metals that has to be stockpiled at the mine site. The PolyMet FEIS does not address this common issue of pollution plumes from sulfide ore mines contaminating the surrounding water tables and aquifers. There is nowhere in the PolyMet FEIS covering this issue.	PD	S	O	8	AWMP v9, Sec 4.2.2.3.9
christie white dauphin	Polymet makes all the required promises. We should believe them, that they will keep their promises? What sort of God is this that we believe in? The God of Science. "To be human, is to err." How long will this corporations be solvent?	FIN	NS	X	1	
christie white dauphin	When copper/nickle/platinum are extracted from sulfide rock formations it must, of necessity, be exposed to air, dampness, water in some form. Sulfuric acid results.	WAT	NS	X	1	
christie white dauphin	The land is forever. Do we really want it polluted forever (termed indefinitely, by Polymet).	WAT	NS	X	1	
christie white dauphin	Is your idea of jobs, jobs, jobs, that this project, if approved will provide the next generations with work cleaning up the inevitable pollution?	SO	NS	X	1	
christie white dauphin	I am 100% against this mining venture, and the land swap.	GEN	NS	X	1	
Spencer Shaver	After reading the changes to the most recent Environmental Impact Statement concerning Polymet's proposed copper-nickel mine in and around the Superior National Forest, I'd like to express my complete opposition to the mine.	NEPA	NS	X	1	
Spencer Shaver	I still feel the risks posed by the proposed mine are too great to the state of Minnesota, and know that this type of mining cannot be done safely.	GEN	NS	X	1	
Spencer Shaver	Part of my coursework concerns water sustainability, and the construction of this mine would jeopardize some of the most important water systems in North America, mainly Lake Superior.	WAT	NS	X	1	
Spencer Shaver	I stand with the Duluth Downstream Coalition of businesses in their opposition to any hard metal mining on the North Shore of Minnesota, as well as the countless Outdoor Recreation businesses in around the Boundary Waters that oppose development like this around their homes.	LU	NS	X	1	
Spencer Shaver	Despite the precautions outlined in the FEIS, I'm concerned that the system Polymet has proposed to treat sulfate-latent wastewater is inadequate. Similar wastewater treatment systems were used by every open pit copper-nickel mine ever operated in North America, and each one has polluted.	WAT	NS	X	1	

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Spencer Shaver	Each of those mines passed a similar environmental impact statement process, then left unacceptable amounts of pollution to clean up, paid for mostly by taxpayers.	FIN	NS	X	1	
Spencer Shaver	This mine that promises to provide 350 jobs for twenty years has no place jeopardizing the thriving tourism-based economy that sustains 18,000 jobs annually.	SO	NS	X	1	
Heidi Aubrey	There is plenty of copper in the world as is.	PD	NS	X	1	
Heidi Aubrey	The long term effects of any strip mining operation are not limited to just the blatant destruction of the natural ecology, they are also well know for contaminating the ground water.	WAT	NS	X	1	
Heidi Aubrey	I would like you to analyze the cancer rates of populations around strip mining pits vs. the national averages.	HU	NS	X	1	
Heidi Aubrey	I am against it. It is irresponsible and smacks of greed, corruption, and personal profiteering from PUBLICLY HELD land.	GEN	NS	X	1	
Larry Ekegren	What in the world are you doing wasting our tax dollars, mailing out sets of 4 CDs to some one who has no decision-making power and little interest in the environmental review process. I will return them to you to use again or recycle. Please remove me from your Mailing list, which I have no idea how I got on in the first place.	GEN	NS	X	1	
Larry Ekegren	Incidentally, I am quite opposed to the proposed PolyMet mine.	GEN	NS	X	1	
Diana Tapelt	I object to PolyMets plan to for land exchange and expansion project near Hoyt Lakes and Babbitt in northeast Minnesota because predictions about where PolyMet's polluted water would spread are not backed up by independent science. Only private contractors who stand to benefit if PolyMet is permitted have run the water models used to predict where pollution would flow.	WAT	NS	X	1	
Diana Tapelt	PolyMet proposes storing billions of gallons of toxic mine waste behind a forty year old leaky dam.	GT	NS	X	1	
Diana Tapelt	There are not detailed plans for securing a damage deposit sufficient to protect taxpayers from being stuck with a massive cleanup bill. PolyMet would require treatment of polluted water "indefinitely" after closure. "Indefinitely" is a delicate way of saying "forever."	FIN	NS	X	1	
Diana Tapelt	PolyMets plan is not worth the risks to Minnesota's clean water.	WAT	NS	X	1	
Kathy Klietz	I am writing to state my opposition to this mining project as it presents too much danger to the sustainability of our environment.	GEN	NS	X	1	
Kathy Klietz	I request you look more closely at the water flow charts put together by the Ojibwe tribes.	WAT	NS	X	1	
Jack Parker	I've been here before, about ten years ago, when confidence man Cherry teamed up with Foth's Donohue and the "mining man" in Michigan's DEQ to present Kennecott's Eagle Mine as a sure thing, with absolute confidence, ignoring both the facts and the laws of the land. And it worked. It really was a done deal. The "mining man" at DEQ wielded the rubber stamp, lying as necessary, unchallenged. The evidence is available and Kennecott does not bother to respond.	GEN	NS	X	1	
Jack Parker	And that "done deal" approach meant that the protesters were few and faint-hearted - whereas they should have sent those ringleaders to jail, where they belong. Today your defender of the land has made it quite clear where he stands, and it's not on conservation.	GEN	NS	X	1	
Jack Parker	Let's start at the beginning: show us the orebody. Show us the dd holes and the thickness and grade. If you cannot do that Tom you might as well be peddling another Penokee Pit. And don't forget the power plant, you're going to need it.	GEN	NS	X	1	
Jack Parker	Do you expect the public to make a reasonable decision without even seeing what you are selling? How about an artist's concept of the finished product?	PD	NS	X	1	

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Jack Parker	Go back to your computers and drawing boards and show us what you have to offer. And you Tom, defender of the land, show us how you are going to ensure a satisfactory future for the environment, locally and downstream. I know you cannot do that.	PER	NS	X	1	
Linda Simmons	I do not understand why the state of Minnesota would even consider doing something that would affect our waters FOREVER for 360 jobs for only 20 years.	WAT	NS	X	1	
Linda Simmons	This seems like the wrong way to take care of our planet and create jobs. Please don't let this happen here. I am 66 years old and have been going to the boundary waters for 30 years. My husband and I enjoy the beauty of our 10,000 lakes and want our grandchildren to have the same opportunity.	PER	NS	X	1	
GMS Industrial	Just the description and scope of this proposal is too far fetched to receive approval. Please tally me as against this proposal.	GEN	NS	X	1	
Barbara Richards	This land surrounds the Boundary Waters southern border. It abuts Lake Superior. I could wish that you aren't really thinking this is a good idea. Please listen to those who have a good understanding of watersheds; who realize the issues with surface flows, storage- like the ones that just collapsed creating a huge mud slide destroying lives, livelihoods and communities; and who know the dangers to underground water- aquifers.	GEN	NS	X	1	
Barbara Richards	I am hoping you will let the native peoples speak. I	NEPA	NS	X	1	
Barbara Richards	I am hoping that you will gather more facts than a few outsourced jobs and inflated single bottom lines for extractive industries. I hope you will consider whether a quick (in universe/evolutionary clock time) profit is worth the loss forever: think eternity.	SO	NS	X	1	
Barbara Richards	I hope you will consider what kind of society we are creating with each act; what kind of legacy we hand on to the seventh generation.	CUM	NS	X	1	
Todd Gremmels	How much pollution remains from mining companies owned by Global Tech after every single open pit mine has its minerals extracted? Is there any mine in existence that Global Tech has been a part of that has been cleaned up and not left a lasting impact on the ground water and creatures of the ecosystem of the area surrounding the open pit mines?	GEN	NS	X	1	
Schmidt Michael	I am against the nickel sulfide mining project in any form whatsoever. It has not been proven to any degree that this typing of mining is long-term safe to the watershed and environment of MN or anywhere in the world.	GEN	NS	X	1	
Schmidt Michael	The long-term costs (potential and actual) to the State of MN are far greater than any projected economic gain.	SO	NS	X	1	
T.C. Smith	I am deeply concerned about this project; 1- potential negative environmental impacts	GEN	NS	X	1	
T.C. Smith	mining is a commodity market business-mines only pay a production tax & no proerty tax-so when times are good some tax is paid & when times are bad no tax is paid-infact the companies often fold up their tents & bug out	SO	NS	X	1	
T.C. Smith	we are being told 1000 "new jobs" how many of these jobs are only for 18 month construction period?	SO	NS	X	1	
T.C. Smith	i have spent time in SE Alaska (Skagway) & know that often times if commodity prices are spiking over a several year period the mines increase production -everyone is fat & happy-which leads me to forecast that if such a condition occurs toward the beginning of the mines life the estimated 20 year life expectancy could easily be cut in half or more-thats just good business acumen for the stockholders but what about the miners who mbenefitsay well have families & homes ,thinking they have a20 year job with benefits?	SO	NS	X	1	
Norman Lee	Any risk to the natural resources of northern Minnesota is unacceptable.	GEN	NS	X	1	
Norman Lee	The true value of the natural resources of northern Minnesota can best be appraised by the people who have grown up in the area. Those who have grown up in northern Minnesota, gone hunting and fishing in undeveloped areas of the north woods, experienced the changing seasons of the north woods, and seen the variety of animals and plant life understand the	GEN	NS	X	1	

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	true value.					
Norman Lee	At what level of development do we tell the mining companies that enough is enough. Especially when there is a risk to the entire eco system. Minnesota has made it's sacrifice to the nation during World War II by allowing the destruction of many acres for iron ore mining and the greed has not subsided since that time with the mining of taconite. When is enough enough?	GEN	NS	X	1	
Norman Lee	Please reject additional mining in northern Minnesota on the basis that any risk to the natural resources of our north land treasure is unacceptable.	GEN	NS	X	1	
Norman Lee	I keep hearing about jobs as a critical issue. All the jobs will be temporary except for the pollution clean-up jobs that will go on forever. If jobs are needed in that area, move 1% of the States 40,000 employees to northern Minnesota. That will more than cover the new temporary jobs claimed by the mining interests.	SO	NS	X	1	
Terry D Welander	1. With 1600 volcanoes, 12 tectonic plates covering earth with over 50,000 miles of natural emissions plus volcanic emissions, account for well over 99% of all emissions on Earth, toxic emissions particularly. 2. At much less than 1% of the total emissions on Earth, humanities contribution to pollution is less than minuscule; much less than 1% of Earth's total toxic emissions. 3. The Polymet project and all human resource projects, being much less than 1% of the 1%; is not and has never been, and will never be a pollution source compared to nature. These above 3 facts have been ignored for at least 10 years, more likely longer, and have allowed NE MN to be turned into an abhorrent Appalachia; lacking investment in highly valuable resources. There is no nickel mine in North America currently.	GEN	NS	X	1	
Terry D Welander	Meaning any conflict could leave North American civilization in dire straits without a supply of Nickel; threatening civilization; an unacceptable situation. The Polymet mine and other new mines in NE MN will remedy this potentially dire situation; and are very late for not having placed the above 3 facts front and center in getting these investments in humanity moving forward. NASA has pictures of the Sun's solar wind connecting to Earth's magnetic field; transmitting this solar energy to the core of Earth. Meaning, Earth's core can only get hotter; eventually melting Earth's crust; destroying nearly all if not all Earth life. Making nearly all human resource projects an absolute necessity for gaining the resources for humanity to leave Earth; to survive. We all hope these intolerable delays have not cost humanity its existence on other worlds.	GEN	NS	X	1	
Gerald Brown	I am a lifelong resident of northeastern Minnesota, a frequent visitor to the BWWCA, child of resorters on Seagull Lake, and a true lover of our wilderness. But I fully support the NorthMet project. The balance of environmental protection and economic necessity weigh in favor of this project. The objective experts have studied it to death and concluded mining activity can safely co-exist with a healthy environment. Now it is time for final approval of this project and the benefits it offers for all Minnesotans.	GEN	NS	X	1	
Allen Killian-moore	My name is Allen Killian-Moore, and I am a resident of Duluth, Minnesota. I am writing to voice my comments on the proposed Polymet mine in Minnesota. After plowing through an arduous reading of the NorthMet Mining Project and Land Exchange Final Environmental Impact Statement, and after reviewing a dozen or so articles written about similar projects in other places, including the a burst dam at a British Columbia tailing basin, which gave way and sent 1.3 billion gallons of tainted, sludgy water into local streams and lakes, I must say that I continue to be opposed to the Polymet plan to implement a copper-sulfide mining operation in Minnesota.	GEN	NS	X	1	
Allen Killian-moore	Our wildlands are far too precious to take such risks. Our wildlands already provide far too many jobs for those working the the outdoors industry, forest industries, land water management industries, tourist industries, children's and adult camps, farming, etc.	SO	NS	X	1	
Allen Killian-moore	I don't think the benefits of jobs potentially provided by the mine outweigh the risks to the jobs and livelihoods that already exist in this region of our state.	SO	NS	X	1	

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Allen Killian-moore	Similar to what I had read in the previously issued Supplemental Draft EIS, the Final EIS statement doesn't make it clear how on earth the potential post-mine water treatment would be handled. I as understand it, two wastewater treatment plants to treat polluted water from the mine site and the tailings basin would operate when the mine is running and would continue operating after the mine closes. But, treatment will be needed at the mine site for a minimum of 200 years and at the plant site for a minimum of 500 years and this seems like an awfully long time, post-mine, in order to guarantee accountability and safety. We're talking somewhere between 2 to 5 centuries in which the water would need to be consistently and effectively managed in order to ensure safety for people and the ecosphere.	PER	NS	X	1	
Allen Killian-moore	I don't see any consistent mechanisms laid out in the plan to ensure that safety and regulation, and water cleaning will continue unhindered for such a long, long period of time, and therefore I still do not thing, all things considered, that this mine should be allowed or permitted to operate in Minnesota.	PER	NS	X	1	
Heyward Nash	DON'T ALLOW THIS MINING PROJECT TO HAPPEN. IT'LL POLLUTE LARGE SWATHS OF NORTHEASTERN MINNESOTA, INCLUDING PRISTINE WATERS THAT FLOW INTO THE BWCA AND LAKE SUPERIOR. STOP IT NOW.	GEN	NS	X	1	
Heyward Nash	THIS PROJECT SHOULD BE DROPPED IMMEDIATELY AND NOT CARRIED OUT ANY FURTHER. YOU'RE PLAYING RUSSIAN ROULETTE WITH THE HEALTH, SAFETY AND BEAUTY OF NORTHEASTERN MINNESOTA AND LARGE PORTIONS OF LAKE SUPERIOR. YOU'LL NEVER BE ABLE TO CLEAN UP THE TOXIC MESS THIS PROJECT WILL CREATE--NO MATTER HOW MANY YEARS AND LARGE SUMS OF MONEY YOU POUR INTO THE CLEANUP. YOU'D BE MAKING A TERRIBLE MISTAKE TO CONTINUE WITH THIS DISASTROUS ENTERPRISE. END IT NOW!!	GEN	NS	X	1	
KatieWilli@aol.com	I am opposed to the PolyMet Mine proposal.	GEN	NS	X	1	
KatieWilli@aol.com	I am very concerned that this sulfide mine would affect drinking water and fish and lead to the negative impact of methylmercury on the developing brains of babies and young children.	HU	NS	X	1	
KatieWilli@aol.com	As one who treasures the BWCA and visits there every year, I am concerned that this mine would negatively impact water quality there and pollute our national treasure.	WAT	NS	X	1	
KatieWilli@aol.com	I am concerned that streams and wetlands in western Ontario and Manitoba could also be affected by sulfide mines in northern Minnesota.	WET	NS	X	1	
KatieWilli@aol.com	I am also a property owner on the end of the Gunflint Trail and I am concerned that development of sulfide mining will negatively impact my property value.	SO	NS	X	1	
Lonna Richmond	I am against any new open pit mining operations.	GEN	NS	X	1	
Jack Parker	Lori Andresen has suggested that my letters would "carry more weight" if I included my credentials. I respect her opinion so instead of referring you to my online resume I will attach it.	GEN	NS	X	1	
healing line	This is the last place one would want to place a huge filthy mining operation, at a headwaters that drains in all directions through the North American continent, into both USA and Canada.	WAT	NS	X	1	
Jack Parker	we are being misled into thinking that only the huge open pit mine is feasible. I doubt that, and I doubt that they have seriously considered underground mining of portions showing higher grade, same as the neighbors have - same as Messrs Cherry and Donahue set up at the Eagle mine.	ALT	NS	X	1	
Jack Parker	Please require maps and sections showing grade and thickness at the diamond drill holes, to allow intelligence to select what is ore and what is not ore - and go on from there. They imply that they have done so but show no evidence, so suggesting duplicity. In essence the study is incomplete.	PD	S	N	3	FEIS Sec. 3.2.3.4.1
David	The risks (in a worse case scenario) to our water shed resources, including the north shore and Lake Superior are incalculable. No amount of profit could justify the risk.	WAT	NS	X	1	

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Jerry Werle	you see what happened in Brazil just days ago with the iron mine which has the same idea, holding pools for the sludge which BROKE and devastated several communities in Brazil. This would be sad to see in the affected communities in Minnesota. the same idea is with sulfide mines. These pools can either leak acid which would devastate the water supply or simply break like they did in Brazil.	WAT	NS	X	1	
rb hughes	Please look cautiously at the remaining unknown variables post comprehensive studies. The ways in which we still can not accurately predict the level of environmental damage by contamination to our beautiful (traveling) waters is enough to halt this project.	WAT	NS	X	1	
linda kennedy	I am personally against the irreversible blight on this precious landscape that will be created if this project goes forward. Everyone should be against it.	GEN	NS	X	1	
Bryan Emmel	I agree with those who say that this type of extraction should be limited to dry-land areas.	ALT	NS	X	1	
Bryan Emmel	The water filled NE Minnesota is a sitting duck for contamination.	WAT	NS	X	1	
rozronrock androll@mchsi.com	Anyone who believes this will not lead to a environmental nightmare has their head in the sand or worse! Show me one copper/nickel mine that has not severely damaged the surrounding environment and that report would be false! May the Good Lord have mercy on your soul and all the people who will be subject to it.	GEN	NS	X	1	
rozronrock androll@mchsi.com	We are fooling ourselves to believe big money, the people who control it, and legislature's that support it and the things they go after is necessary for our very existence. FOOLISH!	GEN	NS	X	1	
Jack Parker	My most significant objection to the project is that you are dealing - perhaps unwittingly - perhaps not - with unconvicted felons who practised very similar deceptions, with prearranged collusion from the courts, to obtain illegal permits to mine at the Kennecott Eagle property in Upper Michigan. The two principals involved in the fraud, as at PolyMet, were Mr Cherry, then Project Manager, and Mr Donahue of Foth Engineering who, to quote him, "Knows how to get permits". We still have the evidence. It is significant that Kennecott never denied wrongdoing. In court they would stroke their mustaches thoughtfully and change the subject. We allowed them to do that. Everything was under control. A "Done Deal". The EPA had earlier delegated power to MDEQ to handle all mining regulation in Michigan, without having mining expertise, but they ignored real expert advice and handed out the permits. One item stands out very clearly: Our experts easily recognized lack of expertise and manipulation of data fed into mine design, which led to mine design with safety factors lower than one, indicating that the structure, as planned, is likely to collapse. They simply denied it, without evidence. The judge took a nap. That matter is now in the hands of MSHA (responsible for underground mine safety and health) but they too appear to have been enlisted and compromised, despite Director Joe Main's vow to eliminate all "Sudden and Unexpected Mine Collapses". I remind them every month or two but they have implemented Joe Main's vow by "Talking to Lundin, the current owner/operator, who says that there is no problem." As did the fox in the henhouse. According to Michigan Mining Law, Part 632, pp 14-16 they - and all persons having knowledge of the deceptions - are felons and are subject to stiff penalties - more so now that lives are knowingly endangered. Please acknowledge receipt of this letter, which will go public, then arrange a little chat with the two principals, and go public with your findings. It would seem to make sense to do that at an early stage in the permitting proceedings.	GEN	NS	X	1	
Tegwin	Please do not mine, just too crappy on all levels. No Mine!!	GEN	NS	X	1	
Erica Johanson	I disagree with the use of public, taxpayer-paid land (ie, public forests being used for corporate gain, especially as it will ruin the land for our enjoyment.	GEN	NS	X	1	
Gene R Cooper	I am totally against this project.	GEN	NS	X	1	
Gene R	What happens when the mine is closed in years to come and the land and water are polluted?	FIN	NS	X	1	

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Cooper						
Gene R Cooper	It would take hundred of years to correct this pollution. In the meantime the land and water with the citizens of Minnesota would suffer. This project should not be allowed to proceed.	GEN	NS	X	1	
Mary Ofjord	I oppose PolyMet mining. Yes, it would help an economically depressed area, but it is only a temporary solution and not for long-term gain.	GEN	NS	X	1	
Mary Ofjord	Once it's gone, it's gone. We only have a certain amount of resources on the planet, and I am concerned about the environmental chaos that might be left behind.	GEN	NS	X	1	
Christine	I am opposed to the Polymet mine because water is life.	GEN	NS	X	1	
Christine	We have enough resources, we can infinitely recycling our current copper, iron, and nickel. My father has been a scrapper my whole life;	ALT	NS	X	1	
Christine	I understand there is employment opportunities within this company however the devastation caused to our beautiful Superior is not in the least bit worth it.	SO	NS	X	1	
Mimi McMillen	As a native Minnesotan, I most strongly feel there should be NO mining nor land exchange where proposed.	GEN	NS	X	1	
Mimi McMillen	I have canoed the Boundary Waters as have millions of others and want nothing to disturb this magnificent area. Once disturbed, it will never be the same. We have destroyed millions of acres in America for energy purposes. We must cease doing so or our lives on Earth will come to an end long before it should! PLEASE say NO to this ill-advised proposal despite all the environmental assessments which can be configured to prove whatever one wants.	GEN	NS	X	1	
Elizabeth Anzelc	Can ground water for my well which is 75 ft. deep become contaminated through ground water movement?	WAT	NS	X	1	
Elizabeth Anzelc	Should city water be supplied to this development, wynne ridge, by Giants ridge resort? The city of Biwabik , town of white and Aurora are planning a new city water system. Should this city water supply include Wynne Ridge where I live because of possible water well contamination by underground water movement from poly met?	WAT	NS	X	1	
Jean Public	i do not support this project. this comment is for the public record. please receipt	GEN	NS	X	1	
Holly Wells	Please include in project documentation, the planned dissolution of the site and all project resources (buildings, inventory, waste products, etc) once project is completed and required clean up activities to ensure leaving site/land in condition that is not dangerous to neighbors or the environment.	PD	NS	X	1	
Holly Wells	With growing awareness of how inter-related our planet's ecosystems are; my request is that this project have written clear procedures to ensure the land and any structures or storage area's created or directly build into the land are proven safe to anyone who may enter the project site/land area during or after project completion.	PD	NS	X	1	
Holly Wells	Also critical to document that this project's ongoing activities will not, by deisgn or by accident, negatively impact local water sources.	WAT	NS	X	1	
Holly Wells	And if any negative impact on local water resources does occur, that there are designated means for this project to clean up source of negative impact to local water supply and provide interim safe water to locals who are effected by the situation.	FIN	NS	X	1	
Cathy A. White	This whole deal needs to be taken OFF the table. After what happened in Canada this should be a no brainer.	GEN	NS	X	1	
Cathy A. White	No company can guarantee 100% that no "accidents" will happen and that in itself is an ideal reason to reject the mining project.	FIN	NS	X	1	
Cathy A. White	Northern Minnesota is a jewel in the crown of the state with the Boundary Waters and just the total wildness of the place. We need these wild places to stay as pristine as possible not just for us but for the flora and fauna that thrive there as well as for future generations.	WILD	NS	X	1	
Cathy A.	Money should NEVER a reason to pollute and pillage any untouched land.	SO	NS	X	1	

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White						
Scott Einbinder	Copper/nickel mining in or near an environmentally sensitive area or any area prized and used for recreation is just a bad idea.	GEN	NS	X	1	
Gary Geisler	Global warming is going to get much worse before it gets better, even if all emissions were to magically stop tomorrow. The total collapse of civilization by the end of the century is a real possibility. If you think I'm exaggerating the seriousness of the situation, consider this. It was calculated several years ago that 80% of the known fossil fuels reserves presently on the books must remain in the ground to avoid a global catastrophe that will reek havoc for many thousands of years. It's virtually guaranteed that large energy corporations will use their tremendous wealth and political power to avoid taking a huge loss no matter what the consequences. Highly populated areas of our country may become inhabitable due to, among other things, severe droughts. Minnesota may be one of the few places left on Earth that humans can eek out a meager living.	GEN	NS	X	1	
Gary Geisler	Conserving fresh water wherever it exist should be a top priority to give future generations a fighting chance at survival	WAT	NS	X	1	
Gary Geisler	Sacrificing this invaluable future resource for a lousy 350 mining jobs is utter madness!	SO	NS	X	1	
Gary Geisler	Does anyone actually believe PolyMet will stick around to monitor their tailing ponds for the next several centuries? A hundred years from now, all the needed infrastructure necessary to do so probably won't even exist anymore!	FIN	NS	X	1	
Amber Garlan	Please do not allow sulfide mining in northern Minnesota to proceed.	GEN	NS	X	1	
Amber Garlan	When sulfur comes into contact with water or oxygen it becomes sulfuric acid. There is no safe way to do sulfide mining.	WAT	NS	X	1	
Michael Kinzer	I want this very serious concern and complaint documented on the process used for public comment on the EIS for the proposed sulfide mine by Polymet (and others). How can the DNR expect anyone, let alone the lay citizenry (including myself) to review a 3,000 plus study and comment on it within 30 days. Moreover, part of that period will cover some of the holidays. In light of the length and complexity of the EIS and the very high risks involved for the State of Minnesota, I hereby request on behalf of myself and all Minnesota residents that the DNR extend the comment period to at least 90 days. Unless such extention of the time for public comment is provided, then please deem this comment on the EIS as stating it is de facto inadequate due to the fact that any inadequacies it may contain will be overlooked due to the short time allowed for review.	NEPA	S	N	5	
McKenna Eckerline	I am disappointed in the Minnesota DNR for going through with this new mining plan and continuing to invest its assets into the unsustainable, destructive and unjust fossil fuel energy that contributes to environmental decimation, natural disasters and health risks such as infertility, birth defects and cancer	GEN	NS	X	1	
McKenna Eckerline	With renewable energy sources at their lowest prices ever, now is the time for Minnesota to halt new developments for this outdated industry and instead put department's resources towards sustainable energy resources.	GEN	NS	X	1	
Theresa Rooney	I am 100% against the polymet mine Please do not allow this mine here in Minnesota	GEN	NS	X	1	
Bob Shannon	I just received CDs with a copy of the draft final report. In looking at my submitted comments (submission 47660 – please see text of original and transcribed comments below), I was surprised to see that they were incompletely and inaccurately reported. As a result, the details and substance of my comments were not included, categorized, or addressed in the draft FEIS report. As an environmental professional myself, I most certainly do not envy the folks responsible for responding to the large number of comments, and I appreciate the challenges involved. The fact remains, however, that you have not accurately included my comments in the draft final report. My concern is compounded since if my case is any indication of the accuracy of the larger process, , it would seem reasonable to ask if you have with reasonable accuracy and completeness	NEPA	S	O	3	SDEIS Theme NEPA 11

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	identified and addressed commenters; concerns as you implied below would be done.					
Jason Kuehn	As a resident of Duluth and Ely, I would like to express my strong opposition to the Polymet sulfide mine operation and land exchange.	GEN	NS	X	1	
Jason Kuehn	The proven risks and ensured negative outcome resulting from such a mine is not worth the minuscule benefit to our economy.	SO	NS	X	1	
Jason Kuehn	What benefit we do fetch from this project would be instantly and forever overshadowed by any incident involving leakage of mine waste.	GEN	NS	X	1	
Jason Kuehn	Something that is guaranteed to happen to some extent over the next several generations. Science and history have shown that this project is not in the best interest of residents in Northern Minnesota and I plead with the appropriate agencies to reject this mine proposal.	GEN	NS	X	1	
Lawrence Clemens	I oppose the proposed PolyMet NorthMet copper-nickel sulfide mine. Environmentally precarious - economically very tenuous What's to like?	GEN	NS	X	1	
Richard Mammel	PolyMet has been a terrible dream that became an awful nightmare. Relieve us of the apprehension that their destruction will vanish to never happen.	GEN	NS	X	1	
Amber Garlan	Please so not allow sulfide mining in northern Minnesota!	GEN	NS	X	1	
Amber Garlan	When sulfur comes into contact with water and oxygen it becomes sulfuric acid. There is no safe way to do sulfide mining.	WAT	NS	X	1	
Amber Garlan	500 years of pollution damage is not worth engaging in sulfide mining.	FIN	NS	X	1	
Jim and Diane Malcolm	I am writing today to voice my concerns about the proposed Polymet Copper Mine in Minnesota. I fear there is a great danger of severe and widespread environmental damage as result of this mine.	GEN	NS	X	1	
Jim and Diane Malcolm	Mines nearly the same as this proposed one have caused much damage in other parts of the world.	GEN	NS	X	1	
Jim and Diane Malcolm	It has been stated that the water could possibly be contaminated for at least the next 500 years.	WAT	NS	X	1	
Jim and Diane Malcolm	Apparently, SDEIS does not contain any credible information on actual ongoing costs. How can anyone estimate the costs for such a disaster that far to the future? This would mean perpetual clean-up.	FIN	NS	X	1	
Jim and Diane Malcolm	Keep in mind, that water will be the next big shortage in this country and elsewhere. We in Minnesota have been blessed with bountiful good and clean water. This mine will draw many, many gallons of water to process its operation. We can't afford to drain our aquifer for this purpose.	WAT	NS	X	1	
Jim and Diane Malcolm	Property values would plummet and the tourism which that area of Minnesota greatly depends upon, would decrease significantly.	SO	NS	X	1	

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Jim and Diane Malcolm	My family are campers, hunters, and fishermen. Our lakes and streams are suffering already. We can't afford to risk damaging them further. That region of Minnesota depends a great deal on tourism. If that source of income and state revenue is taken away, the people in the area will have an even greater difficulty sustaining their way of life.	LU	NS	X	1	
Jim and Diane Malcolm	I understand their reason for supporting the mine because of the need for jobs in the area. But, there really is no guarantee that the mine will actually provide good paying jobs for those who now live in the area. It often is the practice of these companies to bring in from outstate, people to fill the high paying jobs claiming there weren't any local people trained or educated to fill those jobs. The jobs left for local citizens will be unstable as they will be based on the demand for copper. When people are laid off the state will be left to pay unemployment.	SO	NS	X	1	
Jim and Diane Malcolm	If would be much more beneficial to the region to look elsewhere for companies willing to relocate in their area of Minnesota. There is some new businesses doing quite well in northern and northwest Minnesota. Look to the real and long lasting future. Many people would love to live there. New startup companies would be a good place to start for recruitment. We need to stop looking at "today" and plan for the future.	NEPA	NS	X	1	
Mark Roalson	1. The engineering firm that will be the lead for PolyMet Copper Nickel Mine to design and build its tailings dikes was also the designer for the failed Mt. Polley Imperial Metals Copper-Gold Mine of British Columbia, Canada. This mine burst its dikes in August of 2014, releasing tons of sulfates and heavy and other metals into the local watershed. Knight-Piesold Engineering claimed that their firm warned Imperial Metals that they had already put too much sediment and water into the ponds, and their warning was ignored. The mine also had logged 5 major violations from the Province of British Columbia. They, too, had warned the mine to correct its operations, but obviously it did not. What assurance is there that our own regulatory agencies are going to put teeth into its authority?	PER	NS	X	1	
Mark Roalson	2. There is a tradition of allowing a variance in effluent from taconite mines here already when it comes to the sulfate standard. Taconite dikes here already leak. How is that going to be mitigated by PolyMet, especially if they are going to re-use the abandoned dikes for their new load of waste. Who is going to be responsible for actually enforcing these regulations? The leaking Dunka Pit has no water purification equipment running as per stated in law. No one is enforcing regulations there. The public has no assurance that any of the regulatory agencies "in charge" will do what they are charged to do at PolyMet, if they cannot enforce what is already on the books.	PER	NS	X	1	
Mark Roalson	3. The failed Mt. Polley Mine in B.C. has only been fined money in its violation of environmental laws. However, its owners and operators are guilty of criminal acts of negligence and threats to public health, as well as outright pollution. No one has gone to jail or been charged with any crime. Just as in Wall Street's "mortgage securities" & Realty Brokers/ Insurance industry malfeasance of the housing scandal of 2008, no one went to jail, even though outright fraud was committed. What assurance is there in the NorthMet FEIS that this will not be repeated? Mining has a long history of screwing up, polluting, and then declaring bankruptcy. What financial vehicle of corporate surety is going to be the bulwark against long-term or sudden pollution events? As a member of the public, I am NOT ASSURED by the FEIS to prevent this.	GEN	NS	X	1	
mtjohansen@earthlink.net	I apologize for this automatic reply to your email. To control spam, I now allow incoming messages only from senders I have approved beforehand. If you would like to be added to my list of approved senders, please fill out the short request form (see link below). Once I approve you, I will receive your original message in my inbox. You do not need to resend your message. I apologize for this one-time inconvenience. Click the link below to fill out the request: https://webmail.pas.earthlink.net/wam/addme?a=mtjohansen@earthlink.net&id=11e5-8a4e-841ea250-a0ef-00144fec6578	GEN	NS	X	1	
Janet Hill	I'm told that a phone number is required for the U.S. Forest Service to consider my comment. My phone number is 218-259-4090.	ROD	NS	X	1	
Colles B. Larkin	Although the "Land Exchange" is well intentioned, I believe it is in no way "equivalent" to maintaining acreage that is part of the larger whole, a national forest. The exchange is in no way a replacement, but a "feel good" trade of numbers/acreage which does not hold the same ecological, environmental benefits to habitat that being part of a larger whole does. Dicing up the national forest, contaminating the mining adjacent land and waters with poisonous sulfide will have serious	LAN	NS	X	1	

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	ramifications down the decades.					
Colles B. Larkin	We need to protect our land and, especially, our waters. Not one of these copper-sulfide mining companies has ever avoided compromising the land it mined; the cost of clean-up are prohibitive where clean-up is even possible. The startling hazard with these mines is the certain contamination of our water. Water is increasingly precious and restricted. For the present generation and future generations, we need to deny this mining.	WAT	NS	X	1	
Colles B. Larkin	And, at the same time, we must find alternative jobs for our miners; it is the responsibility of our State, our universities and our sustainable industries to do so!	SO	NS	X	1	
Mary Jo Reiter	You are welcome.	GEN	NS	X	1	
Carol Kidder	I want to express my opinion as very much against the proposed mining in northern Minnesota.	GEN	NS	X	1	
Dnr For	Let's get the permits going and start constructing this worthy PROJECT!!	GEN	NS	X	1	
Bjorn Reed	Please do not mine near the bwca!	GEN	NS	X	1	
rachel susan	I am writing to voice my opposition to the proposed sulfide mine in the Babbitt/Hoyt Lakes area, and my objection to the implication that the project	GEN	NS	X	1	
rachel susan	I do not believe that the final EIS adequately addresses the predicted environmental consequences. Over and over again, it is stated in the report that the consequences would be "mitigated" or have minimal effect. These statements are made without supporting evidence as to why the consequences would be negligible.	MEPA	NS	X	1	
rachel susan	In addition, I do not feel that the EIS adequately addresses the cumulative effects likely from this project. I believe that the negative environmental consequences and cumulative effects of this project would far outweigh the short-term miniscule employment benefits provided by the mine.	CUM	NS	X	1	
rachel susan	It seems to me that the enormity of negative impact on this project is being minimized in favor of the enormity of short-term economic gain for a few people very far removed from the actual location of this project. The long-term losses to the ecosystems necessary for health should not be sacrificed for short-term economic gains.	SO	NS	X	1	
rachel susan	I object to the advancement of this project based upon the shallow nature of the EIS. I also object to the EIS under the concept of the Precautionary Principle, which it appears is being ignored.	GEN	NS	X	1	
mary jane manion	I'm just someone's grandmother but I have enough sense to know that if it is imperative to contain mine waste for 500 years to get rid of the toxicity then it should never be started because we can't control what happens in 50 years, let alone 500 years.	PER	NS	X	1	
mary jane manion	So far, we only have one planet with fresh water for life. Why, why why would we keep doing what we know will destroy the complicated and interwoven ecosystems that sustain all life.	WAT	NS	X	1	
Kevin Kramer	The type of mining that Polymet proposes has never been tested. This type of mining has never been done before in Minnesota.	PD	NS	X	1	
Kevin Kramer	This project will not create any more jobs than your average grocery store.	SO	NS	X	1	
Kevin Kramer	How long before Polymet declares bankruptcy and leaves us with the bill to clean up their mess.	FIN	NS	X	1	
Kevin Kramer	How long before their waste leaks into our drinking water? Who cares which way the waste water drifts? Whether it drifts towards the Boundary Waters Wilderness or whether it drifts towards Lake Superior. Either way is an environmental tragedy.	WAT	NS	X	1	

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Kevin Kramer	They said that drilling in the Gulf of Mexico was safe. They said all of the environmental protections were in place in the Gulf of Mexico. We all know how that turned out. For the good of all, I beg you to stop this Polymet mining project before it is too late!	GEN	NS	X	1	
Louise James	I am strongly opposed to any mining development by PolyMet.	GEN	NS	X	1	
Louise James	Having lived in Colorado for 30 years, I experienced the rape and pillage of mining companies on the land. All they care about is the dollar.	GEN	NS	X	1	
Jacob Davis	I am writing you to express my disgust and disbelief that the state of Minnesota is willing to threaten the environment, thousands of tourism jobs, and its own collective dignity to pander to foreign mining interests who will extract wealth from our state as they extract minerals from the land they destroy.	GEN	NS	X	1	
Jacob Davis	we are debating this issue based on a flawed and biased environmental review, commissioned by the mining company,	NEPA	S	O	2	SDEIS Theme NEPA 02
Jacob Davis	Unemployment is steadily decreasing and our economy strengthening; yet this state is willing to gamble away its precious land and water resources, which generate tax dollars and jobs already, in the name of jobs and economic impact?	SO	S	O	2	SDEIS Themes SO 01, SO 02
Jacob Davis	It wont be hard for me and others like me to take our education, professional knowledge, and talents to another state which doesn't abuse its people and resources.	SO	NS	X	1	
Erik Maritz	The BWCA gives us natural beauty, perspective on the important things in life, chances to decompress from the monotony of everyday life, the ability to feel healthy, good, and proud about ourselves, the opportunity to escape from brutal and sometimes violent home-lives, and so much more. It has changed my life and I've watched it change the lives of dozens of campers I've guided through it's pristine waters – what a shame it would be to take that opportunity away from future generations.	WILD	NS	X	1	
Johnnie Forrest	The final draft Environmental Impact Statement addressed the environmental and safety concerns necessary to safely treat the water and utilize the LTV mine site.	GEN	NS	X	1	
Ian Andrus	I think it is completely unreasonable for the State of Minnesota to approve a mining operation that will in the end leave a polluted site that will need treatment for 500 years. The future is unknown and it would be foolish to assume we will be able to maintain a water treatment program that long. Once it's polluted there is no going back. As a resident of northern Minnesota, clean water is one of the things I value most and is becoming more a more rare. I also think that we should be monitoring pollution on the site not the boundaries.	PER	NS	X	1	
Andrew Thorsen	I support the proposal to mine put forth by Polymet. Their plans for environmental protection seem adequate to me. While there is no such thing as a 100% perfect plan or complete safety their plans seem to cover foreseeable situations that might arise.	GEN	NS	X	1	
Monica Petrov	Please do NOT jeopardize all Minnesotans' long term health and environment for the short term sake of high corporate profits and jobs for only a few.	GEN	NS	X	1	
Krishna Woerheide	Sulfide mining has never, in the history of mining, been done safely.	GEN	NS	X	1	
Krishna Woerheide	The Polymet project will, by their own admission, have dire consequences for the watershed and the riparian ecosystem. Multiple studies have been done that show conclusively that biota in the downstream habitat cannot withstand the stresses of Acid Mine Drainage.	AQ	NS	X	1	
Krishna Woerheide	I urge you to truly consider the science, and the current world wide water issues. We cannot afford to poison our fresh water. And don't listen to the DNR officials - sulfides do not become sulfates and then turn into hydrochloric acid.	WAT	NS	X	1	
Krishna Woerheide	There are a number of water quality professionals, chemists, hydrologists and ecologists outside of the mining industry whose advice and expertise should be sought.	GEN	NS	X	1	
Courtney	Please please please, for the love of Mother Nature. Keep the pristine beauty in the Boundary Waters.	GEN	NS	X	1	

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Scott						
Liz Bercaw	Clearly the mass of mining accidents caused by attempts to mine highly disseminated low grade metals out of sulfide ores without degrading and polluting our environment for the next 500 years, has not been effective. Nor do we have the technology or the political will to clean up the pollution that is already here.	GEN	NS	X	1	
Liz Bercaw	As citizens, we understand that we seek to approve mining in MN for the sake of jobs, stability for some people. While this is honorable, the number of people who suffer both now and in the future will be much greater if we continue with this short term way of seeing.	SO	NS	X	1	
Liz Bercaw	Already I hear stories of large numbers of children living in northern MN having to be treated for heavy metal poisoning, that is only available through a hospital, at great unsupported cost to the families. These, I have heard, already live at a low income level, on reservation land. This not only dishonors promises to a people who our ancestors moved out of the way, taking their land for our own sake and our lifestyle, but dishonors our MN goals of social equity.	HU	NS	X	1	
Liz Bercaw	If the Lands and Minerals Division of the Minnesota DNR is responsible for permitting our mines, and the agency stopped promoting mining that is inadequate to protect MN waters, the agency division would basically put itself out of business. But surely such educated people can find themselves employed within the economic system. Understandably the DNR feels obligated to hear out such suggestions as Polymet's. It is clear however that Polymet is only hoping for variances and permission to solve the pollution problem later, as has been granted previously, causing the mining pollution we already have.	GEN	NS	X	1	
Mary Pavia	I love the BWCAW, and it would be morally impermissible if it were harmed by toxic sulfide mining corporations. I implore you to block proposals from mining companies in the lands adjacent to the Boundary Waters. If action is set forth, then the benefits will be incredible.	GEN	NS	X	1	
Mary Pavia	Protecting the BWCA would continue to provide opportunities for outdoor recreation and benefit the local economies that are dependent on this ecotourism industry. The need for outdoor recreation is important, especially as the urbanization of society continues to grow. The protection of wilderness is integral to maintaining biodiversity and preserving something that has a deep, intrinsic value for many people. In the words of Henry David Thoreau, "In wilderness is the preservation of the world."	WILD	NS	X	1	
Mary Pavia	There is a need for radical change as the dangers threatening ecological systems are the result of production and consumption, and we must encourage legislators to understand this need by urging them to co-sponsor and support the National Park and Wilderness Water Protection Act. If we do not, the social and environmental cost would be catastrophic, and only act as a catalyst for greater and greater ecological destruction.	GEN	NS	X	1	
thun440@netscape.net	I live in northeast Mn. and I am completely opposed to to the Polymet project!!	GEN	NS	X	1	
thun440@netscape.net	In your environmental statement you say the the Polymet project "would not cause any significant water quality impacts". My question is, what do you consider an insignificant water quality impact. ANY impact is unacceptable----PERIOD!!! And who's going to do the on-going clean-up necessary after it's all over with?	WAT	NS	X	1	
Gene Dale Kalligher	If we are going to risk ruining the BWCA and sinking tourism around Ely, why are we offering this to the least experienced, smallest company of its kind instead of the most experienced corporation with a track record of success in this type of mining? Polymet itself has no track record for this type of operation. The company has no earnings and is what's called a shell corporation. Its stock (PLM) trades for 95 cents per share and is priced not on current operations but on possible future projections, the most risky type. Companies like this go out of business every day which is why the stock is priced so low. Everyone including the Governor and Mr. Landwehr state there is some risk to this effort. So I'll ask again why are we placing this risk in the hands of a company that is inexperienced with no track record to demonstrate their ability to manage the risk we are placing in their hands?	GEN	NS	X	1	

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Brad Hill	Please deny the Polymet mine the ability to operate in Minnesota. There is too much risk to the public.	GEN	NS	X	1	
Brad Hill	Any contamination that is leaked can destroy wetlands and is reduced to the ownership of the public when the Polymet mine and it's financial backers go bankrupt. A perfect example of this is the former Dunka mine near Babbitt, MN. The Dunka mine went bankrupt sometime in the 1970's however there is still the contamination problem today and nothing is being done to clean it up. Today the public bears the financial burden of the chemicals leaching into the surrounding ground. There may be some fact that not much money is spent on the project today but why are we letting contamination leak from a former mine into the water? We are polluting ourselves and doing nothing to clean it up. The former Dunka mine may be in environmental compliance but that means nothing. The environmental compliance factor only means something like the mine has to report contamination level to the state, not to do anything meaningful to reduce the contaminates or clean them up.	FIN	NS	X	1	
Brad Hill	So this proposal by Polymet would place the people of Minnesota in the same position. Once a there is a contamination leak and the mine goes bankrupt and the financial backers move out, the mine will be allowed leak continuously. Any leaking mine will come at the expense of the people of Minnesota because we are left to deal with the contamination and if we want to spend our tax money to clean it up. It's not fair to burden the people of Minnesota with a contaminated environment and the costly clean up.	FIN	NS	X	1	
K Tharaldson	I would like to request as a member of the public and a taxpayer that you have a completely independent analysis of the groundwater movement at the mine and contaminants the mine will produce. Much of this "analysis" in the FEIS is done by BARR Engineering. Though they are reputable, they stand to benefit greatly from this project and even though no contracts have been drawn- they have a relationship with Polymet. This type of mine pollutes, there is no question about that. We need to make sure that our land of 10,000 lakes stays as great as it is for future generations- it is our responsibility. There are taconite mine pits near the proposed Polymet site and this needs to be taken into account. It is irresponsible of the DNR to utilize a company that has an existing relationship with the mining company to do unbiased analysis. The responsible thing to do- and the honest thing to do- is have someone unrelated to the project assess everything- including the surrounding taconite pits and how they affect the movement of water and will affect the movement of what we know will be contaminants leaving the mine.	WAT	NS	X	1	
K Tharaldson	I am not in support or agreement of this environmental impact study. You did not look deeply enough or have the unbiased review you claim to have had. Please reconsider before seeming to approve something that will pollute into perpetuity and harm the environment that you are charged with protecting.	GEN	NS	X	1	
Joshua Bernstein	I am writing to express deep opposition to the proposed PolyMet mine.	GEN	NS	X	1	
Joshua Bernstein	the proposed mine would reap devastating consequences on Minnesota's ecology, and the long-term damage will far outweigh any short-term benefits in job creation or economic growth. Specifically, the contamination from mine tailings and from the elevated levels of mercury and aluminum in the water will prove fatal for the already-threatened ecosystems.	SO	NS	X	1	
Joshua Bernstein	The resultant contamination will also likely endanger the habitats and survival of numerous threatened species, such as the Canadian Lynx.	WI	NS	X	1	
Joshua Bernstein	the resultant pollution from the mine will almost certainly disrupt waterways and lands that hold tremendous spiritual and economic significance for Native Americans in Minnesota. To destroy these resources, which have been in their possession for hundreds of years, and have represented the natural habitats of numerous species for thousands of years, is simply an affront to humanity and unconscionable on numerous levels.	CUM	NS	X	1	
Joshua Bernstein	The Environmental Impact Statement, which ostensibly addresses these concerns, reflects unsubstantiated claims and dubious science at best. At worst, it represents the corruption of science and environmental review by overzealous investors.	GEN	NS	X	1	

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Joshua Bernstein	While some Minnesotans may support this proposed mine on the grounds that it would purportedly create jobs, the truth is that these supporters have been misled or coopted by the mining industry. Any economic gains would be short-term and primarily limited to the financial stakeholders of the mine, while Minnesotans as a whole will invariably have to pay for the enormous and long-term costs of site repair and environmental cleanup. There is simply no sustainable way to run a mine in Minnesota, as any honest scientist or economist will attest. The best solution for job growth in Minnesota is to promote the industries that can work in harmony with the state's natural resources, such as tourism and camping, rather than those, such as mining, that exploit those resources for the good of the few. The State of Minnesota can also devote funds to worker training and education, two strategies that are far sounder in the long-run and likely to reap greater economic benefits than destroying the state's precious lands.	SO	NS	X	1	
Craig David	I would like to express my TOTAL OPPOSITION to the proposed PolyMet Mine.	GEN	NS	X	1	
Craig David	There is one reason we must not allow the mine to be built. That reason is the INDEFINITE TREATMENT OF WASTE WATER from the mining process. It is outrageous that the DNR, and the State of Minnesota, would even consider such a proposal. Human beings, if we look at their capabilities, will in no uncertain terms be unable to maintain toxic water treatment for 500 plus years.	PER	NS	X	1	
Craig David	With all prudence, and caution, to protect the state's environment, especially the pristine waters of the northern tier, I beg of you not to make this huge, shortsighted mistake. PLEASE - DO NOT LET THE MINE BE BUILT.	GEN	NS	X	1	
Shawn Roed	Vote NO!	GEN	NS	X	1	
Shawn Roed	PolyMet company never has operated a mine and that the company and state have yet to tell taxpayers how they PolyMet would pay for cleanup needed for at least decades after the mine closes.	FIN	NS	X	1	
Shawn Roed	Even With Modern Technology, Disasters Happen ? A landslide occurred at the huge Bingham Canyon open-pit copper mine in April 2013. Reuters News Service reported: "A landslide at Rio Tinto's Bingham Canyon mine in Utah extended farther into the pit than predicted, and there was greater damage to equipment than previously estimated, Rio's Kennecott unit said on Friday. Kennecott Utah Copper, which operates the mine . . . said it had not yet determined the impact of the slide . . . or a time frame for resuming mining operations." More than two hundred people lost their jobs—more than half of them permanently. At Summitville Mine in Colorado pollution spilled from a containment pond and impacted all aquatic life for 18 miles in the Alamosa River. At Mike Horse Mine in Montana 1 million cubic yards of metals-contaminated mine waste is piled behind an eroding tailings dam at the headwaters of the Blackfoot River, an important trout river; a failure of a prior dam poisoned the river for years, causing fish kills and environmental damage for miles downstream. A leak in a Charleston, West Virginia storage tank that held a chemical used in the coal mining industry polluted the water supply of three hundred thousand people for several weeks in early 2014; economic harm has reached \$61 million and continues to increase. ? The Montcalm Mine, Ontario closed abruptly after structural changes and unforeseen ground movements threatened the underground mine. Tailings dams for mining waste storage fail; on average one major tailings dam failure occurs each year. Industry's track record is full of examples of unintended consequences: A vast landslide (about one square mile) caused by heavy rains on a slope that had been clear-cut by loggers where geologists had warned logging should not occur destroyed much of the community of Oso, Washington in March 2014. Fukushima Nuclear Power Plant in Japan melted down and released radioactive materials following an earthquake and tsunami in March 2011; officials incorrectly assumed the plant was safe because no previous tsunami had ever been high enough to reach the plant site. BP (British Petroleum) oil spill in the Gulf of Mexico in 2010 caused by the explosion and sinking of the Deepwater Horizon oil rig was the largest accidental marine oil spill in history. Exxon Valdez oil spill occurred in Prince William Sound, Alaska in 1989 when an oil tanker struck a reef and spilled crude oil; it is considered to be one of the most devastating humancaused environmental disasters. Oil is still present on the beaches, and the herring population, which is vitally important commercially and ecologically, has collapsed.	GEN	NS	X	1	

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Abbie Debiak	Both the proposed mine (open-pit) and the Eagle mine (underground) are located in the Lake Superior watershed. Both mines have sulfide-based ore bodies. The proposed Minnesota mine is approximately 100 times larger than the Eagle mine.	GEN	NS	X	1	
Abbie Debiak	Governor Dayton was impressed with the independent Community Environmental Monitoring Program (CEMP) on his recent tour of the Eagle mine (www.cempmonitoring.com). The CEMP program monitors for mine-related impacts to groundwater, surface water, air quality, wildlife and plant life. After the tour, the Governor indicated that he would insist on a similar independent monitoring program if he decides to allow an open-pit copper mine near the Boundary Waters Wilderness Area.	PER	NS	X	1	
Abbie Debiak	the SWP feels that requiring an independent monitoring program should not be a factor in his decision. It should be stressed that while the CEMP program was designed to detect environmental impacts from mining activities it is not capable of preventing such impacts.	PER	NS	X	1	
Abbie Debiak	In our opinion state required monitoring should remain completely separate from independent monitoring (ie; the state should not mandate independent monitoring, it should be locally-driven).	PER	S	O	2	SDEIS Themes PER 06, PER 24
Abbie Debiak	In our case, independent monitoring became possible only after it was clear that local opposition had failed and the mine would be a reality.	PER	NS	X	1	
Abbie Debiak	Linking independent monitoring to a proposed mine's approval process can imply tacit community support (social license) and this was definitely not the case with CEMP (the region continues to be about evenly split regarding the mine).	PER	NS	X	1	
Abbie Debiak	In 2006 the SWP developed the Salmon Trout River Watershed Management Plan which included the recommendation to "prohibit all sulfide-based mining" in this sensitive natural area (http://superiorwatersheds.org/admin/wp-content/uploads/2014/06/Salmon-Trout-River-Watershed-Management-Plan.pdf see page 41).	PER	NS	X	1	
Abbie Debiak	Both the proposed mine in Minnesota and the new Eagle mine in Michigan are located in sensitive, wild watersheds that drain to Lake Superior (St. Louis River and Salmon Trout River).	WAT	NS	X	1	
Abbie Debiak	With a looming national and global water crisis many people feel that protecting the headwaters of the Great Lakes (more than 20% of the world's fresh water) is more important than ever.	WAT	NS	X	1	
Abbie Debiak	American Rivers (Washington D.C.) designated the Salmon Trout as one of the Ten Most Threatened Rivers in the country in 2006. Not coincidentally, American Rivers nominated the St. Louis River for the same distinction in 2015 (http://www.americanrivers.org/endangered-rivers/2015-report/st-louis-river/).	WAT	NS	X	1	
Abbie Debiak	In all fairness the SWP believes that Eagle mine is a state-of-the-art facility using the best practices available and that Eagle staff are truly committed to environmental protection. Eagle has also provided significant economic support to the region and the state. On the other hand the mine has only been in full operation for just over a year and CEMP is currently tracking several groundwater trends that could indicate future problems. More importantly, the very real potential for long term environmental impacts after mine closure has still not been adequately addressed. Historically, sulfide-based mining operations have left a legacy of pollution.	GEN	NS	X	1	
Abbie Debiak	Deciding whether to allow a mine near a wilderness area is far more complicated than simply choosing between economics and the environment, especially when nature tourism and the tradition of the wilderness experience is such an integral part of Minnesota's economy.	SO	S	O	2	SDEIS Theme SO 02
Abbie Debiak	For decades Minnesota has been an environmental leader among the Great Lakes states. Long before it was common, Minnesota required intensive environmental education in the classroom.	GEN	NS	X	1	
Abbie Debiak	Even if a mining company could provide 100% assurance that there would never be any water quality impacts there is still the glaring fact that mining is an incredibly disruptive industrial process. Both open-pit and underground operations use massive mining equipment with ore trucks running continuously, literally for years on end. A true wilderness never fully recovers from such an onslaught.	WILD	S	O	2	SDEIS Theme WI 02

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Abbie Debiak	The first decision facing Governor Dayton is whether to allow an industrial zone immediately adjacent to a wilderness area. In our opinion independent monitoring should not be part of that decision process.	PER	NS	X	1	
Darrell pattersen	I would like to see the DNR approve the final Environmental Impact Statement (EIS) for the PolyMet Mine. After 10 years, millions of dollars, and countless hours of labor, PolyMet has convinced me they will comply with the strict state and federal environmental laws.	GEN	NS	X	1	
Darrell pattersen	If an extensive EIS that satisfactorily meets the state and federal requirements can be overridden by a group of naysayers, then I am concerned we will discourage businesses from investing in our state in the future. Let's approve PolyMet's final EIS so we can show the rest of the country that there is a safe way to mine the precious metals that we all use every day.	GEN	NS	X	1	
Jan Kilian	I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal.	GEN	NS	X	1	
Jan Kilian	We cannot afford even a small amount of more water pollution in our state. A large percentage of our lakes are already beyond recovery and PolyMet would threaten those still viable.	WAT	NS	X	1	
John Roth	I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal for legal, economic and moral grounds.	GEN	NS	X	1	
John Roth	Given the current worldwide surplus of the minerals, and the large number of mining projects already in development elsewhere, the price for these minerals will virtually guarantee PolyMet NorthMet's bankruptcy and inability to pay for environmental monitoring and cleanup. While not openly admitted by the mining companies, bankruptcy is a central part of their business model. Most importantly, I consider it to be absolutely immoral to allow any mining action that will require our children and grandchildren, and potentially generations after them, to pay the price for cleanup. We have a moral responsibility to give the next generation a world that is equal to, if not better, than the one we inherited from our parents. If PolyMet NorthMet are allowed, we will be giving our children and grandchildren a polluted and damaged northern Minnesota. That we cannot allow. No amount of money earned by the owners of the mining companies and mine workers can justify that damage or compensate future generations for their loss.	FIN	NS	X	1	
John Roth	The proposed mines are simply not needed and prudent, conservative resource management dictates that the minerals should be left in the ground and extracted only if needed by future generations and the environmental risks can be eliminated. The reason why the mines are not needed is that there is no shortage of copper and nickel. According to the International Copper Association and the U.S. Geological Survey, "Since 1950 ... there has always been, on average, around 40 years of copper reserves (which are defined as 'deposits that have been discovered, evaluated and assessed to be economically profitable') and over 200 years of resources left." Resources are defined to "include reserves, discovered deposits which are potentially profitable and undiscovered deposits that are predicted based on preliminary geological surveys." The U.S. Geological Survey further reported in its February 2014 Mineral Commodity Summary that "The International Copper Study Group predicted that global refined copper production in 2013 would exceed demand by about 390,000 tons." It went on to state that "Global production of refined copper was projected to increase by 3.9% and consumption was projected to remain essentially unchanged." In another report issued on March 6, 2014, the U.S. Geological Survey stated that "geologically-based global assessment of undiscovered copper resources estimated that 3.5 billion metric tons of copper may exist worldwide." PolyMet's website says that they estimate 275 million tons of reserves and 694 million tons of resources - a tiny fraction of what the U.S. Geological Survey estimates may be available. What is important to note, as well, is that "copper is one of the few raw materials which can be recycled repeatedly without any loss of performance." (International Copper Association) If the recycling of copper already in the waste stream, or slated for it in the future, could be increased, it would significantly reduce the need for newly refined copper. At present, the U.S. Geological Survey states that "about 32% of the U.S. copper supply" comes from recycled copper. Each year, however, we recycle only a fraction of the waste copper available. The U.S. Environmental Protection Agency reported that the U.S. generated 3.412 million tons of e-waste (waste from old computers, cell phone, TVs, wires and other electrical items) in 2012. We recycled only 29.2% of it. The EPA also estimated that there are probably 100 million old TVs in storage, resting in people's closets and basements, ready to be thrown out. And that doesn't include the number of old computers, printer,	NEPA	S	O	3	SDEIS Theme NEPA 06

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	phones and other devices. Clearly there is a huge potential for increased recycling, and the value of that recycled material exceeds the value of newly refined metal. According to the United Nations University (September 17, 2009), "A ton of used mobile phones ... - or approximately 6,000 handsets (a tiny fraction of today's 1 billion annual production) - contains about 3.5 kilograms of silver, 340 grams of gold, 140 grams of palladium and 130 kg of copper ... The average mobile phone battery contains another 3.5 grams of copper. Combined value: over US\$15,000 at today's prices." On July 11, 2014 the COMEX spot copper price for newly refined copper was \$3.27 per pound. The price for copper scrap was \$3.021 per pound. And that price does not factor in the enormous benefits achieved by recycling, such as the reduced pollution and costs of landfills. Accordingly, when there is excess production of newly refined copper and large supplies of scrap, why would any prudent steward of our natural resources allow environmentally risky and highly expensive mining to occur? It doesn't make economic sense. We should save the resource for our children and future generations.					
James Mayerle	This is the same old story of mining companies claiming to be able to now safely mine the sulfide ores that have led to so many ecological disasters in the past. And it's the same old story of politicians backing any project that produces new jobs, no matter what the ultimate cost. I am a native of the Iron Range and am sympathetic to the difficulty of creating jobs in the region. However, in this case, the risk is just too great.	GEN	NS	X	1	
Jenny Dahl	Please reject mining proposals in northeastern Minnesota.	GEN	NS	X	1	
Jenny Dahl	Yes, mining generates jobs, but they are ALWAYS temporary. They always put at risk the potentially permanent tourism jobs. Moreover, I personally believe clean water will be the "oil" of the next generation -- worth big \$ and fought over. So please let's not put water -- our invaluable, irreplaceable, and to some degree uniquely Minnesota -- resource at risk for some temporary jobs.	SO	NS	X	1	
Dan Korpi	please build mine already. We need the minerals to build wind mills (bird choppers)	GEN	NS	X	1	
Chris Erickson	I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal. My understanding is the current proposal does not use the best available technology, for reasons which I do not understand..	ALT	NS	X	1	
Chris Erickson	Furthermore, these types of mines with hundred-plus year treatment obligations are logically suited to more arid landscapes, not in the land of 10,000 lakes, and certainly not next to the pristine BWCA.	WAT	NS	X	1	
John Tonsager	I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal.	GEN	NS	X	1	
John Tonsager	I have an issue with both the financial and ethical aspects of the PolyMet mine. The holding company providing the monetary backing to PolyMet is problematic at best.	FIN	NS	X	1	
John Tonsager	The ore has been and will continue to be in the ground and available forever. There is no demand for this ore that outweighs the risks. Leave it there until sometime in the future when it can be safely extracted and not create such a huge risk to us and the environment.	PD	NS	X	1	

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John Tonsager	We are only fooling ourselves to believe the money can be set aside to mitigate any known and unknown hazard for ever into a future we know nothing about.	FIN	NS	X	1	
kelly hemsath	There will be NO benefit for the State of MN, and it is IMPOSSIBLE for PolyMet to honor any cleanup guarantee into the future....there could be a spill 300 years from now. Just tour ALL the mining failures, they were once state-of-the-art mines too and the same promises were made to their area.	FIN	NS	X	1	
kelly hemsath	350 jobs is one of the most laughable parts of this proposal. Where is the breakdown of income and positions for these ridiculously low number of created jobs? There are so many companies looking for workers in a 200 mile radius that to destroy an entire ecosystem for the profit of overseas CEO's is what makes this deplorable.	SO	NS	X	1	
kelly hemsath	Also, what if PolyMet goes bankrupt? They are off the hook, and who is on the hook?	FIN	NS	X	1	
kelly hemsath	The environmental study is also laughable, using phrases like "not likely" to cause the destruction of the area, and "probably" safe.	GEN	NS	X	1	
kelly hemsath	The RISKS FAR OUTWEIGH any gain the state of MN would benefit from, and what are the details of the 10 billion they say will be the benefit to MN? Their lack of details alone is an embarrassment that the DNR is even considering this	GEN	NS	X	1	
tony vavricka	I oppose sulfide mining in Northern Minnesota.	GEN	NS	X	1	
tony vavricka	The PolyMet FEIS is inadequate under federal and state laws and regulations because health risks and impacts on children, and communities who rely on fish and wild rice for subsistence, including risks from asbestos-like particles and methylmercury.	HU	NS	X	1	
Nicholas Huelster	I am a Minnesotan and a frequent visitor of the Boundary Waters Canoe Area Wilderness. I believe that Minnesota must protect its natural heritage,	GEN	NS	X	1	
Nicholas Huelster	Although there are sound rational and scientific arguments why the mine project would do more harm than good, I am also of the belief that we must on principle be even more automatically protective of our wilderness areas, and this mining project is but one large example of a business-minded decision making process that immorally obstructs what should be a universal Minnesotan principle of environmental conservation of our natural heritage.	GEN	NS	X	1	
Kelly Munson	Wilderness is something that is under assault every day. Because we can't commoditize it, it shrinks in value in people's minds. Minerals are very important to human development but Wilderness is more important. Mining is temporary, nature is forever.	GEN	NS	X	1	
Winifred Tillmann	I am th owner of property in northern Minnesota. The property is on a large lake with a large watershed. The possibility for spills and leaks; although assurances have been given that they would be minimal or none at all, is too great a risk to take in this vulnerable area.	WAT	NS	X	1	
Lynda Pauling	I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal.	GEN	NS	X	1	
Amber Garlan	Do not allow sulfide mining in Northern Minnesota! When sulfur comes into contact with water or oxygen is becomes sulfuric acid. There is no safe way to do sulfide mining. Five hundred years of pollution must be avoided.	GEN	NS	X	1	
Marilyn Benson	Why are we being so shortsighted? Jobs are important. BUT once the natural world is polluted, there is no way back. Why do we think a dam will hold? Look at what happened in Brazil this last week? Why do we think a company will continue into infinity to pay for clean-up?	FIN	NS	X	1	
kathleen kelnberger	With water being the resource touted as more powerful and pervasive to life on earth than oil, I am amazed that it is given so little regard in this proposal. THERE HAS NEVER BEEN A CLEAN COPPER SULFIDE MINE. Why is our DNR, the state government, and our elected officials in a state of denial especially in THIS STATE, which prides our clean and plentiful lakes.	GEN	NS	X	1	

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kathleen kelnberger	I see no gains to be made by Minnesota in pursuing this mining proposal. It will mean the destruction of the thousands of permanent jobs supported by those who travel to the BWCA each year. We are giving that up for a limited (I believe I read 30 year) extraction of an ore which is close to 99% waste. Putting that waste in water, in an already failing tailing pond, is insanity of the worst dimension.	SO	NS	X	1	
Dirk Hanson	I'm not against mining; I'm against mining that is economically and environmentally unsound from the start, meaning that the odds of a cleanup in the future are even worse. This is one of the reasons people speak of the "resource curse," one aspect of which is that some people make money--but not the locals, who just get stuck with the Superfund site. For a grand total of 350 jobs, this one is a bad bargain from every angle.	GEN	NS	X	1	
Matt Straw	Where's the protection for taxpayers? Why aren't "we the people" making demands that THEY clean up their mess afterward? Why aren't we demanding AT LEAST a \$10 million deposit, to be returned only when the pollution is gone and cleaned up by THEM, not US, for a change?	FIN	NS	X	1	
Matt Straw	Why would you otherwise want to risk the CERTAIN gainful employment of tens of thousands of Minnesotans that can be maintained FOREVER with a clean environment through tourism, guiding, retails sales of everything from boats to gasoline, lodging, camping fees, park fees, etc.? Employment gained by that mine is a drop in the bucket comparatively, won't last, and will leave whole communities stunned and hurting with unemployment.	SO	NS	X	1	
Matt Straw	No way will a PolyMet mine help this state. In the long run, it can only impoverish the people and cause health and environmental problems that could last centuries. Only sociopaths could possibly consider accepting the PolyMet plan.	GEN	NS	X	1	
Dr. Scott Cram	I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal. Their documentation is inadequate and assumes that heavy metal binding to mammalian systems is well understood, it is not. The chemistry of heavy metal binding is not understood at the molecular level. Even more critical are biological effects. Toxicity studies have only been done using model tissue culture systems that have been shown to be inadequate when predicting effects on humans. At a minimum normal human cells (vs. say HeLa cells) should be used for toxicity studies involving heavy metals. Peer reviewed literature citations validate my concerns.	HU	S	N	6	
Tom Mattson	I support the polymet proposal as it now stands. That said this whole process along with yet another public comment period has been a disgrace to the human race.	GEN	NS	X	1	
ctok	We are not in favor of the Polymet project. We feel that there have been exaggerated and even dishonest claims about the number of jobs which will become available. We are also unhappy about the reputation of the companies behind this endeavor. There definitely could possibly be threat of danger to the environment and the people who sitll hope to live here after Polymet's proposed 20 year lifespan is complete. My grandchildren will be in their 30's and out of work if they hope to work there. Please count our 2 votes against the project.	GEN	NS	X	1	
Bruce Hart en	The Final EIS for PolyMet's proposed mine concludes an inadequate review of the project's potential environmental effects. After 10 years of study, the Minnesota Department of Natural Resources, U.S. Army Corps of Engineers, and U.S. Forest Service have looked at the evidence and incorrectly found that the NorthMet Mine can comply with strict state and federal environmental standards. The Final EIS for the NorthMet Mine is grossly inadequate from the beginning ! in that it puts a Potential pollution problem in the footprint of an existing pollution problem! - The Co-lead Agencies have spent 10 years evaluating potential project effects and have completely ignored the existing tailings pond. Earthen bermed tailings ponds LEAK and Fail Period ! (an integral Poured Concrete tailing pond shrouded in the crushing and balling mill facility that reuses water from which all sulfides have been removed is requisite !)	PD	NS	X	1	
Bruce Hart en	- The project's water modeling—shows that PolyMet's treatment and mitigation plans will not prevent acid mine drainage and meet all water quality standards unless used in a Engineered Closed Loop Facility	ALT	NS	X	1	
Bruce Hart en	After careful review, of the Final EIS I have concluded that these documents are flawed and skewed to enable 300 iffy jobs and give minnesotand 500 plus years of devastation	GEN	NS	X	1	

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Bruce Harten	In short, the Final EIS does not meet the requirements of todays available technology in that it does not provide a "Completely Closed Loop Facility....One enclosed facility that crushes, ball mills, rod mills, separates, extracts, smelters....reuses water and REMOVES SULFIDES....dries and compacts tailings before returning them to the pit ! "When the power shuts off EVERYTHING STOPS....for a minute or 500 years !	ALT	NS	X	1	
Bruce Harten	The DNR should recognize the inadequacy of the Final EISand serve notice that permitting will not proceed in the future ! Non-ferrous mining is not conducive to maintaining Minnesotas Woods and Wildlife !	GEN	NS	X	1	
Thomas Borbiconi	I am not in favor of this mining.. these company do not care about the environment only profits I worked in the mining industry and I have seen first hand how irresponsible they can be and they pollute everyday and when they get caught all they do is pay the fine and do nothing more	GEN	NS	X	1	
Rowan Glaser	Is this the legacy that the Dayton name wants to be tied to? http://news.yahoo.com/brazil-mining-flood-could-devastate-environment-years-142842186--finance.html RIO DOCE, Brazil (Reuters) - The collapse of two dams at a Brazilian mine has cut off drinking water for quarter of a million people and saturated waterways downstream with dense orange sediment that could wreck the ecosystem for years to come. Or perhaps one of these? http://www.msha.gov/MSHAINFO/FactSheets/MSHAFACT8.HTM When will we accept alternatives that do not harm the earth or its people? How about now!	GEN	NS	X	1	
Jonathan Baker	the proposed Polymet site has the potential to affect some of Minnesota's most wonderful and environmentally sensitive places.	LU	NS	X	1	
Jonathan Baker	Just because a resource is available, does not mean we should do whatever it takes to harvest it. This state and this country have reached a tipping point where we need to say "enough is enough": if we continue to make compromises, soon enough there will be nothing left to compromise.	NEPA	NS	X	1	
Jonathan Baker	Case in point, I grew up in the northwoods of Minnesota, about 25 miles southeast of Walker. What has happened, and continues to happen, to that area is an atrocity. Lakeshore has been developed with the mentality that it is an inexhaustible resource. The result: hardly a lake that isn't overrun with people.	CUM	NS	X	1	
Jonathan Baker	public lands are purchased and set aside not for the benefit of private interests, but for the benefit of the public.	NEPA	NS	X	1	
Jonathan Baker	Certainly there will be short-term benefit to members of the public who will obtain employment at the proposed mine, but those benefits will be short lived.	SO	NS	X	1	
Jonathan Baker	we continue to value benefits to a small group of wealthy individuals over those of the public who enjoys the pristine beauty of northern Minnesota and the vulnerable animals that call the area home.	NEPA	NS	X	1	
Coby Maria	The jobs the mine would provide would be a plus in the short term, but the potential for environmental damage is too great. Northern Minnesota is an outdoor vacation area, tourism also provides a living for many people.	SO	NS	X	1	
Kristopher Olson	Please, please, please, Do not let the true birthright of ALL Minnesotans be literally poisoned and polluted by the lure of money, the amount of which that in the future will be likened to "beads & trinkets" compared to what will have been lost. The number of jobs gained is only politically significant and while the welfare of individuals is certainly affected, there is a greater good that needs to be obeyed. Small towns that exist only because of the business of extracting resources from the earth, have no real or legitimate expectation of that work in perpetuity. These unfortunate peoples lives are being used by the corporate interests that are driving the quite literal desire to rape our land.	GEN	NS	X	1	
grant mcdougall	I feel that this project has been studied to a point that it will be safe. Enough with all the red tape lets get people working and get this mining project started.	GEN	NS	X	1	
David Rutford	I support the permitting of polymet to mine in northern Minnesota. This area of the state is in much need of a diversified employment base and there has not been a company more scrutinized as polymets. Issue the permits and the whole state will benefit!	SO	NS	X	1	

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mbk004@frontiernet.net	Polymet, if allowed to run its course, is going to ruin what's left of this state's watersheds in too many ways to list. We've destroyed countless wetlands and watersheds with our arrogant, ignorant, meddling human ways as it is without even counting mining.	GEN	NS	X	1	
mbk004@frontiernet.net	It is already polluting as it stands with unlined basins holding tailings just a-seeping away - & they just plan on heaping the newly created pile of it on top of that. Eventually it will seep & pollute its way to Lake Superior, bottom line.	WAT	NS	X	1	
mbk004@frontiernet.net	If you depend on water, or know someone who does...please take a stand against open pit mines or any mines in or near a watershed in Minnesota. Mining can't be done clean. Period.	GEN	NS	X	1	
Ron shoden	The DNR, U.S. Army Corps of Engineers and the U.S. forest service have determined after 10 long, grinding years of study that the North Met Mine project has proven they can and intend to comply with the extremely strict state and federal environmental standards. Obviously, the Polymet opponents do not trust these agencies, which is totally ridiculous. We thank these agencies for their hard work in drawing this process to a very expected positive result. Congrats and "LET'S GET THIS PROJECT STARTED"!!!!	GEN	NS	X	1	
todd danielson	Can I do this everyday? I certainly will if it helps over power those environmentalist IDIOTS!	GEN	NS	X	1	
Bill Doran	I live on Lake Eshquaguma and SUPPORT the MN final EIS for the Polymet project	GEN	NS	X	1	
rkhudnut@aol.com	It is my understanding that the EIS was prepared without the dry-filtered tailings approach, which produces one one-tenth of 1 percent of the contaminated seepage of PolyMet's wet slurry tailings waste heaps.	ALT	NS	X	1	
rkhudnut@aol.com	It is inconceivable that Minnesota would even consider granting a permit to PolyMet, which states that "We have not developed or operated any mines, and we have no operating history upon which an evaluation of our future success or failure can be made."	GEN	NS	X	1	
rkhudnut@aol.com	Furthermore, PolyMet's parent company, Glencore, is in grave financial condition, selling off assets, eliminating its dividend, closing two African copper mines, laying off large numbers of workers. How could such a company possibly guarantee the funding needed for PolyMet, not only now but for the hundreds of years into the future that PolyMet will be required to continue monitoring and remediating?	FIN	NS	X	1	
rkhudnut@aol.com	For these reasons alone, no permit to PolyMet should be issued.	GEN	NS	X	1	
LS	Please protect the health of Minnesota infants and children. Please support the Minnesota Department of Health's request for a comprehensive analysis of the human health risks of the proposed PolyMet NorthMet copper-nickel mine.	HU	NS	X	1	
LS	It is important to assess: 1.) Risks to vulnerable populations -- infants, children, and people who rely on fish for subsistence -- from increases in mercury contamination of fish in the lower reaches of the St. Louis River, as well as the Partridge and Embarrass River watersheds. 2.) Risks to the health of plant and mine workers from exposure to cancer-causing asbestos-like fibers and metal dust. 3.) Risks to downstream communities and residential well owners from arsenic, manganese, and other toxic metals seeping into drinking water.	HU	S	O	2	FEIS Section 7.3.4
LS	Doctors and nurses across Minnesota have asked that a comprehensive analysis of human health risks be performed for the PolyMet sulfide mine project under the guidance of the Minnesota Department of Health. Department of Health Commissioner, Dr. Edward Ehlinger, has recommended to the Minnesota DNR that a Health Impact Assessment be prepared to help policymakers balance health risks and potential benefits of the PolyMet project. Please follow the advice of Minnesota's medical leaders and protect the health of generations to come. Push the Department of Natural Resources to require a Health Risk Assessment managed by the Department of Health as part of the PolyMet environmental review process and direct the Department of Health to initiate a Health Impact Assessment for the PolyMet sulfide mine project to address public health concerns.	HU	S	O	2	FEIS Section 7.3.4

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Carol bechtel	The long-term health of Minnesota's waters & the tourism industry is worth much more than a limited number of jobs for a limited time.	SO	NS	X	1	
Carol bechtel	Mining is an exploitive industry by nature & we need to get beyond it.	GEN	NS	X	1	
Carol bechtel	Even the Eagle mine in MI that is supposed to be a model is rife with environmental problems & potential problems.	GEN	NS	X	1	
Carol bechtel	If there is any kind of glitch, it is too late.	GEN	NS	X	1	
dale Saari	I never commented. Just hoping it goes through. What more can the range handle.	GEN	NS	X	1	
Chad Sahr	This is simple. They will meet everything they need to and we NEED the jobs. Done deal, move forward!	GEN	NS	X	1	
David Marty	Polymet and the DNR have been excruciatingly meticulous in reviewing the possible environmental impact of a Polymet mining operation. We have met due diligence and it is time to move forward with this project	GEN	NS	X	1	
Leah Nelson	While PolyMet claims that sulfide mining will "diversify" the mining economy, I feel that it is not the kind of economic diversification we need in northern Minnesota. We need to protect our sustainable industries that depend on environmental health for the future hundreds of years.	SO	NS	X	1	
Leah Nelson	I dread to see the day where the PolyMet 'bust' occurs and people are out of jobs along with loss or degradation of our most precious natural resource - water.	SO	NS	X	1	
Leah Nelson	Sweetwater is a synonym for 'fresh water' - I hope to see it preserved as I know it for the rest of my life and into the future.	WAT	NS	X	1	
Leah Nelson	I am proud to be a Minnesotan - I'm happy to live in a place where my environmental values and priorities are supported in government - a luxury and privilege not many can claim.	NEPA	NS	X	1	
Leah Nelson	I believe that allowing this project to happen would be a mistake.	GEN	NS	X	1	
Greg Holcomb	It is my opinion the groups that lined up against Polymet, from the very beginning, would be against any mining, even if they had total control over the operation. It is the same world view that is destroying good paying jobs in my industry. For the "environmentalist" the only solution is NO.	GEN	NS	X	1	
Jim Companion	I believe they can comply safely with the clean water, If they circle the holding pond with. Sheet piling within. the berm surrounding the holding ponds.	GEN	NS	X	1	
Catherine Johnson	I would like to express my strong opposition to the proposed Copper Nickel plan offered by Polymet.	GEN	NS	X	1	
Catherine Johnson	1) Copper mining in such a valuable wetland area will permanently harm this valuable resource that we hold dear to us, including Lake Superior.	WET	NS	X	1	
Catherine Johnson	2) There is not a 100% assurance that this operation is capable of cleaning up a spill if it does occur (Polymet and its partner Glencore have had financial difficulties recently). More likely, a Superfund would be created with the obligation falling to the taxpayers.	FIN	NS	X	1	
Catherine Johnson	3) This operation has been compared to the Michigan mine, which is underground. This is not comparable as an underground mine better contains the toxins that occurs with Copper Mining.	ALT	NS	X	1	
Catherine Johnson	4) Tourism is a large part of this beautiful area and a toxic spill would result in the loss of many valuable jobs and businesses in the area that rely on tourism. 5) Mining is a very unreliable job venture, as proven by the recent layoffs. A determination to approve just to provide jobs is unrealistic and unsustainable.	SO	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
dancath	I am opposed to Copper mining in Northern Minnesota. The cost of polluting this valuable natural area is too high to permit an operation like this from happening. By allowing Polymet, you open the door to other operations as well, each with the potential to permanently harm our natural environment. The DNR has the responsibility to protect the natural resources and is not obligated to hold up the economy of the Iron Range. Please do not allow Copper Nickel Mining in this area.	GEN	NS	X	1	
steve merling	I am all for this project to go forward!	GEN	NS	X	1	
Richard Schuh	Please protect the health of Minnesota infants and children. Please support the Minnesota Department of Health's request for a comprehensive analysis of the human health risks of the proposed PolyMet NorthMet copper-nickel mine.	HU	NS	X	1	
Richard Schuh	It's important to assess: 1.) Risks to vulnerable populations -- infants, children, and people who rely on fish for subsistence -- from increases in mercury contamination of fish in the lower reaches of the St. Louis River, as well as the Partridge and Embarrass River watersheds. 2.) Risks to the health of plant and mine workers from exposure to cancer-causing asbestos-like fibers and metal dust. 3.) Risks to downstream communities and residential well owners from arsenic, manganese, and other toxic metals seeping into drinking water.	HU	NS	X	1	
Richard Schuh	Doctors and nurses across Minnesota have asked that a comprehensive analysis of human health risks be performed for the PolyMet sulfide mine project under the guidance of the Minnesota Department of Health. Department of Health Commissioner, Dr. Edward Ehlinger, has recommended to the Minnesota DNR that a Health Impact Assessment be prepared to help policymakers balance health risks and potential benefits of the PolyMet project. Please follow the advice of Minnesota's medical leaders and protect the health of generations to come. Push the Department of Natural Resources to require a Health Risk Assessment managed by the Department of Health as part of the PolyMet environmental review process and direct the Department of Health to initiate a Health Impact Assessment for the PolyMet sulfide mine project to address public health concerns.	HU	NS	X	1	
Gretchen Flynn	Minnesota's waters are our most important resource and nothing should be undertaken that would pollute them.	WAT	NS	X	1	
Gretchen Flynn	the thought that the mine will have to be monitored indefinitely says it all. Will we still have to be testing and watching 100 years from now?	WAT	NS	X	1	
Gretchen Flynn	If this sounds ridiculous look at the abandoned gold mines in the west. They are still dumping sulfides decades after they have closed.	PD	NS	X	1	
sam shaw	opening the mine under very strict rules, exercising strict testing practices and maintaining the natural resource so that now and into the future it can be monitored and kept clean, I can only say that this resource should be mined, it should be opened and passed.	PER	NS	X	1	
David Collins	Minnesota's permitting process is cumbersome and unpredictable, and being exploited and further complicated by endless meddling from opponents to everything. Time to move the process forward in a timely and ordered manner and resolve this issue soon, hopefully it support of the project which seems to have proven its viability.	PER	NS	X	1	
Lyle Salmi	The risks of such a project far outweigh the short term economic gains. Stop this project from moving forward. Our natural resources are too valuable to allow the potential for pollution from this type of mining.	GEN	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Mike McDonald	I support the current PolyMet NorthMet copper-nickel sulfide mine proposal. The PolyMet Final Environmental Impact Statement (FEIS) is adequate under both federal and state standards; I do not object to the U.S. Forest Service proposal to exchange Superior National Forest land for the PolyMet proposal; and I support issuing any federal permit allowing PolyMet to develop wetlands and improve water quality. The PolyMet FEIS is adequate under federal and state laws and regulations because: - It succeeds to evaluate pollution risks to drinking water, fish, wild rice and human health using realistic assumptions about how much polluted seepage will be captured and treated during operations, reclamation, and closure. - It succeeds to analyze health risks and impacts on children, workers and communities who rely on fish and wild rice for subsistence, including risks from asbestos-like particles and methylmercury. - It does evaluate the impacts of polluted seepage north of the mine site on the 100 Mile Swamp and the Rainy River (Boundary Waters area) Basin. - It succeeds to adequately consider alternatives to minimize environmental harm, reduce polluted seepage from unlined permanent waste facilities, mitigate wetlands destruction, and reduce the threat of catastrophic dam failure. I do not object to the proposed NorthMet Mining Project Land Exchange in the Superior National Forest because: - It does not conflict with federal policy to protect wetlands, resulting in direct destruction of 913 acres of wetlands and destruction or impairment of up to 8,264 acres of wetlands. - It would not degrade surface and groundwater, violating the Superior National Forest plan and state, federal and tribal water quality standards. - It would not harm endangered, threatened and species of concern, including the northern goshawk, great gray owl, lynx and moose. - It is in the public interest, would not impair tribal resources, and would not result in a loss of ecological services.	O	NS	X	1	
Jim Bendtsen	I fully support the current PolyMet NorthMet copper-nickel sulfide mine proposal. The PolyMet Final Environmental Impact Statement (FEIS) is fully adequate under both federal and state standards; I support the U.S. Forest Service proposal to exchange Superior National Forest land for the PolyMet proposal.	GEN	NS	X	1	
Eric Ament	I don't want to pay for someone else to get rich. That is not the America I know. I will be paying, my children will be paying and for 10 generations we will be left paying for the cleanup when the problems do arise. Perpetual cleanup is not okay. We might see some brief profits but our future generations won't. Instead we are asking them to pay for us when we should be investing in them.	FIN	NS	X	1	
Eric Ament	This company will close this mine if opened. Ask yourself how this process will happen. Look at all the examples of mining companies who have closed mines. Have you researched how many of them go bankrupt? If the company goes bankrupt who will pay for the cleanup? What are the statistical probabilities of a company being around in 500 years? If they aren't around who will be paying to clean the tailing, the water? Perpetual cleanup or 500 years is too long to comprehend. The legality of the pollution that needs to be controlled is debatable. But even if it was found legal it is not the representation we need from our politicians. We need politicians who can look at the morality in this to make the right decision.	FIN	NS	X	1	
Eric Ament	The government is in place to protect the people....the majority. It is also in place to step in and make difficult decisions for the people and their well being. If laws need to be changed to protect the majority then we need to think about those. It shouldn't be as much about is this legal right now or not. Laws change. If a mine goes in and disrupts a population there is no going back. Yes, there are some short term economic gains. But we need to project our budget into the future and all I see is the majority of people paying for a small few people to get rich.	PER	NS	X	1	
Sieglinde Gassman	approval of this short-termed venture assumes that there will be long-term negative effects on the environment ifn the state of Minnesota. We should not be undertaking any such thing. There are other initiatives to provide jobs without trading and destroying land and pollutting the water.	SO	S	O	2	SDEIS Theme SO 01
Linda Rolf	We don't owe 300 people a job or Polymet a mine. There has never been a safe copper-nickel mine--ever--so why would you trust Polymet, who has never operated this kind of mine, to be the first? Even if there were no Mt. Poly-like natural disaster, the toxic waste water from this mine would still need to be treated for 200 to 500 years. How could you even calculate the cost of the treatment, let a full scale disaster? I wonder what the reviewers of Mt. Poly, Ladysmith and all the other copper-nickel disasters recommended? Can't MN learn from all the other existing copper-nickel disasters?	GEN	NS	X	1	

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Linda Rolf	Freshwater and a clean environment are a million times more valuable to the people of this state than this dirty mine. I don't care how many years you spent studying this mine, anyone with a shred of common sense should know better than to gamble with our pristine wilderness areas and freshwater. I have to ask what the MN DNR and the other government agencies are getting out of this doomed venture? Do the math: 300 jobs for 20 years vs. 500 or more years of toxic cleanup paid for by the MN taxpayers or whatever entity rules this region in the year 2565. By that time, the state of MN may no longer exist and Polymet most likely will cease to exist after they have finished extracting our natural resources and polluting the Boundary Waters, Lake Superior and all the related waterways because that is the modis operendi of mining companies.	GEN	NS	X	1	
Linda Rolf	The fact that you did not have a single objection to Polymet's plan is a huge red flag. Hopefully, you will actually listen to the opinions of native Minnesotans this time instead of just going through the motions like you have done in several recent public comment periods. You have the responsibility to do what is right for the state and people of MN--not yourselves, Polymet or the 300 Iron Rangers who are demanding jobs at any cost. 300 jobs is a pathetic reason to risk MN crown jewels. Reject the Polymet Mine in the name of reason, dollars and common sense, and the pristine legacy we owe to future Minnesotans who deserve to inherit a state that is at least as good as the one we inherited. Just Say NO to Polymet!	GEN	NS	X	1	
Linda Rolf	I request a specific response to my comments.	O	NS	X	1	
Art Alanen	Because all northern Minnesota should work for minimum wage while they wait on Twin City tourists.	GEN	NS	X	1	
Ray Cleveland	Please approve PolyMet's plan. No company in its right mind would proceed with a project haphazardly with the astonishingly high degree of scrutiny the offered by the lefty dirt worshiping goons deployed by environmental extremists.	O	NS	X	1	
Paul Sears	That water treatment would be needed for hundreds of years is unacceptable. Consider that it has not been determined for HOW MANY hundred years that water treatment will be required. 400? 900? 14,900? How can this proposed mine be justified to uncountable future generations? What will they think of us, if we allow this mine to happen?	GEN	NS	X	1	
Duluth Coffee Company Eric Faust	We are a growing group of 56 small businesses, representing a cross-section of industries, including technology, manufacturing, service, entertainment and the trades. We employ nearly 1000 people in the North and we are continuing to succeed and invest, adding jobs and dollars to our economy. Our businesses depend on the health of our watershed. WE ARE PRO RESPONSIBLE MINING AND PRO JOBS We support and benefit from ferrous mining, which has built the economy and culture of the North. We rely on mined products in our businesses. As primarily owner-operators, we are pro worker and pro quality of life, and we have and will continue to rely on union labor as we expand. We are vitally connected to the entire regional economy, and its success is our success. COPPER-NICKEL MINING POSES A SIGNIFICANT NEW THREAT TO OUR WATERSHED But we are also part of a regional ecology, which is why we are concerned about copper-nickel mining. The proposed PolyMet NorthMet copper-nickel mine, and others like it, are vastly different from ferrous mining, and have the potential to spread toxic metals throughout our watershed. In copper-nickel mining, water that passes through the site leaches toxic metals, including mercury, from the metallic sulfide ore. According to the NorthMet Environmental Impact Study (EIS), this pollution will continue for a "minimum of 200 years at the Mine Site and a minimum of 500 years at the Plant Site," requiring treatment "indefinitely". 1,2 Flow path maps in the EIS show that the plume of contamination will reach the Partridge and Embarrass Rivers, which flow to the St. Louis River and ultimately Lake Superior.3 This mine does not just threaten a water source; it threatens one of the world's greatest freshwater resources. Lake Superior contains 10% of the world's freshwater. We trust that PolyMet intends to meet all applicable regulations, but our concerns are based on the track record of similar projects. We welcome them to show us one metallic sulfide mine of this type that has operated for 10 years and been closed for 10 years without exceeding government pollution standards. Indeed, under Wisconsin's 'Prove It First' law, no such example has yet been identified. Like the rest of the resources we rely on, we want mining to continue to become more technologically advanced and more environmentally friendly. But until the technology is proven, we simply don't believe the Land of 10,000 Lakes is the place for a test case. WE'RE STILL CLEANING UP FROM THE UNSUSTAINABLE PRACTICES OF THE PAST The St. Louis River, after decades and more than \$100 million dollars spent on	GEN	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
	<p>cleanup from the unsustainable practices of the past, is finally becoming a safe place to live, work and play again. Up to an estimated \$240 million will likely be spent over the next 5 years to continue the cleanup and restoration. We owe it to future generations to finish the cleanup, not to put our water at risk again. THE RISK TO OUR REGIONAL ECONOMY OUTWEIGHS THE BENEFIT The value of jobs now is real, in any number. We all rely on mined products. And yes, copper mining has to happen somewhere. However, we believe this type of mine, in one of the world's great freshwater resources, is too great a risk. We know some people will take issue with us getting involved in what is perceived to be a political issue. Indeed, a recent article in the newspaper - without a clear explanation of our position - was enough to cause some of our customers to boycott our products. This is an economic issue resulting from an environmental issue. We believe the risk to the environment poses a long-term threat to the regional economy that far outweighs the shortterm benefits. OUR REQUEST: INVEST THE MONEY THE STATE WOULD SPEND ON POLYMET IN SUSTAINABLE LOCAL BUSINESS DEVELOPMENT INSTEAD</p>					
Duluth Coffee Company Eric Faust	<p>There is an alternative to the boom and bust extraction economy that benefits foreign corporations and leaves local communities worse off in the end. Our locally owned small businesses are proof positive that a more sustainable model is possible. We, and other locally owned businesses, will continue to reinvest the wealth we create into new jobs over the next 20 years. And there's another important resource on the table the money the state will spend on environmental review, permitting and regulation of Polymet. We call on Governor Dayton to reject the Polymet proposal, and instead invest that state money in sustainable local small business development on the Range. This investment has the potential to make a larger and longer-term impact than the proposed copper-nickel mining project. WE WILL CONTRIBUTE TO JOB GROWTH AND LESSEN OUR DEMAND FOR MINERALS We will do our part to contribute to job growth in the North, and we will reach out to existing Range businesses to partner with them wherever possible. We will also continue our efforts to lessen our demand for minerals by using resources more efficiently. WE WELCOME CONTINUED CONVERSATION We know our voice is only one of many, but we feel it is necessary to say that this is more complicated than jobs vs. the environment. Both are important, and they are linked, and we hope to engage in an amicable debate about responsible mining and building a more sustainable economy in the North for generations to come. We invite other businesses across the region to reach out to us and become part of the Coalition. Sign up at DownstreamBusinessCoalition@gmail.com. And we thank the customers & suppliers that stick by us. WHO'S INVOLVED? See our members page for a list of businesses involved. MEMBERS 1 PFEIS (Preliminary Final Impact Statement, NorthMet Mining Project and Land Exchange), Minnesota Department of Natural Resources, U.S. Army Corps of Engineers and U.S. Forest Service, June 2015, pp. ES-26 and 5-8. 2 Supplemental Draft Environmental Impact Statement for the NorthMet Mining Project and Land Exchange, Appendix C, November 2013, p. 12 3 PFEIS, Figures 5.2.2-7 and 5.2.2-9</p>	NEPA	S	O	6	SDEIS Theme NEPA 06

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Lake Superior Art Glass	<p>We are a growing group of 56 small businesses, representing a cross-section of industries, including technology, manufacturing, service, entertainment and the trades. We employ nearly 1000 people in the North and we are continuing to succeed and invest, adding jobs and dollars to our economy. Our businesses depend on the health of our watershed. WE ARE PRO RESPONSIBLE MINING AND PRO JOBS We support and benefit from ferrous mining, which has built the economy and culture of the North. We rely on mined products in our businesses. As primarily owner-operators, we are pro worker and pro quality of life, and we have and will continue to rely on union labor as we expand. We are vitally connected to the entire regional economy, and its success is our success. COPPER-NICKEL MINING POSES A SIGNIFICANT NEW THREAT TO OUR WATERSHED But we are also part of a regional ecology, which is why we are concerned about copper-nickel mining. The proposed PolyMet NorthMet copper-nickel mine, and others like it, are vastly different from ferrous mining, and have the potential to spread toxic metals throughout our watershed. In copper-nickel mining, water that passes through the site leaches toxic metals, including mercury, from the metallic sulfide ore. According to the NorthMet Environmental Impact Study (EIS), this pollution will continue for a "minimum of 200 years at the Mine Site and a minimum of 500 years at the Plant Site," requiring treatment "indefinitely". 1,2 Flow path maps in the EIS show that the plume of contamination will reach the Partridge and Embarrass Rivers, which flow to the St. Louis River and ultimately Lake Superior.3 This mine does not just threaten a water source; it threatens one of the world's greatest freshwater resources. Lake Superior contains 10% of the world's freshwater. We trust that PolyMet intends to meet all applicable regulations, but our concerns are based on the track record of similar projects. We welcome them to show us one metallic sulfide mine of this type that has operated for 10 years and been closed for 10 years without exceeding government pollution standards. Indeed, under Wisconsin's 'Prove It First' law, no such example has yet been identified. Like the rest of the resources we rely on, we want mining to continue to become more technologically advanced and more environmentally friendly. But until the technology is proven, we simply don't believe the Land of 10,000 Lakes is the place for a test case. WE'RE STILL CLEANING UP FROM THE UNSUSTAINABLE PRACTICES OF THE PAST The St. Louis River, after decades and more than \$100 million dollars spent on cleanup from the unsustainable practices of the past, is finally becoming a safe place to live, work and play again. Up to an estimated \$240 million will likely be spent over the next 5 years to continue the cleanup and restoration. We owe it to future generations to finish the cleanup, not to put our water at risk again. THE RISK TO OUR REGIONAL ECONOMY OUTWEIGHS THE BENEFIT The value of jobs now is real, in any number. We all rely on mined products. And yes, copper mining has to happen somewhere. However, we believe this type of mine, in one of the world's great freshwater resources, is too great a risk. We know some people will take issue with us getting involved in what is perceived to be a political issue. Indeed, a recent article in the newspaper - without a clear explanation of our position - was enough to cause some of our customers to boycott our products. This is an economic issue resulting from an environmental issue. We believe the risk to the environment poses a long-term threat to the regional economy that far outweighs the shortterm benefits. OUR REQUEST: INVEST THE MONEY THE STATE WOULD SPEND ON POLYMET IN SUSTAINABLE LOCAL BUSINESS DEVELOPMENT INSTEAD There is an alternative to the boom and bust extraction economy that benefits foreign corporations and leaves local communities worse off in the end. Our locally owned small businesses are proof positive that a more sustainable model is possible. We, and other locally owned businesses, will continue to reinvest the wealth we create into new jobs over the next 20 years. And there's another important resource on the table the money the state will spend on environmental review, permitting and regulation of Polymet. We call on Governor Dayton to reject the Polymet proposal, and instead invest that state money in sustainable local small business development on the Range. This investment has the potential to make a larger and longer-term impact than the proposed copper-nickel mining project. WE WILL CONTRIBUTE TO JOB GROWTH AND LESSEN OUR DEMAND FOR MINERALS We will do our part to contribute to job growth in the North, and we will reach out to existing Range businesses to partner with them wherever possible. We will also continue our efforts to lessen our demand for minerals by using resources more efficiently. WE WELCOME CONTINUED CONVERSATION We know our voice is only one of many, but we feel it is necessary to say that this is more complicated than jobs vs. the environment. Both are important, and they are linked, and we hope to engage in an amicable debate about responsible mining and</p>	GEN	NS	X	1	

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	building a more sustainable economy in the North for generations to come. We invite other businesses across the region to reach out to us and become part of the Coalition. Sign up at DownstreamBusinessCoalition@gmail.com . And we thank the customers & suppliers that stick by us.					
Robert Gore	Why would we take any action that has the possibility of destroying what we live most about Minnesota? It's crazy. There is risk. It IS a possibility. That means it can happen. Your names would be associated with this destruction. Earthen dams can break. 1,000 year flood events occur. We are setting a poisonous trap that will survive 100s of years. It is not worth it. I worked in economic development for a year up on the Iron Range, and I can tell you nothing will change until the Iron Range is able to move away from mining. Approving the mine is foolish. 300 jobs is a pittance for what we are risking.	GEN	NS	X	1	
Scott Slocum	The PolyMet NorthMet sulfide mining proposal and the Final EIS is inadequate to guarantee environmental safety or long-term economic advantage. It would generate decades of revenue at the higher cost of centuries of pollution abatement, with the risk of environmental disaster in the case of an undetected leak or an uncontrollable breach from containment. The MN DNR should reject the PolyMet Final EIS.	MEPA	NS	X	1	
Scott Slocum	The USFS should reject the proposed exchange of Superior National Forest lands for the PolyMet project. The EPA and Army Corps of Engineers should deny any Section 404 permit that would allow PolyMet discharge to pollute wetlands and public waters.	ROD	NS	X	1	
jennifer schad	Hello, I object to PolyMet's mine plan in Northern Minnesota.	GEN	NS	X	1	
Joe Krall	I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal. Even if the mine operates for 30 years and creates 2000 jobs for Minnesotans (which is debatable), a disaster would wipe out 10s of thousands of jobs in the tourism industry. A disaster would also destroy a beautiful wildlife habitat. So once again, it all boils down to money. Let Minnesota set an example for the rest of the country by declaring our clean air, water and land is more precious than a few tons of copper.	GEN	NS	X	1	
Robert Oliva	I feel that mining is shortsighted and betting the farm on a few years if mining over a lifetime of pristine beauty is ridiculous.. The Ely area economy is doing fine and it's tourist based economy will only grow as the population grows. How many true wilderness areas are left in this country. Not many, How many places on the planet are left with clean water? Water that you can drink directly from the lakes without any ill effects. Not many. I know a few people dream about the hey day of the sixty coming back. What killed a lot of small towns wasn'tt a lack of jobs it was progress. Mega malls, big box stores and the internet. I can get things cheaper at Amazon.com. Delivery right to the house the next day. A mine might make a few people prosperous but not necessarily the community as a whole. We do have mines in northern Minnesota and many of these communities don't seem very prosperous. Not as prosperous as mining proponents would lead you to believe. I'm willing to bet Ely's future on a pristine area of Resorts and wilderness over growth and mining. Let's look out 50 or even 100 years like our leaders of the past were willing to do. As the population of the planet grows there will be fewer and fewer areas like the arrowhead region left. The kind of Mining proposed for the Ely area has a lousy track record. Let the big mining companies prove their new mining practices some place else. The head of the Kawishiwi river, which leads directly into the heart of the BWCAW is not the best place to try this out. The minerals will still be there after these new mining practices are proven. Once an area is polluted it is almost impossible to bring.it back. Holing ponds don't always hold and water treatment aren't always effective.	GEN	NS	X	1	
Downstream Business Coalition c/o Loll	The proposed PolyMet NorthMet copper-nickel mine, and others like it, are vastly different from ferrous mining, and have the potential to spread toxic metals throughout our watershed. In copper-nickel mining, water that passes through the site leaches toxic metals, including mercury, from the metallic sulfide ore.	PD	NS	X	1	

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Designs						
Downstream Business Coalition c/o Loll Designs	Flow path maps in the EIS show that the plume of contamination will reach the Partridge and Embarrass Rivers, which flow to the St. Louis River and ultimately Lake Superior.3 This mine does not just threaten a water source; it threatens one of the world's greatest freshwater resources. Lake Superior contains 10% of the world's freshwater.	WAT	NS	X	1	
Downstream Business Coalition c/o Loll Designs	We trust that PolyMet intends to meet all applicable regulations, but our concerns are based on the track record of similar projects.	PD	NS	X	1	
Downstream Business Coalition c/o Loll Designs	We welcome them to show us one metallic sulfide mine of this type that has operated for 10 years and been closed for 10 years without exceeding government pollution standards. Indeed, under Wisconsin's 'Prove It First' law, no such example has yet been identified.	PD	S	N	5	
Downstream Business Coalition c/o Loll Designs	Like the rest of the resources we rely on, we want mining to continue to become more technologically advanced and more environmentally friendly. But until the technology is proven, we simply don't believe the Land of 10,000 Lakes is the place for a test case.	PD	NS	X	1	
Downstream Business Coalition c/o Loll Designs	The St. Louis River, after decades and more than \$100 million dollars spent on cleanup from the unsustainable practices of the past, is finally becoming a safe place to live, work and play again. Up to an estimated \$240 million will likely be spent over the next 5 years to continue the cleanup and restoration. We owe it to future generations to finish the cleanup, not to put our water at risk again.	WAT	S	N	2	SDEIS Theme WR 158
Downstream Business Coalition c/o Loll Designs	THE RISK TO OUR REGIONAL ECONOMY OUTWEIGHS THE BENEFIT The value of jobs now is real, in any number. We all rely on mined products. And yes, copper mining has to happen somewhere. However, we believe this type of mine, in one of the world's great freshwater resources, is too great a risk. We know some people will take issue with us getting involved in what is perceived to be a political issue. Indeed, a recent article in the newspaper - without a clear explanation of our position - was enough to cause some of our customers to boycott our products. This is an economic issue resulting from an environmental issue. We believe the risk to the environment poses a long-term threat to the regional economy that far outweighs the short-term benefits.	SO	NS	X	1	
Downstream Business Coalition c/o Loll Designs	OUR REQUEST: INVEST THE MONEY THE STATE WOULD SPEND ON POLYMET IN SUSTAINABLE LOCAL BUSINESS DEVELOPMENT INSTEAD There is an alternative to the boom and bust extraction economy that benefits foreign corporations and leaves local communities worse off in the end. Our locally owned small businesses are proof positive that a more sustainable model is possible. We, and other locally owned businesses, will continue to reinvest the wealth we create into new jobs over the next 20 years. And there's another important resource on the table the money the state will spend on environmental review, permitting and regulation of PolyMet. We call on Governor Dayton to reject the PolyMet proposal, and instead invest that state money in sustainable local small business development on the Range. This investment has the potential to make a larger and longer-term impact than the proposed copper-nickel mining project.	SO	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Kim Young	I object to PolyMet for all the reasons above, and I live in northern Minnesota. We already have problems from mining here in the north. Mesothelioma is a huge problem from mining, although everyone thinks of taconite mining as safe. Spills are basically a given although know one really wants to believe it will happen. How can we play with the most precious resource we have-water??? For a few hundred jobs for a number of finite years? People of the north deserve jobs that will last. I believe that this FEIS has been tainted by biased people, people that want to give people jobs for the wrong reasons. Science should be taken into more consideration than politics. Science is what matters and is reliable. Water models should be done by an independent company to check Barr Engineerings results. Please be considerate of science, not just what people want to happen.	GEN	NS	X	1	
John Deitering	The polymet is an INSANE idea...to risk our environment for hundreds of year for a few hundred jobs for 20 years. Here is a better idea: hire the same number of people and have them retrofit every public building north of Minneapolis . You will not only save the environment, but you will get your money back over time in energy savings.	GEN	NS	X	1	
Shylan Rose	I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal. Based on U.S. and Minnesota history of mining pollution and other serious environmental damage from industrial pursuits, I have no reason to believe that this mining would be conducted in a way that would not damage the environment--and the humans that treasure and depend on it for our lives and livelihoods. The few jobs that would be provided by a copper-nickel mine could destroy just as many jobs by damaging an environment that must remain pristine in order to support a vibrant tourism industry, and in order to provide clean drinking water, edible fish, safe swimming, and non-toxic soil to support food plants and natural ecosystems. I have no trust in either regulators or PolyMet to conduct copper-nickel mining AND safeguard the environment. As a former canoe guide in the Boundary Waters and Quetico; as someone already concerned about toxins in Minnesota fish that I would like to eat; as someone acutely aware of how much I depend on a clean, healthy environment for my well-being, and as a daily user of copper and nickel in the infrastructure of my life: I object to this mine. We can recycle copper and nickel that have already been mined. We can also find and create alternatives to the ways we use these metals. We can not find an alternative to a clean environment; we cannot continue to poison our life-support system. It has been reported that this mine may create "some pollution" that may take 100 years or more to clean up. That is absolutely unacceptable. The few people who would profit from this mine would be stealing everything--potable water, nontoxic soil, a healthy healing vibrant ecosystem to live in--from generations of people over an unknown geographic area, leaving them with unsaleable land, undrinkable and unswimmable water, destruction of their tourism industry, and destruction of their health. That is absolutely unacceptable. We can do better and we must. I oppose the PolyMet copper nickel mine as it is currently proposed.	GEN	NS	X	1	
Gary Gross	I support the current PolyMet NorthMet copper-nickel sulfide mine proposal. Let's get this thing built ASAP so that the hard-working people on the Range can find meaningful employment.	SO	NS	X	1	
brad carlson	i do not want the polymet mining to be allowed. there are all sorts of reasons i do not want this type of mining to be allowed in the state of minnesota overall but the thought of it being allowed in the water rich environment of n.e. minnesota is appalling. it is my researched and verified opinion that this type of mining/industry will cause profound irreparable damage to the area. anyone who believes an industry that leaves behind horrendous pollution problems that last for hundreds of years should be allowed to operate has not thought through the issues. I OPPOSE THE POLYMET MINING AND WANT THE PERMIT DENIED.	GEN	NS	X	1	
Melissa Roach	I oppose issuing any federal permit allowing PolyMet discharge of pollutants that will destroy wetlands, municipal water supplies, aquatic life, wildlife, human health and welfare, environmental justice and special aquatic sites.	GEN	NS	X	1	
DD W	I am really surprised that we are having this discussion and wasting our time and resources on entertaining a proposal from people like this and within the Federally Protected area of the Boundary Waters Canoe Area (BWCA), which flows into the "cleanest"/largest body of fresh water in the world. When are we going to learn that raping, pillaging, and plundering the landscape isn't SUSTAINABLE? First we cut down all the trees in that region, then we take away their topsoil and other parts	GEN	NS	X	1	

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	of the healthy ecosystem, then we take as much of the iron ore as we profitably can, and now PolyMet open-pit copper-sulfide mining. Can't you see the outcome for these people continues to get worse with ever stage of raping, pillaging, and plundering their landscape? What is the current health of that area after all the years raping, pillaging, and plundering? PolyMet open-pit copper-sulfide mining would be catastrophic to that part of Minnesota and beyond. Also, pay attention to where the Laurentian Divide is; they have already crossed that line, which should have never happened in the first place. I wish Albert Einstein was here to tell you this, maybe people would get it. He might say, "Insanity is doing the same thing over and over again and expecting different results." Which sub-committee at the Minnesota State Capital is in charge of making decision(s) regarding this matter? Why is it so hard to say, "NO, go away"? Who on this email list supports this mining in the BWCA watershed? Who on this email list opposes this mining in the BWCA watershed? Have you read the link below; I'm sure there is more too, but this really seems like a "no-brainer"? After first search and picking first non-profit, I get this info: http://www.miningtruth.org/sulfide-mining-minnesota/polymet-mine-proposal/#.Vk6aXXarTcs					
Elizabeth Larsen	I strongly oppose the entire PolyMet's project, it will cause far more harm than anything good that comes of it. The EIS does not assess the value of the ecological benefits the lands that will be impacted will cost the people and they must be calculated to provide us with a meaningful evaluation of the project	GEN	NS	X	1	
John Eggert	I want to express my opposition to the Northmet project. It is not safe for our environment and the company does not have a good record.	GEN	NS	X	1	
KR STOKES	I am in favor of the current PolyMet NorthMet copper-nickel sulfide mine proposal. The PolyMet Final Environmental Impact Statement (FEIS) is adequate under both federal and state standards; I was glad to see the U.S. Forest Service proposal to exchange Superior National Forest land for the PolyMet proposal; and I support issuing any federal permit allowing PolyMet to begin operations. The PolyMet FEIS is adequate under federal and state laws and regulations because: - It evaluated pollution risks to drinking water, fish, wild rice and human health using realistic assumptions about how much polluted seepage will be captured and treated during operations, reclamation, and closure. - It analyzed health risks and impacts on children, workers and communities who rely on fish and wild rice for subsistence, including risks from asbestos-like particles and methylmercury. - It evaluated the impacts of polluted seepage north of the mine site on the 100 Mile Swamp and the Rainy River (Boundary Waters area) Basin. - It adequately considered alternatives to minimize environmental harm, reduce polluted seepage from unlined permanent waste facilities, mitigate wetlands destruction, and reduce the threat of catastrophic dam failure. I strongly support the proposed NorthMet Mining Project Land Exchange in the Superior National Forest and any federal Clean Water Act permit for PolyMet. I request the Minnesota Department of Natural Resources approve the PolyMet FEIS as adequate; the U.S. Forest Service support the proposed exchange of Superior National Forest lands for the PolyMet project; and the U.S. Environmental Protection Agency support and the U.S. Army Corps of Engineers approve any Section 404 permit that would allow PolyMet to operate.	O	NS	X	1	
Virgil Sohm	My name is Virgil D Sohm, an enrolled member of the Lake Superior Band of Ojibwe, Vermilion sector of the Bois Forte Band, a federally recognized tribal government. Under the Treaty of 1854 recognized as Federal Law, you are not entitled to interfere with our usufructuary rights to hunt, fish and gather our foods and medicines. We have a responsibility as stewards of the land to protect our land for our children and grand children to the 7th Generation.	CR	NS	X	1	
Virgil Sohm	Endangered, threatened and species of concern, specifically moose and wolf populations have our tribal protection in our legends, tribal history and culture. Because the habitat of the moose is already severely impacted by climate change, human encroachment and wetland reduction, we have opted at the Bois Forte Tribal Council level to suspend our annual moose hunt. We have also declared our 1854 Treaty area as a sanctuary in light of the wolf hunts of 2012 and 2013. Federal court ruling makes killing wolves illegal, effective Dec. 19, 2014, Minnesotans can no longer legally kill a wolf.	WI	NS	X	1	
Amber Garlan	I oppose the proposed PolyMet NorthMet copper-nickel sulfide mine. The track record across the United States for sulfide mining is 100 percent failure.	GEN	NS	X	1	

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John Trullinger	I'm writing in support of the Polymet project. While I am not intricately familiar with all aspects of the EIS, I believe there is a plan in place that is compliant with the laws of the land. If any project comes up with a plan that can meet the law, I am a firm believer that project should be allowed to happen. I trust the government, and I trust that the USACE, the USFS, and the MNDNR have thoroughly reviewed and vetted the plan to the point where they are comfortable with the mine plan. There were tens of thousands of public comments regarding the plan during the draft phases, and the EIS owners were able to address all of these comments. The fact that Polymet, the USACE, USFS, and MNDNR were able to justify and slightly tweak the FEIS following all of these comments, and still want to proceed with the project, leads me to believe they have a viable plan in place. The mine will provide many benefits for the region. It will provide much needed high paying jobs and allow for the iron range to start diversifying the types of minerals it is mining. This will also buy the communities of the iron range additional time to transition into other types of manufacturing to keep these communities viable beyond when the minerals run out. Polymet will provide new taxes and school funds for the state and nation. Proponents argue that copper prices are currently low, and there isn't much of a demand for it, however, in copper's case this seems to be more of a short term anomaly rather than a lengthy trend. I've read studies where the world's demand for copper will outlast its' current mineable reserves in a frighteningly short time period. I am not a fan of the nebulosness of the water treatment period that the EIS proposes at plant closure; however I realize that there will be many unknowns by then including sulfate laws making it difficult to plan for, so I am willing to overlook it and still provide my support for the project. My biggest concern with this project is outside the realm of Environmental impacts. This is a very polarizing proposed project, and short of some unforeseen politics, I believe this project will be permitted. There are good caring people on both sides of the argument. My biggest concern is that the people who are against this project do not trust their government, and do not trust the process, and because of this, they have been forced to resort to "dirty tricks" and "dirty politics" to try and do anything they can to try and stop the project. After the dust clears, I'd like to see the respective government agencies to do what they can to try and rebuild trust in their government by all. This process has worked, and it has made the project environmentally viable. It has turned a draft EIS that the EPA gave a very poor rating to into a viable final EIS that will safeguard the people of the region while aiding the region's economy.	GEN	NS	X	1	
Sandra and William Lavin	We are against Polymet .	GEN	NS	X	1	
Turk_ Bryan J	I can't see all the worries, because technology is amazing and has come a long way. The people that work at the mine, will all live around here, and not want to damage their homeland. Technology is cheap, so redundant systems are cheap insurance and a definite option. We need the jobs up here and in this country, so let's finally break ground on this project.	O	NS	X	1	
jmonacelli@duncanco_com	After 10 long years, and millions of dollars it seems as though we may be building a mine soon. The final EIS is far beyond antiquate, and covers every foreseeable scenario. Polymet has proven they can mine the Northmet site, while being sensitive to the surrounding environment. While mines are closing throughout the Iron Range, this project would be just what we need to help hard working families in the area. WE KNOW HOW TO MINE... WE'VE LIVE HERE, AND HAVE BEEN DOING IT FOR GENERATIONS!	MEPA	NS	X	1	
Ed Casper	It's time to get Polymet up and running. All concerns have been answered.	PER	NS	X	1	
Ed Casper	Polymet may actually reduce overall pollution by being the low cost producer and shutting down other foreign mines.	GEN	NS	X	1	
Ed Casper	Technology has advanced to allow mining to proceed in a safe environmental way. Let's get this project approved so others can begin the process and get the "Range" back to work.	GEN	NS	X	1	
Marilyn Magnuson	Please take these comments as a great concern for the health of our state and nation. We must look at this situation in the long term.	GEN	NS	X	1	

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Cindy Jindra	I am writing to support DNR approval of the Polymet Mining Project. Ten years is more than adequate to study, study and study some more. I am totally supportive of this mining project, not only for the economy of the Iron Range, but also for the benefit it will have for our country, to provide a copper/ nickel source within our borders. I love on the Range, and believe that the Polymet project is safe and should be allowed to proceed.	MEPA	NS	X	1	
Mark C Wihriala	I still don't believe that polymet has our best interest at heart. They state right in the eis that they still will poison our water! We will still have to deal with that for at least 500 years....How can you even come up with a dollar amount for risking our childrens water supply , not to mention the the damage to our wetlands. I just really think we can find better ways for Minnesota to employ its people in a more environmentally safe way. I totally oppose this mining effort.	GEN	NS	X	1	
Alyssa Friske	Polymet shown through its EIS that they can safely mine with minimal effects to the environment. Polymets operation will be able to pave the way for a new standard of mining, and when it is show it can be done successfully it will open the gates for other exploration and mining projects in northern Minnesota which will allow for even greater economic impact for Northern Minnesota. Please approve polymets final EIS and allow polymet to lead northern Minnesota to a new age of Mining. The Final EIS for PolyMet's proposed mine concludes a thorough and independent review of the project's potential environmental effects. After 10 years of study, the Minnesota Department of Natural Resources, U.S. Army Corps of Engineers, and U.S. Forest Service have looked at the evidence and correctly found that the NorthMet Mine can comply with strict state and federal environmental standards. The Final EIS for the NorthMet Mine is far beyond "adequate." It takes a careful and comprehensive look at the project from every angle. - The Co-lead Agencies have spent 10 years evaluating potential project effects and alternatives. - The Final EIS responds in detail to thousands of public comments and questions submitted during the review periods for the Draft EIS and the Supplemental Draft EIS. - The project's water modeling—which was fully updated for the Final EIS—shows that PolyMet's treatment and mitigation plans will prevent acid mine drainage and meet all water quality standards. - After careful review, the Final EIS concludes that groundwater flows from the NorthMet project will not directly, indirectly, or cumulatively affect the Boundary Waters Canoe Area Wilderness or Voyageurs National Park, and that any possible groundwater flow would be prevented. - The Final EIS also specifically considered the project's potential effects on air quality and water quality with respect to human health, and identified no adverse health risks. - In short, the Final EIS meets all of the requirements of the Minnesota Environmental Policy Act and the National Environmental Policy Act. The time has come to move forward. The DNR should affirm the adequacy of the Final EIS so it can serve as the foundation for the state of Minnesota's permitting process.	MEPA	NS	X	1	
Jim Togeas	I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal. I am an emeritus professor of chemistry. The proposed mine will lead to the formation of sulfites and sulfates, which, when mixed with water, produce a mixture of sulfurous and sulfuric acids. If these escape into the environment JUST ONCE, the damage is done. I am supposed to believe that over the course of decades or even centuries there will NEVER be a single event that allows them to escape into the environment. NEVER over such a long period has a probability approaching zero, meaning that the probability of one escape approaches unity. Sound reasoning must be based on probabilities. I conclude that sound reasoning means that you must reject this proposal.	WAT	NS	X	1	
Geoffrey Johnson	I complelty agree with openeing the new mines in MN. Bringing in jobs and stability to a dying region in our great north. This response was sent VIA the mining truth website. as a Northern MN native I request a specific response to my comments and hope you get to open the mine.	GEN	NS	X	1	
Ann Gustafson	I'm an almost 40 year old, teacher, wife/mother, City Councilor, 4h leader, avid outdoors woman: biking and skiing. I love living in northern Minnesota! I think allowing for the proposed copper-nickel mine would be a big Mistake. Current and future generations already have enough environmental-baggage to clean up. We need to help the local economies come up with sustainable economic development. The amount of jobs that this mine could create does not come close to justifying the associated risks.	GEN	NS	X	1	
Deanna Arce	I strongly oppose any mining that has the potential to poison our land or water.	GEN	NS	X	1	

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Judith Cherveney	I want to register my objection to permitting copper-nickel mining in northern Minnesota. I have followed the progress of this matter for many months, and I cannot imagine for one minute that anyone would do anything that would in any way harm the water quality in northern Minnesota. All it takes is a quick read of the newspaper or an hour of television news to be made aware of the value of clean water on our planet. We have an abundance of it where we live, and I think we take it for granted at times.	GEN	NS	X	1	
Judith Cherveney	Please, please, please do not allow the mining of these heavy metals to take place in Minnesota. Is 20 years of 350 jobs worth the risk? I don't think so. The mining companies are only interested in profit. They couldn't care less about the impact their mining practices have on our communities. They will be gone as soon as they have used up our resources and will go on to other places to woo them into sacrificing their natural resources for a few more years of profit. Will they clean up their mess after they are gone? They say they will, but do you really trust them? If you truly have the best interest of the citizens of Minnesota at heart when making your decision, you will make the right one: not the easiest one; not the one that politicians want you to make; not the one mining enthusiasts want you to make; you will do the right thing and say "No. It's not worth the price we could very well pay." And there's no reversing a bad decision this time.	SO	NS	X	1	
Jeff Wehr	But what is the plan if contamination of our waters and lands. What is the cleanup plans? No one seems to have an answer	WAT	NS	X	1	
Jeff Wehr	It just seems mining co lie a lot and do not bring the jobs that they claim to the area.	SO	NS	X	1	
Jeff Wehr	They just destroy our lands and they just leave it to the tax payers to fix.	FIN	NS	X	1	
Aiya Butler	I strongly oppose any mining that has the potential to poison our land or water.	GEN	NS	X	1	
In Closing	In closing I would just like to say that I can't believe we are even considering allowing this kind of mining in a wetlands, by an international company none the less. Yes mining produces jobs, but it also leaves impoverished towns once the mining operations are done. My question to you is has PolyMet ever had an operation that did not result in a spill or accident? Once the mining jobs move out, which they always do, can PolyMet guarantee that the wilderness will be left uncontaminated so that the only sustainable industry (recreation/tourism) can continue to thrive? What happens if there is a spill? Can PolyMet afford long term cleanup? You know as well as I do that companies such as this simply file bankruptcy and go on their merry way when things go wrong, leaving the tax payers to clean up their mess...if the mess can even be cleaned up effectively. Please, please, don't let the greed of a few ruin a rare gem like the BWCA for a little nickel and copper. There are plenty of places in the U.S. where these minerals can be mined safely without threat to one of the earth's most valuable resources...clean water!	GEN	NS	X	1	
Nancy Conger	Just because it's proposed doesn't mean we have to accommodate it. There is no way that the plans in place are guaranteed to work -- as you well know, no sulfide mine has yet been successful in preserving the environment. This is a BAD DEAL for Minnesota!	GEN	NS	X	1	
Gail Matthews	I am opposed to the poly met project. These are not long-term sustainable jobs. When has a mining company ever kept its promises. Never. Taxpayers of Minnesota will be left to pay for cleanup after Poly-NET either goes bankrupt or pulls out. 1000 jobs lasting 20 years is not a good trade-off for 500 years of monitoring. Does anyone really believe poly Matt will be around that long to clean up it's mess. It's preposterous. This is a bad deal for Minnesota	GEN	NS	X	1	
Susan Kern	Enough of the red tape to get the approval for Polymet to get up and running. Let's show the world how to do copper and nickel mining safely. We have heard enough from the environmentalists and the potential for disaster. Let's please move forward with Polymet and progress.	O	NS	X	1	
Andrew Kuncel	Not worth the risk if harming our water! Polymet will just skip town when then go bad or global copper prices go down. People have worked so hard to protect this area, constantly turning down offers, knowing how important natural land is. Don't be weak and give in.	GEN	NS	X	1	
Sally Ruvelson	The long-term risk of catastrophe far, far outweighs the short-term economic gain. I strongly oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal. It really is that simple.	GEN	NS	X	1	
John Flaten	The substantive comments which I made to the SDEIS have not been addressed by or in the FEIS in any meaningful way.	MEPA	NS	X	1	

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John Flaten	and incorporating and restating those comments which I made to the SDEIS, none of which have not been addressed in the FEIS.	O	NS	X	1	
Lilla Gidlow	I strongly and pleadingly object to PolyMet building a mine in Northern Minnesota... It is too close to the Boundary Waters Canoe Area Wilderness with a significant risk to polluting the lakes and rivers there. The company can say anything it wants to promise this and that, but those are just empty words. Perhaps they wish their protections and safety will be true, but time tells that it will not be so, and the resulting pollution and damage is proven to happen and be true.	GEN	NS	X	1	
flynn karen	I am opposed to the Polymet mine proposal. Even with the best of intentions, I don't believe that the safety of our water supply can be protected. Time passes, leadership changes, promises can be broken, and polluted water is forever. I foresee a disaster for our future.	GEN	NS	X	1	
Matt Kokotovich	I do not support the proposed Polymet mine. I believe it will not do that much for the area, economically, and it will ultimately pollute our water. Please do not allow it to move forward.	GEN	NS	X	1	
Ryan Bergstrom	I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal. While I support mining and the livelihood it brings to the residents of northern Minnesota, and, while I understand that mining will occur in the Duluth Complex at some point in the future, I oppose issuing state or federal permits allowing Polymet (or any other entity) to destroy this land until better mining technologies have proven themselves. The need for these resources is not so great, nor has it been proven as such, that it warrants issuing permits and risking (even in the slightest) the environmental integrity of our most valued natural resource - the natural splendor that is northern Minnesota.	PER	NS	X	1	
David Danz	I would like to go on record as OPPOSED to the PolyMet cooper-nickel sulfide mine proposal. As a critical decision maker in the final determination of allowing this mine to become operational or not, I ask you also to oppose this mining proposal.	GEN	NS	X	1	
David Danz	1. The benefit of the jobs created is far outweighed by the potential risk. The creation of a couple hundred high paying jobs in, and in support of, the mining operation is insignificant compensation in face of the potential risk of exposing our northern Minnesota waters and lands to the poisons leached into them from a copper-nickel mining operation. 2. The lifetime of the economic reward to NE Minnesota is a mere 20 YEARS, while the potential damage to our valuable land and water resources is ETERNAL. This is a lousy trade.	SO	NS	X	1	
David Danz	3. The odds of permanently damaging our lands and waters through this copper-nickel mining operation are high. Based upon the history of copper-nickel mining operations world wide, betting on the promises of PolyMet that the mine will not leave poisoned lands and waters in its wake is a mighty poor bet. How can you take this bet on behalf of current and future generations and sleep well at night?	GEN	NS	X	1	
David Danz	4. The promise by PolyMet to build control ponds, monitor leakage and pay for damage in the event of poisonous leaching for a period of 500 years is so ridiculous it insults the intelligence of us all. For God's sake, empires rise and fall in a fraction of this time. How can one rely on the promise of a corporation which can declare bankruptcy and dissolve itself into non-existence in the course of one day to protect us from the damage they cause for the next 500 years?	FIN	NS	X	1	
David Danz	As a resident of NE Minnesota whose home is 40 miles as the crow flies from the proposed mine site, I have a considerable stake in your decision. With this in mind, I respectfully request a response to this letter and my expressed concerns.	GEN	NS	X	1	
David Dresbach	Don't be on the wrong side of history. Don't be another individual bought so a corporation can destroy an entire ecosystem that is so dear to so many people and the very essence of Minnesota. This CANT BE REVERSED!	GEN	NS	X	1	

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alyssa greening	I completely, with great passion object to Polymet/sulfide mining in Minnesota. With great urgency I plead for you to decline this mining endeavor permanently. It is extremely shortsighted to downplay the value of the pristine habitat and wealth of clean fresh water that our state holds. As our world continues on its consumption trajectory at greater and greater speeds, more and more resources will be tapped, more of the natural world violated by oil spills, chemical leaks, mining runoff, etc etc. When all the clean corners of the planet are polluted, when the west coast hasn't seen rain in 20 years, when we're having a hard time growing enough food to feed our nation, when fresh water from the ground is a rare delicacy, our state could be the crown jewel source of vitality. water brings life. and we have so much of it. nature brings healing to humans, and we have so much raw beautiful powerful nature that can help us - if we let it. The short term financial gain from the sulfide mining is minimal in comparison to the long term financial gain that the state could garner from clean fresh water. water not tainted with sulfide runoff, chemicals, radiation, not recycled gray or purple water ... but clean fresh water from the ground. It will be a novel thing. There are parts of California currently looking at desalinization as their new water source - which is expensive and toxic. I'm telling you. WATER WILL BE GOLD! Do not ruin our greatest resource! The Boundary Waters, Lake Superior ... these are incredibly special places, tourist attractions. Lets keep them that way for generations to come. What if we refocused our attention reacting to now, from getting money out of mining minerals now at the cost of the future... to focusing on how we can be the locus of clean water for the future?	GEN	NS	X	1	
Charles Huber	I feel The PolyMet Final Environmental Impact Statement (FEIS) is inadequate under both federal and state standards	MEPA	NS	X	1	
Mark Trainor	I am strongly opposed to any copper mining in the fragile Northeast MN. Yet, I realize all my objections and strong scientific support against doesn't mean anything as there is ONE TRILLION dollars of metal underground. This is all for show because the money always wins. Right?	GEN	NS	X	1	
Gene R Cooper	I am totally against the NorthMet Mining Project and Land Exchange, This is a total waste of natural resources. If this project is allowed to proceed, it will reek havoc on the Boundary Waters Canoe area and will eventually pollute surrounding waters, the water supply and the natural beauty of the wilderness. I would hope that the people in charge of approving this project will reconsider and vote not to let this project move forward. This project is not worth all the damage that it will do the environment, and the few temporary jobs this will create. The people of Minnesota deserve better from our leaders.	GEN	NS	X	1	
Russ Mattson	We are asked to decide what is the best for our communities. That of course is loosely interpreting the governor. But there is a bigger question here. The issue presented, by some, is the choice between economic development, good jobs and the environment and health. To frame the choice as correct or incorrect, right or wrong is simplistic. The question, as are all policy questions, is not so clear as it would first appear. Is the choice between employment and fresh air and clean water? Is it that simple. Maybe the question should be turned around. Can you have a clean green environment and healthy individuals and communities without good jobs, without concerned families, and an engaged community? And would it matter if the environment was clean and green but no community? Sort of a nature park or zoological exhibit? Can you have a productive stable economy with opportunity for our children and their children without both? I suggest that the environment is not so narrow as some would make it to be. A stable economy builds communities, families, futures and ensures that all benefit, not only the environment of the community, and families, but the health of the people and that of the physical environment and ecosystems. Much concern is voiced about the potential for pollution from the mine. But lets take a closer look at our environment. The mine proper would encompass less than 1000 acres of mostly previously mined land. The Mining would reuse an existing tailings basin and utilize state of the art pollution prevention in the entire process. It would produce mainly Copper, Nickel and lesser amounts of Cobalt, Silver, Platinum, Palladium and Gold. By contrast Farming/Agriculture in Minnesota (per farmlandinfo.org) covers 40,000 (25,600,000 acres) square miles of Minnesota. And almost 1,450,000 square miles in the entire US. In the process farming has a tremendous impact on the environment. This industry applies more than 8.91 million tons of minerals(from the USDA), such as potash and phosphorus to this land. Both of which are mined. Neither of which are easily recycled, unless one removes these elements from the ocean in which they end. 80% and 30% of the Potash and Phosphate(Phosphorus) respectively are imported. These totals do not include the	O	NS	X	1	

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	<p>nitrogen injected into the soil coaxed out of the atmosphere by the Huber-Bosch process with the use of natural gas. This amount is an amazing 12.89 million tons. 50% of the nitrogen fertilizer, as well, is imported. In addition there are other additives, chemicals, such as; herbicides, fungicides, pesticides which control or kill; pests, molds, insects, bacteria, viruses. Approximately 76 million pounds of Atrazine and Endosulfan(from the EPA and CDC), in round numbers, are applied to the land and crops. In the process of Farming/Agriculture much of what is added finds its way via erosion the Mississippi into the ocean as indicated previously. As well this industry, Farming/Agriculture has caused to be removed via erosion several cubic miles of topsoil, with any of the remaining additives in that topsoil. This mix of topsoil, fertilizers and pesticides also finds its way to the ocean. This industry, Farming/Agriculture farming uses in planting, harvesting, transport, processing and packaging about 15% of all the petroleum products consumed in the US. This summary does not include the potential impact of genetically modified products which have been planted on this same land, or the known impairment of aquifers, lakes and rivers by Farming/Agriculture in the state of Minnesota. In comparison any copper nickel mining of whatever extent would cover less than 1/1,000,000 th of the land surface covered by that of Farming/Agriculture. As well the Mining places no additives on or in the soil. No herbicides, no pesticides, no chemicals. Are we missing something here? Is the wrong industry being monitored? Of course we want food and the products that come from Farming/Agriculture. We want the products from the farm and we use the products every day from Mining. We all want the iconic farmland of Minnesota. But we could get those products from elsewhere; (as well do with many critical metals and minerals) Chile, New Zealand, Mexico, Argentina, Brazil, Russia, or Europe and let others deal with impacts. This is even more curious when we look at where these metals, copper, nickel, palladium and gold are used: Cell Phones, Flat Screen TVs, Solar Panels, Wind Farms and Electric Cars In particular each cell phone, of which there are over 100,000,000 in the United States, use .572 oz. of copper, .01 oz. of silver, .001 oz. of gold and .0005 oz. of palladium (from Electronic Recyclers). Multiply that by 100,000,000 and we see a substantial amount of these metals. For a typical 2.5MW Wind Turbine more than 1200 pounds of copper(from copper.org), and slightly more for a Solar Farm with a similar capacity. And electric car such as a Prius? About 64 pounds of copper and 22 to 32 pounds of nickel depending on which source one uses. (Not to mention the rare earth metals used by both the cell phone and electric vehicle.) Some of these metals are recyclable, such as copper. 44% of the copper used in the United States is recycled copper. Today there is no practical way to recycle the minerals used in Farming/Agriculture; Potassium and Phosphorus. No one is so out of touch as to suggest seriously outsourcing farming. Hopefully the same can be said of mining these essential metals. Mining is not old fashioned, out of date, or irresponsible of the environment. It is crucial to a modern economy, an absolute necessity. Both industries, Mining and Farming/Agriculture need attention to the processes, need boundaries, need practical regulation and monitoring. We want a community that is viable, stable, healthy and to the greatest extent practical resourceful and self sufficient.</p>					
Lawrence Miller	<p>I am finding that the analysis of water flow is incomplete and could be easily rectified if the U of M was allowed to use the roads that Polymet owns north of the proposed site and get access to the watershed there. But since Polymet has been unwilling to allow access to the sites north I find it highly suspect that your findings are correct because apparently the company fears something being discovered. If the company was confident about the water flow they would allow access, and let this issue be settled. It would be a shame to ruin the BWCA and the tourism economy for some volatile short term mining jobs. Please not that at least one of the taconite mines closed do to the fluctuation in the market.</p>	WAT	S	N	12	<p>Comment noted. SDEIS Theme WR 074 addresses data adequacy. FEIS pages 6-40 through 6-41 address potential northward flow. SDEIS Theme SO 01 addresses the economic aspects of the comment.</p>

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James Ferstle	The problem with inflicting environmental damage is once it's done you can't repair it. We argue about climate change, but do very little to address the problem. Jobs trump resource destruction when all at issue is training oneself to do a job, not demand that the job must conform to your "skills." America was not built on people demanding work, it was by Americans working to make the country strong, not rolling over to a corporation that wants to minimize their costs and drive up their profits. If it was cheap to mine copper or other "precious metals" under the Washington Monument, the White House, etc. in Washington, DC, would we plow under those structures to create jobs to mine there? No, you manage your resources, not go wherever it is easiest or cheapest to get resources that are not vital to anything but a company's bottom line. Mining copper-nickel sulfide at a place, such as the proposed site in Northern Minnesota, is not worth the damage it will do to the area. Create something good for the country instead of stripping the land at a higher cost than any minerals you take out of it. Take a trip around the area and look at what mining has left behind. Pits and waste. Yes, it built great schools, such as Hibbing HS in the era when companies were more responsible and the profits trickled down to education and community, not merely for the carpet bagging practices of today where companies don't care about the community. They promise things that they have no intent on keeping. Use out of work mine workers as a bargaining chip. Spend money bussing them into public meetings, rather than putting money into retraining them so they can have the skills to do something aside from mining for the times when the environment does not need their mining skills. They'll also ship in workers from outside the area, rather than maximize the economic impact on the skilled workers who already reside on the iron range. In short they take out minerals, money, opportunity from the area and leave behind their waste.	GEN	NS	X	1	
Scott Cram	I oppose the proposed PolyMet NorthMet copper-nickel sulfide mine. The final environmental impact statement is seriously lacking in detail and DOES NOT meet both federal and state standards. The proposed mine will be prohibitively expensive to reclaim so the likely result is the company declaring bankruptcy and then nothing gets cleaned up. Please do not approve this mining operation. A specific response to my comments would be appreciated.	GEN	NS	X	1	
Judy Kelloway	I was raised in Northern MN and now live in Minneapolis. However, I have a summer home in Northern MN, which is very close to PolyMet. From my opinion the amount of jobs/money that come in for this mine will be equal to the loss of tourism and money that people like me that like to support the area with tourism and buying and building summer homes if the area. If this goes through, I will move to Wisconsin that has STRICTER regulations on preserving the wilderness.	GEN	NS	X	1	
Elaine Thrune	I strongly and vehemently oppose the proposed PolyMet NorthMet copper-nickel sulfide mine, and all such mines in Minnesota.	GEN	NS	X	1	
Elaine Thrune	No amount of "new jobs" would be worth any risk of degrading the health of Minnesota citizens, adults and children, and those who visit our state, and the livestock and pets who use the water. No amount of taxes or jobs is worth any risk of degrading our precious Boundary Waters Wilderness Canoe Area or any of the surrounding areas that feed into it or drain from it, nor any risk of degrading any part of the North Shore or Lake Superior drainage. No amount of jobs or taxes or temporary prosperity is worth the risk of degrading surface and groundwater and causing harm to any wildlife, including endangered, threatened and species of concern, including the northern goshawk, great gray owl, lynx and moose. Whatever enters the environment and water affects EVERY size of every species of every plant and animal, including humans. No amount of jobs or taxes is worth impairing tribal resources. No amount of jobs or revenue is worth degrading Minnesota's tourism through poisoning our environment--water, air, land, beauty, and aesthetics of any kind. And no amount of additional extracted metals are worth any of the above!!!!	SO	NS	X	1	
Shirley Anderson	Can anything replace the loss of precious water? This mine will pollute both the Boundary Water area and Lake Superior.	WAT	NS	X	1	
Shirley Anderson	Will destroying wetlands for the profit of one company be worth this loss?	WET	NS	X	1	
Shirley Anderson	The few jobs that will be created will not compensate for the loss of this precious area.	SO	NS	X	1	

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Marlise Riffel	As I read the FEIS, I am not convinced that the NorthMet project will be safe. On page 36 of the Executive Summary, the FEIS identifies 10 gallons per minute of untreated water to be released during closure from the Mine Site and 20 gallons of untreated water per minute released from the Tailings Basin. That's 43,200 gallons of water per day or about 1.29 million gallons per month. An Olympic swimming pool contains 660,000 gallons of water, so this ongoing release of UNTREATED water is the equivalent of 2 Olympic swimming pools per month seeping into Northern Minnesota's groundwater.	WAT	NS	X	1	
Marlise Riffel	I am also concerned that the citizens of northern Minnesota will be left with the cost of "indefinite" water treatment. Because the models do not allow any predictions about the length of ongoing treatment required, there is no adequate way to require Polymet to contribute sufficient funds to cover what might be required. I found this disclaimer about the models' inability to predict in at least five different places in the FEIS. I object to the project and I request a specific response to my comments.	FIN	NS	X	1	
Paul Musegades	Every article I have read states that the water around the mine will need to be cleaned for 200+ years. So I ask can you to name a mining company that has been in business for half of that time period, how many companies can you name that are still in business after 200 years, who will pick up the bill for cleaning the water after the PolyMet leaves Minnesota?	WAT	NS	X	1	
Paul Musegades	Next, think of the superfund pollution areas around Minnesota that have been left behind by companies that had good intentions, but poor follow through. 20 years of jobs and 200 years of cleanup just sounds terrible to me. Would you ask the People of Minnesota to remodel the state capital if the the projection was that the building would last only 20 years? Think of the future of Minnesota and invest in businesses that will last a lifetime.	GEN	NS	X	1	
Steven Schild	I oppose the PolyMet mine proposal because the risks to the environment and health are just too great. On numerous projects in the past, numerous companies have made numerous promises about how they'd safeguard against environmental problems. And on numerous occasions, those promises have been broken. We as a society simply must stop using wishful thinking as a guide to public policy, as there is no way to undo environmental damage once it occurs. That's especially the case with a mining process such as that would be used in this instance, which is inherently, inescapably risky. Please look to the long-term future rather than to short-term gain in this case. Please don't allow PolyMet to go ahead with this project.	GEN	NS	X	1	
Douglas Wallace	As reported in the Timberjay Newspaper (8/19/15) "According to a June 18, 2015, letter from the Great Lakes Indian Fish and Wildlife Commission (GLIFWC), one of the cooperating agencies on the decades-long study, Barr Engineering, the PolyMet contractor that actually ran the water flow model used in the study, made fundamental miscalculations, rendering the results of this key element of the environmental study invalid. Barr works as a consultant for PolyMet, yet the lead agencies have relied heavily on its technical work throughout the environmental review process." "GLIFWC, which represents 11 Indian bands in Minnesota, Michigan, and Wisconsin, maintains its own scientific research staff. The agency, based in Odanah, Wis., is the only entity, other than Barr Engineering, which has actually run the MODFLOW model, a highly complex computer program for determining water flow through the environment." "Yet, according to GLIFWC, Barr got it wrong when it set the assumptions while calibrating the MODFLOW model, using water levels within the Peter Mitchell pits that were ten meters too high for the time period in question. With the higher water levels used by Barr, the model predicted that--since water flows downhill-- the higher the elevation of the water in the pits, the greater outward pressure and flow of that water towards lower terrain, such as the Partridge River, located just south of the Peter Mitchell pit and adjacent to the proposed PolyMet mine. But if the water level is assumed to be 33 feet lower, as GLIFWC officials maintain was the proper assumption, then the headwaters of the Partridge River would be higher in elevation than the water in the Peter Mitchell pits, and that would reverse the flow of water, and potential contaminants, according to Coleman." "Because of this error, the calibration model has the local direction of groundwater flow 180 degrees reversed from the actual conditions during the calibration period," states Coleman. Rather than pushing ground and surface water from the Laurentian Divide to the south, lower water levels in the Peter Mitchell pits would essentially move the continental divide to the south and incorporate much of the area surrounding the proposed PolyMet Mine into the Rainy River watershed."	WAT	S	O	3	MDNR et al. 2015c

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Douglas Wallace	I along with many seasonal residents spend months at a time within the Rainy River watershed. We believe that Polymet's flow studies are biased, do not rest on solid independent science, and will put a pristine northern watershed at substantial risk in future years. Polymet's proposed mining operation should not be allowed to move forward. The EIS is not complete and it represents flaws putting a whole pristine watershed at great peril.	WAT	NS	X	1	
Robert Hoekstra	The U.S. Forest Service proposal to exchange Superior National Forest land for the PolyMet proposal should never happen.	LAN	NS	X	1	
Jack Parker	Emboldened by successes at the Eagle and at Flambeau (where they still proclaim no pollution, without shame, as the manganese leaks out) and now in the early stages at PolyMet - we can expect more of same and must be prepared to repel it.	GEN	NS	X	1	
Joe Musich	The tipping point ... for encroachment on the Minnesota wilderness will be a decision to allow Polymet to proceed. The next reaches into the forests and lakes will be even more easily justified with a Pollyanna view of the present danger to health of the people the animals and the forests and waters. Science is science and facts are facts. The deep struggle of the human has always been overreach as exemplified by hubris. A decision to allow Polymet to mine will be exactly this. We are not bigger and more powerful then we are even if we would like to think so. There are many examples of the miscalculation of the "margin for error." Do the right think. Say No !	GEN	NS	X	1	
Larry D. Popovich	I would like to comment on the Polymet FEIS and state that I am fully in favor of the project and think that the FEIS is more than adequate to allow the project to be permitted and go into production. The agencies are to be commended for all of the hard work and studies that have gone into this. Please accept my thanks for all of the effort and let's get this much needed project going on the Eastern Iron Range, so it can benefit the state and the nation. I live in the area and my place of work is next to the plant site. We have worked with Polymet and are eager to get going.	GEN	NS	X	1	
dianne carey	Protect fresh water - just say no to tar sands - frack oil - sulfuric mining. the mid- west holds the largest bodies of fresh water in the world. we have a responsibility and obligation to protect it - do not allow toxins to enter it from mining, rail, pipeline, farms. people should not have to compete with corporations for ownership of water quality.	WAT	NS	X	1	
Rebecca Dudley	I dont think the long term condition of our Minnesota wilderness is worth risking over the short term gain of jobs and economy.	SO	NS	X	1	
Rebecca Dudley	Our real economy is the tourism and the beauty of the northern part of the state.	SO	NS	X	1	
Rebecca Dudley	Mining equals pollution.	GEN	NS	X	1	
Jane Koschak	The PolyMet NorthMet Final Environmental Impact Statement (FEIS) proposed on 6,700 acres of public land in the Superior National Forest, is a bad plan for Minnesotans and should be rejected with all permits denied.	GEN	NS	X	1	
Jane Koschak	This flawed sulfide-ore copper mine plan, to be located between the Boundary Waters and the Lake Superior watersheds, the first of its kind in Minnesota, risks polluting the headwaters of both iconic places with toxic metals and acid mine drainage for hundreds of years. We all know, that if permitted, this type of mining activity will not stop because based on the geology, mining of the Duluth Complex could extend eventually all the way to the Gunflint Trail.	WAT	NS	X	1	
Jane Koschak	I do not endorse exchanging our public federal land for a mine site so that our present lakes district can be turned into a giant mining district. Our region would never recover from this, and when the minerals are removed, we will have a devastated landscape, polluted water, and air and the present sustainable economy of the Superior could never be rebuilt. Instead, we would get hundreds of years of pollution.	LAN	NS	X	1	
Jane Koschak	Why would we take the crown jewel of the national forest system in the eastern two-thirds of our nation and turn it into what would become almost a solid and continuous industrialized zone? This is a huge flaw in the Poly Met FEIS. The cumulative effects of this type of development on the Superior National Forest were not studied by the DNR. Hard, scientific facts have been ignored, including those related to health issues from methyl mercury toxicity to the developing brain.	CUM	S	O	7	FEIS Chapter 6

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	Instead, a political document, all 3,500 pages of it, was produced, and pushed upon the citizens of Minnesota.					
Jane Koschak	PolyMet mine is the tip of the iceberg for sulfide-ore copper mining companies wishing to stake their claim in northeastern Minnesota. There will be a half dozen or more mines with miles of open pits, wasterock piles, intrusive roads and corridors, concentrator plants, railroad lines, heavy truck traffic...all dissecting the heart of the Superior National Forest.	GEN	NS	X	1	
Jane Koschak	Despite years of citizens raising concerns about the impact PolyMet would have on Minnesota's clean water legacy, and despite some 50,000+ comments against PolyMet's Supplemental Draft Environmental Impact Statement (SDEIS) in 2014, PolyMet's plan has not changed much at all. Considering that our clean water is at stake, PolyMet is not worth the risk.	GEN	NS	X	1	
Jane Koschak	PolyMet would require treatment of polluted water "indefinitely". In other words, forever. This is surely a bad plan for Minnesota and one that I adamantly oppose. It is up to you, the decision makers to safeguard human and environmental health.	WAT	NS	X	1	
Robin Vora	I do not believe the EIS contains enough analysis of the proposed land exchange. An exchange of nearly equal acres is inappropriate and unfair to taxpayers. The land that Polymet would obtain through a land exchange is worth a lot more than the lands the federal government will obtain. The appraisal process used by the Forest Service does not fully consider the value of future uses of exchanged lands. This should be remedied in the EIS. In a fair exchange Polymet should provide the federal government with total acres that are several multiples of what is presently proposed. If Polymet were to turn around and sell their lands to another mining company, what price would they likely get for it? I suspect the proportional gain from the federal lands acquired would be enough to buy far more than 6,723 acres of private land.	NEPA	S	O	8	SDEIS COOP Response #3152
Robin Vora	The analyses in the EIS shows gains in some resources through private lands made public through the proposed exchange (e.g., a gain of 3 special status plant species). This analysis would only make sense if the natural environments on those private lands were planned for obliteration. That is not the case on most of the these parcels and so this type of analysis showing net environmental gains from the proposed land exchange is misleading. The real overall effects on wetlands from a northeastern Minnesota perspective may be similarly misleading.	LAN	S	N	8	FEIS Section 7.2.4, Table 7.2.4-1 and Sec 3.3.1
Robin Vora	I am concerned about 90% thresholds being adequate for water resources, if I am understanding that correctly. I want to know if there is a 99-100% chance of no significant contaminants at my property downstream on the St. Louis River. For example, as an analogy, 3% of wildfires cause 97% of the damage. I don't want that 3% or even 1% event to effect me and my neighbors, and the environment. I would like to see a better explanation of these thresholds used in analyses and why they are appropriate.	WAT	S	O	8	FEIS pg 5-83 to 5-94
Robin Vora	I think the overall net loss of high quality vegetation, rare species and wildlife habitat and corridors is unacceptable. This and all the other mines along the Laurentian Divide have resulted in a significant cumulative loss of these resources.	CUM	NS	X	1	
Peggy Parise	the state and federal standards proposed are more than adequate to protect the environment.	PER	NS	X	1	
Peggy Parise	We need the added jobs and mineral base in our area,	SO	NS	X	1	
Bill Parise	the state and federal standards proposed are more than adequate to protect the environment.	PER	NS	X	1	
Bill Parise	We need the added jobs and mineral base in our area	SO	NS	X	1	
karlene plante Jim Etzel	It doesn't matter who looks at this project or what is said to try and persuade the public that this is a good idea,IT IS NOT!! Humans do not learn from their mistakes. This will cause major damage to the region. We set aside the Boundary Waters Canoe area to preserve nature and allow people to enjoy a specific experience. Iron ore mining is bad enough. Allowing sulfide mines in the region will be the biggest mistake made by Minnesotans. Please turn this project down and have them mine these products from the dumps that we have created throughout this country. We throw so much useable material away in the name of money. Do something right for once. Deny this project.	GEN	NS	X	1	

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Stephen Quin	I have had the pleasure of being involved in the early days of this project, initially as a director of Fleck Resources and subsequently as a director of PolyMet for several years. As a result, I am knowledgeable about the project and its potential for significant benefits to the economy and people of Minnesota and the USA. I also recognize the importance of protecting the natural environment and ensuring a sustainable outcome.	SO	NS	X	1	
Harry Melander	The Co-Lead Agencies have adequately considered the potential project effects and alternatives.	NEPA	NS	X	1	
Harry Melander	The Final EIS addresses the thousands of public comments and questions submitted during the review periods for the Draft EIS and the Supplemental Draft EIS.	NEPA	NS	X	1	
Harry Melander	The project's water modeling—which was fully updated for the Final EIS—shows that PolyMet's treatment and mitigation plans will prevent acid mine drainage and meet all water quality standards.	WAT	NS	X	1	
Harry Melander	After careful review, the Final EIS concludes that groundwater flows from the NorthMet project will not directly, indirectly, or cumulatively affect the Boundary Waters Canoe Area Wilderness or Voyageurs National Park.	WAT	NS	X	1	
Harry Melander	The Final EIS also specifically considered the project's potential effects on air quality and water quality with respect to human health, and identified no adverse health risks.	AQ	NS	X	1	
Michael W. Garbisch	My response to the adequacy of the mining FEIS is that it cannot really peer adequately into the future, by looking at current and historic information. In every realm of science and technology, improvements are being developed with breathtaking speed. Mining is not at the forefront of this parade of newly developing knowledge, but even the mining industry will eventually discover ever-safer ways to develop natural resources. Why should we jump the gun, in the face of almost universal problems worldwide with hard-rock mining? We should wait until we are able to look at numerous examples of clean, safe mining technology in the then-current time. Maybe this is 25 years away, but the resource won't be going anywhere in the interim. When mining is proven to be safe and clean rather than speculative, based on established examples, then we can open new mines in northern Minnesota.	GEN	NS	X	1	
Hans Olsen	Neighbors: As a son and grandson of iron miners and a supporter of proposed copper / nickel mining in the Duluth Complex, I am disappointed in the Final Environmental Impact Statement (FEIS) released this week on the DNR website.	GEN	NS	X	1	
Hans Olsen	The good news is that the PolyMet operation is south of the Laurentian Continental Divide and it will be theoretically possible to manage the potential pollution from this one mine in the St Louis River drainage, some 200 miles away by river from Lake Superior.	WAT	NS	X	1	
Hans Olsen	The old news is that PolyMet is refusing to accommodate and deal with certain important issues that have been raised in the public comment process. Their response can be neatly summarized in one word: no. This is to be expected, I guess, in an age when corporations have only one ethical imperative, shareholder value. It is still depressing to witness first hand. I was hoping for something more, particularly because so much good work has already gone into this. I know the PolyMet executives working here locally want to do this right, Minnesota right.	GEN	NS	X	1	
Hans Olsen	The bad news is that the Cooperating Agencies seem poised to approve this FEIS and move on to the permitting process and are content to accept no as the final answer on the following specific environmental issues which were repeatedly and strongly raised in the 53,000 public comments on the PolyMet SDEIS. Commissioner Landwehr has as much said so.	PER	NS	X	1	
Hans Olsen	Cumulative Impact: The public strongly urged the Cooperating Agencies to broaden the EIS to consider the cumulative impact of opening an entire new mining industry that will operate for a 100 years, rather than limit their scope of review to one mine for 20 years. This broader review would have allowed the DNR to make better decisions about the proposed land exchanges that are required, by considering the needs of multiple mines operating in this narrow area. It also would have allowed the EPA to better assess the pollutant load levels in the headwaters of the Partridge and Embarrass Rivers from multiple mining operations impacting the same water resources. PolyMet said no to considering these cumulative effects and the Cooperating Agencies apparently said, "Oh, okay, fine with us." It took them many words to say that, but that is essentially what is implied.	CUM	S	O	7	FEIS Chapter 6

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Hans Olsen	Catastrophic failure of the proposed PolyMet copper / nickel tailings basin. The public demanded to know how PolyMet would deal with such a failure. These tailings basins fail all the time. There are at least two or three such failures world wide every year. It was known that PolyMet has done a detailed engineering study of the effects of a catastrophic failure of their tailings basin but refused to include that report in the EIS according to engineers working on the project. PolyMet simply asserts that the chances of such a failure are too remote to even be considered in the EIS. Apparently the Cooperating Agencies rolled over and said: " Oh, okay, that's fine with us."	GT	S	O	8	SDEIS Theme WR 202
Hans Olsen	In my opinion if this stands and the permitting process is allowed to proceed without addressing this contingency, that will constitute a failure to exercise due diligence in the exercise of the fiduciary responsibilities of the principals in the relevant Cooperating Agencies.. This is a serious and substantive omission and a sad day indeed. I'll go further and say, in my friendliest tone of voice, that If this were the FEIS for the Twin Metals project in the Kawishiwi drainage, it would be taken as a declaration of war.	PER	NS	X	1	
Hans Olsen	Financial Assurance. The public seeks to know if the operating companies standing behind PolyMet can provide adequate financial assurance in the form of performance bonds or other forms of insurance to fund long term cleanup operations which could run for hundreds of years. This issue has simply been punted down the road out of the FEIS	FIN	S	O	6	SDEIS COOP Response #3010
Hans Olsen	Wild Rice and the historic cultural values inherent in harvesting wild rice.. The public seeks to know if wild rice stands down river from these operations will be either protected or re-established in alternative wild rice stands elsewhere in the area. Don't waste your time reading the 3,500 pages looking for an answer to that question. It isn't in there.	WAT	S	O	8	FEIS Section 5.2.2.1, p. 5-22. Sulfate predictions for: Embarrass River at FEIS pages 5-218 through 5-222; Partridge River at FEIS pages 5-160 through 5-164. Evaluation criteria not exceeded.
Hans Olsen	I'll end this letter with a simple assertion. Our public environmental regulatory agencies will make or break their reputation for integrity and competence on this project. It is readily apparent from reading the FEIS that our public officials have done a lot of good work to bring this analysis to this point. I hope they now live up to our high expectations and keep this EIS open until the issues noted here are fully considered. I think these concerns can be addressed. and this mining could go forward, but we are not there yet.	MEPA	NS	X	1	

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Peter Bormuth	<p>The Religious Freedom Restoration Act of 1993 prohibits the government from substantially burdening a person's exercise of religion, even if the burden results from a rule of general applicability, unless the government 'demonstrates that application of the burden to the person - (1) is in furtherance of a compelling governmental interest; and - (2) is the least restrictive means of furthering that compelling governmental interest' 42 U.S.C. Sec. 2000bb-1(a)(b). The Act defines "government" to include any department or agency of the United States (Sec 2000bb-2(1). The United States Forest Service and the Army Corps of Engineers are Departments or Agencies. The least restrictive means standard is exceptionally demanding (see City of Boerne, 521 U.S. at 532) and cannot be met by the proposal for the NorthMet mine. Mesabe Widjiu[1][1] is an acknowledged "cultural resource" and is an ir retrievable resources under 42 U.S.C. 4332 Sec. 102 (2)(C)(v). As amended by the Religious Land Use Act of 2000 (RLUIPA), the Religious Freedom Restoration Act covers "any exercise of religion, whether or not compelled by, or central to, a system of religious belief.' Sec 2000cc-5(7)(A). A Court's "narrow function...is to determine" whether the asserted religious belief reflects "an honest conviction" (See Thomas v. Review Board of Indiana Employment Security Div. 450 U.S. 707 at 716). The NorthMet mine site is ceded land under the 1854 Treaty Authority. Under NEPA the human environment includes the natural and the physical, and the relationships of people to that environment. The NorthMet Project Proposed Action is considered an undertaking as defined in 36 CFR 800, the regulation implementing Section 106 of the NHPA. The area in which effects on resources are evaluated is the Area of Potential Effect (APE). The APE is defined as, "... the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist. The area of potential effects is influenced by the scale and nature of the undertaking and may be different for different kinds of effects caused by the undertaking" (36 CFR § 800.16(d)). Mesabe Widjiu is within the APE of the NorthMet mine. Mesabe Widjiu is a Traditional Cultural Property (TCPs). Beliefs or practices associated with a TCP are of central importance in defining its significance. Mesabe Widjiu is the path of the Thunderbirds. Mesabe Widjiu is a tangible property as defined in National Register Bulletin 38 as a place "eligible for inclusion in the NRHP because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community" (National Register Bulletin 38:1). Since Mesabe Widjiu is adversely affected by the NorthMet mine, (see 36 CFR 800.5) the USACE and the USFS must avoid the effect by refusing to permit the land exchange, since the effect cannot be mitigated. The destruction of a section of the Mesabe Widjiu destroys the integrity of the landform and the earth energies and spiritual energies associated with the landform. As a Pagan Druid, I have taken my staff, drum, and pipe and performed ceremony on the Mesabe Widjiu (though not at the overlook at the mine site. I have never been on the proposed mine property) to ensure that the Thunderbirds continue to bring the rains to the Lake Superior/Great Lakes Basin. If this NorthMet mine is allowed to proceed, the Thunderbirds may no longer travel along their traditional path, bringing drought to the land ceded in the 1854 Treaty Authority and to the Superior Basin. Or they may stop at the mine site in their anger and flood everything and not continue on to ThunderBay. This future harm is a physical and quantifiable harm which proceeds directly from the honest spiritual conviction of the Ojibwe and Pagans that the Thunderbirds follow Mesabe Widjiu (see Sec 2000cc-5(7)(A). There is no compelling governmental interest in either the mine itself or the land exchange associated with the NorthMet mine that justifies the destruction of the Mesabe Widjiu. You cannot break the path of the Thunderbirds without spiritual repercussions. The USACE and the USFS both admit that the best feasible alternative to permitting the mine is to maintain the status quo (See FEIS – Chapter 3) and this action must be adopted by the co-lead agencies. The Religious Freedom Restoration Act prohibits you from destroying the ir retrievable resource that is the Mesabe Widjiu and from burdening the religious beliefs of the Ojibwe and Pagans. The Thunderbirds follow the Mesabe Widjiu and will alter their path if you destroy this culturally significant landform.</p>	CR	NS	X	1	
Hans Olsen	<p>I am writing to you today to bring a single item from this overall comment to your attention and that is the refusal of PolyMet to address the possibility of a catastrophic failure of the copper / nickel tailings basin that is part of this project. I believe an analysis of such a failure must be included in the FEIS and if it is not this will be a material breach of trust between the Cooperating Agencies and the people of Minnesota. I strongly urge you, as duly elected representatives of the</p>	NEPA	S	O	8	SDEIS Theme WR 202

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	people, to take action to insist that an analysis of tailings basin failure be included in the FEIS.					
Chaunce	Always glad to see you have not lost your deserved sense of the historical record. I pray daily that folks will awaken to the prowess of those who have blazed the trail with truth and blood. Reading your actual records of events is like reading the bible. We are told what and who we can not trust and given the direction we must follow for a positive legacy for future generations. After all, if your assertions were not true, why is there no retribution from the accused. There is only one right answer. The continued tenacity of each of you is always appreciated by me. At times when praising the Creator, I ponder the welfare of each of you. In my heart.	O	NS	X	1	
Greg and Julie Carlson	We believe that Polymet will be responsible in the activities that they are proposing. This whole process has taken over 10 years of research and planning for responsible open pit mining. Even though my family does not live on the iron range, it is our belief it will help our economy in Duluth and surrounding areas with spin off jobs and stable employment for many unemployed people from our area. Yes, we have concerns about our water, fish and animals in our area, but with the extensive planning, we feel that this operation has done their due diligence in understanding the environmental impact the operation may have.	GEN	NS	X	1	
Andrew McKibben	I oppose the proposed PolyMet NorthMet copper-nickel sulfide mine. I am a NE Minnesota land owner, taxpayer, and year-round resident. I work and live here. These decisions will have a direct impact on my life and livelihood.	GEN	NS	X	1	
Andy Schuster	I believe that mining can have a good short term effect on the local economy, but that the long term negative effects aren't worth the potential risks.	SO	NS	X	1	
Andy Schuster	If we're going to mine it at all, I say WAIT until the prices for these materials are skyrocketing	NEPA	S	O	4	SDEIS Theme NEPA 06
Andy Schuster	hopefully as more time passes, we will have much better technological resources and methods to do this in a more efficient manner with less risk to the surrounding environment.	NEPA	S	O	2	SDEIS Theme ALT 16
Andy Schuster	let technology and mining methods get better and better through trial and error in other places before we let it happen in our beautiful northwoods.	NEPA	S	O	2	SDEIS Theme ALT 16
Tim Shoup	Having followed Polymet for over 10 years, and thus the sequence of compliance steps Polymet has undergone, the millions spent, and noting their continual quest not merely to mine, but to do so in a manner respectful of this earth, and noting most importantly the final EIS providing an independent review of potential environmental effects, which meets all the state and federal environmental requirements, I gladly and strongly encourage the DNR to affirm the Final EIS thus providing opportunity for this project's permitting.	GEN	NS	X	1	
John Eloranta	As a lifelong Ranger, a University of Minnesota graduate with a degree in Environmental Science, and someone who lives and works at a family business 15 miles from the proposed mine site, I wholeheartedly support this project. This is what our communities need. Let the people who live here decide what to do with our area, not the weekend warriors who visit our beautiful region a few days out of the year. This project is long overdue and will greatly benefit the Iron Range.	GEN	NS	X	1	
Lynn Taliaferro	Please consider one important question when considering mining in MN. What should be valued most: A healthy environment and healthy people or money from digging resources out of the ground even though it will pollute our water sources and poison our environment and thus our people. I've lived in Minnesota for over 40 years and always valued its resources, clean air and clean streets. I ask you to think twice about the right direction for all Minnesotans. May the Lord, Jesus Christ lead you in your decision.	GEN	NS	X	1	
kim Saari	And for the record, I have been blocked from posting on Mining Truth and cannot comment any longer.	GEN	NS	X	1	
kim Saari	I support Polymet and added a bit to the beginning of the comment line stating my opinion and support for Polymet as well.	GEN	NS	X	1	

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Greg Solberg	1. How much money will it cost to treat the water until it doesn't need to be treated any longer? 2. How much money does a failure cost? 3. How long do the set aside funds need to be set aside to satisfy the above two questions? The problem, as I see it, is none of the above questions can be answered with any kind of certainty. Yet someone - the State I'm assuming - is going to somehow come up with numbers and time frames. Polymet keeps saying they'll deal with the financial assurance at permitting. But how can they make any promises about this project if there's no money to pay for all the maintenance and water quality treatment after closure? Financial assurances ought to be an issue for public discussion now, not later. Is this just another end-around...much like the wild rice standard?	FIN	S	O	8	SDEIS Theme FIN 05
Christine DiSimone	Please deny this project and protect our environment instead!!	GEN	NS	X	1	
dianne carey	Protect fresh water - just say no to tar sands - frack oil - sulfuric mining.	GEN	NS	X	1	
dianne carey	the mid- west holds the largest bodies of fresh water in the world. we have a responsibility and obligation to protect it - do not allow toxins to enter it from mining, rail, pipeline, farms.	WAT	NS	X	1	
dianne carey	people should not have to compete with corporations for ownership of water quality.	WAT	NS	X	1	
Rebecca Dudley	I dont think the long term condition of our Minnesota wilderness is worth risking over the short term gain of jobs and economy.	SO	NS	X	1	
Rebecca Dudley	Our real economy is the tourism and the beauty of the northern part of the state.	SO	NS	X	1	
Rebecca Dudley	Mining equals pollution.	GEN	NS	X	1	
Rebecca Dudley	Please choose our state over big mining adventures.	GEN	NS	X	1	
Emily Steil	This EIS is faulty in its assessment of resulting water quality. In chapter three it accepts that the water will need to be treated for an unidentifiable length of time. Next it seems to accept that the water can be treated but says nothing about how long this water will need to be treated. In the press we read it could be a very long time. It then forwards the issue over to the permitting phase to ensure that the water will be treated as long as needed. It assumes that is where the necessary resources will be allocated to treat this water "forever" if required. Since the EIS is not able to say at what point the water will be safe it is in fact saying there is a long term unacceptable environmental consequence from this mine. Hiding behind a "sleight of hand" statement that passes this issue on to the permitting process reveals a huge inadequacy in the EIS. The EIS is about environmental consequence not about whether there will be the will or resources to permanently and forever sufficiently address water quality. Given all the unknowns that our future holds there is a big chance government will eventually be required to address part or all of the water quality issues from this mine. Or, worse, the resulting water will eventually be not treated at all. It also assumes what we know about water quality today is all we will ever need to consider.	WAT	S	O	8	MDNR et al. 2014b
Emily Steil	There is a fairly simple solution to this complex issue. This would be that Polymet fills in the west pit with what was taken out at some predetermined point, and covers it, which would end poisoning the water. At present the state has written the agreement with Polymet to allow them access to any minerals under what they presently plan to remove in the west pit. It would seem to be a simple step to get them to commit to a set time to end any more mining on the site. Then the state would have a finite term to monitor water quality, not for an indefinite term as this EIS proposes.	ALT	S	O	4	MDNR et al. 2013b
Danny Terry	They are going to Bribe the weak people in Office and those people who in Need of a little Money and they are going to put your Friends against each other and Destroy what family'[s are made of on a Large Scale	GEN	NS	X	1	
Danny Terry	They are going to take away your Assets Like Doctors,people who work Construction, E.M.S, reduce the people in your County on a Massive Scale	SO	NS	X	1	

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Danny Terry	They will take over your Drinking Water that you will need to Live, They will Destroy the Land,Air and Water on A Massive Scale with there Toxic's that they will be using and Digging up out of Our Ground that will not go away for Hundreds and Maybe Thousands of Years	WAT	NS	X	1	
Danny Terry	They will Close there Doors after Looting the Land for your Gold and Assets and leave you with the Bills and the Land to pay for until the End Of Time	FIN	NS	X	1	
Danny Terry	We pay over 78 Billion Dollars PLUS every year in our Tax's that they have stuck us with, now you need to thank about all this before it happens because your Future will be the Same as our Children's if you Don't STOP THEM NOW !	GEN	NS	X	1	
Cicpri@aol.com	I think 10 years of studying the environmental impact of this mining operation is more than enough. Since they have met all the requirement from a monetary, scientific and engineering perspective to adequately protect our environment any further delay would only be punitive. This area is suffering from a slowing of the economy especially in the mining industry. This project would go a long way to relieve the economic pain in the mining industry. Although the tourism industry is part of our economy it is not the main stay of it. And since this project would have no effect on it, it should not be delayed because of an unconfirmed perceived threat to it.	GEN	NS	X	1	
Craig Samson	After all the years and all the discussions the whole PolyMet project is realistically back right where it started. Their assertion at the beginning was that new technology (which was never fully explained) would allow this form of mining to be done safely. Yet after all this time it has become evident by their own EIS that it not only can not be done safely, but they admit that they will pollute, and remediation will take centuries. They have actually proven all the arguments that had been given to kill this project right from the beginning. I think it is time for all the decision makers to stand up and do the right thing and put an end to this proposed project before an environmental disaster occurs. An environmental disaster that could not be fixed, there would be no second chance or reconsidering. That is a huge responsibility and I for one would not want to be responsible for taking that type of gamble for some short term jobs, most of which would not even go to the Minnesotan's who are so keen on going forward with this project. Please consider the consequences of this project very carefully.	GEN	NS	X	1	
Trout Lowen	PollyMet is a mistake and once permitted there will be nothing we can do but watch and weep as waste water from PollyMet finds its way to the BWCA, the jewel of Northern Minnesota's natural landscape.	WAT	NS	X	1	
Allen Killian-Moore	After plowing through an arduous reading of the NorthMet Mining Project and Land Exchange Final Environmental Impact Statement, and after reviewing a dozen or so articles written about similar projects in other places, including the a burst dam at a British Columbia tailing basin, which gave way and sent 1.3 billion gallons of tainted, sludgy water into local streams and lakes, I must say that I continue to be opposed to the Polymet plan to implement a copper-sulfide mining operation in Minnesota.	GEN	NS	X	1	
Allen Killian-Moore	Our wildlands are far too precious to take such risks. Our wildlands already provide far too many jobs for those working the the outdoors industry, forest industries, land water management industries, tourist industries, children's and adult camps, farming, etc. I don't think the benefits of jobs potentially provided by the mine outweigh the risks to the jobs and livelihoods that already exist in this region of our state due to potential long-term pollution etc.	GEN	NS	X	1	
Allen Killian-Moore	Similar to what I had read in the previously issued Supplemental Draft EIS, the Final EIS statement doesn't make it clear how on earth the potential post-mine water treatment would be handled. I as understand it, two wastewater treatment plants to treat polluted water from the mine site and the tailings basin would operate when the mine is running and would continue operating after the mine closes. But, treatment will be needed at the mine site for a minimum of 200 years and at the plant site for a minimum of 500 years and this seems like an awfully long time, post-mine, in order to guarantee accountability and safety. We're talking somewhere between 2 to 5 centuries in which the water would need to be consistently and effectively managed in order to ensure safety for people and the ecosphere.	WAT	NS	X	1	
Allen Killian-	I don't see any consistent mechanisms laid out in the plan to ensure that safety and regulation, and water cleaning will continue unhindered for such a long, long period of time, and therefore I still do not thing, all things considered, that this	PER	NS	X	1	

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Moore	mine should be allowed or permitted to operate in Minnesota.					
Je Blomquist	No to PolyMet. The few years of jobs is not worth the decades of pollution and clean up. We all know the taxpayers get stuck with paying for hazardous clean up after these companies suck their profits out of the business, then move on after a few years. The degradation and destroyed habitat is not what Minnesota is about anymore. We must preserve what wilderness/habitats we have left.	GEN	NS	X	1	
petejudieh ome@yahoo.com	Please be advised we think your diligent efforts this past 10 years is remarkable! Please know that our household is 3rd generation mining and we have high regard for the 4th generation who will benefit from your proper insight. Please know we support your statements with thanks!	O	NS	X	1	
steve dubiak	How does polymet intend to pay for the clean up? Where are they going to get the money? Glencore is in major trouble and is not going to keep giving them money. Who is going to finance them? I dont see how this can move forward as I dont think they have the money and they need to prove they have the money.	FIN	NS	X	1	
Patti Rajkovich	I am 100% for PolyMet. Jobs are badly needed in the area.	SO	NS	X	1	
dembiczak 1@wildblue.net	My wife and I have been looking at this project proposal since it's infancy,it has been studied to death. Outsiders that have nothing better to do with their time,and just want to use Northern Minnesota as a play ground,with us as caretakers,have no idea what it takes to live in this part of the state. We want clean water,Clean air,Fish, and the many species of wildlife that make this part of the state their home,to flourish and have a safe environment for ALL. It has been proven time and again that this project can be done to the specifications that have been laid out for it,and it would have been providing much needed ,high paying employment to hundreds of FAMILIES,(thousands of people) in an area that is going to die without these projects. If you use a computer,swipe on a cell phone or use any other type of electronics,and are against the project,because of something that might happen,YOU are a hypocrite. These mines will be mining metals that every one of our electronic devices needs to operate. Why should we rely on countries that don't even like us,to supply such materials? If this project is abandoned due to the GOVERNMENTS inability to get out of the way.SHAME ON THEM, AND US, FOR ALLOWING THIS TO HAPPEN.We have "DO NOTHING POLITICIANS" (that some of us)voted into office,that need to get a backbone and stand up for what is needed in the State of Minnesota. We need to supply these materials to "The United States Of America" from our own soil.	O	NS	X	1	
Jane Beattie	The mine will destroy nearly 1,000 acres of high-quality wetlands many of which have already been lost to mining.	WET	NS	X	1	
Jane Beattie	The mine will destroy two square miles of designated critical habitat for Canada lynx and wolves.	WI	S	O	3	SDEIS Theme WI 02. FEIS Sec. 5.2.5.2.1
Jane Beattie	Which direction will pollution flow?	WAT	NS	X	1	
Jane Beattie	How can PolyMet provide financial assurance for the hundreds of years of mechanical water treatment that will be required to comply with water quality standards?	FIN	NS	X	1	
Jane Beattie	There is no evaluation of pollution risks using realistic and scientifically supported assumptions concerning how much polluted seepage is likely to be captured and treated both during and after mining operations.	WAT	NS	X	1	
Jane Beattie	No Clean Water Act Section 404 permit can be issued for the proposed mine because the mine will degrade ground and surface water.	WAT	NS	X	1	
Jane Beattie	There is no plan to compensate for the thousands of acres of direct and indirect impacts to high quality wetlands.	WET	NS	X	1	
Jane Beattie	There has been no worthwhile consideration of alternatives to reduce harm to wetlands and water quality.	ALT	S	O	4	SDEIS Theme ALT 03

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Jane Beattie	The mine site and surrounding lands on the Superior National Forest cannot be traded away to PolyMet for other lands.	LAN	NS	X	1	
Jane Beattie	The and exchange is not in the public interest, and will violate the forest plan for the Superior National Forest, harm endangered species, impair downstream tribal resources and conflict with laws and policies to protect wetlands and other resources.	ROD	NS	X	1	
Jane Beattie	Please comply with all environmental laws and do not let the min result in environmental damage.	PER	NS	X	1	
MARTY LAAKSO	MINING IS THE LIFELINE TO THE ECONOMY OF THE RANGE. SURVIVAL OF ALL RANGERS DEPENDS UPON THE CONTINUED DEVELOPMENT OF ADVANCED PROCESSES FOR IRON ORE AND THE DEVELOPMENT OF THE RESOURCES THIS AREA WAS CREATED WITH. I AM IN SUPPORT OF THE POLYMET PROJECT BECAUSE IRON ALONE CANNOT KEEP THIS AREA THRIVING. THE EXTENDED PROCESS THAT POLYMET HAS HAD TO ENDURE, ITS WILLINGNESS TO MEET ALL REQUIREMENTS FROM SO MANY DIFFERENT AGENCIES, AND ITS UNEQUIVICAL SURPPORT FROM THE PEOPLE LIVING IN THE AREA SHOULD BE ENOUGH TO APPROVE THE EIS AND LET POLYMET INVEST IN THE SURVIVAL OF THE IRON RANGE. PLEASE DON'T LET THOSE WHO LIVE IN DISTANT PLACES OR WHOSE LIVES DO NOT DEPEND ON THIS ENVIRONMENT SOUND PROJECT AFFECT YOUR DECISION TO DO THE RIGHT THING FOR THE THOUSANDS OF FAMILIES WHO ARE COUNTING ON THIS PROJECT AND THE OPPORTUNITIES IT WILL BRING TO ASSURE SOME STABILITY TO THEIR LIVES.	GEN	NS	X	1	
HJJKJS@aol.com	The five changes to the final EIS cannot ensure anything! PolyMet has spent 10 years and \$28 million trying to make us believe that they are going to create lasting employment on the range (how many jobs?) and that they will make every attempt to protect the environment. We just have to trust them. Anyone who believes that PolyMet really cares about anything except profit has their head stuck in an open pit mine. I am adamantly opposed to this adventure.	GEN	NS	X	1	
Joseph Heegaard	After reviewing the EIS for the proposed Polymet mine, I believe it is inadequate and that the project should be refused.	GEN	NS	X	1	
Joseph Heegaard	My main concern is water contamination, especially groundwater, that could pollute the watershed which would have catastrophic implications for humans and wildlife. Based on past sulfide mining projects,the risk of groundwater contamination is to great and will eventually cost our public more than the supposed economic benefits. In the process of trying to confine that waste water, treat it, and return it, there are too many opportunities for error and past sulfide mining projects have not been able to do so effectively.	WAT	NS	X	1	
Joseph Heegaard	n chapter 5 under "Contaminant Transport in Groundwater from Waste Rock," there is a claim that "over time the concentration of contaminants leaking from the sources would decrease, as the sources would gradually degrade, diminishing in strength. Those, and other processes would result in contaminant concentrations decreasing with time and distance from the source." It is hard for me to believe this project can be done safely when there is acknowledgement of the contaminants being leaked. Despite contaminants being purportedly diminished and degraded as they leak away from the source, the contaminants have still entered the environment, many of them heavy metals, that will not break down for hundreds of years. These contaminants will accumulate in the environment, threatening our precious water sources, our fragile ecosystems, and our socioeconomic well being.	WAT	NS	X	1	
Joseph Heegaard	The bottom line is that we have devastated our environment enough. As we begin to feel the effects of climate change and see the implications of land exploitation, we must put a stop to reckless profit seeking projects and start building our economy sustainably. Let's leave a little piece of the natural world for our children, and cherish it while we have it. We cannot survive without clean water, and this project threatens that at a time when water scarcity has never been more prevalent. Please, make the responsible decision and refuse this mining project.	GEN	NS	X	1	
Margaret Seibel	First of all, where does the overflow go? Is it treated? Does it collect somewhere else? And secondly, with global warming, we don't know the definition of a rare event. The probability of high rainfall storms may increase. What volume of overflow is expected as a function of total rainfall in an event at different freeboards? How long would the bypass event last vs. total	WAT	S	O	8	PolyMet 2015j

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	rainfall for different freeboards? This is where XY plots are needed. What mass of pollutants makes it to the Polymet boundary? What happens if the ground is frozen? Or if it's very saturated?					
Margaret Seibel	What is the P90 composition of the tailings pond water? I didn't see a table for this. Can geese land on this and be unaffected?	NEPA	S	O	8	PolyMet 2015j
Margaret Seibel	Was a rare event rainfall (for example, 10 inches of water in a 24 hour period) modeled? Was annual rainfall the only input or was there an option for daily rainfall? The Climate Change Sensitivity Analysis Model seems to just change annual rainfall according to the following statement.	NEPA	S	O	8	PolyMet 2015j
Margaret Seibel	Is this true even in high rainfall situations?	NEPA	S	O	8	Polymet 2015m
Margaret Seibel	Snowmelt is seasonably predictable and higher discharge rates will be used beforehand. A high rainfall event is not as predictable. How quickly can freeboard be created?	NEPA	S	N	8	Stormwater ponds are designed for the 100-year, 24-hour storm event plus one foot of freeboard. All process water ponds, with the exception of the OSLA pond, were designed for the 100-year, 24-hour storm event plus three feet of freeboard. The OSLA pond was designed for the 25-year, 24-hour storm event plus three feet of freeboard. Additionally, all process water systems with the exception of the Rail Transfer Hopper pond, can manage runoff from these storm events without their pumps running, in the event of a power outage or at full capacity at the WWTF. FEIS Section 5.2.2.3.1. See SDEIS Theme PD 22 and PolyMet 2015r.
Margaret Seibel	If the East Pit overflows to the West Pit (and the sulfate levels in the East Pit are shown to be high on page 5-122) will there be sufficient freeboard in the West Pit for all this flow in a high rainfall event?	NEPA	S	N	8	PolyMet 2015r, Section 2.1.3. Inflows to the pits include contributions from groundwater and runoff within the pit. The size and location of the sumps and pumps will change as the pits expand in size and depth, requiring periodic evaluation of the pumping system. Pump capacities are based on peak annual flows from the snowmelt event, assuming a rapid spring snowmelt (40% of the snowmelt occurring within one day). The pumping systems are designed to handle groundwater inflows and the average annual runoff volumes from a snowmelt event, removing approximately 100% of the groundwater inflows and 40% of the annual snowmelt runoff (1.28 inches) within 3 days. The volume from this snowmelt event is approximately equivalent to the runoff volume expected in the pits during the 5-year, 24-hour storm event. The sumps have the capacity to hold the remaining volume from this snowmelt runoff event. If a storm exceeds the sump and pump capacity, the lowest level of the pit will be used to store the excess water, with

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						mining operations relocated to higher levels or delayed until water levels are pumped down. During extreme storm events, pit dewatering may temporarily be stopped to allow the WWTF to handle the increased volumes from other process water sources to minimize overflow of process water sumps and ponds across the Mine Site. FEIS Section 5.2.2.3.1.
Margaret Seibel	This statement refers to the tailings basin. What conditions do the maximum flow numbers correspond to? Spring snowmelt? A high rainfall event? If this flow is returned to the tailings basin, at what rate does freeboard decline?	NEPA	S	N	8	FEIS Section 5.2.2.3.3, Table 5.2.2 - 37 for predictions. The maximum flow numbers represent contributions from the climate and the project. See PolyMet 2015j, Section 5.2.1.1 for climate and Fig. 6-6 for rates captured by the containment system over the course of the project.
Margaret Seibel	Is there a diagram with flowrate (gpm) for all of the overflows and pipes for a high rainfall event?	NEPA	S	N	8	The information requested is more than is necessary to assess the project's impacts. Detailed project specifications for this feature will be provided and reviewed during permitting. See PolyMet 2015r, page 11.
Margaret Seibel	Fact sheet 13 I don't think g/yr is a unit of concentration.	O	NS	X	1	
Margaret Seibel	3) Many concentrations in the FEIS are compared to the CEC scenario such as 18.3 mg/l compared to 18.2 mg/l at a wild rice bed on the Partridge River (5-151), both of which violate the original standard of 10mg/l. Figure 5.2.2-50 shows sulfate the time. The state should have identified the source of the high sulfate levels in the past and started mitigation proceedings so that standards were met. Once the Polymet mine is in operation, and mitigation is required according to standards, will the state act to enforce regulations?	NEPA	S	O	8	SDEIS COOP Response #9132
LK Woodruff	I STRONGLY oppose PolyMet's proposed NorthMet sulfide copper mine on the Superior National Forest. That anyone would seriously consider this as a rational option is mind-blowing.	GEN	NS	X	1	
LK Woodruff	The recently released Final Environmental Impact Statement (FEIS) is inadequate, and The proposed open-pit mine would result in unacceptable, irreversible environmental harms. Quite possibly for many, many, many years.... Long after we are all dead and long gone:(So there goes any serious accountability.	MEPA	NS	X	1	
LK Woodruff	The proposed mine would destroy nearly 1,000 acres of high-quality wetlands in a region that has already lost many thousands of acres of wetlands to past and ongoing iron ore and taconite mining.	WET	NS	X	1	
LK Woodruff	The mine would also destroy two square miles of designated critical habitat for Canada lynx and endangered wolves, which also provides important habitat for Minnesota's already declining moose population.	WI	NS	X	1	
LK Woodruff	The FEIS is inadequate because it has still not answered fundamental questions such as which direction the pollution will flow, or how PolyMet can provide financial assurance for the hundreds of years of mechanical water treatment that would be required to comply with water quality standards.	WAT	S	O	8	MDNR et al. 2015c. SDEIS Theme FIN 01

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
LK Woodruff	The FEIS also fails to evaluate pollution risks and impacts using realistic and ~scientifically supported~ assumptions concerning how much polluted seepage is likely to be captured and treated both during and after the proposed mining operations.	GEN	NS	X	1	
LK Woodruff	In addition, no Clean Water Act Section 404 permit should be issued for the proposed mine because the mine would degrade groundwater and surface water, there is no plan to adequately compensate for the thousands of acres of direct and indirect impacts to high quality wetlands, and there has been no meaningful consideration of alternatives that would reduce harm to wetlands and water quality.	COE	NS	X	1	
LK Woodruff	Moreover, the proposed mine site and surrounding lands on the Superior National Forest should not be 'traded away' to PolyMet for other lands. The proposed land exchange is NOT in the public interest, and would violate the forest plan for the Superior National Forest, harm endangered species, impair downstream tribal resources and conflict with laws and policies to protect wetlands and other resources.	LAN	NS	X	1	
LK Woodruff	the FEIS is poorly done and fails to demonstrate that the proposed PolyMet mine would comply with all environmental laws and that it will not result in unacceptable environmental impacts. The agencies should reject PolyMet's proposal, and keep the proposed mine site under the current ownership and protections provided by the Weeks Act, Endangered Species Act, the Superior National Forest Plan and other laws. This is really a no brainer, folks.	GEN	NS	X	1	
Paul White	I consider myself an environmentalist yet I fully support this project and think that not only will it benefit MN and the local communities with desperately needed jobs, but it can be an example of how to do mining the right way! It is certainly better to do it with care than to have mines that are subject to almost no oversight in foreign countries. It makes no sense to pollute the planet in China or Chile to gather raw materials and then ship them to the USA. In my opinion, the Final EIS for PolyMet's NorthMet Mine is beyond adequate.	GEN	NS	X	1	
Ralph Butkowski	This plan goes against the clean water and clean environment ideals that Minnesotan's stand for, and it is difficult for me to accept the idea that we stand for these principals in name only.	GEN	NS	X	1	
Ralph Butkowski	We must not forget the work of those who fought polluters in the same region of the state, and we must diligently guard against a repeat of these difficult times.	GEN	NS	X	1	
Ralph Butkowski	Minnesota does not currently need the potential economic support that could be realized by undertaking sulfide mining projects. We can afford to wait until better plans and better technology comes along to extract these commodity metals.	ALT	NS	X	1	
Ralph Butkowski	I regard the mining project as having high potential of water, land and air contamination with risks to our health and environment that could not be readily reversed. Once approved and put in place, it would be extremely difficult to undo any damage as we should remember from the past.	GEN	NS	X	1	
Susan Boyle	How many 'studies' must be done and re-done to mollify the detractors.	NEPA	NS	X	1	
Susan Boyle	Are Minnesota's decision makers determined to empty Northern Minnesota of inhabitants?	SO	NS	X	1	
Susan Boyle	The poverty that plagues Northern Minnesota since jobs emigrated elsewhere should be obvious to all.	SO	NS	X	1	
Chuck Lyons	Copper is a needed mineral, it needs to be mined in a environmental safe manner. That can be done at PolyMet rather than a country that abuses both the environment and the workers.	GEN	NS	X	1	
Chuck Lyons	It will also create needed job in north eastern Minnesota.	SO	NS	X	1	

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Mark McClellan	I would like to voice my support for the Polymet mining project. After 10 years of objective study and review led by the Minnesota DNR with involvement of the MPCA, Army Corp of Engineers, U.S. Forest Service and Federal EPA this project has probably received more and closer scrutiny than any other mining project in the world, which is as it should be. We all understand we must protect our resources, but do so as we responsibly make use of them. There is no where in the world today where mining is done more responsibly than Northeastern Minnesota and this project will keep that high standard, probably setting new standards for operating with very low environmental impact. I'm also confident that the 20 plus permits that are required from the DNR, County and other state agencies will identify and further address these concerns to the benefit of the people of Minnesota. We need to mine these resources somewhere in the world and this is where a copper nickle mine will be held to the highest environmental standards in the world. All for mining what we consume responsibly.	GEN	NS	X	1	
Carlan Lesch	I am against the North Met Mining Project.	GEN	NS	X	1	
Mandy Lilla	I support PolyMet's North Met Mine. I believe Copper can be mined in a environmentally friendly way. An EIS is a very thorough review process of a project and would have identified and evaluated the impacts due to mining. The opening of a new mine on the Iron Range will positively benefit the area and people by providing additional jobs which are needed.	GEN	NS	X	1	
Allen Frechette	The FEIS is in my experienced opinion, incomplete in its failure to fully evaluate background contamination both known now and that which might become evident in the future as a direct result of preexisting conditions from identified Areas of Concern (AOCs). Because of the absence of this crucial background information, the state would have a difficult and costly time proving that future contamination, which the state believes emanates from the Polymet operations, was not from one of the AOCs that had not been fully evaluated, should Polymet deny responsibility.	HAZ	S	O	2	SDEIS Themes HAZ 05, PD 10. SDEIS COOP Response #2984
Allen Frechette	Also, establishing the amount of financial assurance that Polymet will have to provide in advance of obtaining permits to cover both the preexisting AOCs that they have accepted responsibility for and those that might become evident in the future appears from the findings in the FEIS to be premature. Polymet could claim future discovered contamination, which the State alleges is Polymet's responsibility, is not their responsibility, but rather from a preexisting AOC that had not been adequately evaluated by the state. The FEIS actually acknowledges this possibility and provides Polymet an established position for denial of future responsibility for contamination.	FIN	NS	X	1	
Allen Frechette	Establishment of responsibility for preexisting ground water contamination must be addressed before a permit for Polymet can be granted, to eliminate the potential for legal problems associated with assignment of responsibility for subsequent ground water contamination should Polymet proceed. It is reasonable to assume that any claim by the state for access to financial assurance from Polymet will be challenged if Polymet can argue that such contamination is the result of preexisting conditions. This issue has been established as legitimate in previous permit considerations by the MPCA where applications for permits have been submitted in areas with preexisting contamination concerns that could complicate assignment of responsibility for contamination to the proposed project. (One example is the former Pollution Controls Incorporated (PCI) site in Scott County, where the deed for the site was even written by the MPCA's AG to exclude future development.) There are only two ways to resolve this problem – either Polymet must agree to full responsibility without the right to challenge the State's decision, for any actionable contamination found subsequent to their operation regardless of original source that is deemed by the State to be associated with their operations, or Polymet must agree to be responsible for proving to the satisfaction of the state that discovered contamination is not from their project. Both of these options are unlikely to be acceptable to Polymet. In the absence of a resolution to this issue, the FEIS must be found incomplete until all AOCs potentially complicating future assignment of responsibility for contamination can be fully examined and addressed.	FIN	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Allen Frechette	The amount of financial assurance necessary to ensure sufficient funds to address the future costs of site reclamation, ongoing monitoring and potential mitigation in response to contamination discovered through the monitoring has yet to be determined. The FEIS acknowledges that the details needed for this assessment can only be determined with additional technical information normally provided during subsequent permitting. However, Polymet should have provided the necessary engineering details for this critical issue as part of the EIS. Thus until the issue of existing AOCs and their relevance in complicating existing and future contamination discovery, which could be associated with the Polymet proposal, is addressed, this remains an unresolved issue, which could also complicate future regulation of Polymet should a permit be issued.	PER	NS	X	1	
Allen Frechette	A Project Proposer chooses the project site and as noted in the EIS alternatives discussion, there were no alternative sites or technologies that would satisfy the needs of the Project Proposer. With a chosen site come the preexisting assets and liabilities associated with that chosen site. Polymet appears willing to accept some of the liabilities, but in the absence of a better understanding of the preexisting AOCs, it is likely the state would be responsible for addressing contamination from both existing AOCs and those that Polymet alleges were from existing AOCs in the absence of state funded investigation to prove otherwise.	FIN	NS	X	1	
Allen Frechette	Polymet is a Limited Liability Corporation, with (at this point) financial resources that have been questioned. The proposed transaction and affiliated private agreements appear to transfer responsibility for existing contaminated properties to Polymet. As the FEIS notes (see sections below) transfer of financial responsibility from previous mining sites to Polymet appear to (should Polymet fail) result in removing responsible parties currently (apparently) cooperating with the State for remediation and transfer them to Polymet. The issue of the necessary financial assurance prudent to be required by the state appears to have not been resolved in the responses to comments on this issue presented in the FEIS. Thus, this remains an unresolved issue rendering the FEIS incomplete, or if unresolvable, cause for permit denial.	FIN	NS	X	1	
Allen Frechette	The FEIS appears to acknowledge the unresolved issues related to establishing appropriate financial assurance for the Polymet proposed project but fails to actually provide sufficient illumination to those who would rule on the permits, set the amount of financial assurance and land swaps associated with this project. As a result, the FEIS remains incomplete in my opinion. It is arguable that the effort and cost of fully resolving this important concern is beyond the scope of an EIS, and it may be so. However, in that case, this issue should be emphasized and carefully explained to subsequent decision makers so that they understand the associated risks to the State and rule appropriately. The purpose of an EIS is after all simply to illuminate the potential impacts and risks associated with the evaluated proposed project and provide the project proposer an opportunity to agree to applicable mitigation. It thus becomes the responsibility of the State staff charged with preparation of an environmental review document to effectively convey the findings to the decision makers. Because of the immensity of the documents associated with this EIS, it would be inappropriate for responsible staff to assume that decision makers would be able to read through all the complicated technical documents to obtain an appropriate level of understanding to make responsibly informed decisions. Therefore, I believe it would be of value for the technical staff from the DNR, MPCA, MDH, U. S. Army Corps of Engineers and others who have worked on this EIS to offer their professional opinions regarding risks associated with this project to the decision makers.	FIN	S	O	5	SDEIS Themes FIN 05, FIN 08, FIN 13
Neil Simonson	Please approve PolyMet's permit. Even though Canadian they possess the technique's to wash out the Sulfer.	PD	NS	X	1	
Neil Simonson	With Minnesota's expertise we can insure that we can monitor the process just fine.	PER	NS	X	1	
Neil Simonson	We can finally obtain Paladium from an American source to box out the Russians.	SO	NS	X	1	
Neil Simonson	We'll have to find a source of Copper, Nickel, Paladium and Platinum some day	NEPA	NS	X	1	

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Neil Simonson	Because of all the unemployed Iron Workers on the Range now's the time to mine the NE Mesabi.	SO	NS	X	1	
Neil Simonson	None of us want to die from Cancer or eat Green Fish; but the Rangers' group conscience allows for the mining.	HU	NS	X	1	
Eric Eng	So much of our land is in flat open areas, but little of it is near beautiful water byways and adjacent to the best asset we have to Minnesota. The North Shore, and Lake Superior and the water ways that feed it for the welfare of the lake, and wildlife that it supports please work to find an alternative spot in a more rural flat area as there are very many.	ALT	NS	X	1	
Eric Eng	Do not sell out the future generations by receive empty short term benefit from a large company that cannot guarantee to protect Minnesotas greatest asset. Any oil, Mining and other mineral digging endeavors do damage the Ecco system even with safeguards applied and shallow promises.	SO	NS	X	1	
Eric Eng	Ultimately it is in our federal regulations that any contracted mining oil, or mineral search and excavation persued in the US period. These companies ARE NOT LIABLE ultimately if something happens drastic or upon moving there operations to elsewhere.	FIN	NS	X	1	
Michael N Felix	I'm for it.. I'm an envionmental... from grand rapids mn. There are too many reasons so I'll stick with that.	GEN	NS	X	1	
Ron Bergh	Hoping the polymet mine will open soon.	GEN	NS	X	1	
Dyke VanEtten Williams	Nowhere do I see an economic or aesthetic analysis - hence your "study" is in no way complete and no permits should be issued until ALL affecting factors are considered.	SO	S	O	2	SDEIS Themes SO 04, SO 07. FEIS Sections 5.2.10, 5.2.11
Dyke VanEtten Williams	I see no reference to any response to the Ojibwe study saying water actually will flow INTO the BWCA. The FEIS states it won't. That's no where near enough assurance given that there has been a legitimate challenge to your assertion. And it doesn't deal with the possibility that polluted water would reach Canada - either via the Rainy Lake watershed or directly on Lake Superior. The fact that the IJC and/or Canadian Parliament could stop this cold needs to be addressed.	WAT	S	N	11	MDNR et al. 2015c
Dyke VanEtten Williams	- Global warming and other influences have created an environment wherein what HAS happened is no longer any kind of prediictor of what WILL happen. So many statements in the FEIS cite assumptions" and "predictions" rather than any kind of certainty. Look	AIR	NS	X	1	
Dyke VanEtten Williams	The wild areas of the Arrowhead have been and need to continue to be a carefully controlled and protected "classroom" in which young people can and do learn responsibility, constructive risk-taking, leadership, limits and develop character. This generation has few of those traits and reality-based experiences due to their helicopter parents who guaranteed that absolutely nothing would ever happen to their kid - good or bad. These "screenily dependent", virtual reality taught youngsters have nothing to draw on when faced with real crises - global warming, for example. They need to be able to say to development that "This far is too far" - just what we who want to see no mining are saying. Destruction of an irreplaceable resource necessary to quality of life for the sake of profit for a few to make the "stuff" consumed by the many is not right. This far IS too far!	GEN	NS	X	1	
Dyke VanEtten Williams	The lands you are proposing to trade away, in the guise of "mitigation", are not yours to trade. They are in trust to your department to manage for we the people. It seems clear that we the people really don't want this development and its consequent results and unforeseeable risks. Please look at www.OurChildrensTrust.org. This group of children, along with James Hansen from NASA, have filed suit against the federal administration citing an ageold precedent that government must protect their basic rights to clean water and clean air. A judge in a state case in Washington has just agreed with this principle. Allowing hard rock mining would fly in the face of it - a basic right as old as organized civilization itself! For the sake of the children of my children, do not let this development move forward. It is based on the expectation that what has happened in the past will shape the future, which is now clealy a fallacy. It is time for all of us - especially you - to say: THIS FAR IS TOO FAR!	LAN	NS	X	1	

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Cecilia Kurtz	I recently received info on 4 discs containing information in regards to the PolyMet project. I had already been somewhat informed on this topic and while the info I received in these discs is very detailed and extremely long, I still stand by my first inclination to be opposed to this project.	GEN	NS	X	1	
Cecilia Kurtz	There is absolutely no way that severe and premanent contamination from this mining project can be avoided to the surrounding lands and water. Since people depend on their very lives and livelyhood with the pristine land and waters as they currently are, I hope that the promise of economic dollars will not outweigh the common sense that should be used for decision-making on this project. There are many ways of making a living and making money without destroying the very land and water we are blessed with. Mining in the headwaters of any land should be avoided at all costs. Clean, fresh water that sustains life is our most precious resource.	SO	NS	X	1	
Cecilia Kurtz	I have been a tourist many times to the very areas being described for future mining. These new mines would permanently scar, destroy and basically get rid of what we Minnesotoans have now. We already have the big farmers destroying much of MN ag lands with improper tillage methods. Their toxic chemicals contaminate the air we breath and most of the adjoining waterways. Our birds, bees and butterflies are disappearing thanks to a federal and state government that allow farmers to continue to give a whole new meaning to the words "dumb farmer".	GEN	NS	X	1	
Cecilia Kurtz	Do we have to continue to destroy this beautiful state, it's fish and other aquatics, and it's wildlife with mines such as this one being proposed by PolyMet?	GEN	NS	X	1	
Alan Breuer	I believe that if all the regulations are met ,that have been put in place by different agencies federal and state then it's time to move forward with permitting and get jobs coming to Minnesota!	PER	NS	X	1	
Alan Breuer	It's time to stop environmental terrorist from stopping jobs and businesses from moving forward after following all regulations and showing they'll operate safely!!!	SO	NS	X	1	
Mike & Linda Gallagher	I object to the Poly Met mine proposal mainly due to the lack of overview the project has had.	NEPA	NS	X	1	
Mike & Linda Gallagher	What kind of company would agree to monitor and maintain mine waste "indefinitely"? In other words forever. No company who was honest would agree to that because of the liability involved with the word indefinitely. No lawyer would let their client agree to that. They WILL cut and run, declaring bankruptcy as soon as trouble occurs. And you know problems will occur.	FIN	NS	X	1	
Mike & Linda Gallagher	There needs to be an independent review of the project that is unbiased.	NEPA	NS	X	1	
Mike & Linda Gallagher	The biggest problem is the proximity of the mine to the BWCA. Once the mine leaks its toxic waste, the BWCA will be lost. FOREVER. You can't put it back the way it was, EVER. no matter how much money you throw at it.	WAT	NS	X	1	
Mike & Linda Gallagher	It is just not worth the gamble to provide a few good paying jobs, and loose a wilderness area forever.	SO	NS	X	1	
Jonah Shaw	As the DNR completes the Environmental Impact Statement for the Polymet mine and looks towards a future EIS on a proposed mine by Twin Metals, I urge you to do what you can to stop these projects. Risks to both the incredible natural environment of the North Shore and the Boundary Waters far outweigh the potential benefits of these mines. The failure of all prior containment systems for open-pit sulfide mining sets a clear precedent that the toxic byproducts of these mines cannot be safely contained. In addition to threatening the environment, these mines pose threats to the tourism industry that employs 18,000 people and is dependent on the Boundary Waters. Polymet would only employ around 400 people for 20 years. These mines are not the right decision for northern Minnesota.	GEN	NS	X	1	

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Ruthanne Fenske	I SUPPORT the proposed PolyMet NorthMet copper-nickel sulfide mine. The PolyMet Final Environmental Impact Statement (FEIS) is ADEQUATE under both federal and state standards; I SUPPORT the U.S. Forest Service proposal to exchange Superior National Forest land for the PolyMet proposal; and I SUPPORT issuing any federal permits. The PolyMet FEIS is ADEQUATE under federal and state laws.	GEN	NS	X	1	
Levi Hurley	My thoughts are that if this mine does not go forward, with all the work that has gone into the Final EIS, I'm not sure how any mining operation can possibly be permitted in Minnesota and actually go into operation. It makes me wonder if the state is interested at all in the good jobs, and the economic advantages that would result from this mine operation. What a shame it would be if it falls by the wayside. This mine has been looked at every which way possible for risk of every possible type one could imagine. It is time to move this project forward!	SO	NS	X	1	
Jane Nicholson	The recently released Final Environmental Impact Statement (FEIS) is inadequate, and the proposed open-pit mine would result in unacceptable, irreversible environmental harms.	GEN	NS	X	1	
Jane Nicholson	It is essential that we guard against any pollution whatsoever.	GEN	NS	X	1	
Jane Nicholson	The FEIS is plainly inadequate, as it has still not answered fundamental questions such as which direction the pollution will flow, or how PolyMet can provide financial assurance for the hundreds of years of mechanical water treatment that would be required to comply with water quality standards.	FIN	NS	X	1	
Jane Nicholson	no Clean Water Act Section 404 permit should be issued for the proposed mine because the mine would degrade groundwater and surface water, there is no plan to adequately compensate for the thousands of acres of direct and indirect impacts to high quality wetlands, and there has been no meaningful consideration of alternatives that would reduce harm to wetlands and water quality.	COE	NS	X	1	
Jane Nicholson	And what about surrounding commons such as the Superior National Forest? Is it possible that there is any consideration toward trading this away to PolyMet for other lands? Under whose authority??	CUM	NS	X	1	
Jane Nicholson	The proposed land exchange is not in the public interest, and would violate the forest plan for the Superior National Forest,	LAN	NS	X	1	
Jane Nicholson	[The proposed land exchange would] harm endangered species, impair downstream tribal resources and conflict with laws and policies to protect wetlands and other resources.	GEN	NS	X	1	
Jane Nicholson	In sum, the FEIS is inadequate and fails to demonstrate that the proposed PolyMet mine will comply with all environmental laws and that it will not result in unacceptable environmental impacts.	GEN	NS	X	1	
Peter Spink	I am very concerned about potential water quality issues associated with the potential PolyMet mine and urge you to consider further testing and to listen to the many water experts who have raised serious issues about this project. We will never be able to reclaim our lakes and water supply if something goes wrong. Virtually every mine of this type has ended up with water contamination related issues. I urge you to engage in further testing and err on the side of safety.	WAT	NS	X	1	
Lori Rumpf	I am writing to oppose PolyMet's proposed NorthMet sulfide copper mine in Superior National Forest. The proposed open-pit mine would result in unacceptable, irreversible environmental destruction.	GEN	NS	X	1	
Lori Rumpf	The FEIS is inadequate because it hasn't answered fundamental questions such as direction of pollution flow and how PolyMet will provide monetary resources for the hundreds of years of water treatment that would be necessary to comply with water quality standards.	WAT	NS	X	1	
Lori Rumpf	The FEIS also fails to evaluate pollution risks and impacts using scientifically-supported assumptions concerning how much polluted seepage is likely to be captured and treated both during and after the proposed mining operations.	WAT	NS	X	1	
Lori Rumpf	In addition, no [Clean Water Act Section 404] permit should be issued for the proposed mine because it would degrade groundwater and surface water. There is no plan to compensate for the thousands of acres of impact to high quality wetlands, and there has been no meaningful consideration of alternatives that would reduce harm to wetlands and water	PER	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
	quality.					
Lori Rumpf	the proposed mine site and surrounding lands should not be traded away to PolyMet for other lands. The proposed exchange is not in the public interest and would violate the Plan for the Superior National Forest, harm endangered species, impair downstream tribal resources, and conflict with laws and policies to protect wetlands and other resources.	LAN	NS	X	1	
Lori Rumpf	the FEIS is inadequate in that it fails to demonstrate that the proposed mine will comply with all environmental laws and will not result in unacceptable environmental impacts.	NEPA	NS	X	1	
Lori Rumpf	All agencies should reject PolyMet's proposal and keep the proposed mine site under the current ownership and protections provided by the Weeks Act, Endangered Species Act, the Superior National Forest Plan, and other laws.	GEN	NS	X	1	
Robert & Anne Haas	Please, protect the Superior National Forest from this project, which isn't allowed, but will be manipulated using a land swap. Do not rubber stamp it. It is not in the public interest, which goes against your stated mission.	GEN	NS	X	1	
Robert & Anne Haas	The recently released Final Environmental Impact Statement (FEIS) is plainly inadequate, as it has still not answered fundamental questions such as which direction the pollution will flow, or how PolyMet can provide financial assurance for the hundreds of years of mechanical water treatment that will be required to comply with water quality standards.	WAT	NS	X	1	
Robert & Anne Haas	As you all know, the proposed mine will also destroy nearly 1,000 acres of high-quality wetlands in a region that has already lost many thousands of acres of wetlands to past and ongoing iron ore and taconite mining.	WET	NS	X	1	
Robert & Anne Haas	Please reject PolyMet's proposal, and keep the proposed mine site under the current ownership and protections provided by the Weeks Act, Endangered Species Act, the Superior National Forest Plan and other laws.	GEN	NS	X	1	
Richard Houck	I have toured the proposed mining sight and am convinced that Polymet knows what it is doing and has taken all reasonable and proper precautions to adequately protect the environment.	PD	NS	X	1	
Richard Houck	with all of the mandates and restrictions that have been imposed on this type of business, and in my opinion are being more than met, this project must receive approval for the benefit of all of Minnesota, and especially those in northern Minnesota who are in need of employment.	PER	NS	X	1	
Richard Houck	Any lawsuits that are filed to cancel or delay this project should and must be dismissed for lack of evidence that this company cannot or will not meet all the environmental needs of the State.	MEPA	NS	X	1	
Peter Krause	It seems to me like you are only asking for input from those with an aptitude toward hard science such as water flows and parts per million. That myopic view alone displays a major fault in this process.	NEPA	NS	X	1	
Peter Krause	just like with the draft IES a couple years ago, the release and therefore the comment period is timed coincident to the nation's most major holiday season: Thanksgiving thru Christmas. That is a really cheap and disingenuous maneuver.	NEPA	NS	X	1	
Peter Krause	if it is true, as it seems to this observer, that you are basing these deliberations primarily on data provided by the mining company then you are basically letting the fox design the hen house.	GEN	NS	X	1	
Bob Hedlund	This project is so much more controlled than what it was then. Minnesota has had mines for a long time. This is better.	GEN	NS	X	1	
Bob Hedlund	it will help the economy of the state and the country.	SO	NS	X	1	
Sue Ramthun	It occurred to me that there is a possible alternative process that was omitted and may help mitigate the water pollution issue citizens fear. What if the ore processing is done at an already existing processing plant instead of NE Minnesota? At the mine pit, the plan is to load railroad cars with ore and haul to be processed. What if the railroad cars haul the ore to an established processing plant outside of Minnesota, unloads ore and returns to NE Minnesota to fill up/haul again? NothMet would save money by not constructing the processing plant, reinforced storage pits and indefinite water treatment. There would still be new jobs created in NE Minnesota and possibly Mn people transferring to the processing plants to staff extended hours for the additional ore processing.	ALT	S	O	4	SDEIS Theme ALT 10

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Kathy Van Dame	Please deny NorthMet Mining Project Land Exchange in the Superior National Forest to protect traditional tribal land uses and precious watershed resources. Kathy	LAN	NS	X	1	
Ernest Peaslee	I am writing to state my opposition to granting a mining permit to PolyMet for its proposed copper nickel mine in the Hoyt Lakes area of northern Minnesota.	GEN	NS	X	1	
Ernest Peaslee	I do not think the plan is designed in a way that would reasonably protect the St Louis River or BWCAW watersheds. Leakage of toxic mine wastes would be disastrous. Leakage is inevitable. A recent "News In Brief" article in Science (20 Nov 2015 Vol 350 issue 6263 p892) regarding the recent Brazilian mining disaster (collapse of two dams, see photo below) solidified my opinion.	WAT	NS	X	1	
Ernest Peaslee	The funding reserves for future problems would inevitably disappear as years and corporate shenanigans go along.	FIN	NS	X	1	
Ernest Peaslee	I think the risks to our Superior National Forest lands far outweigh the modest regional economic benefits.	SO	NS	X	1	
Richard Crum	1. The EIS is technically sound and satisfies Minnesota Rules 4410.0200 through 4410.7070. The basis for this comment is beyond the scope of this narrative but it is well supported by the body of comments already addressed and the DNR commissioner has been very articulate regarding the technical adequacy.	MEPA	NS	X	1	
Richard Crum	2. Our society must be able to rely on science and engineering, with transparent review of the results, to understand natural systems, design methods for using natural resources and design mitigation for potential impacts. The alternative is a jeopardy to our economy and national security. This means that the argument that the environmental risk of the NorthMet project is unknown or cannot be remedied is nonsense.	NEPA	NS	X	1	
Richard Crum	3. We have highly competent regulators in Minnesota. With 25 years of environmental consulting, I have found the Minnesota Pollution Control Agency stands out from regulators in other states and Canada in terms of their understanding of the science and engineering, the statutes, rules and guidance. The argument that our state agencies are not capable of protecting the interests of the state on a project like Northmet is also nonsense.	PER	NS	X	1	
Richard Crum	4. My last comment is a personal one. NTS is a firm of about 50 scientists, engineers and administrative staff. The vast majority of our practice is for mining or mining related businesses in Northeast Minnesota. The economic impact of both ferrous and non-ferrous mining is VERY REAL to us. Our Staff and the Professionals in the mining companies they work with, take their jobs very seriously to protect the environment, support the economic engine of this region and maintain our social license to mine. The team assembled by Polymet to start up and operate the Northmet project is beyond reproach in terms of the science, engineering and ethical character.	SO	NS	X	1	
Ryan Clark	During the 2015 MN Legislative Session, a statute change was made to Sec. 88 Minnesota Statutes 2014, section 103G.2242, subdivision 12 (c) (5). This change allows for the act of restoring or protecting streams and riparian buffers to earn wetland replacement credits in the >80% area of MN. Although invaluable to water quality and wildlife habitat, an argument could be made that protecting and restoring streams and riparian buffers will not have the same water quality and wildlife habitat benefits of an intact natural wetland. In addition, as of today, 12/1/2015, there are only 68.4875 available wetland credits in Bank Service Area 1 and 2 combined. This number is far short of the ~1,000 credits likely needed to mitigate for the wetland impacts proposed with this project.	WET	S	N	12	The commenter describes recent legislative changes that are still in the process of rule-making/implementation. FEIS Section 5.2.3.3 discusses wetland mitigation and identifies that mitigation details will not be finalized until permitting.
Ryan Clark	Also approved by the 2015 Legislature was a change allowing an in-lieu fee for projects impacting wetlands, meaning a project sponsor can pay a fee to a public agency to replace the wetlands lost to permanent impacts. This is a great option for many small scale projects, but with a lack of restorable wetlands in the NE part of MN, it may not be feasible to propose this option.	WET	S	N	12	The commenter describes recent legislative changes that are still in the process of rule-making/implementation. FEIS Section 5.2.3.3 discusses wetland mitigation and identifies that mitigation details will not be finalized until permitting.

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Ryan Clark	the EIS points out several impaired waters within the same major watershed of the proposed mine site. Allowing an unpredictable circumstance such as coppernickel- precious metal mining in a wet environment would likely be opposed in any TMDL, Watershed Restoration and Protection Strategy (WRAPs), 1 Watershed 1 Plan, and any Comprehensive local Water Management Plan implemented in the region to address impaired waters.	WAT	NS	X	1	
Ryan Clark	Whether the groundwater flows north or south should not be the determining factor when determining the adequacy of this EIS. Either direction flows to pristine water resources cherished by the citizens of not only MN, but much of the Country. The risk of pollution is far too great to allow a project of this nature to proceed beyond this EIS.	NEPA	NS	X	1	
Ryan Clark	Obviously, this is necessary to mine on/under land belonging to the federal government, but one has to consider if the private land proposed to be exchanged for the Superior National Forest land under which this mineral formation lies would ever be developed in a way that harms the environment to the extent the EIS portrays. Currently, both the land where the mine site is and the private land proposed to be exchanged is undeveloped forest. If the project were to be permitted, we would see a net loss of undeveloped forest land. Whether or not this alternative is relevant under any current or future land use opportunities and/or regulations on private land, it should still be considered.	ALT	S	O	10	FEIS Section 3.3.3.3.7
Bruce Trebnick	PolyMet has undergone the most extensive environmental review of any mining interest in North America and has proposed plans to responsibly extract strategic metals to support the continued maintenance infrastructure and the manufacture of goods necessary to sustain the USA as a leader of the free world. With copper and other ductile metals needed to support US enterprise, we should all rally to promote these interests - mining is necessary to sustain our economy. As solar and other non-petroleum energy supplies are developed, we will need copper transfer and supply grids to develop these alternate energy sources - copper is the second best means to transfer electrical energy compared to silver. Copper has many other uses such as antimicrobial surfaces and biocide applications, construction/plumbing, wood preservatives, etc. and is an essential nutrient to all higher plants and animal life. After more than 10 years of study to assess whether copper mining will cause permanent damage to our environment, the Minnesota Department of Natural Resources, U.S. Army Corps of Engineers, and U.S. Forest Service have found that the NorthMet Mine can comply with strict state and federal environmental standards to be a supplier of strategic metals for the good of all of us. Please allow PolyMet to mine and let us (America/Minnesota) succeed as a nation that is responsible and capable of producing the metals we consume. We should take ownership and the environmental stewardship of our mining interests and not rely on other nations to supply our needs when they are often less able to fully undertake the steps necessary to protect our environment.	NEPA	NS	X	1	
Bruce Trebnick	The time has come to move forward. The DNR should affirm the adequacy of the Final EIS so it can serve as the foundation for the state of Minnesota's permitting process.	MEPA	NS	X	1	
Mary Ann Vande Vusse	How will the state deal with the potential for pollution on that area?	WAT	S	O	2	FEIS Section 5.2.2.3.5
Mary Ann Vande Vusse	Will there be long term studies to monitor the health of people living in the area?	HU	NS	X	1	
Mary Ann Vande Vusse	Can the period for comment not be extended to adequately consider alternatives to minimize environmental harm, reduce polluted seepage from unlined permanent waste facilities and mitigate wetlands destruction?	NEPA	NS	X	1	
Mary Ann Vande Vusse	How will the DNR deal with the possibility of dam failure?	GT	S	O	2	SDEIS Theme GT 15
David Baldus	Although I am just finishing my undergraduate degree in geology at a liberal arts college I find it easy to conclude and defend the stance that there is not adequate knowledge of how groundwater will interact with the fractured bedrock at and	WAT	S	O	2	SDEIS Themes WR 010, WR 007

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	around the mine to claim that contamination of the surrounding watershed is not likely.					
David Baldus	It has been widely suggested that the upper layer of crystalline bedrock aquifers tends to exhibit more fractures and a higher propensity for groundwater movement. In the case of the proposed NorthMet sulfide mine in Northern Minnesota this fractured layer is of vital importance in modeling potential groundwater contamination. The groundwater flow properties of this upper-fissured layer of the Duluth Complex are poorly understood and characterized. This study models the flow of contaminated groundwater through this layer from the West Mine Pit to the Partridge River. Based on the wide range of results and their indication of likely contamination in the Partridge River; I suggest that acid mine drainage from the NorthMet site to the Partridge River is a pressing concern and the hydraulic properties (Hydraulic conductivity, porosity, and thickness) of fissured layer of the Duluth Complex are key factors in modeling this situation, which deserve refined characterization and investigation	WAT	S	O	2	SDEIS Themes WR 007, WR 011
David Baldus	This contamination would take the form of acid mine drainage. As the sulfide mining occurs large piles of waste rock would be generated. This waste rock will contain elevated levels of sulfide minerals. If left at the surface in contact with water and oxygen these sulfide minerals will oxidize to sulfates and produce highly acidic solutions referred to as acid drainage (Leticariu 2009).	WAT	S	O	2	SDEIS Theme WR 001
David Baldus	The idea behind filling the pits with water is that the pits will then become anoxic preventing the oxidation of the sulfide minerals and creation of acid mine drainage. While in principle this is true, if the pits overflow or more relevantly leak into the substrate oxidation could occur and produce acid mine drainage.	WAT	S	O	2	SDEIS Theme WR 002
David Baldus	Crystalline bedrock has a very low primary permeability and porosity almost all groundwater movement through them occurs through fractures, faults and joints (secondary permeability and porosity). Due to this property; PolyMet argues that the likelihood of groundwater leakage from their pit is low (Cite). However the literature suggests the upper portion of Hard Rock Aquifers tend to be highly fractured and viable for ground water movement (Lachassagne 2011). I will suggest that groundwater leakage through the upper fractured portion of the Duluth Complex and the overlying unconsolidated deposits from the West Pit to the Partridge River in indeed a reason for concern.	WAT	S	O	2	SDEIS Theme WR 011
David Baldus	PolyMet claims at the fracture flow is largely irrelevant in the Duluth complex due to the fact that fracture causing tectonic event predate the intrusion of the Duluth complex (POLYMET 2013 pg3 ->Farvolden et al. 1988; Douglas et al. 2000; Rouleau et al. 2003). However the literature suggests that fracture permeability of Hard Rock Aquifers is not due solely to unloading and tectonics but the weathering of the surficial layers of near surface crystalline bedrock (Lachassagne 2011). Lachassagne et al. (2011) describe a "fissured layer" residing at the bottom of the unconsolidated weathering profile directly above the un-weathered fresh bedrock that has that has relatively high permeability. According to Figure 1 from Arcworth, 1987 this zone may be anywhere from one to twenty meters thick (3.28-65.67 feet). Citing data from Maréchal et al., and Dewandel et al., 2006 they report hydraulic conductivity values of up to 2.83 feet per day. In the model, groundwater leakage from the NorthMet Mine Site flow through the upper fractured portion of crystalline bedrock is highly relevant. The Duluth Complex is close to the surface and exposed in many locations thus susceptible to weathering and the creation of the discussed "fissured layer"(cite). Groundwater flow will likely be concentrated in this fissured layer because of the relative lack of permeability elsewhere in the bedrock substrate.	WAT	S	O	2	SDEIS Theme WR 011
David Baldus	I will use two values for hydraulic conductivity of the "fissured layer" in this model: the highest reported value (28.3 feet per day), the lowest value (2.83x10 ⁻² feet per day). These values will represent best, worst-case scenarios.	WAT	S	O	2	SDEIS Theme WR 009
David Baldus	Wood et al. (1993) found porosities of 1.5% in the fractured bedrock at the Mirror Lake site, also used by Day-Lewis et al. (2000). Caine and Tomusiak. (2003) report values as high as 2.78% in a fractured crystalline bedrock aquifer system in the Front Range of the Rockies. The Front Range site is likely also heavily altered by faulting and mountain building but having the highest porosity value found in the literature for fractured crystalline bedrock aquifers it will be used to calculate a best-case scenario. The Wood et al., 1993 porosity value will be used to simulate a worst-case scenario model as it setting is the	WAT	S	O	2	SDEIS Theme WR 168

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	most similar to the NorthMet site.					
David Baldus	Based on the model discussed in the methods section I estimate travel times from the West Pit to the Partridge River ranging from ~5 months to ~800 years. The range of estimated travel times varies hugely from a matter of months to hundreds of years. This alone suggests that these estimates are poorly constrained and call for more concrete data; specifically hydraulic conductivity and porosity values for the "fissured layer" of the Duluth Complex.	WAT	S	O	2	SDEIS Theme WR 168
David Baldus	there is a high likelihood of acid drainage based on report model results.	WAT	S	O	2	SDEIS Themes WR 001, WR 002
David Baldus	Despite the lack of a concrete travel time this rough model clearly indicates that there should be serious concern about the possibility of acid drainage contamination in the Partridge River.	WAT	S	O	2	SDEIS Themes WR 001, WR 002
David Baldus	"fissured layer" in the Duluth Complex, were missing from any reports issued by PolyMet.	WAT	S	O	2	SDEIS Theme WR 011
David Baldus	these data point directly to the need for further investigation of the upper "fissured layer" of the Duluth Complex; and improved characterization of this layer both in terms of hydraulic conductivity and porosity	WAT	S	O	2	SDEIS Themes WR 007, WR 011
Joel Zimmerman	No way, no how, no polymet!!!! KEEP MINNESOTA AND LAKE SUPERIOR BEAUTIFUL!! Save the wetlands, prestine Minnesota forests, moose, waterfowl and any other animals this threatens !!! A waste pond for 500+ years? ARE YOU KIDDING!? They are owned by ANOTHER COUNTRY!! Glencore owns 60%, the owner is in court in spain for lying and corruption. THINK OF YOUR CHILDREN AND SAY NO!!!!!!	GEN	NS	X	1	
Lisa Lenz	1) Is the state is doing their own environmental impact assessment and is not relying on the one paid for by Polymet?	MEPA	NS	X	1	
Lisa Lenz	The boundary waters and Lake Superior are too important to risk contamination and we should not rely on the study sponsored by Polymet.	WAT	NS	X	1	
Lisa Lenz	2) How confident are you that Polymet will be around for 500 years to keep cleaning up the impacts of their waste? What will happen if they fail?	FIN	S	O	2	SDEIS Theme FIN 01
Kate Dougherty	I was stunned with the lack of honesty, and objectivity exhibited from the MN DNR regarding the PolyMet FEIS. I would expect this from the southern states and many states in the west, but from my DNR who has the responsibility of protecting MN residents and their property, quality of life along with our wildlife, it was an appalling rejection of everything northern Minnesotans hold dear, our clean water and our lifestyle along the shores of these waters and wetlands.	GEN	NS	X	1	
Kate Dougherty	These mines would be located in my backyard and drain into my drinking water. The Polymet-FEIS is not acceptable.	GEN	NS	X	1	
Evan Johnson	The preliminary environmental review given to this project is unprecedented for that of its type. The co-lead agencies as well as the opponents have brought every reasonable possibility of environmental detriment to attention, and Polymet has calmly, thoroughly, and scientifically addressed each concern to the best of their ability. And truly, the completeness of the environmental protection aspect involved in the mining, processing, and long term mitigation and treatment of 'left over' products (tailings, industrial use waters) is beyond that given to any other mining facility on the Iron Range, or those of similar make in the US, and even across the world.	PD	NS	X	1	
Evan Johnson	Polymet themselves has financed the majority of this extensive, lengthy process out of their own resources, again showing their dedication to the project, and their desire to construct a facility that can be used as an example to the world as an environmentally sound, profitable mining facility that can bring both economic growth and stability to the Iron Range through increased mining capacity and diversification of product. There is no known reasonable basis aside from personnel preference that can be brought against Polymet that would discredit their preparation to date.	PD	NS	X	1	

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Evan Johnson	I credit the opponents of Polymet for ensuring that 'no stone goes unturned' in regards to the environmental impact statement, but to continue to bring economic and political sway to force against the Northmet project is simply selfish, and bordering on ridiculous. While Polymet has financed their progress, ideologs associated with non-profit organizations have made and used small fortunes against Polymet by effectively manipulating and appealing to the people's responsibility to protect their own home. They have mis-represented and slandered Polymet on numerous occasions for the sake of gaining political prestige among their peers and to increase their funding. Without the sound minded entrepreneurs of the world like Polymet, these 'environmentally minded' organizations would be lost for lack of prey to leech off. If these 'environmentally minded' organizations were truly concerned for the betterment of the world, they would see that mining in our own backyard with a very mindful eye to the impact on our environment is far more responsible that allowing others to produce the resources we all expect to use daily with next to no oversight and totally out of our control. If they were truly motivated by a love and concern for the environment and those who live in it (all of us), they would recognize that the best use of resources at this point would be to come alongside Polymet financially, politically, and personally to ensure that they operate at the highest of standards as they have indicated they will do in the Final EIS. I am not a terribly liberally minded person, but imagine the final product that could come forth from a strong and real cooperation between Polymet and those who once opposed it, and perhaps still do, but desire and intend to make it literally the best copper/nickel/precious metal mine in the world.	O	NS	X	1	
Richard Newmark	I oppose the proposed PolyMet NorthMet copper-nickel sulfide mine - MAINLY because it leaves the US government and the citizens of MN with hundreds of millions of dollars of liability to clean-up after the mine closes and PolyMet declares bankruptcy. Please require at least a \$500 million bond to cover clean up for the next two hundred years which can't be used to cover bankruptcy fees.	PER	S	O	3	SDEIS Theme FIN 07
Claudia Egelhoff	Can Minnesota afford another company moving to the Arrowhead region making promises it won't be able to fulfill? I say no.	GEN	NS	X	1	
Claudia Egelhoff	Financial: the PolyMet financial model does not take into account today's mining costs, metal prices, and realistic financial assurance requirements. Further, it ignores the impact of new technologies that will make use of rare metals obsolete.	SO	S	O	3	SDEIS Theme SO 08
Claudia Egelhoff	Giving a permit to operate a risky mine to a financially shaky company would put Minnesota's water and taxpayers in jeopardy.	PER	NS	X	1	
Ralph Johnson	PolyMet mining project now has the completed NorthMet Final Environmental Impact Statement. Let PolyMet, MNDNR and the co-lead agencies do their job. Enough time and money has been wasted already. Other groups seeking more delays should be held responsible for any added costs. Any related issues that may come up can be worked out by PoyMet, MNDNR and the co-leading agencies.	O	NS	X	1	
John Walsh	I think this decision should be put up for a public vote for all Minnesota residents. Let us decide. Like everything else, once it is up and running if they pollute MN waters? We wont shut them down because of the jobs involved we will just fine them for not meeting water Quality standards and the state/residents will have to pay to clean up the mess.	GEN	NS	X	1	
River Point Resort Outfitting Co.	As a citizen of Minnesota and a resident and business owner in Ely who lives on Birch Lake and the South Kawishiwi River in the Superior National Forest please accept these comments. The PolyMet NorthMet Final Environmental Impact Statement (FEIS) proposed on 6,700 acres of public land in the Superior National Forest, is a bad plan for Minnesotans and should be rejected with all permits denied.	GEN	NS	X	1	
River Point Resort Outfitting Co.	This flawed sulfide-ore copper mine plan, to be located between the Boundary Waters and the Lake Superior watersheds, the first of its kind in Minnesota, risks polluting the headwaters of both iconic places with toxic metals and acid mine drainage for hundreds of years. We all know, that if permitted, this type of mining activity will not stop, because based on the geology, mining of the Duluth Complex could extend eventually all the way to the Gunflint Trail. I do not endorse exchanging our public federal land for a mine site so that our present lakes district can be turned into a giant mining district. Our region would never recover from this, and when the minerals are removed, we will have a devastated landscape,	GEN	NS	X	1	

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	polluted water, and air and the present sustainable economy of the Superior could never be rebuilt. Instead, we would get hundreds of years of pollution.					
River Point Resort Outfitting Co.	Why would we take the crown jewel of the national forest system in the eastern two-thirds of our nation and turn it into what would become almost a solid and continuous industrialized zone? This is a huge flaw in the Poly Met FEIS. The cumulative effects of this type of development on the Superior National Forest were not studied by the DNR.	CUM	NS	X	1	
River Point Resort Outfitting Co.	Hard, scientific facts have been ignored, including those related to health issues from methyl mercury toxicity to the developing brain. Instead, a political document, all 3,500 pages of it, was produced, and pushed upon the citizens of Minnesota.	HU	NS	x	1	
River Point Resort Outfitting Co.	PolyMet mine is the tip of the iceberg for sulfide-ore copper mining companies wishing to stake their claim in northeastern Minnesota. There will be a half dozen or more mines with miles of open pits, wasterock piles, intrusive roads and corridors, concentrator plants, railroad lines, heavy truck traffic...all dissecting the heart of the Superior National Forest. Despite years of citizens raising concerns about the impact PolyMet would have on Minnesota's clean water legacy, and despite some 50,000+ comments against PolyMet's Supplemental Draft Environmental Impact Statement (SDEIS) in 2014, PolyMet's plan has not changed much at all. Considering that our clean water is at stake, PolyMet is not worth the risk.	GEN	NS	X	1	
River Point Resort Outfitting Co.	3. It would destroy habitat for endangered and threatened species such as the moose and lynx and great gray owl.	WI	S	O	2	SDEIS Theme WI 02
River Point Resort Outfitting Co.	PolyMet would require treatment of polluted water "indefinitely". In other words, forever.	WAT	S	O	2	SDEIS Theme WR 035
River Point Resort Outfitting Co.	This is a bad plan for Minnesota and one that I adamantly oppose. It is up to you, the decision makers, to safeguard human and environmental health.	GEN	NS	X	1	
Ryan Talbott	It is simply impossible, however, to review the over 3,500 pages of documents in the FEIS and accompanying appendices within the 45-day objection period. Therefore, SOS and WLP respectfully request that the Forest Service extend the 45-day objection period to allow enough time to review the FEIS and Draft ROD.	NEPA	S	N	5	
Ryan Talbott	While the Forest Service claims that an extension of the objection period is not permitted, see Draft ROD Legal Notice (citing 36 C.F.R. § 218.6(d)), it is important to note that the Forest Service's regulations cannot run afoul of the National Environmental Policy Act ("NEPA") and the Council on Environmental Quality's ("CEQ") regulations. NEPA "is our basic national charter for protection of the environment." 40 C.F.R. § 1500.1(a). "Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA." 40 C.F.R. § 1500.1(b) (emphasis added). NEPA's public participation regulations require the Forest Service to "[m]ake diligent efforts to involve the public in preparing and implementing their NEPA procedures" and to make environmental documents available "so as to inform those persons and agencies who may be interested or affected." 40 C.F.R. § 1506.6(a)-(b). In some cases, "proposals should be given more time for the thoughtful preparation of an EIS and development of a decision which fulfills NEPA's substantive goals." CEQ,	ROD	S	O	5	SDEIS Theme NEPA 07

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	Forty Most Asked Questions Concerning CEQ's National Environmental Policy Act Regulations, Q. 35 (1981). Requiring the public to review over 3,500 pages of documents and file an objection within 45 days is contrary to NEPA's substantive goals and the Forest Service's obligation to ensure the public has enough time to fully scrutinize the FEIS and Draft ROD.					
Ryan Talbott	As the Forest Service surely understands, not all projects are created equal. Some projects are relatively straightforward and do not require the same level of environmental analysis as other, more complicated projects. Limiting the objection period to 45 days for all projects ignores this distinction and undermines the public participation requirements of NEPA. To illustrate this point, the Superior National Forest recently approved the "Mixed Use Motorized Use Project," which authorizes the mixed use of passenger vehicles and all-terrain vehicles ("ATVs") on 5.25 miles of Forest Service roads. See, Superior National Forest, Mixed Use Motorized Use Project, available at http://www.fs.usda.gov/project/?project=40836 . This project was subject to a 45-day objection period. See Superior National Forest, Legal Notice for the Mixed Use Project Draft Decision Notice, available at http://a123.g.akamai.net/7/123/11558/abc123/forestservic.download.akamai.com/11558/www/nepa/92918_FSPLT3_2537882.pdf . Without commenting on the propriety of this project, it is safe to say that it is nowhere near as complex as the proposed NorthMet Mine and Land Exchange. Indeed, the revised environmental assessment ("EA") for the Mixed Use Motorized Use Project was all of 24 pages. See, Superior National Forest, Mixed Use Revised EA, available at http://a123.g.akamai.net/7/123/11558/abc123/forestservic.download.akamai.com/11558/www/nepa/92918_FSPLT3_2485245.pdf . In comparison, the FEIS for the proposed NorthMet Mine and Land Exchange is over 1,900 pages (not including appendices and thousands of pages of reference documents that the agencies have yet to make available to the general public). A project of this scope and complexity, which will advance a type of mining never previously permitted in Minnesota, requires more than 45 days to file an objection. Sulfide mining is controversial in Minnesota and concern is growing over the threat that copper-nickel sulfide mining poses to our environment and National Forests. This FEIS is reportedly one of the largest, if not the largest, ever for a project in Minnesota. Nevertheless, the objection period is the same as it was in the Mixed Use Motorized Use Project – 45 days. In other words, the Forest Service expects the public to be able to digest a 1,900-page FEIS and file an objection within the same 45-day period as it would for a 24-page EA. This is arbitrary and capricious and contrary to NEPA and CEQ regulations.	NEPA	S	O	5	SDEIS Theme NEPA 07
Ryan Talbott	SOS and WLP are concerned about errors and confusion in the FEIS citations and project record as well as numerous reports of problems with webpages and accompanying digital documents, possibly indicating a problem with agency servers. These concerns are highlighted by the fact that the Minnesota Department of Natural Resources just published a Notice of Errata Sheet containing reference-related corrections in the FEIS. See http://files.dnr.state.mn.us/input/environmentalreview/polymet/feis/errata.pdf . The fact that just days after the publication of the FEIS, the agencies had to correct numerous references supports the need to extend the objection period to allow more time to adequately review the record and draft an objection.	O	S	N	12	Comment noted.

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Ryan Talbott	While the Forest Service treats all projects equally for purposes of filing an objection, it does not when it comes to resolving an objection. For example, if "additional time is necessary to provide adequate response to objections," the reviewing officer "has the discretion to extend the time [for resolving objections] for up to 30 days[.]" 36 C.F.R. § 218.26(b). It is arbitrary and capricious for the Forest Service to have the option to extend its deadline for resolving an objection when no such opportunity exists for filing an objection. Finally, it is important to note the timing of the Forest Service's Draft ROD. As stated above, the legal notice for the Draft ROD was published on November 17, 2015. The 45-day objection period ends on January 4, 2015. ¹ In other words, the Forest Service knowingly burdened the public with an objection period that coincides with three major holidays – Thanksgiving, Christmas, and New Year's. SOS and WLP have been waiting for the Forest Service's Draft ROD for almost a year. Releasing the Draft ROD so that the objection period coincides with three major holidays substantially impairs SOS's and WLP's ability to meaningfully review the FEIS and Draft ROD and file a comprehensive objection.	ROD	S	O	5	SDEIS Theme NEPA 07
Ryan Talbott	Therefore, SOS and WLP respectfully request that the Forest Service, in compliance with NEPA and CEQ's regulations, extend the period for timely objections to at least 90 days. Such an extension is clearly warranted to ensure that the public has enough time to fully scrutinize the FEIS and Draft ROD. If you have any questions, do not hesitate to contact Ryan Talbott at 503-329-9162. Thank you for your attention to this important matter.	NEPA	S	N	5	
Lorilee Gesch	In closing I would just like to say that I can't believe we are even considering allowing this kind of mining in a wetlands, by an international company none the less. Yes mining produces jobs, but it also leaves impoverished towns once the mining operations are done. My question to you is has PolyMet ever had an operation that did not result in a spill or accident? Once the mining jobs move out, which they always do, can PolyMet guarantee that the wilderness will be left uncontaminated so that the only sustainable industry (recreation/tourism) can continue to thrive? What happens if there is a spill? Can PolyMet afford long term cleanup? You know as well as I do that companies such as this simply file bankruptcy and go on their merry way when things go wrong, leaving the tax payers to clean up their mess...if the mess can even be cleaned up effectively. Please, please, don't let the greed of a few ruin a rare gem like the BWCA for a little nickel and copper. There are plenty of places in the U.S. where these minerals can be mined safely without threat to one of the earth's most valuable resources...clean water!	GEN	NS	X	1	
Robert Gelles	I am emailing to request the 404 permit application for the proposed modification in public notice MVP-1999-05528-JKA for public interest review. Please let me know if you need any more information from me. Thank you!	COE	NS	X	1	
Mary T'kach	The pollution from this type of mining will very possibly destroy the future of this area and there is no proof that it won't.	GEN	NS	X	1	
Mary T'kach	The jobs that will be created are far fewer and shorter lived than the jobs that a robust tourist economy will bring.	SO	NS	X	1	
Mary T'kach	Also, any pollution of waterways and groundwater will last for centuries, and will preclude any tourism or other development in the future.	WAT	NS	X	1	
Mary T'kach	Please do not allow copper-nickel mining in Minnesota.	GEN	NS	X	1	
Sandy Bergeron	We have seen time again the aftermath of these mining projects. Companies promise safety and vigilance in overseeing environmental concerns. History has shown that the promises don't hold true. The environmental issues for the water and land in the surrounding areas outweigh the short term jobs they are promising. 100's of years of compromised water and possible, almost inevitable, contamination cannot be the price Minnesota pays for jobs that are not guaranteed, long term and threaten wildlife and humans alike. Please look at the long term for the state, people, flora and fauna and deny this to move forward.	GEN	NS	X	1	

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Jared Martin	I cannot believe we're once again considering giving in to another corporation that wants to get even wealthier at the cost of the environment and our health. From what I've read sulfide mining is dangerous and incredibly dirty... and accident just waiting to happen. Meanwhile the boundary Waters and it's surrounding areas is an amazing place that we should respect and cherish. How many jobs will this actually create??? Not enough to risk everything! These shouldn't be the kinds of jobs we're looking for anymore it's almost 2016 for crying out loud! Do NOT go through with this proposal. PLEASE. Minnesota should be showing the rest of the country how to take care of it's wilderness. DO NOT. APPROVE. THE PROPOSAL.	GEN	NS	X	1	
Kevin Lee	I am writing to express my deepest opposition to the PolyMet Final Environmental Impact Statement (FEIS), which I believe to be is inadequate under both federal and state standards.	MEPA	NS	X	1	
Kevin Lee	The federal law on environmental review is quite clear, and the Polymet FEIS falls well short of that law.	NEPA	NS	X	1	
Kevin Lee	The law on EIS's is clear, and this EIS is not in compliance with that law. The law, including guidance from the EPA, clearly requires evaluation of financial assurance in the EIS itself, as the prospect and likelihood of environmental harm is directly related to the amount of, and security of, the proposed financial assurance. As you know, the Polymet FEIS contains no evaluation of financial assurance, which makes a true evaluation of environmental impact next to impossible. This is clearly not the intent of federal and state environmental review laws, which is to provide the public and decisionmakers with the information necessary to assess environmental impact.	FIN	S	O	8	SDEIS Theme FIN 13
Kevin Lee	The FEIS also fails in the legal directive to rely on independent, objective assessments of environmental harm. The use of water flow models created and run by consultants hired by Polymet undercuts the purported objectivity of the evidence.	NEPA	S	O	8	SDEIS Theme NEPA 18
Kevin Lee	But perhaps most importantly, the FEIS fails to take into account the cumulative effects of sulfide mining in the region as a whole This mine will not exist in isolation, and the environmental impacts of mining will not be limited to those caused by Polymet alone.	CUM	S	O	8	SDEIS Theme CU 04
Kevin Lee	There are also extensive indirect effects of this mine not accounted for in the FEIS, including the effects of smelting the copper produced at the mine. These effects include water, soil and air contamination that directly affects the public health.	HU	S	O	8	SDEIS Theme PD 33
Kevin Lee	Residents living near smelters experience higher rates of cancer in addition to other health effects that are derived from their exposure to toxic byproducts of smelting. None of these effects are even mentioned in the FEIS, yet they are well within the law's contemplation of environmental impacts appropriate for discussion in an EIS.	HU	S	O	8	SDEIS Theme PD 33
Amber Garlan	Sulfide mining has a dismal track record of pollution and taxpayer liability.	GEN	NS	X	1	
Amber Garlan	PolyMet's mine plan risks polluting the headwaters of both the Boundary Waters and Lake Superior watersheds with toxic metals and acid mine drainage for hundreds of years.	WAT	NS	X	1	
jack@elora ntaassoc.com	I am a geologist and mining engineer with 39 years of mining experience including work in Senegal, Peru, New Zealand, Australia, South Africa and Panama. I have served as CEO for a coal mining company. I have had direct responsibility for environmental effects of mining. It would be a travesty to require further studies beyond the current EIS. Mining in Minnesota would be cleaner and far more responsible than any jurisdiction in which I have operated. The EIS is fully adequate and should be approved.	MEPA	NS	X	1	
Kurt Doran	I am writing this letter in support of the Final Environmental Impact Statement (Final EIS) issued for PolyMet Mining's NorthMet Project by the Minnesota Department of Natural Resources (MNDNR), along with the co-lead agencies: the United States Forest Service (USFS) and U.S. Army Corps of Engineers (USACE). The Final EIS has adequately addressed potential impacts resulting from successfully permitting the NorthMet project. The Final EIS is adequate to protect Minnesota's natural resources and the project, should it be permitted, will meet all state and federal air, solid waste and water quality standards.	MEPA	NS	X	1	

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Kurt Doran	The proposed land exchange will remove lands inaccessible by the public and make other lands accessible, as access to PolyMet's mine site is currently restricted on both east and west ends. The proposed land exchange aligns with the charge, as declared by Congress in the Mining and Minerals Policy Act of 1970, that, "It is the continuing policy of the Federal Government, in the national interest, to foster and encourage private enterprise in (among other goals) the development of domestic mineral resources and the reclamation of mined land." This obviously applies to minerals within PolyMet's proposed mine site.	LAN	NS	X	1	
Kurt Doran	Finally, the NorthMet project gives Minnesota a unique opportunity to provide framework for the rest of the world on how to extract and provide strategic metals to meet global demands while upholding our state's stringent environmental standards and providing the highest degree of worker safety. This last comment may border on being personal and not science-based, but it should be considered by the scientists, engineers and regulators tasked with successfully bringing this project to fruition as it would reflect positively on the state and subsequent agencies.	O	NS	X	1	
Kurt Doran	In summary, the Final EIS has been adequately completed and shows that the NorthMet project will not adversely impact the intrinsic natural resources characteristic of Minnesota.	MEPA	NS	X	1	
Darrell Godbout	I am writing this in support of the FEIS for the NorthMet Mining Project. The first thing that people need to understand is that this is an existing mine site, active for 44 years, not developable property. We now have the opportunity to bring this site back to life along with the town of Hoyt Lakes, which has been depressed since LTV Steel Mining Company shutting down in 2001. Through extensive research and modern technological advances, this project can be constructed and operated safely and efficiently for both the environment and the economy. The Final Environmental Impact Statement (FEIS) has addressed a magnitude of potential risks, hazards and also solutions for these issues	GEN	NS	X	1	
Darrell Godbout	In regards to water quality, the Minnesota Pollution Control Agency has concluded that the project would have no significant effect on water quality due to the preventative measures taken (as clarified in the FEIS). Additionally, PolyMet would continuously monitor water quality along with the water treatment facility. Funding will be set aside to ensure treatment is available for as long as necessary.	WAT	NS	X	1	
Darrell Godbout	The topic of air quality has raised a few flags in terms of greenhouse gasses and chemical dust emissions. The Minnesota Pollution Control Agency has declared PolyMet will be well within the strict criteria set by the National Ambient Air Quality Standards and Minnesota Ambient Air Quality Standards by using state-of-the-art technology such as high efficiency air filters and dust suppressants. Electric power is encouraged to reduce the use of diesel engines. It has been ensured that areas such as Voyageurs National Park, Grand Portage National Monument, the Boundary Waters Canoe Area Wilderness and neighboring communities' air quality will not be effected.	AIR	NS	X	1	
Darrell Godbout	In summary, the FEIS addresses every possible scenario that could cause a potential risk. The combination of research teams has come up with preventative measures and treatment solutions leaving this an environmentally safe project with assurances to keep it that way. I strongly encourage the DNR to conclude the FEIS meets all necessary requirements to allow this vital project to move forward.	GEN	NS	X	1	
Jeffrey L. Wiles	I conclude that PolyMet's proposed sulfide mine in northern Minnesota poses unacceptable risks to Minnesota's clean water legacy. And that PolyMet's mine plan would put Minnesota's wetlands, health, and taxpayers in dire jeopardy. Bottom Line: That PolyMet would do substantially more harm than good. And this is not what I want for the State of Minnesota in the future!	GEN	NS	X	1	
Ingrid Timboe	My family has owned a home and land along Lake Superior in Lutsen, MN since the 1970s and I grew up spending summers in the BWCAW with my father and siblings, autumns hiking in the Sawtooths, and winters cross-country skiing in the Superior National Forest. This is precious land to my family, to our North Shore communities, to the thousands of people who paddle and fish the rivers and lakes of the North Shore each year, and most importantly, to the native Ojibwa peoples who have called this land home for thousands of years. Expanding mining operations along the Partridge River is unacceptable. Several rivers in the region are already listed as impaired under the Clean Water Act and must be managed	GEN	NS	X	1	

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	under costly TMDL regulations. Adding additional, risky mining operations is likely to exacerbate the environmental problems already faced by regional rivers, as well as by the Great Lake herself. This area is an international treasure and opening more of its forests and wetlands to sulfide mining would be a travesty.					
Johan Baumeister	In examining the PolyMet EIS, I encountered a statement that I found to be extremely troubling. With regards to wildlife impact, in the Cumulative Effects section of the EIS, the only information provided was, "No Endangered, Threatened or Special Concern (ETSC) animal would be cumulatively affected." I find this hard to believe. The EIS itself recognizes that the loss of wetlands habitat in the two affected watersheds will occur. Additionally, in the Threatened and Endangered Species Section, there is one highly-speculative paragraph with very little information, that does acknowledge something that seems to be directly opposite the above claim. "Some of these protected species (such as Canada lynx or gray wolf) could be directly or indirectly affected by project-related noise, vibration, human activity, and rail and vehicle traffic. More broadly, species populations, individuals, or their habitat(s) could be removed or destroyed as part of clearing, filling, or construction activities. Some plant and animal species could also be indirectly affected by the proposed NorthMet project, for example by changes in water quality and environment, deposition of dust, loss of pollinators, erosion, and invasion of non-native species." So which is it? No ETSC animal would be cumulatively affected, or "some of these protected species... could be directly or indirectly affected." You cannot have it both ways. You say two different things in different sections of the report. The summary section glosses over any negative effects whatsoever, and even this paragraph doesn't seriously take into account the negative effects that could potentially occur due to dust deposition or water quality/environmental changes. This makes the rest of the report automatically suspect, since it isn't even internally consistent.	WI	S	O	3	SDEIS Theme WI 01. FEIS 6.2.5
Johan Baumeister	Furthermore, since I'm typing this response comment on a computer keyboard, it is fairly obvious to me that copper-nickel mining has occurred in other places at other times. In fact, humankind has been taking copper from the ground literally since before the Bronze Age began. (You folks do know what bronze is made of, right?) Why are there no references to the documented effects that other similar mines have recently had on the ETSC animals in their areas of operations? It seems as if this data would not be too difficult to get. For example, in 2010, the metal mining industry in the US was responsible for 41% of all toxic metals released into our environment.	WI	S	O	3	FEIS Sections 4.2.5, 5.2.5
Johan Baumeister	I acknowledge that mining has brought Minnesota jobs and some amount of prosperity, but this expansion of that industry—at the risk of our environmental integrity—gives me serious concern that we are about to make one too many trips to the well. Or mine, as it were. Please, allay my concerns and do a more exhaustive report on the potential impact to ETSC animals (and plants) which includes comparisons to other domestic copper-nickel mining operations and their impacts upon ETSC species in their immediate areas.	WI	S	O	3	FEIS Sections 4.2.5, 5.2.5
kathyck@centurytel.net	The Final EIS for PolyMet's proposed mine concludes a review of the project's potential environmental effects. After 10 years of study, I DO NOT believe that the Minnesota Department of Natural Resources, U.S. Army Corps of Engineers, and U.S. Forest Service have looked at the evidence and correctly found that the NorthMet Mine can comply with strict state and federal environmental standards. It is a shame that the supporters of the project are more concerned with their jobs than what this project would potentially do to the environment for generations. There is no proof that pollution can be avoided from this project. Other similar projects have created environmental disasters that can not be corrected. No amount of financial gain is worth this risk, which is only a short term gain for the region in the jobs it would create. We need to address the environmental issues with this project to the point that it is guaranteed by the company, that NO POLLUTION will occur. It is not possible for this company to do at this point. They assure us that polluting the environment "probably" won't occur, and, if it does, they'll just clean it up. I don't believe this is a good plan going forward, since clean-up at other sites can't be accomplished, and polluted areas will remain, affecting generations to come. SAY NO TO POLYMET!	GEN	NS	X	1	

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Donna Cannon	I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal.	GEN	NS	X	1	
Donna Cannon	It will despoil the land, water, wetlands & render the entire surrounding area uninhabitable.	GEN	NS	X	1	
Donna Cannon	WE DO NOT need more minerals--we need better management of what we have & what we discard.	PD	NS	X	1	
Donna Cannon	The PolyMet FEIS is inadequate under federal and state laws and regulations.	MEPA	NS	X	1	
Donna Cannon	I strongly object to the proposed NorthMet Mining Project Land Exchange in the Superior National Forest	ROD	NS	X	1	
Donna Cannon	I oppose any federal Clean Water Act permit for PolyMet discharge and wetlands destruction Minnesota	PER	NS	X	1	
Donna Cannon	Minnesota Department of Natural Resources MUST reject the PolyMet FEIS as inadequate	MEPA	NS	X	1	
Donna Cannon	the U.S. Forest Service reject the proposed exchange of Superior National Forest lands for the PolyMet project	MEPA	NS	X	1	
Donna Cannon	the U.S. Environmental Protection Agency veto and the U.S. Army Corps of Engineers deny any Section 404 permit that would allow PolyMet polluted discharge and wetlands destruction.	PER	NS	X	1	
Eric Krenz	That being said, in its current state I ~strongly oppose~ the current proposal to allow copper nickel mining in this part of the state.	GEN	NS	X	1	
Eric Krenz	Due to the well documented shady histories of a number of the businessmen pushing for this mine, good reasons exist to question the ethics and honesty of the people and money behind Polymet.	GEN	NS	X	1	
Eric Krenz	I'm concerned that when the last of the recourses are removed from the ground, they will declare bankruptcy and attempt to stick the taxpayers with the bill for an "indefinite" environmental disaster.	FIN	NS	X	1	
Eric Krenz	I feel that the questions regarding the current water model are being inadequately addressed. I have observed no small amount of online propaganda attempting to discredit people questioning that water model.	WAT	NS	X	1	
Eric Krenz	It's clear that the long-term health effects to residents of this region need to be studied in far greater detail then they have been thus far.	HU	NS	X	1	
Eric Krenz	Please search the internet and take a good hard look at some of the aerial photos of defunct copper nickel mines. There is NO WAY that you can tell me that scarring the landscape in that manner and passing a toxic environmental mess on to the next TWENTY generations of Minnesotans in exchange for a few jobs and large profits for a handful of wealthy business executives and investors who will NOT be living in the area is in keeping with the values of our Great State.	SO	NS	X	1	
Amber Garlan	I strongly object to the proposed NorthMet Mining Project Land Exchange in the Superior National Forest.	LAN	NS	X	1	
Amber Garlan	The mine plan is inadequate and likely to cause long-term pollution. Five hundred years of pollution is not worth any profit made by this mine.	GEN	NS	X	1	
Larry Ronning	This mining project is positioned at the headwaters of the greatest human resource in our entire solar system, the fresh water of the great lakes. The world must have a say in any decision to taint it!	GEN	NS	X	1	
Larry Ronning	Isn't it ironic that the steel industry is tanking and asking for handouts from the government, this mine proposal will be the first to close when price is at a low point. The cycle continues,so, why not put the couple hundred million dollars Mn will spend cleaning up the waste into a diverse economy first.	GEN	NS	X	1	
Lori	PolyMet and the Rest of the Copper/Nickel Mining Industry are Lying to Us About the Safety of its Proposed Operations in	GEN	NS	X	1	

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Andresen	NE Minnesota					
Lori Andresen	MCEA is concerned about how the mine will prevent metals and sulfides in massive piles of waste rock from turning into sulfuric acid and leaching into nearby waters years, or even decades, from now. MCEA is also skeptical that a strip mine, which is being proposed instead of an underground mine, is necessary. ?	WAT	NS	X	1	
Lori Andresen	Modeling at the PolyMet site shows that water running off the mine features will be hundreds or even thousands of times the safe level for wild rice.	WAT	S	O	3	FEIS Section 5.2.2
David Low	Please also consider a spiritual angle: it is very likely, I think, that the creator wants us to preserve as much of his original handiwork as possible!	GEN	NS	X	1	
Langton Todd	While I understand the need for jobs in Northern Minnesota I do not believe this is the correct course to take to provide employment. First this mine only creates 200 jobs for 20 years. If the waste "pond" fails, as it did in Canada, 100 square miles around this mine will be a wasteland. How many people who rely on tourism will no longer have a viable income when this wastewater destroys the area. Polymet assured Canadian officials that the dam that failed would last 500 years also. You and I both know this is impossible. A pit with a poly liner is not going to last 500 years. Second, several mines in Northern Minnesota have recently closed. Metals including iron, copper, nickel, zinc, gold, silver, etc. are all at historic lows. I recently read a op-ed piece in the Star Tribune that concluded that this mine is not financially feasible. This study was well done and was completed by several financial analyst with very reputable reputations. I believe that Polymet will lose money from the onset and when this happens they will belly up to the taxpayer trough and Minnesota taxpayers will be bailing them out. We just got taken for \$66 million by another Northern Minnesota mine (I realize that was a taconite mine but ALL metals are at historic lows) and do we really want to bail out another one? Polymet has an abysmal record of leaving open pit mining areas environmental disasters after they leave. I also believe that Polymet's only goal with this mine is to set a precedent so that they can take whatever they want in the future. I also believe it is immoral the way they have contributed money to the political campaigns of our elected officials to sway their vote to push this permit through. When you approve this please keep in mind that when this waste pond fails and destroys thousands of acres of pristine forest you are ultimately to blame. If you have any conscience at all this will haunt you for the rest of your life (maybe longer ?). We taxpayers will definitely remember who destroyed our beloved forest.	GEN	NS	X	1	
Dave H	I sternly oppose the activation of the Polymet mine for the following reasons. 1. The state of Minnesota already owns the dubious distinction of being the largest changed/modified landscape-geography in the United States. Why? Global demand for food precipitated the massive drainage of prairie/swamp land thru the great red river valley starting from the Canadian border and extending to the Iowa border amounting to approximately 1/3 of the state's wild natural acreage. Iron mining in the NE/NC modified another large percentage of the state's northern geography in order to satisfy the world demand for steel. Urban sprawl for housing the Twin Cities 4M population. 2. No history exists, anywhere in the world, proving that sulfide mining does not negatively impact the environment. In Minnesota this means potential damage to our: o natural wild rice plots o streams,rivers, lakes o forests and vegetation o wild life o fish o current & future drinking water supplies 3. Jobs are important, but 75 local jobs out of 350 Polymet jobs does not justify the unmitigated risk affecting two very large and nearly pristine watersheds in NE Minnesota. 4. Swapping nationally protected BWCA acreage for mining is a most ridiculous idea. 5. Risk of losing tourism revenue in the NE counties. 6. Foreign owned/backed mining companies have NO risk to their own soil & environment. Lastly, awareness of our state's diminishing water supply should be enough of an impetus for us to strictly protect ALL ground water, from any and ALL type, OR RISK, of pollution. We all should know by now the, inevitable, water shortage in the coming years will dwarf the agitating cost of current gasoline prices. Without fuel we don't move around, without water we die. Even more serious, are you ready to increase the risk of polluting the states only natural water supply ever granted by creation to us in this state? Should we continue to lead the nation with the most changed landscape by adding more modified natural acreage for a few million dollars of copper/nickel ore that mostly benefits a foreign nation? My parting thought. Man is the only animal on this planet that Pooh's in his own nest! Let's stop it now! Natural resources are not renewable!!!	GEN	NS	X	1	

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Henry Hark	I oppose the Polymet mine project because 25 years of jobs is not worth the destruction of the most visited wilderness area in the country.	SO	NS	X	1	
Henry Hark	Openpit mines are not ever good for the environment. That is a fact.	GEN	NS	X	1	
Henry Hark	Notice, I write my own message. Please respond because no one my age (20) believes in your ability to act against big corporations or big money.	O	NS	X	1	
Nancy Gibson	One, the impact on moose and the loss of a significant portion of aquatic habitat needs more attention. It does not mention what type of wetlands will be mitigated nor does it take into consideration that the mine disturbance will restrict moose movement around a large buffer of the mine. Moose get 25% of their annual nutrients from aquatic vegetation.	WI	S	O	8	FEIS 5.2.5.2.2. SDEIS Themes WI 01, WI 03
Nancy Gibson	Secondly, the issue of the quality of water has been marginally addressed. Polymet's designs are no different than the open pit collapse of the Mount Polley copper mine in British Columbia and the November spill of an iron mine in Brazil. It is not state of the art mining as stated in their presentations. What is different? The quantity of water will be immense and the impact on groundwater and surface water in the era of global climate change needs clarification. Where is it coming from and then the outflow modeling.	WAT	NS	X	1	
Nancy Gibson	I know the laws favor mineral extraction in this State. but this plan is only a piece of paper coming from a company that has no mining experience and questionable finances. Their partner Glencore won the "Pig of the Year" award at last year's prestigious Davos Financial Conference. Glencore was cited for their horrific environmental and labor practices. Does Minnesota want that risk?	GEN	NS	X	1	
F Jeff Verito	My research on the NorthMet proposal leads me to believe the same deceptive politics are at play. The only maps I could find were not very clear, complete or large scale enough. Also, I couldn't find an adequate description of the properties to be exchanged, especially the age of the stands, topography and wetland features of what we're receiving versus exchanging. Without an adequate description, there's no telling whether our net gain of 6,722.5 acres for the Federal acreage of 6,650.2 acres is worthwhile.	LAN	S	O	8	FEIS Section 5.3.3
F Jeff Verito	It's shocking that of 1,580 acres of wetlands in the Project Area, 913 would be directly affected. This is too many acres to compromise regardless of how many wetland acres we're receiving versus exchanging. Furthermore, the document states we'd lose Mud Lake, wetlands and a large black spruce and tamarack stand.	WET	NS	X	1	
F Jeff Verito	From a public standpoint, we could care less if the exchange is necessary to make the project feasible, because I can only assume a clear majority does not favor the project. The necessity of the exchange to make the project feasible sounds the bells and whistles that tell me from experience that the project should not occur. The public cannot be compromised just because a massive company invested thousands of dollars in an attempt to justify its proposal.	LAN	NS	X	1	
F Jeff Verito	An example of the deception is the document's mention that the nearby riparian corridors do not empty into the BWCA. Well, the corridors must lead somewhere! They flow either into Lake Superior or inland lakes, which many of us don't want impacted by sedimentation, pollutants, nearby logging, non-invasive species and likely cumulative effects when accounting for the current condition of the area. The site is too near riparian corridors and wetlands.	WAT	NS	X	1	
F Jeff Verito	Also of concern is your own publicized information, including the "potential for wetland fragmentation, changes in hydrology, changes in stream flow and wetland water quality due to atmospheric deposition of dust and rail car spillage." To have the company monitor the wetlands is to put wolves in charge of the chicken coop. An independent agency that operates in the public interest (not the MDNR) needs to oversee the consequences of such development.	PER	NS	X	1	
F Jeff Verito	Your own document species the risks from mercury, a list of other metals, sulfate and the potential impact to lynx, wolf and bats. You know the risks and you know the way government operates, yet you proceed with the proposal anyway.	GEN	NS	X	1	
F Jeff Verito	The document is so un-user-friendly that I couldn't access section 7.3.4 for the effects on human health.	O	NS	X	1	

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F Jeff Verito	Lastly, what's to say PolyMet will still be in business over the decades that are required to remediate the exploited land, or whether a corporate sale will negate PolyMet from liability, as we've seen in Upper Michigan. At best, such projects pose eyesores, reducing the value of our priceless, already compromised, public spaces. I'm dead set against this proposal. My fear is the impetus has gotten too far before projects reach this stage. NorthMet is asked to conduct their deleterious projects on another planet.	GEN	NS	X	1	
Stephen Arkulary	If the Poly Met operation is to include a Mile Post 7 tailings basin that is already in bad shape, how will Mile Post 7 be fortified in order to prohibit 100% of the discharge of heavy wet tailings from reaching Lake Superior?	WAT	NS	X	1	
Stephen Arkulary	How does the short term need for these low grade metals along with 300 jobs justify the pollution of Lake Superior, the largest body of fresh water on the planet? Water is a long term necessary resource.	WAT	NS	X	1	
Stephen Arkulary	Who is going to baby sit Poly Met 24 hours a day, 7 days a week so they adhere to the rules set forth?	PER	NS	X	1	
Stephen Arkulary	Are we going to learn after the fact that the greatest watershed on the planet is beyond repair?	WAT	NS	X	1	
Don Krebs	Having spent 40 years in Civil Environmental Engineering Design. I can tell you that no one can predict what might happen when dealing with engineered solutions to complex environmental pollution treatment. Reliable "Treatment forever" or 100 or 500 years is just not feasible. There are too many variables including human, geophysical and technical. If you allow this sulfur ore mining to go forward remember that, its not if a problem occurs, its only a question as to WHEN it occurs. I certainly would not put my name to such a project in such a unique and cherished wilderness area. When I started in the business in 1970 there were clients that we just had to walk away from. They wanted to circumvent the new rules, delay the costs, take short cuts or build facilities that would not be effective. We resigned fees, got fired and sometimes just walked away. I never regretted doing what I thought was right. In your hearts you know that this mining is just not the right thing to do. You'll take the heat but will sleep much more soundly in the future knowing that you protected a great resource for future generations.	GEN	NS	X	1	
David McMahill	But I do know that 20 to 40 years from now if we find ourselves dealing with the tragic consequences of the PolyMet mine, my children and grandchildren will look back and wonder how it was possible that this magical place that they have learned to love has become permanently polluted.	GEN	NS	X	1	
Dorie Reisenweber	Attached are comments explaining why the Clean Water Act has been watered down and does not work to protect water from sulfide mining. It also explains that Minnesota laws and regulations should protect our water, but through various manipulations such as granting variances and permitting and irregular monitoring practices may not. The future depends on clean water.	PER	NS	X	1	
Dorie Reisenweber	I urge that you do not approve Polymet's NorthMet Final Impact Statement.	GEN	NS	X	1	
Dorie Reisenweber	Can Polymet, which from my reading has never mined, be expected to be able to accurately determine that? What if numbers were crunched to fit the desired outcome, or worse yet, what if the public is expected to take that prediction on faith, and it were not true? Wouldn't that negatively impact the waters? the health of the people? What about protection under the law?	WAT	NS	X	1	
Dorie Reisenweber	Underground water is the common property of the people, not a private party or company. By law it must not be allowed to become contaminated whether within the party's or company's boundary, at the boundary or outside the boundary. All of Minnesota's ground- water is considered a public resource. Groundwater is not owned by the surface or by the mineral owner. Our state law does not say owners are allowed to pollute groundwater inside their property so long as it meets legal requirements at the property lines where agencies might monitor it. If that were so, what if a company bought lots of land and polluted the groundwater so that pollution would be less at the boundaries where it might be monitored? No agency	PER	S	O	8	SDEIS Theme PER 09

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	should allow such an environmental crime within a property or at its borders to be perpetrated on future, or even current, users. Ground water is a public resource.					
Dorie Reisenweber	Potable water is the "highest and best use" for all groundwaters according to Minnesota regulations. (Minn R 7060.0400) No economic or social development may override the beneficial current and future uses of the waters. I urge you, do NOT accept Polymet's NorthMet Project & Land Exchange FEIS. It is not in the people's best in	WAT	NS	X	1	
Dorie Reisenweber	Contamination of the water or other natural resources is not ever acceptable. Do not risk the state's precious water by gambling that an unproven project will work. I have not read of any copper/nickel mine that did not pollute. Again, I urge you, do not approve PolyMet's NorthMet Project.	WAT	NS	X	1	
Crystal Yakacki	The way the world is going, I just will not vote for candidates who are not on the right side of environmental issues anymore. I'm not the only one and I hope it will become political unfeasible to allow this kind of things to continue anymore. I don't believe that voters up north swayed by THIS issue would be voting for you anyway. Please be on the right side of history, don't let the same old mess take over.	GEN	NS	X	1	
Crystal Yakacki	Polymet is not trustworthy, the venture is inherently flawed, it has only lead to bad things wherever it has been attempted, and it should not be attempted so close to our precious resources, the Boundary Waters and Lake Superior. These are national treasures - world treasures!	GEN	NS	X	1	
Crystal Yakacki	And nobody is going to make a dime but non-minnesotans and non-working-class people. We cannot afford these kinds of short-sided decisions anymore. Let's put money into building long-lasting jobs, and protect what makes Minnesota special -- our clean water and wilderness.	SO	NS	X	1	
Sally Fresquez	I realize you have a lot of push back from businesses and residents to allow this risky mining. I grew up in Hibbing, MN and am painfully aware of the need for jobs in the area. Jobs are a concern, but not worth the risk of the destruction and contamination of our land and water for what would inevitably be short-term jobs and negative impacts on the environment.	SO	NS	X	1	
Sally Fresquez	We are stewards of this earth and fortunate to have the rich beauty of Northern Minnesota and the Boundary Waters.	GEN	NS	X	1	
Alizabeth Moore	I WILL NOT STAND FOR THIS TO BECOME OUR REALITY!!!! Please take a few minutes to view the video below. I hope that influences your decision. I am certain Minnesotans and everyone 'downstream' from us would oppose making this a reality as well. https://www.facebook.com/permalink.php?story_fbid=10103601325905913&id=10239881	GEN	NS	X	1	
Finn Soderstrom	I am 12 years old, and live in Orono, MN. I play hockey with your nephew, Joe Dayton. I have a cabin in northern MN, about 15 minutes from Ely. I really hope Polly Met cannot ruin the BWCA and watershed area around it. It says it can contain it, but it can't. I know you've heard that a million times, but I'm saying it again. I have met you before, and I was very small. I don't remember too much. I think you are a great governor, and I hope I can keep that opinion of you. I hope you get this email, because me and many other people care very much about this beautiful area. I have experienced it first hand, in a camp called Widjiwagan, and just on family camping trips. We will find out results soon, and I hope you will continue to support us.	GEN	NS	X	1	
Mark Krenelka	I am a former member of the U.S. Army Corps of Engineers. I find the comments by some officials regarding the proposed PolyMet mine and how Minnesota agencies will ensure "vigorous " enforcement of environmental standards to be wishful thinking. I also believe that the local tourism economy will be negatively impacted, land values will decrease and many current cabin owners will leave.	GEN	NS	X	1	

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Chip Borkenhagen	The Polymet mine that is being proposed at the doorway of the BWCA is simply too high of a risk to take for this beautiful state. This is a foreign company that is virtually stealing Minnesota assets to sell to other foreign companies. What is possibly in it for Minnesotans for this kind of risk? There are so many of us that implore you to disallow this rape of our resources for needs that can obviously be met in far less risky arenas. Please reconsider the importance of your decisions, and veto the opportunity that Polymet is trying to literally gouge us with. Our BWCA and surrounding areas are world-class destinations, and our legacy for many future generations that follow us. By saying no to this multinational corporate assault will gain substantial political capital of the ever-growing multitude of people who believe our state's welfare is worth far more than making a quick buck - at the potential expense of harming our assets. Thanks for reconsidering our collective conscience, and just doing the right thing.	GEN	NS	X	1	
Quincy Osborn	Water is the greatest natural resource in the world, not only is this mine project irresponsible to the future, it is economically a bad decision. Mines come and go, our lakes and trees need to be protected as part of our way of life in Northern MN. Please use your best judgement and don't fall into the trap of thinking only of the initial impact this project would have on the economy. Even in a best case scenario this project will have a negative impact on one of the greatest resources in the world and the economy that relies on it. I request a specific response to my comments.	GEN	NS	X	1	
Howard Gantz	Everyone, the decision to reject PolyMet's request should be one the easiest you'll ever need to make. Their proposal is not in the interest of our country and its people. My guess is that they've submitted a mountain of paper (studies, legal arguments, promises, etc) in an effort to try to turn an obvious decision to reject, into a "debate". It's basically a "con". They are trying to put the burden on you to rebutt what's in their pile of paper. PolyMet's requests are against our interests on it's face (and probably that of Canada).	GEN	NS	X	1	
Dick Gallien	In 1946 I went on a 10 day canoe trip out of Sommers Boy Scout Canoe Base, when 14 and again when 16. The summer of 1964, I was on staff at the first Mn. Outward Bound Sch. for 2.5 months, with 2.5 days off and 45 days into the Quetico. Siguard Olsen spoke to us. At 84, I'm busy on my organic farm, but will never forget that pristine area and hope you don't let anyone foul it up.	O	NS	X	1	
Michael Guest	This isn't right and a big mistake. Over the years, the environments, such as wetlands, lakes, and boundaries, have been affected not just by pollution, but other threats. This proposal is unnecessary and could put water, health, communities, citizens at huge risk. We don't want any mining. Allowing that is wrong and unacceptable. The future of our environments depend on us. Conservation and preservation are very important. This is not about about politics. Please listen to the public and reject this mining plan before it happens.	GEN	NS	X	1	
Margot Galt	I completely support your opposition to the PolyMet mine. Please see my blog on the topic, at margotlog.blogspot. It's the most recent blog "Empty Water" Here's to success in defeating the mine.	GEN	NS	X	1	
Kathleen Williams	The health of Americans is being put at risk in hundreds of projects that introduce toxic substances into our wetlands and the air we breathe.	O	NS	X	1	
Marit Anders	I am a student at UMD in Duluth with a biology major and a passion for our outdoor wilderness. I recently gave a presentation on the sulfide mining project, and since then have had multiple peers signing opposing petitions against the sulfide mine. Sure, we understand this is needed for the economy and that mining workers are in need of jobs, but please, think about our future first. We will be the generation dealing with the consequences of opening a sulfide mine in our land of 10,000 lakes. Do you realize how incredibly horrible acid mine drainage is, especially in the presence of water?? 1/10 children born in the Lake Superior region are already born with mercury poisoning. Please, please, don't allow an increase of this, for my future children. The students of UMD are BEGGING YOU, PLEASE think of our future. Think of the long term effects that we will have to face, not you. We don't have much of a voice, but I am speaking for most. Listen to us, for we are your future. We will be here after there is no mine, and we will have to be the ones to clean it up, if we have to. Think of us when you make your decision.	GEN	NS	X	1	

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Roland Wells	I appreciate the need for jobs on the Range, but to risk the future of the BWCAW for a generation or two of profits is horribly shortsighted. Please don't make the possible destruction of the BWCAW your legacy.	GEN	NS	X	1	
Roland Wells	Right now, with copper prices high and unemployment high up there, it's an opportune time for Cu-Ni mining to make its big push, no matter what the cost to future generations. They've been waiting a long time. Please stand firm for our grandchildren's sake.	GEN	NS	X	1	
David Lauseng	We fully support PolyMet Mine, we need this up here in the Northland.	GEN	NS	X	1	
Jason Ziehm	All evidence suggest that there is a great likelihood of this mine being disastrous. The "pros" to this proposal are few, and the "cons" dramatically outweigh all benefits. There simply are no do-overs, and I feel that approval of this mine would be a mistake, and looked upon with great remorse and sorrowful regret. The damage could NEVER be undone. EVER.	GEN	NS	X	1	
Tristan McCormick	This is a no-brainer. And I don't say not having done my due diligence. I was a natural resource economics major and have studied the issue of sustainable multi-agent landuse policy. This is not such an issue. This would be a phenomenally polluting mine in one of the most economically (and ecologically, socially, etc but we can leave that aside for now) valuable natural landscapes in the country. A northern Minnesota wilderness that produces billions of dollars in tourism and other economic flows cannot coexist with this mine. It's a clear choice. Allowing this mine to move forward would jeopardize billions of dollars of long-term, equitable future revenue for debatably net positive short-term revenue. I grew up going to the BWCA and, 25 years old now, I dream of bringing my kids and grandkids there. Don't rob me of that.	GEN	NS	X	1	
Jason George	I write on behalf of the more than 13,000 members of the International Union of Operating Engineers Local49. Our members operate heavy equipment, and build the infrastructure in our region, including the mining industry. We have patiently waited for ten years on a decision regarding PolyMet.	O	NS	X	1	
Jason George	There is heightened interest in this project right now because of the incredibly dire situation facing workers on the Iron Range. While we wait, construction workers are being laid off, and two million construction work hours at Poly met sit idle. 350 family sustaining jobs in operations are unfilled while thousands of skilled people are without jobs.	SO	NS	X	1	
Jason George	Ten years of study is enough. The EIS is more than adequate. You have all the information you can possibly have, you have listened and responded to every comment that you could possibly get	MEPA	NS	X	1	
Jason George	The time for discussing the EIS is over, it is now time to move forward to the permitting process. We believe the science is clear, and that this project can be built safely. We also believe that during the permitting process, financial assurances will be worked out that sufficiently protect Minnesota taxpayers. There will be no logical or scientific reason why this project should not ultimately be approved.	PER	NS	X	1	
Jason George	We thank you, and the hard working men and women of the Minnesota Department of Natural Resources (DNR) for your diligent work on this project. The DNR has stuck to the facts despite illogical attacks from activists with purely political agendas. We know that has not been easy, and want you to know your efforts are appreciated.	O	NS	X	1	
Judith Isaacson	There is no human action without an unforeseen disaster lurking.... Protect our environment, we do not need these mines.	GEN	NS	X	1	

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Richard Hunt	We are losing valuable natural resources and while corporations are profiting, we are left with pollution and a permanent loss of something we were entrusted to hand down to our children. Once the Great lakes are polluted, we are affecting not only Minnesota, but many districts in the surrounding area and Canada that depend on the pristine waters of the Great lakes for drinking and the tourism that brings in most of the livelihood for many that live in the areas. That is too much to lose for the profits of a handful of FOREIGN investors. Don't let money cloud your judgement, Say NO!	GEN	NS	X	1	
Greg Swanson	I can't believe that the people and departments that we count on to protect our forests and water would even consider any such proposal. I am strongly against this and ask you to deny and reject this proposal or any similar proposals in the future.	GEN	NS	X	1	
Ken Winkle	Do any of the people in the state senate & representatives read any history? I have my doubts. Historically any CEO with mining, oil or gas has been one who practices immoral actions against the land and against people. It is all about the American god of corporate GREED. This is also a part of our history that the oligarchs have been not wanting to share as with all their tax breaks they want indentured servants and a 3rd world country. Water is life for all people, not just the few.	O	NS	X	1	
Anthony Driza	There is but one opportunity to get this right and that requires the rejection of this proposal. Even under the best of circumstances, this would be a blight on the pristine landscape of northern Minnesota. The opportunity for mining disasters to pollute for hundreds of years the waters of Lake Superior and the surrounding Boundary Lakes region abounds. One need look no further than the recent Animas River spill in Colorado from upstream mining...Thank you for your time, and please take my concerns to heart. In no way, shape, or form, are the risks worthy of the money that will benefit only a single entity.	GEN	NS	X	1	
Stephen Ryan	The final EIS is adequate and will comply with the strict state and federal standards. This is the place to build a mine where we have the laws and the mining experience needed to complete this project. PolyMet along with the State and Federal agencies have done their job. Now is the time to approve this project and not spend more time and money on the review but on construction.	MEPA	NS	X	1	
Suzanne Long	The threat to the area and the water supply in northern Minnesota is too great. Jobs for the people of the area must be found some other way. The mining companies have no credibility regarding the process nor their promises to clean up or restore their mistakes. Their mistakes cannot be restored. The profit motive by definition and practice prohibits the people (humans) in the companies from best practices that affect the land and water that human beings depend on.	GEN	NS	X	1	
Phyllis Kahn	The PolyMet NorthMet Final Environmental Impact Statement (FEIS) is inadequate, fails to fully analyze the issue of financial assurance and fails to respond to my comments on the Supplemental Draft Environmental Impact Statement (SDEIS). There are numerous reasons why the FEIS is inadequate. I will focus on one that I feel the most strongly about. The FEIS fails to fully analyze the issue of financial assurance. I understand that the terms and amounts of financial assurance would be evaluated in the Permit to Mine. However, these permits often lack the amount of analysis and information necessary for a project of this scale. This issue deserves a greater analysis than you provide and you must ensure that the public, including those with expertise in finance and those elected by the people of Minnesota have an opportunity to weigh in. This project should not go forward unless a reputable third party insurer can be found to back the issued bonds. Private insurers have expertise in managing risk that Minnesota doesn't have. Simply put, if a third party private entity won't take on the financial risk posted by Poly Met, then the state shouldn't be expected to either.	FIN	S	O	6	SDEIS Theme FIN 13
Dorie Reisenweb er	Consideration needs to be given to the cumulative effects of mine seepage into the water, climate change, the combined effect of other even larger mines' operating in northeastern Minnesota and the resulting pollution , plus the likelihood that the fast-tracked TPP would circumvent state and national laws intended to safeguard the environment.	GEN	NS	X	1	
Dorie Reisenweb er	Among the affected resources, however, are water quantity and water quality, air quality, wetlands and vegetation. Look at just one set of statistics regarding water . It is predicted that tailings seepage would find its way to the Embarrass River at the rate of 20 gallons per minute (THE DULUTH READER, 11/18/15, p. 18) (20 gal per min. x 60 min. per hour x 24 hours a day x 365 days per year = 525,600 gal.) That is 525,600 gallons of waste seepage a year with no consideration to other possible contamination problems arising. That water makes its way to the St. Louis River which is already burdened with contamination from taconite mining. Waters from the St. Louis River flow into Lake Superior the largest freshwater lake in	CUM	S	O	7	FEIS Section 6.2.2.1.1

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	the world. It's not right, nor to my knowledge ever lawful, to contaminate water.					
Dorie Reisenweber	The NorthMet project is not the only mining project lurking in the woods. If PolyMet's NorthMet project were permitted, it would be only the first of several mines seeking to operate in northeastern Minnesota. It has been pointed out that the NorthMet processing plant would logically make full use of the facilities to process for other companies in the area. Already other larger mining companies are doing exploratory work. Duluth Metals which is now fully owned by Chilean mining giant Antofagasta is in the Duluth Complex. Talon Metals and Kennicot a subsidiary of international Rio Tinto is drilling north of Tamarack some fifty miles west of Duluth. The PolyMet project is small compared to the others. Cumulative effects must project the whole of the environmental impacts of the NorthMet operation as well as those waiting to open up in northeastern Minnesota.	GEN	NS	X	1	
Dorie Reisenweber	Remember NO sulfide mine has ever NOT polluted. Look at the recent mining disasters in British Columbia and Chile. This is not what we want in Minnesota or anywhere. Keep the minerals in the ground, until sulfide mining can be done without the pollution risk.	GEN	NS	X	1	
Dorie Reisenweber	The FEIS relies on Gold-Sims to anticipate weather events. It ignores the huge swings in weather worldwide due to climate change. Floods and droughts occur at rates far more devastating and frequent than the Gold-Sims recognizes. A thorough FEIS would possibly consult Minnesota's state extension climatologist, Mark Seeley. A thorough FEIS would check several other sources on climate. 90+ percent of the world's scientists are not likely to be wrong about climate change. Realistically, the NorthMet Project and the other even larger companies one can anticipate mining in northeastern Minnesota will not operate under previously existing weather conditions, but a remarkably different climate.	WAT	S	O	2	SDEIS COOP Response #17903
Dorie Reisenweber	What would happen when ten inches of rain within 24 hours falls onto NorthMet's multi-story tailings pile? Wouldn't there be an increase in the heavy metal toxins released into the run-off? Could the FEIS-described trenches and dams provide protection against such calamities? Consider, also, severe drought conditions such as California in recent years or our nation's "Dirty Thirties." It sticks with me that the NorthMet operation alone would use millions of gallons of water. What happens to the groundwater in a drought? Would the mines close? Would the private wells go dry? Would the people have water? Groundwater in Minnesota is not owned by owners of minerals or land. Groundwater is a public resource. It must be monitored and protected wherever it is, not just at the edge of the mining property, but on site.	NEPA	S	O	6	SDEIS Theme WR 189
Dorie Reisenweber	What is at risk here if an unproven mining company like PolyMet began operating and other giant mines opened? Clean water for sure. Please look at the big picture. Is that the kind of future anyone wants tomorrow's generations to deal with? We may not stop climate change fast enough, but we can say no to sulfide mining. I urge you, do not approve PolyMet's NorthMet FEIS. Finally, include with the above a consideration of the world's current political climate and the rule of law. The mining companies I have mentioned are foreign companies. While that was not in the FEIS, the matter needs to be factored in this evaluation. What power would the state of Minnesota's environmental laws or any other laws and regulations have, if the TPP (Trans-Pacific Partnership) goes into effect? The last I knew, the TPP was on fast track—an up or down vote in Congress. My understanding is that a state's and even a nation's laws could be challenged and taken before three international judges to decide the case. I think the odds would favor the corporations over Minnesota's enforcement of mining laws and regulations. Again, I urge you, do not approve PolyMet's NorthMet FEIS.	GEN	NS	X	1	
Ryan Thompson	I oppose the proposed PolyMet NorthMet copper-nickel sulfide mine. Any risk of damaging our wilderness areas in Minnesota is unacceptable.	GEN	NS	X	1	

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Frank Verderame	I oppose the proposed PolyMet NorthMet copper-nickel sulfide mine. I could have just clicked and sent the form letter, but I'll tell you straight out that I did not read the FEIS. I did however, read most of the draft EIS. I am not an engineer, but have a degree in Environmental Science, so I can understand most but not all of the information. However, that's not why I'm writing you. I oppose the project based on the fact that a foreign company wants to come in to one of the finest parts of my state and sully it for short-term gain. The track record of these mines is abysmal, there are NO guarantees against disaster (despite what the engineers say) and only a few temporary jobs will be created. Meanwhile, the risks of impact to the recreation industry, the residents of the area, and the taxpayers footing the clean-up bill are too great. We love the clean lakes and streams of Minnesota too much to let a foreign company with no track record attempt an operation with a poor track record for their monetary gain and a supply of metals for China's benefit. TURN THIS PROPOSAL DOWN!	GEN	NS	X	1	
Richard Mitchell	Please do not allow polymet to mine copper. It will ruin our waters. Would this be a wise move when clean waters are a diminishing resource on the planet? I think not.	GEN	NS	X	1	
Stephen P. Arkulary	If the Poly Met operation is to include a Mile Post 7 tailings basin that is already in bad shape, how will Mile Post 7 be fortified in order to prohibit 100% of the discharge of heavy wet tailings from reaching Lake Superior?	WAT	NS	X	1	
Stephen P. Arkulary	How does the short term need for these low grade metals along with 300 jobs justify the pollution of Lake Superior, the largest body of fresh water on the planet? Water is a long term necessary resource.	WAT	NS	X	1	
Stephen P. Arkulary	Who is going to baby sit Poly Met 24 hours a day, 7 days a week so they adhere to the rules set forth?	PER	NS	X	1	
Stephen P. Arkulary	Are we going to learn after the fact that the greatest watershed on the planet is beyond repair?	PER	NS	X	1	
Darlene White	Mining is boom/bust business. The boom times wreak havoc on the earth, air and water. In the bust time, we place our trust in the companies' promises of full clean up costs but it's really the taxpayers who are on the hook. In boon times workers can make very good wages but it's the investors and CEO that run away with the pot of gold leaving employees having to go on unemployment (taxpayers) with constant threat of benefits being cut off. This is dysfunctional economics. Northern Minnesota would prosper with a diversified economy. This is where our energy, imagination and capital should be going. If Polymet is given permission to assault our land, they will be followed by many more mining companies. When will we learn that destruction and (kind of) clean up is not the way to steward the earth for the sake of following generations.	GEN	NS	X	1	
jeffrey.lipovetz@tkda.com	Canada. With the understanding that it is not a reasonable point of discussion to disagree that we need responsible mining to support the fundamental standards of living we all enjoy, I strongly support the Polymet NorthMet Mine project. I believe in a global ecology. Therefore, we need to be in control of extracting these base minerals for our collective beneficial use in the most responsible way. This project proposes to do that. Further, the leadership team assembled for Polymet has a proven track record of executing similar projects to the highest environmental standards.	O	NS	X	1	
Amber Garlan	PolyMet's pollution would contaminate drinking water with lead and arsenic, increase mercury contamination of fish, and decimate wild rice, damaging the health of communities as far downstream as where the St. Louis River meets Lake Superior.	WAT	NS	X	1	
Taina Amayi	Crimes against Nature are causing more problems than admitted by the perpetrators, and their accomplices. Along with the Oak Flats land theft proposed by Senators John McCain, and Jeff Flake (AZ), this is just one more act of war against all living beings upon the Earth. These must not just be limited; they must be stopped.	GEN	NS	X	1	
Stan Jacobson	I'm writing today to express my opposition to the proposed PolyMet NorthMet copper-nickel sulfide mine.	GEN	NS	X	1	
Stan Jacobson	As you know, there has never been truly safe, pollution-free mining of the type under consideration. You may have read or heard about the analysis from several business people who concluded that the investment is a "bad deal" from an investor's standpoint. That is relevant because the whole proposal is based on the assumption that the mining will produce not only jobs, but profits sufficient to protect the MN environment for decades, even hundreds of years to come. Please think about	GEN	NS	X	1	

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	this using the "seven generations benefits" approach					
Megan Williamson	I deeply and wholly object to this plan! This is a project that could very well cause irreparable damage to Lake Superior which of course means all the Great Lakes. This is a precious resource that belongs to all of us and CANNOT be jeopardized by a greedy and dangerous mine. PLEASE protect our fresh water.	WAT	NS	X	1	
Laura Beitzel	The BWCA is a very important wilderness area that provides habitat for many animals as well as a spectacular place to get away to. I remember trips to the BWCA as a kid and how important the experience of being outside in the wilderness was to me. There is no reason to jeopardize the beauty and health of such an important piece of land by allowing polymer to mine, we KNOW this will cause damage to a pristine wilderness area. How many places to we have to destroy before we learn from our mistakes. Let's keep the BWCA beautiful for ourselves, the wildlife, and our children.	GEN	NS	X	1	
Kevin Klucas	I oppose the proposed PolyMet NorthMet copper-nickel sulfide mine. But go ahead and support it because, after all: - there is probably no risk to the BWCA, - there is probably no risk to any of the surrounding watersheds, - there is probably no chance that any mining related noise will disrupt the treasured silence of the North, - and there is probably no chance that any private parties or corporation will gain substantial profit at the expense of local, national, and international citizens. These things are PROBABLY ALL TRUE, just as: - it is probably true that there is no global warming, - and it is probably true that man never landed on the moon. Just to be clear, I say again, I oppose the proposed PolyMet NorthMet copper-nickel sulfide mine. Last summer took my wife, 3 daughters, 2 grandkids, and my son-in-law (from Uganda) to the BWCA. It was their first visit to this gem of Minnesota. All of them were totally surprised at the unique experience. And this is after family camping trips to Utah, North Carolina, and Alaska. The son-in-law, after spending 3 hours sitting alone on a rock, said that the solitude was the best experience ever. He complained only about someone's constant attempt to start an engine thus disturbing the total silence. It wasn't an engine. It was a grouse! This January I turn 65. I am appalled at what we have done to our planet in those 65 years and few seem to care and most choose to ignore it. We in Minnesota now have chance to pay attention and care. Construction of this mining project cannot be reversed and any damage cannot be repaired. Don't let this project go forward.	GEN	NS	X	1	
Allegra Dengler	I spend my summers at "The Lake", my family's lake for generations. When "our" lake becomes polluted and killed by the PolyMet mine, we will lose the value in our year-round cabin and we won't come up any more. We won't spend our money there, because we won't be there. We travel 1400 miles every summer to go to northern Minnesota because it is beautiful and wild and we love it. We can stay closer to home, like NJ, if we want to spend time in an industrial wasteland. MN will lose its tourism industry.	GEN	NS	X	1	
Barb Burns	The DNR should NOT affirm the adequacy of the Final EIS . It does not do enough to protect our precious fresh water for the future! Jobs are important but not at the expense of our future fresh water. It will not protect pollution any more than other places in the U.S. Or Canada has been able to do. I do not trust that it can be done safely, when we only have 1/10th of 1 percent of fresh water left in the world, don't sacrifice it for money. Vote against it.	MEPA	NS	X	1	
Clay Williams	The notion that the mining company will exist as a viable business entity for the duration of the environmental danger has no precedent. When the toxins leach out, Minnesotans will be left to deal with it. Reject the mine proposal.	FIN	NS	X	1	
Lawrence Suchy	The history of sulfide mining, and pollution that remains after the mine shuts down has been dismal. This report does nothing to reduce my fears. Count me as one who does not want to see this type of mining in northeastern Minnesota. Not for myself, but for future generations. Living north of Ely half of every year we can see how divisive this issue is.	GEN	NS	X	1	

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Ron Regal	I oppose the proposed PolyMet NorthMet copper-nickel sulfide mine. The risk of long term harm outweigh the potential benefits of shorter term gains. Other ways can and should be found to address job opportunities throughout the state that maintain a state where people want to live and visit . This has worked in the past. Http://www.mn2020.org/issues-that-matter/fiscal-policy/a-look-back-at-a-state-that-worked A Look Back at a State That Worked "What made Minnesota work? The Time article identified several factors ...made possible a variety of public investments that served Minnesota well over the generations." "Not least among these investments was public education—both K-12 and higher. " "By most reckoning, the reforms that Anderson pushed during his tenure were a success. Regarding the state’s investment in education, State Economist Tom Stinson observed that “Minnesota's economic record over the last half-century is one most states envy. The reason that occurred was because far-sighted public and private sector leaders figured out they were going to invest in the education of the baby boom generation. " Jobs in the future will be more and more dependent on good educations and economies will be fueled by inventiveness. Http://www.technologyreview.com/sites/default/files/images/jobs.5x650.jpg We need to invest in education, not risky shorter term gains. The promises that for sulfide mining "We will get it right this time" are largely unsubstantiated. Other approaches need to be the forefront of Minnesota’s march into the future.	GEN	NS	X	1	
Lee Witte	I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal. In addition to the legalities listed below, I oppose the mine proposal because the risks to the peoples of Minnesota's quality of life. Water is our most valuable asset. A failure of the holding pond could pollute the drinking water thousands rely on, it would negatively impact, other industries that provide sustainable jobs for thousands, jobs in tourism, fishing and hunting, outdoor sports, outfitters, bait shops, hunting gear retailers. The mine is a short sighted venture that would benefit a few at the expense of the many.	GEN	NS	X	1	
Robert Woolfolk	National forests are for the American public, not for private companies. The resource extraction industry, including mining companies, has proven time and time again that their only concerns are taking as much of a natural resource from an area for as little expensive as possible, selling the extracted resource for as much as possible, and then moving out of an area once it is completely stripped of resources while abrogating any and all responsibility for cleaning up and restoring the environment post-extraction.	GEN	NS	X	1	
Maki Christopher G.	I was born on the Iron Range. Members of my family worked and still work in the mines. I understand the frustration some have with the boom and bust years that happen up here. However, this project will not solve that problem and we will be back to this issue when the mine shuts down in 20 years. When they are complete, the best case scenario the state is left with is a heavily pollutes hole in the ground that is incompatible with any form of life and whose water must be treated for longer than this country let alone this state has been in existence. Maybe people could visit it like they do in Butte MT.	WAT	NS	X	1	
Maki Christopher G.	So PolyMet puts down some money for clean up. What happens when all that is used up.. No one knows how much money it will take. There are projects all over the country still waiting to be cleaned. Many of them sulfur rock mines.	FIN	NS	X	1	
Maki Christopher G.	These types of mine are the number one polluters. They are the hardest to clean up. Once the chemical reaction starts it can’t be stopped. It’s like a coal fire. It won’t stop until all the reactants are consumed. There has yet to be a sulfur rock mine in this type of location that not polluted. At least not to my knowledge. They are just hoping to mitigate it. Once these heavy metals get into the rivers, they cannot be removed easily or cheaply.	WAT	NS	X	1	
Maki Christopher G.	Who is going to pay that bill? Who is going to pay when the company goes out of business. Mining companies do not last forever; a lesson we have learned here on the Iron Range. It says that bankruptcy does not wipe out this debt; but a judges ruling is only paper. Money doesn’t grow on trees and a company that doesn’t make money has no investors. They tend to take there money and run. The company dies and the state or should I say the tax payers are left with the mess that must be cleaned up and maintained. This will have to be maintained for generations. So the state is trading 20 years of jobs for a lifetime problems. This will be like thorn in our side. Just like Tar Creek Oklahoma and the Anaconda mine in Montana. I hope I don’t have to say in 20 years “I told you so”. Thank you for this opportunity.	FIN	NS	X	1	

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Caree Gordon	The aftermath of the Mount Polly Mine tailings pond breakage in B.C. is an example of the worst-case scenario of what could happen with the PolyMet/NorthMet project in the Hoyt Lakes area. The Kawishiwi River & surrounding watershed will be affected by the pollution, even if things go well and there is no disaster. The BWCAW is protected, but not protected from the drainage traveling north and east. The Spruce Rd Twin Metals site is nearly adjacent to the BWCAW, and is less than a mile from Gabro and Bald Eagle Lakes. Thousands of visitors to the Superior National Forest and BWCAW seek solace in the wilderness, as it is one of the last areas in our Nation that is protected from pollution. I want to see ZERO pollution and avoid any possibility of a disaster happening in this area. I have signed numerous petitions to defend our Constitution and the Federal Wilderness Act of 1964. Is it really in Minnesota's best interests to allow a foreign company with no ties, or connections to our pristine wilderness and neighboring communities to jeopardize and possibly destroy what has been protected and maintained for public use? In the future, when PolyMet/NorthMet has completed stripping the area of copper, nickel, and platinum, what will be left with? There will be no second chances after the damage is done. Recently, I was employed as an information assistant for the US Forest Service at the Superior National Forest Headquarters located in Duluth, MN. I issued BWCAW permits and spoke with people from all over the world who were in the process of planning trips to the BWCAW. These people bring commerce to our beautiful State of MN. They spend money throughout the state as they travel north for their vacations. There are many well-established businesses that stand to lose profits if the wilderness is spoiled. PolyMet/NorthMet will create jobs for people in Northern MN, however, the essence of our beautiful wilderness and clean lakes is at stake – the exact reason why so many people choose to vacation and visit Northern MN. I believe the stakes are too high and definitely not worth the risk. Future generations of family members return year after year to experience the unpolluted lakes, forests and solitude that is exclusively offered in the BWCAW and surrounding areas. For long-term commerce, we need to keep MN clean and free of unwanted pollution for the sake of our unique lands, water, animals and forests. The Wilderness Act of 1964 was put in place as federal law to protect the boundaries of the BWCAW. Let us HONOR our land and RESPECT the foresight our leaders had to create these protective boundaries.	GEN	NS	X	1	
Timothy Cameron	I am a simple man with deep love for the Boundary Waters. Let's keep the Superior National Forest a forest and not a reservoir for capital.	WILD	NS	X	1	
Craig Fellman	I personally have got to know and understand the leadership behind POLYMET. These are some great people that have spent tireless hours doing the right thing for the State and the people of MN. They are on the right track and I believe the EIS shows things are set to be in place for an environmentally sound project.	O	NS	X	1	
Megan Williamson	I deeply and wholly object to this plan! This is a project that could very well cause irreparable damage to Lake Superior which of course means all the Great Lakes. This is a precious resource that belongs to all of us and CANNOT be jeopardized by a greedy and dangerous mine. PLEASE protect our fresh water.	WAT	NS	X	1	
Chip Jones	We need to protect our State's natural resources and NOT allow the destruction of our unique resources for short term financial gain. This land will be around much longer than any type of business and we should not allow this project and others like it that jeopardize the Boundary Waters Wilderness Area. I urge you to reject this project.	GEN	NS	X	1	
Tim Schwarz	After reading the changes to the most recent Environmental Impact Statement concerning Polymet's proposed copper-nickel mine in and around the Superior National Forest, I'd like to express my complete opposition to the mine. I still feel the risks posed by the proposed mine are too great to the state of Minnesota, and know that this type of mining cannot be done safely	GEN	NS	X	1	
Tim Schwarz	Part of my coursework concerns water sustainability, and the construction of this mine would jeopardize some of the most important water systems in North America, mainly Lake Superior. I stand with the Duluth Downstream Coalition of businesses in their opposition to any hard metal mining on the North Shore of Minnesota, as well as the countless Outdoor Recreation businesses in around the Boundary Waters that oppose development like this around their homes.	WAT	NS	X	1	

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Tim Schwarz	Despite the precautions outlined in the FEIS, I'm concerned that the system Polymet has proposed to treat sulfate-latent wastewater is inadequate. Similar wastewater treatment systems were used by every open pit copper-nickel mine ever operated in North America, and each one has polluted. The Mount Polley mine in British Columbia, the Gold King mine in Colorado, and the Gilt Edge mine in South Dakota are just a few examples of the kind of legacy this industry leaves. Each of those mines passed a similar environmental impact statement process, then left unacceptable amounts of pollution to clean up, paid for mostly by taxpayers.	WAT	NS	X	1	
Tim Schwarz	I will not foot the bill for our state's inability to protect the water and wildlife that defines our landscape. I refuse to pass down a polluted North Shore to generations of Minnesotans to come.	FIN	NS	X	1	
Tim Schwarz	This mine that promises to provide 350 jobs for twenty years has no place jeopardizing the thriving tourism-based economy that sustains 18,000 jobs annually. Please keep these folks, the environment that sustains them, and future generations of Minnesotans in mind as you reject Polymet's permits to mine in and around the Superior National Forest.	SO	NS	X	1	
comed32@aol.com	The approval of the PolyMet EIS is a step towards improving the unemployment problem on the Range. While the band aid of extended benefits may be needed for a short term solution, PolyMet could be a giant stop towards a permanent solution to the Range's unemployment. I hope that the Department of Natural Resources will make the approval of this EIS the 1st gigantic step to solve the Range's unemployment problem.	O	NS	X	1	
Scott DyAnne	To the Minnesota Department of Natural Resources: The final environmental impact statement for the NorthMet Project in northeastern Minnesota offers indications of inadequacy and that PolyMet Mining, Inc. is attempting to circumvent environmental regulations and water quality standards in order to legalize their pollution.	PER	NS	X	1	
Scott DyAnne	As an example, PolyMet's proposed land swap with the U. S. Forest Service would transfer federal land that is currently part of the Superior National Forest to the private ownership of PolyMet. The Minnesota Pollution Control Agency cannot enforce groundwater quality standards until contaminated water departs from private land and flows into public property. Unfortunately, water doesn't know where to stop; it doesn't recognize boundaries.	WAT	NS	X	1	
Scott DyAnne	PolyMet's computer modeling shows that the levels of pollutants in their water will be many times greater than Minnesota's water-quality standards. Therefore, according to the law, PolyMet is free to pollute within their boundaries. But that same water will flow into the Embarrass, Partridge and Dunka rivers, and eventually into the Boundary Waters and Rainy River watersheds, and the St. Louis River which drains into Lake Superior. As a result, Minnesota's highly touted water-quality regulations are actually a sham.	WAT	NS	X	1	
Scott DyAnne	Individual people representing the co-lead agencies will determine the adequacy of PolyMet's FEIS. People, not agencies, are in a position to prevent such a legal loophole from being egregiously misused. They need to scrutinize PolyMet's FEIS further to the most minute detail. Otherwise, those individuals will go to their graves knowing they could have made responsible decisions, but chose to ignore them.	GEN	NS	X	1	
DyAnne Korda	I have serious qualms about the safety of the PolyMet Mine. Since proponents and opponents have completely different views as to the outcome, I question the actual risk of the mine's pollution the level. The data within PolyMet's final environmental impact statement is confusing. It needs to be evaluated by an outside, trustworthy source since the DNR and mining industry are closely tied together through shared employees.	GEN	NS	X	1	
DyAnne Korda	Given the risk of pollution, clean-up costs must be taken into account and paid for upfront before profit is considered.	FIN	NS	X	1	
Bob Dolores Delaney	the U.S. Environmental Protection Agency veto this request and start making an effort to ENFORCE the Clean Water Act. This will save our retirement dreams to live in Ely with clean water and clean air health problems eliminated. It is our belief that based on my own financial review that this will become an above ground mining project in a very short time with damage to our health and well being FOREVER. You can stop this! Please do.	GEN	NS	X	1	
Michael Forsman	I believe all due diligence has taken place in regard to Polymet permitting. Polymet should be given the green light to begin mining.	GEN	NS	X	1	

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Kwilas Tony	The Minnesota Chamber of Commerce wants to thank you for allowing us to comment on the adequacy of Final Environmental Impact Statement (FEIS) of PolyMet's proposed NorthMet mine. The Minnesota Chamber of Commerce is the state's largest business advocacy organization representing 2,300 companies of all sizes and types across Minnesota and a half million employees. The Department of Natural Resources (DNR), the U.S. Army Corps of Engineers and the U. S. Forest Service put forth an exceptional amount of dedication and due diligence in reviewing and analyzing the FEIS. The review and analysis was accomplished in a thoughtful, deliberate and thorough process involving many stakeholders, including members of the public, the business community and state, local and federal governmental units. The FEIS analyzed the required topics identified in the original scoping documents, as well as other topics that were identified in both the public comment period and environmental review process. Water quality, water quantity and potential human health effects of the proposed project were all identified and analyzed in the FEIS. Particular attention was paid to the human health impacts of the project. The addition of the new section that concisely analyzed the human health impacts and addressed concerns raised by the Department of Health and others during the public comment period are a positive contribution to the report. Water quality modeling and monitoring information at the mine and plant sites that also included mitigation and analysis of the potential for northward flow of groundwater are also supplements to the FEIS that addressed many concerns in the comment process. The final analysis shows that all of the concerns regarding these topics and others were more than adequately addressed in modeling and analytical discussions.	GEN	NS	X	1	
Kwilas Tony	During the public comment period over 58,000 comments were received through three well publicized and well attended public meetings and various other public comment opportunities. The DNR, the U. S. Army Corp of Engineers and the U. S. Forest Service did a tremendous job of categorizing all the comments, analyzing them and incorporating them into the FEIS when necessary. The co-lead agencies should be commended for providing more than adequate opportunities for the public to comment, listening to and analyzing those comments and incorporating them into the final environmental review document.	NEPA	NS	X	1	
Kwilas Tony	I would like to reiterate that the FEIS addresses all of the topics that were identified in the seeping process, addresses the public comments that were offered and follows the very detailed environmental review process set forth in Minnesota state statute and rule as well as federal law and therefore, should be deemed adequate.	MEPA	NS	X	1	
Kwilas Tony	Thank you for allowing the Minnesota Chamber of Commerce to comment on the FE IS of this vital economic development project for Minnesota. We are encouraged by the thorough and deliberate process used by the co-lead agencies.	GEN	NS	X	1	
Wendy Lane	I am writing to request a copy of the 60 page executive summary of the FEIS for the PolyMet Mining Inc. Project.	GEN	NS	X	1	
Chris Heeter	This risk of contamination and permanent damage to a precious and fragile ecosystem makes the benefits of job creation simply not work. We cannot run the risk of contaminating land and water, particularly when it is impossible to determine how far-reaching that damage and contamination will flow.	SO	NS	X	1	
Chris Heeter	Even if the environmental impact study were to be strengthened, if more people could agree that it is thorough and complete--which it is not. There remains unavoidable and unpredictable risks that we cannot take. We can't do it. We have to think bigger and broader and more creatively in terms of how we support communities and individuals in need of jobs. Risking the environment isn't the answer. We've done it before with unspeakable consequence. And so it falls to you, Governor Dayton, and leaders of agencies tasked with protecting our environment, to make the hard call. To speak and act from our wiser selves, compassionately resisting the pull of a "quick fix" for our employment needs. And standing for wild places that depend on your voice.	GEN	NS	X	1	
Chris Heeter	And so it falls to you, Governor Dayton, and leaders of agencies tasked with protecting our environment, to make the hard call. To speak and act from our wiser selves, compassionately resisting the pull of a "quick fix" for our employment needs. And standing for wild places that depend on your voice.	SO	NS	X	1	

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Kathleen Hills	The destruction of a significant portion of our forestland is not worth a few jobs for a few years.	SO	NS	X	1	
Kathleen Hills	This kind of mining has never been done without severe environmental degradation, and Polymet has given no evidence that they will be the first to accomplish that.	PD	NS	X	1	
Kathleen Hills	Even without the inevitable poisoning of the associated waters, the mine itself would create an ugly blot that would last hundreds of years. For	LU	NS	X	1	
Anne Uehling	Herein are my comments on the Polymet's Northmet Project FEIS. (also attached) -Longterm plans for sustainable water treatment are inadequate. An inability to predict the future is given as a reason to leave future water treatment open ended. In particular, "Once the West Pit is full (by the end of year 52), discharge of treated water from the WWTF to the West Pit would be terminated. The WWTF would be upgraded to RO or equivalent technology that would meet water quality targets and include evaporator/crystalizers to convert the RO reject concentrate to residual solids...." (FEIS 3.2.2.1.8, p. 3-65)	WAT	NS	X	1	
Anne Uehling	Herein are my comments on the Polymet's Northmet Project FEIS. (also attached) A question is will the cost of converting to an expensive Reverse Osmosis system be included in Financial Assurance, and will any part of Polymet be around in year 52 to implement action? Note: The primary WWTF will be chemical precipitation and filtration.	FIN	NS	X	1	
Anne Uehling	All of The replacement wetlands for mitigation of impacted wetlands are not within The St. Louis River watershed.	WET	NS	X	1	
Anne Uehling	This watershed is currently impacted by mining and needs all mitigation possible as it flows to Lake Superior. Polymet will be discharging sulfates into the watershed, sometimes higher than the 10 ppm and thus potentially harmful to wild rice beds. Furthermore, more than 3 ppm have been shown to facilitate the formation of methylmercury, a major problem in the area of Lake Superior fed by the St. Louis River.	WAT	NS	X	1	
Anne Uehling	-Negative economic impact has been ignored and only the jobs impact of mining noted for 20 years until closure). In that part of northeastern Minnesota where mining is not taking place, the economies are sustaining and growing: Duluth, Grand Marais, Ely.	SO	NS	X	1	
Anne Uehling	The inadequacy of water models for determining The direction of water flow, bedrock fractures, and rate of flow from The site are documented by Tribal entities and others. While it is asserted that certain concerns WILL be addressed in The permitting process and in on-going monitoring by agencies, this is an undercover process at best and when monitoring shows a problem, The pollution HAS begun.	WAT	NS	X	1	
Ann Schley	The risks to our environment are too great. Northern Minnesota and Lake Superior are precious resources on their own. There is no need to open up the land and expose the area to sulfide mining waste.	GEN	NS	X	1	
Fran Field	Lake Superior and its surrounding lands and waterways are like no place else in our country. With its million acres of wild lands, 1000 pristine lakes and streams, and 1500 miles of canoe routes of the Boundary Waters Wilderness, people are drawn to this area for its incredible beauty and unlimited opportunities to enjoy the outdoors. Unfortunately, these pristine lands and waters are threatened by something that would forever destroy this area -- a proposed open-pit sulfide mine on the headwaters of Lake Superior near the Boundary Waters Canoe Area Wilderness. I am asking the U.S. Forest Service, Army Corps of Engineers, and Minnesota's Department of Natural Resources to stand up to PolyMet Corporation and reject this dangerous and destructive mine. This mine is not in the public interest! Instead, please choose to do the right thing, the moral and ethical thing! Protect Lake Superior and the Boundary Waters Canoe Area Wilderness! The risk is simply too much -- polluting Lake Superior, threatening our clean water and wild lands, and endangering public health for generations to come. If PolyMet starts mining, the floodgates for more sulfide mining near Lake Superior and surrounding the Boundary Waters Wilderness would open. The dangers of sulfide mining are so extreme that Wisconsin has banned this type of mining until it can be proven safe. Last year, the Mount Polley sulfide mine in British Columbia dumped billions of gallons of toxic water and heavy metal sludge into the surrounding forests, rivers, and lakes -- which has been called the worst mining	GEN	NS	X	1	

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	disaster in Canadian history. And PolyMet has even admitted that their proposed sulfide mine threatens to pollute waterways and groundwater with toxic heavy metals for hundreds of years. Don't allow PolyMet to profit at the expense of our health and wild places. The U.S. Forest Service, Army Corps of Engineers, and Minnesota's Department of Natural Resources have a moral obligation to reject this dangerous mine.					
bernicen@frontiernet.net	I am totally in favor of giving Polymet its permits. Not only have they spent tons of money and jumped though hordes of hoops, but they have proven that they can mine is a safe and economical way. Do we really want to though away a chance to produce these minerals here in the US? If we leave it to third world countries, we are held hostage to war tribes and people who do not care about pollutions and human life. Already some of these foreign countries are asking the United States to help clean up their toxic messes. Their pollution does not stay within their borders, but it travels over the oceans to us. Let us have the advantage of controlling the process and reaping to profits. We can do it safely here.	O	NS	X	1	
Krehl Stringer	Minnesota Environmental Partnership's assessment that this proposal fails to evaluate pollution risks adequately, fails to analyze health risks to local communities, and offers no viable alternatives for safeguarding the environment.	GEN	NS	X	1	
Charles Marsden	The FEIS represents a massive effort, and I commend the agencies involved in its preparation for all their hard work, but the FEIS does not give adequate assurances that water quality will be protected, and clean water is unquestionably the most valuable natural resource we have in this state and in the United States. Communities and nations that fail to protect this most valuable resource in the pursuit of minerals and industrial production are risking destruction of their citizens' health and their economies. There are more and more examples of the reality of this every year.	WAT	NS	X	1	
Steve Voiles	Approval is based on strategies that contain toxic wastes that cannot be avoided. We cannot bet our children's futures on the containment strategies that must last 100s of years. It is ingenuous to pretend we can know these strategies will work in an unknown future.	PD	NS	X	1	
Steve Voiles	Similarly we cannot pretend that the Polymet assurances can be believed. If they had confidence, why would the parent company hide behind the shell corporation of Polymet which is set up to fair by holding no real assests that could be seized in the event of failure. They have, in effect, pre-planned bankruptcy. But they don't hesitate to promise hundreds of years of monitoring the containment. How patently transparently dishonest!	FIN	NS	X	1	
Steve Voiles	Yet we hold out for short-term jobs that will sell our treasure to foreign interests and leave Minnesota impoverished. How can we be so foolish?	SO	NS	X	1	
Steve Voiles	I again asked that they post a billion dollars in escrow to pay employees during any shut-down, and that an third party monitoring system be created with the power to shut down the mine as soon as problems appear and keep it shut until the problems are solved. Only in this way can be be protected from the black-mail tactics that pit jobs against the environment. If they reallly can "do it right" the escrow will never be used.	FIN	NS	X	1	
Aaron Pendl	On one hand this mine will bring jobs to an area that needs them. Adding jobs, and the associated economic impact that comes a long with those jobs, can have a tremendous impact on families. That is a fact, and one that is not to be taken lightly and hard to overlook.	SO	NS	X	1	
Aaron Pendl	But I hope you also realize that 1 error with this mine will wipe out other northern communities. Towns like Ely would be destitute if any hazardous waste invaded the water system.	WAT	NS	X	1	

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Aaron Pendl	Not to mention the collateral damage to the environment, people's health, etc.....	GEN	NS	X	1	
Aaron Pendl	This wilderness is already paying for itself. There's an entire economic model already in place that was built on the boundary waters, and the 250,000+ visitors each year that come to enjoy its pristine wilderness. So approving this mine is risking one for the other, plus the additional risks of major pollution.	SO	NS	X	1	
Aaron Pendl	Furthermore, it's a temporary endeavor. I do not know the details around the length of time the mine would operate. But I do know at some point the resources will be gone, but the potential for disaster will remain.	PD	NS	X	1	
Aaron Pendl	We saw that mistakes get made even by those who want to protect the environment (Animas River in Colorado).	GEN	NS	X	1	
Aaron Pendl	the permanent risks, seem to far outweigh the short term rewards.	SO	NS	X	1	
Elinor Ogden	The history of sulfide mining in the western US resulting in Superfund sites; the failure of dams meant to hold back pollution drainage in Canada and Brazil;	PD	NS	X	1	
Elinor Ogden	In addition, I feel that allowing a non-US company, whose net profit will leave the US, to conduct mining without tight environmental controls is a very bad idea.	SO	NS	X	1	
Bonnie Nelson	There is no amount that could be set aside as financial assurance which can cover an infinite clean up.	FIN	NS	X	1	
Bonnie Nelson	Allowing Polymet is opening the spigot to other companies to follow causing irreparable harm to Minnesota natural areas.	CUM	NS	X	1	
Michael Swift	As an aquatic ecologist, I am appalled that the State of Minnesota would even consider permitting this ecologically disastrous project.	GEN	NS	X	1	
Bob Shannon	As a working environmental chemist, I wish to register significant concerns about the rigor of the Final Environmental Impact Statement Polymet Mining, Inc. - NorthMet Mining Project and Land Exchange (SDEIS) and its conclusions. While I, as an individual citizen, lack the resources needed to perform in-depth review of the FEIS, there are a number of areas that are of significant concern and warrant correction, revision of conclusions, and additional outside independent review. I provided comments on the SDEIS. Although I have concerns about the process used to parse comments into brief statements that would receive comment, I will concentrate on my most significant concern - failure to address uncertainty in long-term modelling data and the co-lead's failure to identify this as a scientifically indefensible claim.	MEPA	NS	X	1	
Bob Shannon	My original comment was parsed into comments 7870 and 7872 which were not adequately addressed by the thematic response. Thematic response (WR189) concludes by saying that "...modeling results for hundreds of years in the future should be viewed with appropriate caution." The co-lead's are using hyperbole to gloss over, accept, and validate scientifically indefensible representations about the long term conditions at the site. While models can provide powerful information within the bounds of uncertainty, any conclusions made based on the output will be bounded by its uncertainty. Modeling conditions far into the future, however, is not scientifically defensible unless there is adequate control of the uncertainty of model input parameters, and this uncertainty is rigorously propagated into the output of the model and accounted for in the subsequent assessment process. Lacking any other empirical evidence that supports long-term conclusions based on these models and their "probabilistic estimates", a reasonable assessment of these claims must conclude that using these models to any longer-term representations is scientifically indefensible. The question is highly pertinent since the output of these models is being used by PolyMet to support claims made that PolyMet will be able to comply with environmental regulations "in perpetuity". Since there is no basis for bounding the limits of predictions made by the models beyond the first few years, these claims are not scientifically defensible and they should be excluded. Until the state can project the longer term reliability of representations made by PolyMet – who are making claims about conditions "in perpetuity", they cannot: 1) assess whether the project will maintain compliance with water and air quality	WAT	S	O	8	SDEIS Theme WR148

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	regulations well past the point in time one can reasonably assume that the corporation will continue to exist; or 2) provide realistic estimates of the financial assurance needed to protect the State of Minnesota from long-term responsibility for the site should NorthMet or their successors cease to exist.					
Bob McFarlin	The NorthMet Project FEIS represents a thorough review of potential environmental effects. Twin Metals agrees with the FEIS conclusions that the NorthMet Mine can comply with strict state and federal environmental standards. ? The co-lead agencies – the Minnesota Department of Natural Resources (DNR), the U.S. Army Corps of Engineers, and the U.S. Forest Service – along with their FEIS consultant, Environmental Resources Management, have properly conducted a professional and objective analysis of all relevant environmental, health and operational issues related to the proposed NorthMet Project. Under the processes outlined in the National Environmental Policy Act (NEPA) and the Minnesota Environmental Policy Act (MEPA), the co-lead agencies have responsibility for performing extensive, thorough and objective EIS analysis of the NorthMet Project. No additional “third party” review of the FEIS, in whole or in part, is necessary. ? The FEIS thoroughly and adequately responds to the thousands of public comments submitted to the Supplemental Draft EIS.	MEPA	NS	X	1	
Bob McFarlin	Twin Metals agrees with the findings of the FEIS that groundwater flows from the NorthMet Project will not directly, indirectly, or cumulatively affect the Boundary Waters Canoe Area Wilderness or Voyageurs National Park.	WAT	NS	X	1	
Bob McFarlin	Twin Metals also agrees with the findings of the FEIS that the NorthMet Project’s potential effects on air quality and water quality pose no risks to human health.	HU	NS	X	1	
Bob McFarlin	The NorthMet Project FEIS meets all NEPA and MEPA requirements. The DNR should affirm the adequacy of the FEIS and move forward into the NorthMet Project’s permitting phase. Thank you for your consideration of these comments.	NEPA	NS	X	1	
Dennis Szymialis	Count One That the cooperating agencies including the Minnesota Department of Natural Resources, United States Army Corp of Engineers, and United States Forest Service, arbitrarily and capriciously composed a Supplemental Environmental Impact Statement, a Final Environmental Impact Statement, that fail in many respects to analyze environmental impacts in reference to the PolyMet mining project to avoid violations of federal United States of America law including the Clean Air Act, Clean Water Act, National Environmental Policy Act, Federal Land Management Policy Act, Hobbs Act, and other law.	NEPA	NS	X	1	
Dennis Szymialis	Count Two That the cooperating agencies have acted arbitrarily and capriciously in judging the tailings basin containment and stability in light of the design of the system having been engineered by the same company that engineered the failed Mount Poly system in Canada and in light of the failed taconite tailing containment system at United Taconite and other locations. That the cooperating agencies have acted arbitrarily and capriciously in failing to properly analyze the capacity of the subterranean composition around the tailings basin for its capacity to hold loads associated with tailings to be deposited including the weight of the water that will be held back by the containment system and the weight of the tailings themselves.	GT	S	O	3	SDEIS Theme GT01
Dennis Szymialis	Count Three That exposing downstream consumers to any additional amounts of arsenic as indicated on p.S-170 is a common law assault on the health of downstream consumers and should be enjoined as a nuisance. The judgement and honesty of the cooperating agencies should be suspect as co-conspirators to a crime in violation of crimes against downstream consumers and humanity, common law torts, and the Hobbs Act.	WAT	NS	X	1	

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Dennis Szymialis	Count Four That the cooperating agencies, or any of them, lack the authority to conduct a land exchange in violation of the WEEKS ACT and the Clarke McNary Act of 1924.	LAN	NS	X	1	
Dennis Szymialis	Count Five That the SDEIS and the cooperating agencies have used arbitrarily and capriciously as an example mine, the canasteo mine, that has a dramatically lower over-all water table. That this draw down will dramatically increase PolyMet water treatment requirements, cost, release of toxins, and lead to the extinction in Minnesota and threaten the all around extinction of the Marsh Marigold.	WAT	NS	X	1	
Dennis Szymialis	Count Six That the SDEIS and land exchange analysis arbitrarily and capriciously includes positive impacts of the project and excludes negative impacts including the transfer of the Minnesota tax burden to businesses and citizens away from mining by reserving mineral interests to the State of Minnesota, a practice followed in no other state, hoarding of land for mining exploration, including 940,000 acres in St. Louis County alone, and not discussing and giving public notice of the Minnesota Power/ PolyMet power rate agreement likely to cost citizens and businesses in North East Minnesota more than one billion dollars over the life of the mine, higher health care costs, decreased recreational opportunities, decreases in tourism related business and income, a destruction of the St. Louis River basin agricultural economy from contamination of irrigation water, and ultimately an economy inconducive to economic redevelopment and conducive to high rates of poverty as has been shown to be the case in most mining communities.	SO	NS	X	1	
Dennis Szymialis	Count Seven Even if the amount of arsenic is as given by the FE IS for release into the Partridge River from the WWTF is acknowledged to be 4 mg/L it is arbitrary and capricious and substantial evidence is lacking to show that here will only be slight increases in Colby Lake arsenic since Northshore discharge to the Partridge River has likely already ceased with their closing.	WAT	S	O	3	SDEIS Theme WR123
Dennis Szymialis	The explanation given on p. 5-170 paragraph 3 is arbitrary and capricious in that it is arbitrary and capricious in terms of vagueness to provide any assurance for protection of life and health for downstream water consumers	WAT	NS	X	1	
Dennis Szymialis	Finally the reference to green sand filtering in paragraph 5 p. 5-170 is arbitrary and capricious in that it does not indicate that green sand filtering will be an element of any PolyMet filtering and is methodologically deficient in that the ph and flushing systems for treatment are not specified. Furthermore, that the lack of green sand filtering at the tailings treatment facility will result in larger amounts of arsenic discharge, the health impacts of which the FE IS and SDEIS have failed to consider.	PD	S	O	8	SDEIS Theme MERC01
Dennis Szymialis	Finally, it is arbitrary and capricious for the FE IS to consider the dilution effect without analyzing the counteracting concentration of arsenic and other contaminants through evaporation along with the cumulative effects of combining the contaminants with existing concentrations on consumers downstream.	MERC	S	O	8	SDEIS Theme MERC011
Dennis Szymialis	Count Eight It is arbitrary and capricious and substantial evidence is lacking in relying so heavily on Gold Simm and Modflow modeling as a basis for predicting outputs that are based on data inputs when at the tailings sight no analysis was done on the flow through the pipes entering the Embarrass River or their origins. D.S-SDEIS Comments p.13 etc.	WAT	NS	X	1	
Dennis Szymialis	Count Nine It is arbitrary and capricious and substantial evidence is lacking in relying so heavily on gold simm and Modflow modeling as a basis for predicting outputs that are based on data inputs when the best technology including ground water analysis has failed to utilize state of the art subterranean diagnostic technics including ground penetrating radar, seismic reflection, hyper-spectral imaging, and magnetotellurics, that create a more objective view were not utilized.	WAT	S	O	8	SDEIS Themes WR 007, WR 010
Dennis Szymialis	Count Ten The cooperating agencies are arbitrary and capricious in failing to disclose in the FEIS the mercury that will be made air bound by the blasting at the mine sight. Blasting will cause mercury to become monatomic or shattered into single atoms into the atmosphere. This is a hard concept to conceptualize accept one can think of it as breaking thousands of fluorescent light bulbs hundreds of feet in the air daily. The addition of the mercury is dispersed but is nonetheless added to the environment and is a violation of the Great Lakes Compact. This phenomena is the only available explanation for ten percent of Lake Superior north shore having toxic levels of mercury in them. The mercury is being carried from taconite mine blasting with prevailing winds and is breathed directly, consumed in the water or from methylization in fish	MERC	S	O	8	SDEIS Theme WET 11

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	consumed. This monatomic atomization of is 'likely to occur with other toxic heavy metals like Arsenic and nickel that are prone to ionization.					
Dennis Szymialis	Count Eleven At p.A-572 in response to theme statement WR 042 the FEIS states, "Given the downstream distance to the cities of Duluth or Superior it is highly unlikely that the water supplies for the cities would be affected." This claim made in the FEIS based on Gold Simm and MODFLOW is not only arbitrary and capricious it is violently dangerous as indicated by the experience in Antofagasta, Chile between 1958 and 1971 as indicated in the following study http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1637404/?page=1 . http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1637404/ The sources of arsenic indicated came from 300 km away, more than twice the distance, and resulted in dermatological	WAT	S	O	8	FEIS Section 5.2.2.3.4
Dennis Szymialis	Count Twelve That the GoldSimm and MODFLOW modeling have no record of reliability in predicting mine contaminant run-off, contradict dramatically the Antofagasta, Chile experience and as indicated in a volume of comments project a lack of public confidence, and as indicated at p. 21 of the PolyMet 2013g AWMP have inputs that are based on PolyMet output goals,"Effluent concentrations used as inputs to the GoldSim water model are based on the PWQT's (preliminarywater quality targets).	WAT	NS	X	1	
Dennis Szymialis	Failure of the cooperating agency to make the PolyMet documents readily available and yet sighting them in their SDEIS and FEIS being arbitrary and capricious and a serious violation of due process notice requirements.	MEPA	NS	X	1	
Dennis Szymialis	Count Thirteen That the cooperating agencies are arbitrarily and capriciously and without substantial evidence setting a president for mining in Minnesota that will lead to the premature death tens of thousands. That the cooperating agencies have notice of the causation of death by their actions and that all of the principles are now on notice of the premeditated nature of their conspiracy to cause the premature death of tens of thousands in violation of the criminal law and civil rights laws of the victims. That the victimization by fraud of tens of thousands of water consumers in Minnesota and Wisconsin in its scope is a crime against humanity.	GEN	NS	X	1	
Dennis Szymialis	That additional time be granted for responding to the FEIS. Additional time would be warranted Pursuant to principles of Due Process and Notice given the complexity of the PolyMet FEIS.	MEPA	NS	X	1	
Dennis Szymialis	That commentator, Dennis Szymialis, requests relief in that no permits be granted for the PolyMet mining project and that the no action alternative be adopted. That commenter, Dennis Szymialis, in addition to the above comments restates and reiterates his comments in the EIS and SDEIS on the basis that responses were lacking by the cooperating agencies including the US Forest Service, Duluth, MN, were vague, or otherwise deficient, and for other relief .	GEN	NS	X	1	
Debra Erickson	I fish the BWCA area and I have to say I am completely opposed to this. If there were a breach it would contaminate too many lakes and waterways. I do not believe the benefits out weigh the contamination it would cause. Please do not allow them to mine in this area.	WAT	NS	X	1	
Kayla Wagner	I am a concerned citizen of Minnesota. Why would anyone want to risk mining next to the Boundary Waters, who is home to multiple different species and types of wildlife? Thousands of people come to the Boundary Waters to get away from the noise of cities and enjoy the serenity of nature. I have been there both in the summer and winter and cannot wait until the next time I can go back. With Polymet's nonexistent history with mining coupled with Glencore's history of destroying the environment, this proposal should not be passed. If one thing goes wrong, the entire 1,000 miles of Boundary Waters will be forever destroyed. It is time to look past the money and business side of things and begin to think about our planet. We are destroying land extremely fast and it is predicted that 50% of all species will be extinct in less than 50 years or so. You should watch the documentary Racing Extinction. Please stop this project and finally be a business who values something	WAT	NS	X	1	

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	more than greed and money. The Earth won't be habitable forever at the rate we are going. So stop the mining and SAVE THE BOUNDARY WATERS.					
Bruce Harten	After reviewing all of the EIS you have provided...and weighing all the data....I have concluded a "Permit to Mine" will cause far more harm than good to the "State of Minnesota".	PER	NS	X	1	
Bruce Harten	Furthermore there are "Market Indications" of global producer influence by parent co Glencore on suppressing "current taconite production"	O	NS	X	1	
Bruce Harten	NO POLYMET PERMIT...without Closed Loop facility and Enclosed Concrete Tailing Pool !	PER	NS	X	1	
Shelley Selstad	If there is any likelihood that mercury and other contamination could affect the Boundary Waters or the 10 percent of a warming planet's fresh water contained in Lake Superior, we should not risk it!	WAT	NS	X	1	
Shelley Selstad	Please use all caution and do not approve this project until it can be absolutely clear that serious risk is controlled now and into the future.	MEPA	NS	X	1	
Gayle Latendresse	I am in favor of the Polymet project. I feel that sufficient information has been provided and this project should finally be allowed to move forward.	MEPA	NS	X	1	
Ammhsmith@aol.com	The Final Environmental Impact Statement on PolyMet's copper/nickel sulfide mine proposal is inadequate; it will not protect the lakes, rivers and streams in the Lake Superior watershed and it threatens the BWCA.	MEPA	NS	X	1	
Ammhsmith@aol.com	Please Reject the PolyMet mine proposal. The following highlight some of my concerns: The mine would destroy or damage 7,680 acres of prime wetlands at the headwaters of streams leading to Lake Superior. These are irreplaceable. ? It would result in centuries of toxic drainage from more than 500 acres of 20-story waste rock piles and the mine pit. This drainage would require treatment "indefinitely." That means "forever." ? Sulfates and mercury released from the mine would increase mercury contamination of fish, already a problem in the area. One in ten infants in NE Minnesota is born w/ excessive mercury levels. ? The financial risk to future generations would be enormous. Who would pay for centuries of active water treatment? What about spills and accidents? Mine sites are the #1 liability of the taxpayer supported Superfund cleanups, with a bill exceeding \$50 billion to date.	GEN	NS	X	1	
Ammhsmith@aol.com	The PolyMet proposal does not adequately consider alternatives to reduce harm to wetlands and water quality, and to human health. Please say "No" to PolyMet.	MEPA	NS	X	1	
Ammhsmith@aol.com	ps. The state does not belong to commercial interests. It belongs to the citizens of MN and, actually, the world. We, especially you and Governor Dayton, owe it to the current and future generations to protect to the extent possible.	GEN	NS	X	1	
Janet Keough	I am writing to request that you reject the FEIS for the NorthMet mine proposal by Polymet. The FEIS is flawed in many ways, but I will outline a few of them.	NEPA	NS	X	1	
Janet Keough	First and foremost, the Polymet FEIS fails to accurately model water discharge from the tailings basin, some of which will flow north towards the BWCA watershed. Alterations of the Laurentian Divide from nearby taconite mines has changed the flow patterns. Given the forecasts for climate change, with high risk of 100 or more year flooding (aw we saw in 2012), the model needs to include the change in watershed features and more accurately include risk to the Boundary Waters Wilderness for centuries to come. The planned clay-lined trench cannot possibly contain 100% of groundwater seepage (Figure 3.2-28) and cannot be adequately monitored for groundwater flows leading north to the BWCA (p 3-150, Section 3.2.3.3.4). This section of the FEIS is wholly insufficient and incomplete. I recommend that independent modelers be	WAT	NS	X	1	

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	brought in to conduct any new model efforts, and that a panel of experts review any new modeling exercise.					
Janet Keough	The Polymer Final EIS should be rejected as incomplete because it fails to examine important alternatives to reduce the hazard of future tailings dam failure and environmental damage. Dry stack start of tailings is a technique to prevent precipitation and groundwater from interacting with the tailings to produce acid and sulfate laden runoff. The FEIS rejects examining this alternative in depth, because seepage would be reduced and concentrate pollutants, requiring even more expensive water treatment. This implies that the FEIS plan depends upon dilution of pollution - clearly an unacceptable approach.	ALT	S	O	4	SDEIS Themes ALT 06, ALT 10
Janet Keough	The Polymer FEIS should be rejected as incomplete because it fails to detail future risks and costs that are necessary to determine financial assurances to protect our children from paying for the cleanup of this proposed mine.	FIN	NS	X	1	
Janet Keough	Further, the FEIS outlines the destruction of more than 12 square miles of wetlands in the headwaters of Lake Superior and its watershed....this will result in a NET LOSS of wetlands in this watershed and in the State. Mitigation banks would restore existing degraded wetlands and would not replace the destroyed wetlands. There is no plan in the FEIS to AVOID destruction of wetlands.	WET	S	O	2	FEIS Section 5.2.3.3.1
Janet Keough	The FEIS is incomplete and insufficient in discussing alternatives to the huge environmental impacts that are likely from this project. We don't need the few jobs and huge environmental impacts of the Polymet project now or in the future.	ALT	NS	X	1	
Janet Keough	I implore you to reject the Final EIS for the Polymet project.	MEPA	NS	X	1	
dleingang@nalco.com	This project has been under scrutiny for far too long - the company has long produced adequate information for the governing agencies to make the proper decision of permitting this project. As a water treatment consultant the extent that Polymet is committed to, along with the continued advancement in technologies, should provide for exceptional treatment of any potential plant discharge. Please move forward with the permitting.	MEPA	NS	X	1	
SHARON NATZEL	My concern is the ongoing need for treating the water for possibly hundreds of years all for a 20-year project life. The background for my concern is on Page A-568, where the thematic response explains the need for ongoing monitoring of the water and treatment and the indefinite timeframe. Also the mining operation comes within 130 to 150 feet of affecting water resources for communities via the Biwabik Iron Formation -- see page 385. This is a very short distance and could easily be overstepped with mining equipment. The mining project is very close to the Laurentian Divide and polluted water may flow in directions unforeseen. The project should not move forward as it risks our healthy Minnesota waters which are necessary for life.	WAT	NS	X	1	
Elinor Monahan	My greatest concern with the flawed FEIS is that it is based on an inaccurate computer model that predicts the contaminated water will not move north towards the sensitive watersheds of Lake Superior or the Boundary Waters.	WAT	S	O	2	FEIS Section 5.2.2.2
Elinor Monahan	If the toxic wastewater does indeed move towards a sensitive area, PolyMet says they will build a holding pond and pump the wastewater back towards the mine site. But they have failed to take into consideration the effects of climate change.	AIR	NS	X	1	
Elinor Monahan	In a nutshell, my concern with the flawed FEIS is this: the toxic water may move towards sensitive areas, and PolyMet's solution would be inadequate in the event of our "new normal" massive rain storms.	GT	NS	X	1	
Darwin Dyce	Surely you are aware that other mining companies smell sweet opportunity to take advantage of PolyMet's NorthMet if permitted. Statements have been made that the NorthMet processing plant would be the "logical" place to help process other mining companies toxic waste. Speaking of other companies, other large mining companies are carrying out exploratory work such as, Talon Metals and Kennicott a subsidiary of international Rio Tinto and Duluth Metals now fully	O	NS	X	1	

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	owned by Chilean mining giant Antofagasta. As the environmental impact is considered it must expand beyond the impact of PolyMet, which if approved will signal an opening for more mines and greater long term risk. You are aware that no sulfide mine has ever not polluted.					
Darwin Dyce	The data mentioned in the Duluth Reader (11/18/15) indicated tailings seepage into the Embarrass River at a rate of 20 gallons per minute. Put a pencil to that and we see a yearly rate of 525,600 gallons of waste. As the water makes its way to the St. Louis River that pollution would be added to pollution from Taconite mining. The contamination keeps going with the flow and eventually ends up in beautiful Lake Superior. (So much for protecting the largest freshwater lake in the world.)	WAT	NS	X	1	
Darwin Dyce	As the FEIS relies on Gold-Sims to anticipate weather events, it conveniently ignores the growing unpredictability and intensity of weather that is visiting us with climate change. The climate is changing and old models do not hold up. What if we had a huge and sudden rainfall in a short period of time? One hundred and five hundred year rainfalls are now happening much more frequently. It is doubtful that the runoff of heavy metal toxins would be contained. Groundwater moves. Toxins in groundwater at the site will not simply remain on site.	WAT	S	O	3	SDEIS Theme WR 077
Darwin Dyce	If you are following world and national news you are aware that the Trans-Pacific Partnership and the influence of the energy industry in climate talks threaten to further undermine pollution regulation in the name of free and unfettered trade. This mine and the very real possibility of other mines, pose great risk to the water so many of us depend on. Denying its operation is one step in the right direction amidst many great challenges that we face. Many others, and I urge you not to approve PolyMet's NorthMet FEIS.	GEN	NS	X	1	
bobdenucci@yahoo.com	This area needs these jobs. If this mine is found to be environmentally safe it would be crazy not to allow them to mine.	O	NS	X	1	
Nancy Songer	The track record of these mines is 100% failure. Why are we looking any further????	GEN	NS	X	1	
Nancy Songer	Do not sacrifice a precious, long-term resource for a mere 20-year or less one and a few jobs.	SO	NS	X	1	
Flint Krupinski	Destruction of these habitats and all the life that depends on them is not worth the environmental backlash for years to come for temporary resource gains now. most of these mining ops are about the profit, and not about what is going to happen to the environment during and after they've reached maximum profit and decided to abandon the mining operation.	SO	NS	X	1	
Flint Krupinski	i can safely say that Minnesota and the people who live here will not stand for the destruction of our state for big mining corporation's minimal gains while our states beauty is destroyed, polluted and almost inhabitable for the life that once lived there cannot return.	SO	NS	X	1	
Flint Krupinski	i have worked as a mechanic on mining operations where you can literally light the water on fire. if that isn't enough to sway you as to why this is a terrible destructive mistake, may god help us all. we've already done enough harm to our ecosystems, the Mississippi river is the biggest examples of how we destroyed and polluted our beautiful and well preserved wetlands, water ways and lakes. DO NOT LET MINNESOTA FALL INTO HABITAT DESTRUCTION!	GEN	NS	X	1	

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Jill Rasmussen	I am sending this email to plead with you not to allow the PolyMet mine to continue with the current EIS. As a proud Northern Minnesotan I would like to shout, now is not the time for a copper-nickel mine! A mine that will cause pollution that will devastate our lakes, rivers, and wetlands for the profit of one Canadian Corporation. Now is the time MN needs to demonstrate it's leadership in environmental protection! Now is the time to step forward as the rest of our Country and World are attempting to do. I grew up in a thriving MN tourist town that is still thriving today. The main draw, clean lakes. My husband grew up in a neighboring mining town. I also taught school in this town. Unlike my little tourist town, it's community was left with drug problems and streets lined with thrift shops and bars. Until recently the struggling town was left with only memories of a booming mining town. The salvation of this town, a state recreation area. The difference is Polymet's EIS states it will need a MINIMUM of 200 years of water treatment while only running for twenty years. This leaves no opportunity for a bounce back. Our state has not allowed this type of mine thus far for a reason. Now the question is which leaders are working for a sustainable economy, and which leaders want to open a giant wound in our most precious resource with the vow to put a quick bandaid on it? Yes, mining supports a small number of us, but a copper-nickel mine is not worth the painful payoff. What will we say when our grandchildren ask us what actions we took to leave them a better world?	GEN	NS	X	1	
Cindy Josin	Please stop fucking with the little land in this country that we are trying to preserve!!!!	GEN	NS	X	1	
Roderick Owre	How smart is it to pollute the environment we depend on to continue living? Have you all lost touch with spirituality in nature?	GEN	NS	X	1	
Roderick Owre	If the government permits sulfide mining to persist, knowing it leads to severe degradation, they are complicit in greed and negligence, both sins. Don't let these cunts poison our church.	GEN	NS	X	1	
Robert Saxton	he copper-nickle sulfide mine has strong potential to harm our food and our water for generations. That is enough to keep it out of our state. When California and the West dry up from climate change, where will there be clean water? Here. Unless we pollute it. No mines near our water resources. Never.	GEN	NS	X	1	
LeRoger Lind	Despite the huge volume of information included in the Final Environmental Impact Statement for the PolyMet NorthMet Mine Project in Northeastern Minnesota the project would continue to violate state and federal environmental and other laws as described herein	PER	NS	X	1	
LeRoger Lind	The document continues to describe a series of short-term "mitigation schemes" that are designed to bring the toxic pollutants within the weakened or non-existent state and federal standards in order to gain permits to mine, pollute water and air, destroy natural habitat and wetlands, increase sulfate and mercury emissions and otherwise negatively affect the watershed, its inhabitants and Lake Superior itself.	ALT	NS	X	1	
LeRoger Lind	The pollution mitigation schemes are based upon a "trial and error" resource management plan that is completely inappropriate for dealing with irreversible and perpetual pollution from the acid mine drainage (AMD) sulfide dissolution process that would inevitably occur.	WAT	NS	X	1	
LeRoger Lind	The FEIS admits that the mine would be discharging water polluted with sulfates, mercury and other toxins for hundreds of years. On a mass balance basis the 500 million tons of processed ore would release millions of tons of sulfur compounds which in turn would produce millions of tons of sulfuric acid and sulfates over time into the environment. Fish, wild rice, and children would not survive but a fraction of this onslaught.	WAT	NS	X	1	
LeRoger Lind	Hundreds of physicians in Minnesota have asked the state Health Department for a public health study focusing on the effects of this potential area wide pollution but have been summarily rejected by the entire state administration. In a stunning display of logic the state determined that enough information exists on potential public health effects from sulfide mining in Minnesota and that a public health study would not uncover any significant information that hasn't been considered. That opinion is not shared by thousands of physicians and our membership. An independent study is required and any delays in the FEIS process would have been self-inflicted.	HU	S	O	3	SDEIS Theme HU 01

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LeRoger Lind	A worst case analysis of the potential damage to children’s cognitive development, methylated mercury entering the food chain in fish and other toxins entering downstream water supplies would be essential in this environmental impact statement. From that perspective alone this FEIS is definitely inadequate.	MEPA	S	O	3	SDEIS Theme WR 202
LeRoger Lind	The pollution mitigation schemes such as reverse osmosis, subaqueous storage, sorting and stacking, bacterial treatment, taconite tailings filtration, and others would not be affordable, let alone effective in preventing this environmental and social disruption.	ALT	S	O	2	SDEIS Theme ALT 10
LeRoger Lind	As evidence of the difficulty in analyzing and controlling acid mine drainage from similar sulfide ore material, over burden containing sulfide ore from the Dunka Mine near the proposed PolyMet NorthMet mine was studied for 16 years at the MDNR facility in Hibbing, MN. Samples from other sites such as AMAX were also tested. The sulfur in the piles dissolved in about 6 years. Acidity increased as sulfates increased with levels varying from one pile to the next. Their tests also show that sulfates and acid are produced at higher volumes and at faster rates from finely ground sulfide ore. It was difficult to control sulfate discharge in the short term after the fine waste rock was generated. Stored rock reacted less quickly due to less surface area.	WAT	S	O	2	SDEIS Theme WR 001
Le Lind	The main conclusion of the tests described above was that it is very difficult to “manage a mitigation” of a source that varies in both size and composition. Scaling results from the test to the mine and the processing waste dumps was defined as being “too difficult” by MDNR scientists. PolyMet is proposing covering and routing water from storage piles to their pit but have limited understanding of where all of the water would be flowing. These tests show that the discharge of polluted water from waste rock and slime storage would be impossible to effectively manage and treat. The FEIS does not define a project that protects the Lake Superior watershed from acid mine drainage consisting of sulfuric acid, sulfates and toxic minerals produced during sulfur dissolution in the waste storage methods being proposed.	WAT	S	O	2	SDEIS Theme WR 060-5
LeRoger Lind	In an associated waste management issue, the MDNR personnel were concerned that sorting and storing various grades of solid waste would be difficult if not impossible. Sorting and storing waste rock is one of the “mitigation schemes” discussed in the FEIS and at other presentations by PolyMet and the MDNR. Resolution of this problem is not adequately addressed in the FEIS.	WAT	S	O	2	SDEIS Theme WR 134
LeRoger Lind	In addition, the economics of continued treatment do not describe a sustainable management process. Financial assurance polices do not address this issue on a continuing basis since the piles will be added to on a daily basis, not on a yearly basis.	FIN	S	O	2	SDEIS Theme FIN 05
LeRoger Lind	The FEIS and other reviews which predict post mining closure water quality use “known” oxidation rates based on a study financed by PolyMet. A very crude model is being used to justify the prediction of the amount of sulfur that would be removed at the processing plant in 100 years. The amounts of sulfur available for reaction vary from 5% to 33% depending upon the stage of processing and waste storage. The FEIS does not adequately describe a reliable method of determining the amount of sulfur that would be mitigated as a function of time from initial production through 100 plus years.	WAT	S	O	3	SDEIS Theme WR 025
LeRoger Lind	Financial assurance requirements appear to be front-loaded to understate the long term requirements for mitigation of sulfates, toxic metals and related pollutants. Permitting water pollution cannot be done on this basis. This would be “trial and error” permitting of an irreversible source of toxins.	FIN	S	O	8	SDEIS Theme FIN 05

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LeRoger Lind	The FEIS does not adequately evaluate the potential effect of the inhalation of asbestos-like fibers generated at the mine site and in the processing plant. Mesothelioma and other lung disease have been diagnosed in studies by the MN Department of Public Health in taconite workers and local residents. The source of these fibers was the Dunka Mine pit and nearby Peter Mitchell Mine pit. Recent MPCA fiber monitoring results show toxic amphibole levels near 12000 fibers per cubic meter. The data was taken on 08/10/2008 in Babbitt, MN which is later than the June 2007 date of the reference document 2007I.RS61 and so was not taken into account in the FEIS reference which makes this reference incomplete at best. The argument that these fibers are cleavage fragments and thus are not harmful has been debunked by many qualified experts including Steve Ring in his comments on the SDEIS. Phil Cook (recently deceased) of the EPA's Duluth Water Lab issued extensive research showing that certain types of these fibers, including ferroactinolite, can be up to 20 times more toxic than even the Libby, Montana fibers which are a toxicity standard. The material at the PolyMet NorthMet mine pit would contain these same fibrous materials interspersed with the sulfide ore PM2.5 dust. Both workers and residents would be exposed to this potent combination of fibers and particles entering their lungs. This FEIS does not acknowledge this as being a health problem. Sulfur based oxides combined with iron based fibers in the lungs represents a new unexplored threat to the public health in the area. A health based standard for the permissible density of these fibers and particles in the mine, processing plant and surrounding residential areas must be developed before any permitting of the mine is considered. Even the World Health Organization recommends no more than 400 particles in the PM2.5 range as a maximum exposure level for the humans. The EPA test data from the Duluth lab clearly shows that even smaller fibers cause tumors and that the toxicity of the fibers is best determined by their surface area, not their length. The PolyMet NorthMet Mine Project FEIS does not adequately describe a project that protects public health from this source of air pollution. The cancers and lung diseases from this type of air pollution do not surface for decades after the exposure. The addition of sulfur compounds to the mix of iron based asbestos-like fibers has not been adequately addressed in this NorthMet Mining Project and Land Exchange Final Environmental Impact Statement.	HU	S	O	6	SDEIS COOP Response #19676. FEIS Section 5.2.7.5
Mitchell Dane Cervenka	The mine being proposed in Northern Minnesota is difficult to comment on due to the economic benefits it will provide the state, but I nevertheless express my gravest concern for the methodological approach taken to this issue. This mine seems like a band-aid solution for 30 years of an added economic "push" , and the 300+ year clean-up certainly diminishes the return on investment. The boundary waters and Northern MN is one of the most beautiful places on earth, and I hope everyone involved in this decision personally visits the area before coming to a conclusion. The land swap is great in theory, but national park land is designated as such for a reason, and it should continue to remain untouched by industrialization. Stop the mining.	GEN	NS	X	1	
Ed Labernik	I would like to go on record as stating that I am all for Polymet being granted a permit to open their mine. I've seen the latest research and firmly believe that if they can do it the correct way as to avoid affecting adjacent waterways, then go for it.	O	NS	X	1	
Dan Iverson	Let's suppose Poly-Met and later Twin-Metals and the sulfide mining becomes a reality in Minnesota. Indisputably, jobs will be created and the local economy will receive immediate benefits. Let's suppose also that within a few short months of mining operations the adjacent land and water are necessarily and irreparably transformed. Let's further suppose that after a few short years of operation, the state finds the mining interests EIS data tragically incongruous with the reality of the mining operations that are beginning to compromise with a growing circumference all surrounding lakes and streams like a spreading cancer. But, with legal documents in hand and obligatory inspections and resulting fines paid, the sulfide mining would continue unabated. The locals, already angered that the projected job numbers and rebirth of the Range never materialized, will demand justice and compensation. But, there will be neither. For, no amount of legislation can turn back the clock. Unlike a farming operation in southern Minnesota that is dumping excessive nitrates into the rivers and lakes whereby simply reducing or stopping the practice will immediately start restoring the environment, there would be no such outcome with sulfide mining. Mountains of toxic sulfur laden tailings and lakes of equally poisonous water holding ponds will remain forever a testament to the desperation and short sightedness of a brief and sad time in Minnesota's history.	SO	NS	X	1	

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Bryan Emmel	This is an environmental disaster waiting to happen. This company, which is not even a U.S. company, couldn't care less about the well being of the people of the Iron Range. All of this talk about jobs is just pie in the sky. The state should recognize that the mining industries of Northern Minnesota, after being in existence for 130 years, have reached the point of beating a dead horse. If this area can't find other ways to make a living then people need to move elsewhere. Trashing a fragile eco-system won't help anything.	GEN	NS	X	1	
Malgorzata Schmidt	This is not the time for mining. This is the time to cherish clean water.	WAT	NS	X	1	
Malgorzata Schmidt	This area as well as all environment is the PROPERTY OF FUTURE GENERATIONS	GEN	NS	X	1	
Jim Steitz	I express my strongest opposition to the proposed copper-nickel sulfide mine that the Polymet company wishes to dig in the wetlands that provide some of the headwaters of streams flowing into Lake Superior. Far more is at stake in this EPA permit decision that is noted in the SDEIS, as this will set a precedent for an unknown number of companies that wish to extract hardrock minerals from the far north-central United States that sustain some of our finest remaining hardwoods, boreal forest, wetlands, and lake ecosystems. As a former resident of Minnesota and sometime visitor to the Boundary Waters wilderness, I personally attest to both the exquisite biological value and biochemical vulnerability of this landscape. Some of these speculated future mines may even occur within the watershed of the Boundary Waters Canoe Area Wilderness itself.	GEN	NS	X	1	
Jim Steitz	The use of federal land from the Superior National Forest is diametrically opposed to the purpose for which the forest was established. It was precisely to preclude this type of misbegotten, heinous destruction of our shrinking ecosystems that Superior was established, not to act as a land bank for future mining projects.	LAN	NS	X	1	
Jim Steitz	I understand that, even under a best-case scenario, approximately 1,400 acres of wetlands would be destroyed. This is one of the worst single death warrants for wetlands in the history in the Clean Water Act, when we can ill afford to lose any more wetlands and our populations of migratory birds and waterfowl are crashing.	WET	NS	X	1	
Jim Steitz	The watershed value of the impacted area is far greater than that of the copper or nickel that could be removed. I understand that this mine would be located in the watershed of the St. Louis River, and is hydrologically connected to the designated Important Bird Areas. The SDEIS does not appear to appreciate the scope or timescale of water quality threats posed by this mine, including the extremely long period after active mining when heavy metal and acid pollution continues to leach during rains. This time could be centuries during which the watersheds of the far north country will likely be of increasing value, long after our descendants have forgotten about the past value of the Polymet mine except for unsightly scars in the landscape.	WAT	NS	X	1	
Jim Steitz	At the very least, you must evaluate waste management alternatives such as lining the waste rock storage areas and tailings disposal basin. The cost to Polymet of proper waste security is not consequential compared to the value of preventing heavy metal and acid leakage. The rivers and lakes of the Minnesota north country are vulnerable to adverse drops in pH as demonstrated by past impacts of acid rain, and they will lack buffering protection against acid leaching from the tailings left behind for indefinite decades after Polymet may have left town.	PD	S	O	3	FEIS Section 3.2.1
Jim Steitz	DNR must also incorporate a realistic cumulative risk assessment over the time span that wastewater treatment will be required. The risk increases proportionally to the total time horizon of the project, and environmental impact assessments of mines frequently fail to appreciate the increasing cumulative likelihood of an event that may be unlikely at any one moment in time.	PER	S	N	8	SDEIS Comment #2969; SDEIS Theme FIN 05
Jim Steitz	When the full scale and scope of liabilities to Minnesota's precious waters and lands are considered, and the financial cost to mitigate and offset those liabilities are calculated, a comprehensive NorthMet SDEIS will find that the proposed mine is has a grossly negative net worth to Minnesota and to the country. Future generations will care little about how much copper or nickel we have produced for our own material indulgences, or to give ourselves the convenience of disposing of so much of our metals in landfills, but they will look back in scorn at the waste piles and acid-soaked waters we leave them. They will	FIN	NS	X	1	

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	not regard the trade of Minnesota's forest, wetland, and lake ecosystems for a temporary binge on metals as a fair trade.					
Jim Steitz	Please issue an SDEIS that fully accounts for these ecological and financial costs, and find correctly that no mining permits conforming to the public interest can be issued. Thank you for your attention to this issue.	SO	S	O	6	SDEIS Theme SO 01
Bradford Shinkle	Please issue an SDEIS that fully accounts for these ecological and financial costs, and find correctly that no mining permits conforming to the public interest can be issued. Thank you for your attention to this issue.	GEN	NS	X	1	
Jennifer Fort Strietzel	In addition to those two animals, countless others use the St. Louis River and the St. Louis River watershed and Lake Superior and the Lake Superior watershed, all of which will be affected from runoff and pollution from the mine, are animals which use the waters for drinking, swimming, bathing and food including the American Bald Eagle, River Otters, Black Bears, Whitetail Deer, Osprey, Lynx, Pine Martens, Fishers, Weasels (Mink, Ermine), various Hawks, Mountain Lions, Bobcats, many kinds of birds, other mammals, fish and reptiles not to mention domestic animals/pets, plant life, as well as human beings. I do not want to see these waters, animals, plants or human beings harmed by any possible runoff or pollution that this mine could possibly ever produce. There have always been polluted waters, land and air from sulfide mines and this one will be no different so I say an emphatic, "No!" to the PolyMet Sulfide Copper Metal Mine and do not want it built or even considered because of the very real potential for it to absolutely ruin the St. Louis River and Lake Superior Watersheds and harm and destroy the lives of all the living beings who depend on them.	WI	NS	X	1	
Jennifer Fort Strietzel	No mining company that has mined for precious metals has ever not polluted the waters and watersheds of the areas where they have mined! That fact right there tells anyone that no sulfide mines should ever be built or allowed to operate, and in this case, specifically not the PolyMet mine. So, do not approve any Environmental Impact Statement and don't approve the Final Environmental Impact Statement.	WAT	NS	X	1	
Ronm430@aol.com	Please don't negatively affect the environment.	GEN	NS	X	1	
thuerasmussen	I am definitely opposed to the approval of the polymet mine project, for a variety of reasons well detailed by representatives of several reputable organizations with environmental, health, safety, and other important concerns.	GEN	NS	X	1	
Brent Decook	I'm Brent from st.charles and I'm very concerned about the proposed mines near the boundary waters area. If there ever is a problem we could destroy the only true wilderness left in Minnesota and lose our voyageur heritage and the all those jobs it produces year after year. please don't gamble with our water and our bwca	GEN	NS	X	1	
Rob Simonich	Hi, I would like to comment on the permit process. I think this has gone on long enough? I'm glad you have crossed all the T's and dotted all the I's. It's time to give out the permits, so we can get on with opening the mine. We all want safe /clean mining. It's time to continue the process.	O	NS	X	1	
Anna Carlson	We just wanted to write to show our support for Polymet! We don't want the environmentalist voice to be the only one heard. Please consider the voice of the locals in Northern Minnesota, where myself and my family reside. We need these jobs for our community, as tourism provides low wage, part time jobs. Our communities should be more than a place to play for people visiting and the people who live here should be considered more than just hired help so others can enjoy where we live. Mining is a huge part of our community. Right now, other countries with less safety concern for their workers and environment are leading the way as we stand, idled by red tape. The hoops have been jumped through, the studies have been concluded; it's time to issue permits and build.	O	NS	X	1	

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Peter Karhatsu	Greetings, I wanted to share my opposition to the Polymet Mine. As a Minnesotan and an avid outdoorsman, I believe that the risks far outweighs the monetary gains. The long term Reverse Osmosis plan is proof positive that the designers know the system will produce waste for a very long time, but RO is low capacity, prone to fail and requires manual, regular maintenance. We're talking about decades, if not centuries of waste "management". It seems the general way of dealing with the tailings is to store it, wait for a breach, and pay the fine. The pristine nature of the adjoining watershed should not even allow for this project to ever have taken root, let alone get this far along in the process. Please show the people of Minnesota and the greedy, foreign-owned corporations that we will not bow to the almighty dollar and sellout our single most important resource, clean water. The world market doesn't need the metal, we don't the need the temporary jobs and the pollution will happen, as it has happened in every single Sulfide mine so far. If you haven't yet seen the most recent mine disaster, the Samarco mine in Brazil, or not long before before that in Colorado, or most relevant, the Mount Polley Mine disaster, which is most like the Polymet, here you go: https://www.youtube.com/watch?v=T9_ODWpUcOE https://www.youtube.com/watch?v=TtZmpPVFiHk https://www.youtube.com/watch?v=VYYwzAvQIF8 Also famous was the Marcopper Mining Disaster - 1996	GEN	NS	X	1	
Lorrie Ogren MA. LPC, LPCC	I am strongly opposed to the proposed polymet mine in Northern MN, and here are my reasons: St. Louis River is one of the top 10 Endangered Rivers in the U.S. The mine pit and processing plant would be located upon the headwaters of the St. Louis River watershed, which empties into Lake Superior at its estuary near Duluth, Minnesota and Superior, Wisconsin. The copper-nickel mineralization of the Duluth Complex — a rock formation that underlies northeastern Minnesota between Lake Superior, the Boundary Waters Canoe Area Wilderness, and Lake Vermilion — is highly disseminated and low grade, with less than 1 percent metals. Mining this rock formation would result in 99 percent waste rock, including the fine ground tailings. Both waste rock piles and tailings leach toxic, heavy metals and acid mine drainage (AMD) into surface and ground waters	WAT	NS	X	1	
Lorrie Ogren MA. LPC, LPCC	The Sierra Club mining committee has been studying PolyMet's mine plan since it was proposed, and came to the conclusion that water modeling for the proposed mine project is woefully inadequate and ground water testing has not taken into account the fractured bedrock of the area. The scale of mining leaving 99 percent waste rock is too monumental to manage for pollution control, and the value of our clean water is too great to put at risk.	WAT	S	O	8	SDEIS Theme WR 010
Lorrie Ogren MA. LPC, LPCC	In 2010, the Environmental Protection Agency gave PolyMet's Draft Environmental Impact Statement a grade of EU-3, Environmentally Unsatisfactory-inadequate with many concerns about lack of water modeling. In 2015, the Great Lakes Indian Fish and Wildlife Commission's (GLIFWC) analysis of PolyMet's water modeling for the final Environmental Impact Statement showed that ground water seepage at mine closure would flow north into the Rainy River watershed (Boundary Waters), thus displacing or concentrating pollution within the St. Louis River watershed — and putting pollution into an adjacent watershed.	WAT	S	O	2	MDNR et al. 2015c
Lorrie Ogren MA. LPC, LPCC	The operation of a copper-nickel sulfide mine in northeast Minnesota would greatly contribute to the mercury/sulfate load that is already creating a problem in the St. Louis River. Methylmercury, which results from a biochemical reaction including mercury and sulfates, bio-accumulates in the food chain — affecting fish and the humans who eat fish. Already, 10 percent of the babies born along the North Shore of Lake Superior have high levels of mercury in their blood, potentially impacting brain development.	MERC	NS	X	1	
Lorrie Ogren MA. LPC, LPCC	In another bio-chemical process, sulfates become sulfides which attach to wild rice roots, destroying entire wild rice beds in the most polluted areas, or greatly reducing plant yield in other stretches of the St. Louis River. Both fish and wild rice impacts affect the Fond du Lac, Grand Portage, and Bois Forte Bands of the Lake Superior Chippewa nation's treaty rights, as well as affecting fishermen, resort owners, and local residents. As sulfates, mercury and other pollutants work their way downstream, they impact the health and economy of both the Fond du Lac Tribal nation and the citizens of Cloquet, Duluth, MN and Superior WI.	WAT	NS	X	1	

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Lorrie Ogren MA. LPC, LPCC	Also consider the loss of wetlands, destruction of wildlife corridors, and loss of public lands within Superior National Forest to a Canadian mining company whose major underwriter, Glencore, is taking a huge market hit, with shares falling approximately 60 percent over the course of the year. How will a company under financial duress manage to treat water pollution at the proposed plant site for at least the next 500 years, as projected in the Supplemental Draft Environmental Impact Statement?	GEN	NS	X	1	
Lorrie Ogren MA. LPC, LPCC	In order for PolyMet to open pit mine on protected public land that is now part of Superior National Forest, the U.S. Forest Service is negotiating a convoluted land exchange that would involve the transfer of about 6,650 acres of federal lands from public to private ownership. The Forest Service failed to follow its own authority under the Weeks Act of 1911, which prohibits strip mining on land originally acquired by the Forest Service for watershed and forest protections; the Forest Service could have required PolyMet to develop an underground mine only. Instead, a land exchange would allow PolyMet, a foreign mining company, to destroy nearly 1,000 acres of wetlands and degrade over 6,000 acres of adjoining wetlands — adversely impacting the 100 Mile Swamp and its water filtration system, vegetation, habitat, and ecology.	LAN	NS	X	1	
Lorrie Ogren MA. LPC, LPCC	Solutions to current mining pollution continue to evade our regulatory agencies. If the highly disseminated sulfide mineralization of northeast Minnesota can ever be mined “safely,” it will have to wait; a synopsis of the North Star mining committee’s position is that we do not have the technology or the regulatory will in place to do so now. Nor have we, as a nation, incorporated the amount of recycling that would negate the need for the extreme mining and extraction of the highly disseminated low grade sulfide ores of Minnesota’s Arrowhead Region. The iconic beauty and quality of the St. Louis River watershed is at risk for us and for future generations. Our agencies and leaders are ignoring clean water as a valuable natural resource. We have lost respect for the quality and character of Lake Superior itself and forsaken those who will follow. (Information Source for all the above: Sierra Club) PolyMet is not compatible with the clean water values of Minnesota and must be stopped. Thank you for choosing the long term health of our precious Boundary Waters and MN’s Watersheds over short term profits of companies that don’t care about our fragile resources, our pristine wilderness, our children and grand children and great grandchildren and all that come after them. This mining company only cares about obscene amounts of profit/money at all of our expense.	GEN	NS	X	1	
Jan	There are too many variables and inconclusive research to say conclusively that the Boundary Waters and the St. Louis River would not be affected by this copper/sulfide mine. Pollutants could very easily leach into the groundwater. 500 years is a long time to keep toxic substances from spreading into our Minnesota waters. I am against this mine.	GEN	NS	X	1	
Byron Rice	I do not support the NorthMet Mining Project. We are privileged to have pristine land in Northern Minnesota and the mine project drains into those areas if there is some problem. Even if there are not mistakes or errors, mining leaves all sorts of waste materials that are hazardous for decades, if not longer. I don't think a short-term economic gain should jeopardize our fragile environment for generations to come.	SO	NS	X	1	
Mary Richards	I have an advanced degree in environmental sciences and am very concerned about the impact the PolyMet would have on the environmental integrity of northern Minnesota and beyond. For the sake of all Minnesotans and those who treasure the north woods, for the continued health of the recreational economy and for the simple fact that what we do to the earth we will do to ourselves, do not even consider approving the PolyMet mine.	GEN	NS	X	1	
Kristin Whatton	My family is very concerned about the water for years and years to come if the mining project were to pass. Our long term water supply is far more important than the short term benefit the mining would provide. Not only are we compromising the water if it passes, but the beauty of Northern Minnesota including the Boundary Waters and the North Shore. It isn't worth it!! Please do not let PolyMet proceed with their plan to mine in this area.	SO	NS	X	1	

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Dave Bjerk	I am TOTALLY against allowing Polymet or any other mining company mine copper nickel in the Ely area. In my opinion it is not worth the risk of ruining the boundary waters area for 200 jobs for 20 years. If there were to be an environmental disaster, (which I am sure there will be) there would be more than 200 jobs lost in the tourism industry for more than 20 years. I don't believe there can be any assurances that will make Polymet or any other company pay for any cleanup if a disaster happens. History proves this. We the tax payers would once again have to pay for it. My family has a cabin on Eagles Nest #4 by Bear Head State Park, so we do have personal interest in the decision. In conclusion, please error on the side of caution and DON'T allow Polymet to continue with this project.	SO	NS	X	1	
Josh Patrick	Say no to the polymet mine. Inadequate long term job creation, tremendous environmental risk, and hundreds of years of environmental impact make this a terrible deal for Minnesota. We cannot commit a half-dozen generations to a clean up fund that polymet will surely excuse themselves from funding as soon as the profits are gone. Protect Minnesota and say no!	SO	NS	X	1	
Michael Miller	It's not worth the chance that this thing can be managed so I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal.	GEN	NS	X	1	
John Gaffney	This project is too risky for Minnesota or any place in the country. It is a real threat to pollute already precious and depleting supplies of clean fresh water. Please keep this operation out of Minnesota and protect our environment.	GEN	NS	X	1	
Carlyle Conrad	Thank you for the 7 day extension, unfortunately, this time of year is so busy with the holidays that people are missing their moment to express their concerns about this project to you.	NEPA	NS	X	1	
Carlyle Conrad	Tom and I are very concerned about the total environmental impact of this project. There has never been a sulfide mine that hasn't left pollution behind. We the people, wildlife, forests and our whole ecosystem will pay the price in years to come. As humans poison ourselves over time there will be devastation. We are wondering why such a valuable resource as our National Park system would contribute to this problem by trading lands to assist these companies that are in it for the short term financial gain, rather than for the good of all people in our country to enjoy the pristine wonders of our Superior National Forest. WHY would we risk our most valuable resource, WATER!!!!???? As a Native American man said at a Duluth meeting, " Water Is Life!"	GEN	NS	X	1	
Carlyle Conrad	I have been watching and listening to the information about the man who just died in Chile that used to own the Northface Co. and how he and his wife purchased private land to combine it with other lands to return it to the Chilean Government so they can have a national park system like ours so it's kept safe from development for the good of all.	O	NS	X	1	
Carlyle Conrad	Thank you for the good work you do every day for the good of the environment of our country.	O	NS	X	1	
Gregory Smegal	NO!! NO!! NO!! DO NOT ALLOW THIS TO HAPPEN!!!	GEN	NS	X	1	
Betty J. Van Wicklen	none of these agencies has the right to bypass the Clean Water Act or any other state or federal regulations safe-guarding The health and well-being of National Forests or Wetlands through mitigation which subverts the intent of the regulations guarding these ecosystems.	PER	NS	X	1	
Betty J. Van Wicklen	Particularly, in this time of climate changes, we must do all we can to preserve intact wild areas, forests and wetlands. Mitigation of these regulations benefits only PolyMet; certainly not public health, safety or the ecosystems affected! Please deny PolyMet any mitigation if==of any kind in this matter. I think most Americans would agree with me at this time that mineral exploration and mining is, in general, a messy, pollution-ridden activity,and when done on public/national lands especially, it mars and destroys the environment surrounding the mine, and risks too much a chance if forever polluting the wetlands and ground water surrounding it. We've thrown away far to much of what Nature provided us - mostly irreparably. I hope a better alternative can be found, where a mine will not endanger the environment and public health and safety. If not, then the minerals should be left in the ground with all the remaining fossil fuels, until such time as our climate has healed itself. Otherwise,it'ss just not wort the risks involved.	GEN	NS	X	1	

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Jo Ann Morse	I'm very concerned about the impact that PolyMet's proposed sulfide mine would have on Minnesota's water. The Final Environmental Impact Statement assumes mechanical water treatment would be required indefinitely at both the Mine Site and Plant Site. I don't think that PolyMet, or any company, can provide sufficient financial and resource assurances for water cleanup that stretches out indefinitely.	WAT	NS	X	1	
Jacqueline Bartosh	I strongly oppose the PolyMet project, or any copper/sulfide mining project in such a wetland region as Northeastern MN. Such a project is risky and highly dangerous to the ecosystem. Plus, PolyMet isn't in our best interests being it's not a local company, doesn't have a backup savings so taxpayers don't have to pay for cleanup after they're gone, and cannot manage the sulfur issue indefinitely or plans to. The few jobs it creates are temporary short term with long term consequences. Please, for the love of all that's good, don't allow this project to go thru. We humans have done enough damage to this planet.	SO	NS	X	1	
Jim Tuomala	After 10 years of rigorous and diligent study and a cost of over \$100 million incurred by this venture, I certainly agree it is time to put the wheels truly in motion and provide the permitting for Polymet. I live right down the road from this site in Babbitt and I as well as everybody I talk to have absolutely no fears of risk to the local ground water and environment. We have mined this area for well over 100 years and it is still the most pollutant free area of the state. As we all already know, those of us who have lived here our lives and perhaps worked in mining, local mines already meet very stringent emissions standards. Those of us who know the truth realize, Polymet will also need to meet these standards along their way while providing much needed economic resources to working families in our area. 10 years is enough already, please see this project through.	GEN	NS	X	1	
Pete Gemuenden	When do words spoken ever have meaning any longer with our government? Credibility is best understood by action and making your yes's yes and your no's no! Please no more nonsense....APPROVE the POLMET PROJECT as credibility and momentum are essential and I'm on your side for awhile!	GEN	NS	X	1	
James Cunningham	I must reiterate; who is being bribed to allow such malfeasance?	GEN	NS	X	1	
James Cunningham	How much have the bribes totaled so far that have permitted this gross injustice to even be considered?	GEN	NS	X	1	
James Cunningham	I would recommend an immediate investigation into Ms. Halter's possible acceptance of bribes from PolyMet. No sane individual would ever agree to consider such a horrific loss of state resources in exchange for some greedy mining corporation to destroy said state resources for private profit while ignoring completely the very real potential for widespread human health problems. Someone, or many "someones" are on the take here.	GEN	NS	X	1	
James Cunningham	I request a specific response to my comments, especially my recommendation to investigate probable corruption of public officials by PolyMet.	O	NS	X	1	
Linda Tyssen	We just need to look at how many miners have been laid off -- and with no word on when they will be called back to work.	SO	NS	X	1	
Joanna Schor	I am writing to oppose PolyMet's proposed NorthMet sulfide copper mine on the Superior National Forest; the proposed open-pit mine would result in horrific and irreversible environmental damage. The proposed land exchange with PolyMet is not in the public interest, and would violate the forest plan for the Superior National Forest, harm endangered species, impair downstream tribal resources and conflict with laws and policies to protect wetlands and other resources.	GEN	NS	X	1	
Joanna Schor	Furthermore, the Impact Statement is plainly inadequate, as it has not answered basic fundamental questions such as which direction the toxic runoff will flow and the FEIS fails to evaluate pollution risks and impacts using realistic and scientifically supported estimates for toxic seepage and treatment both during and after proposed mining operations.	WAT	NS	X	1	

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Joanna Schor	No Clean Water Act Section 404 permit should be issued for the proposed mine. The mine would degrade groundwater and surface water, there is no plan to compensate for the huge impacts to high quality wetlands.	COE	NS	X	1	
Joanna Schor	The agencies should reject PolyMet's proposal, and keep the proposed mine site under the current protections of the Weeks Act, Endangered Species Act, and the Superior National Forest Plan.	ROD	NS	X	1	
Ron Tupy	Creates hundreds of jobs which will in turn create hundreds of workman's comp claims from the multitude of health problems created. Just say NO.	SO	NS	X	1	
John Kruse	The PolyMet or NorthMet mine is not in the best interests of Minnesotans. It is likely to contaminate groundwater in the region, and despoil a precious, irreplaceable resource. Heavy metals and sulfates are likely to be polluting all downstream areas for many many years after the mining is done. There may be ways to lower the likelihood of such pollution, but not to lower it enough. Further, mining operators have time and again cut corners to make a profit. Everybody else suffers the consequences.	WAT	NS	X	1	
John Kruse	The argument that it will create jobs is rendered less plausible when we see Essar experiencing difficulties meeting its payroll obligations.	SO	NS	X	1	
Christine DiSimone	Please do not allow any more mining to deface our environment.	GEN	NS	X	1	
Jack Parker	On Thu, Dec 10, 2015 at 5:55 PM, MN Department of Natural Resources <dnr.updates@updates.mndnr.gov> wrote that the deadline for comments would be extended. Thankyou, it could extend the hearings yet closer to perpetuity. But it may bring this, my fourth submission, closer to the top of the heap.... This, unlike the majority of the opinions I hear, is to suggest that you thank everybody for their interest but to be of good cheer, as befits the season, because most of the discussions and arguments are not necessary. They are pointless. Go home. This is a part of the typical ploy to divide and conquer. Go on your way, rejoicing! The point which they all overlook or fail to comprehend is that the principals behind the Polymet proposal are the same as those who guided the permitting processes for the Kennecott Eagle project, the Kennecott Flambeau project - and now the Polymet project, and, in doing so, committed serious crimes against the law of the land and the people too. They lied and cheated in the proceedings, thus becoming eligible to spend the rest of their days in prison as felons, in Grand Frauds worth billions of dollars - and endangering property and lives too - for profit. So far they get away with it, and the absence of good mining people allows that to happen. The evidence is absolutely clear, already prepared and presented but ignored by the criminals and their accomplices in court, up to and including Attorneys General. I guess that the preparations began some thirty years ago in Michigan. Dow Chemical and Granholm, now retired but a member of the Board. For example - for reasons unexplained but now obvious - the Federal EPA delegated to Michigan DEQ (with zero mining expertise) all authority over mining in Michigan. The AG's lean on that to bemoan the fact that they do not have the necessary jurisdiction. Read Schuette's inaugural pledge - "to root out and prosecute corruption at all levels of his government." He could start far above the roots. Ask him about that. Help him by asking where he was employed before Kennecott moved in ... The technical evidence is even clearer than the politics. The application appears to have been written by schoolboys under pressure. Four mining experts, including the one selected by MDEQ, consider that the technical data were tampered with, then misused to produce a mine plan which was, and still is, likely to bring on a sudden and unexpected mine collapse. Even MSHA (Mine Safety and Health) is now implicated. They, like the other agencies, were forewarned, as you are being forewarned, and they "investigated" by asking the operator about the charge - and were told that there is no problem. Industry and administrators are on good terms, but rock structures and inherent stresses suggest to the experts that the collapse will indeed be sudden and unexpected. I will leave you with that thought - that you might question Polly people in depth - to get at the truth. I doubt that you have the resources to even ask the right questions. For example: Can you guarantee that no major catastrophes or damages will ever be attributable to the mining as planned? If not - the hearings are closed. You need a better plan. Now you have something pertinent to talk about. Are we again dealing with crooks?	GEN	NS	X	1	

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Roger Klisch	I have been a Minnesota resident all my life and what I really appreciate are the lakes, woods, and natural areas of our state. I visit BWCA annually. While I do recognize that industry provides jobs, the natural treasure we have here is more important to keep untouched. Human civilization has come a long way with technology and yes, with the help of fossil fuels and mining of minerals. But we have also come far enough to see the consequences of overuse of our environment, consumption and waste, and the unsustainable pace of it. Science tells us we cannot keep living in the same way because this planet will suffer severe consequences. We have one home, and humans have now come to a tipping point where we have to now decide to care for what remains and find a way to live sustainably. This project is not only a threat to the BWCA, the northern forests, and watersheds, but continues the devastation of our planet that we can no longer afford. I am also a practical person. I am an electrical engineer and work with machinery and see the uses and benefits of technology. I recognize we do need a certain amount of resources. I use resources just as everyone else does. I do my best to minimize my impact on the planet and I'm working to be a sustainably neutral citizen. If this project could be carbon neutral, not harm our state, and all that is mined from it to be used for renewable or green technologies, then I could consider this. For instance, if all the copper that was mined was mandated to be used for wind turbines and electric cars, then it would be easier for me to support. But generally these projects are all about money and profit, so it forces the cheapest way to extract, process, dump, and sell to the highest bidder. Even with regulations, companies find short cuts just as we saw with the BP Deepwater Horizon project that permanently damaged the gulf coast. When money is the motive then you have negative consequences. If the project is about service to the Earth and to humanity, and it can be done in a sensitive, sustainable, and non-impactful way it could gain my support. I highly doubt there is any consensus on my idea, nor any way to mandate it. But I wanted to voice this as the only way I would ever agree with this project. Since it is unlikely mining could be done in this conscious and sustainable way, then I am in opposition to it. We best recycle to metals we currently have on our planet and find alternative ways to create sustainable living.	GEN	NS	X	1	
gloriana casey	MINING always seems to make a lot of \$ for a few, but so many people ,and the environment end up suffering! OMG, there is still uranium leaking from an old site in the Grand Canyon and polluting the wter system! . Since mines seem to be a terrorist to water-----maybe you should nix the mine idea!	WAT	NS	X	1	
gloriana casey	Apparently the leaking of all kinds of chemical things into ground water is shown in the Carolinas and Camp Leguene-----you know. Making peopple sick with cancers and leukemia. So, of you want a great look at a DO NOT REPEAT THIS ACTION, you can go all over America and find examples of destruction by people making decisions--whose competence is debttable!	HU	NS	X	1	
gloriana casey	The after life of so many chemicals seem to be longer than the people, places and animals that are affected!	HU	NS	X	1	
gloriana casey	ALL of this kills life and the planet-----why would any sane person pollute their own nest-----Earth---because even birds are not that stupid!	O	NS	X	1	
gloriana casey	One thing America has that other nations do not-----this nation has not been bombed to smithereens, as many other places in the world have been. So, maybe people are stupid about the effects of chemicals -----it's kind of like reading Kurt Vonnegbut's story, ICE NINE---read that, it's not very long and then I think that the argument for making Nature and the environment the most necesssry part of a culture would be made very clear. PLEASE, really read this as it's kind of a shorthand message of keeping the Earth pristine. Nature will adapt, she always does, but homo sapiens aren't always so sapien! : (GEN	NS	X	1	
gloriana casey	This is a great idea!	COE	NS	X	1	
gloriana casey	Many people have helped to create a wilderness system, but it only takes a few to really muck it up forever. PLEASE don't be a mucker, as we have enough of those already in Washington D. C.!!!!!!!!!!!!!!	ROD	NS	X	1	
David Mykkeltved	I find that it is totally unbelievable that we are expecting a private company to treat waste water for 500 years. I object to politicians being paid off to approve a project that will benefit a very small number of people. I object to the process that	FIN	NS	X	1	

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t	allows projects like this to be pushed forward even though on the basis of lies and mis-information.					
Julie Backer	This is crazy. To heap inside our beautiful state and our natural resources for a few hundred jobs. No way!!!!!!	GEN	NS	X	1	
Jeny Ungers	This is a terrible idea. I don't trust this company to have minnesota's best interest at heart.	GEN	NS	X	1	
Kathy Alvig	I was born and raised in Duluth/Carlton county. I know quite well how connected to the land the rural area people are. After watching their struggles with making a living there all my life, I keep thinking of the large ulcer like looking iron ore mines up there, and, I think of all the arsenic accidents and poisons that have leaked out of mines over the years. I don't care what the company promises, they want copper, gold, platinum or whatever they find to make their profit. And after they are done, they take off, and leave unemployed people who then have to figure out how to make a living anyway. I say no to Polymet and yes to Minnesota s beauty. We do not leave our beautiful state to our children, we borrow it from our children.	GEN	NS	X	1	
Dennis Helander	I have researched the EIS, and I believe the mine and the process are entirely safe. I was an engineer at the site from 1940 to 1984 and know that the tailings basin is well constructed.	GT	NS	X	1	
Dennis Helander	The existing tailing basin is an ideal place for the new tailings basin. Furthermore, there is no chance that water could ever flow up over the Laurentian Divide and get to the BWCA as is frequently suggested.	WAT	NS	X	1	
Lawrence Brault	I'm concerned about the impact that PolyMet's proposed sulfide mine would have on Minnesota's water. I think PolyMet would do more harm than good. Pollution from PolyMet threatens our clean water legacy and would pollute water for hundreds of years after the mine has closed. The impact on the environment is too great to allow this type of mining.	WAT	NS	X	1	
Patrick Kvidera	How about having them post a bond to cover the cost of any cleanup of lost material: be it from a train wreck, dike or damn breach, etc. Also covering the lost revenue to all State and private businesses affected by any such lost material.	FIN	NS	X	1	
Patrick Kvidera	Now that we are having 100 year storms every few years, any holding structure should be built to withstand a 1000 year event.	GT	NS	X	1	
Stephen Anderson	I am opposed to allowing copper, nickel, cobalt, etc. mining in MN.	GEN	NS	X	1	
Cheryl Hegman	I believe copper mining can be done safely in Mn and I trust that the MN agencies responsible for making the rules to keep it safe.	GEN	NS	X	1	
Jill Wiebe	I love our northwoods, and I challenge our lawmakers and policymakers to be stewards of the earth for generations to come, forsaking easy profit in the short term. The Boundary Waters Canoe Area Wilderness, in particular, is a gem worth preserving at almost any cost. Though	GEN	NS	X	1	
Janna Neperud	Do NOT want anywhere in Mn. much less near the precious Boundary Waters!! This could become such a tragic enviromental disaster, I shudder to think of the potential damage that would be done.	GEN	NS	X	1	
waterfront seller	Time to approve this one!	GEN	NS	X	1	
David Hajicek	My primary concern is enviornmental pollution. Look at what has happened around the mines in Canada. Trees are dead for a 20 mile radius down wind.	VEG	NS	X	1	
David Hajicek	Also, tailings dumps have spilled over into formerly clean waters, destroying them for generations.	WAT	NS	X	1	
David Hajicek	Also, financial pressures will win over at the end and there will be no maintenance to prevent spills. Ultimately, the company will cash out, declare bankruptcy and run.	FIN	NS	X	1	
Lisa Wrabek	I have no issue with employment opportunities in NE Minnesota. But when this project first came about there was talk of the impact on waters (mostly north) of the mining project lasting for 700 years. If that is the case, why are we even still	WAT	NS	X	1	

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	considering this? If not, talk to us about the research showing this original consideration debunked					
Lisa Wrabek	If we don't care and still need the jobs, I believe we should tax or force the company to reserve 10% or more of their profits to be saved for filtration systems that will be required in the future.	FIN	NS	X	1	
Dorie Rae Gallagher	Subject: Comment on Northmet Mining Project Do not trust the mining company, as it has been proven to have given wrong data. Do not trust the government oversight as it wants to appease. Polymet is an open invitation of a death sentence to our environment in Northern Minnesota. For what ? A smattering of jobs? Who will answer the question WHY to future generations for this continued destruction that is never-ending and yet, not necessary.	GEN	NS	X	1	
Francoise La Monica	I am opposed to this project as it has obvious negative environmental implications. Extractive industries are not well monitored and regulated. Let us not forget that water is our most precious resource.	GEN	NS	X	1	
jim bambenek	If you don't know history it will repeat itself. Just check in to mining history and see if you think this mine will be any different ? The fact that waste water will have to be processed forever is enough to stop this mine.	GEN	NS	X	1	
Bob Walker	How can this be a good idea? Seems like it should be against the law to let a private company that will saddle the citizens of Minnesota with ongoing costs to keep the environmental mess in check, if it can be kept in check. I am totally against this. This is too precious an area to be playing around with this kind of possible disaster. It's like mounting a toilet on your well and saying you'll put some filters on it to keep the water clean. Someone will have this as there legacy and be remembered for generations as the people who dropped the ball.	GEN	NS	X	1	
pj jensen	I'm writing because I'm concerned about the impact that PolyMet's proposed sulfide mine would have on Minnesota's water. I think PolyMet would do more harm than good. Pollution from PolyMet threatens our clean water quality legacy and would pollute water for hundreds of years after the mine has closed. It isn't worth the risk today or in the long run. I think that's a bad deal for Minnesotans. Please put Minnesota's water first when deciding on PolyMet. Here is too much at stake when considering the potential devastation seen in other mines. Thank you for your consideration.	WAT	NS	X	1	
Jeff Kitterman	I do have a fundamental ethical question at the center of the controversy..... How can our MNDNR (regardless of the affiliation with the USACE/USFS) be expected to serve as the stewards of the land while simultaneously promoting commercial growth abusing natural resources? To my untrained eye this holds itself out as a clear conflict of ethical interests.	GEN	NS	X	1	
Jeff Kitterman	Acidic waste from these mining ops WILL FLOW to the shield lakes eventually and you know it's true from your own EIS.	WAT	NS	X	1	
Bertil William Lindquist	I just wondering if mining has ever been good for the environment. That is all.	GEN	NS	X	1	
Daniel Houle	You already have most of the state with water pollution problems,, why in the good lords name would you ever want to be the ones that contribute more pollution?	WAT	NS	X	1	
Daniel Houle	by its tail. This is what they are doing to you as a entity... trickery... SAY NO TO THIS MINE AND SAVE OUR BEAUTIFUL LAND THAT HAS SOME SUSTAINABLE JOBS.....JOBS THAT WILL LAST FOR HUNDREDS OF YEARS...HUNDREDS...	SO	NS	X	1	
cass kane	What are Polymet's to prevent ground water pollution in the water table? If it occurs how will they ever be able to remediate such an accident?	WAT	NS	X	1	
Daniel Houle	Are you kidding me? You're going to permit a mine that no doubt is going to pollute.... Right on top of our continents two great watersheds. A recipe for disaster.	WAT	NS	X	1	
Daniel Houle	I am a simple man, but even a simple man understands that this is bad business. You should not permit this when even the state auditor says you cant do the math. Come on.. 300years of clean up for 20 years of work,,, please, don't insult our state. Every single mine booms and busts... You are only setting up the North Country for extreme failure in one hundred years.	FIN	NS	X	1	

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Daniel Houle	SAY NO TO THESE FOREIGNERS WHO WANT TO MINE IN OUR BEAUTIFUL BACK YARD,,,BESIDES, THEY ARE ALREADY BANKRUPT.	GEN	NS	X	1	
Richard Morse	Page ES-24 of the EIS makes the following statement: "Therefore, the water modeling cannot be used to predict when treatment would end and thus indicates that water treatment systems would be needed at the Mine Site and Plant Site indefinitely." Since it would be IMPOSSIBLE to determine the funds necessary to fund water treatment systems indefinitely, this is the nail in the coffin for this mine.	FIN	NS	X	1	
Chris Casper	We must think to the future, not the past. No more mining. We must move ahead with sustainable energies, clone or create synthetically things we previously had to mine to get. We have to stop destroying the earth, the very homes of many creatures, the water, the fire, the future for our children. We must think outside the box.	GEN	NS	X	1	
Jon Moss	I want to voice my strong opposition to any sulfide mining near the Boundary Waters and Voyageurs National Park. The potential for massive environmental disasters is almost certain being that it has never been successfully done and the efforts of monitoring and cleaning up from any disaster would be for over a hundred years for a very short mine-life span. Why would it make any sense to risk one of Minnesota's (and the world's) great environmental sanctuaries for such a small gain. While I'm not a Minnesota resident I do own property on the border waters of Minnesota & Canada and I'm very concerned about the ramifications of any copper sulfide mining.	GEN	NS	X	1	
c freeman	My vote is a resounding NO. I understand very well what different types of mining entail. Currently working in the state of Oregon on their proposed mining issue which, by the way has been a resounding NO from Fish and Wildlife (California and Oregon), Forest Service, BLM, as well as several state legislators and citizens. No one wants mining along the Smith, Chetco and other rivers due to severe ecological impacts.	GEN	NS	X	1	
Kerry Davis	I live, work and own a business in Ely, MN. I feel the current EIS is very sufficient in proving the the copper/nickel mining can be done safely.	O	NS	X	1	
Kate Savage	Say no to PolyMet	GEN	NS	X	1	
Daniel J. Peters	I am writing to voice my opposition to the proposed Polymet copper/nickle mine currently being considered in Northern Minnesota. While there may be some debate about the ability of Polymet to contain the pollution associated with copper/nickle mining, even this data assumes a 'best case scenario', and given that the pollution containment assets would need to be operated for hundreds of years. I also am fearful that eventually, Polymet will become financially insolvent, as has happened in several other mining sites around the world, and the taxpayers of MN will be stuck footing the bill, long after the spoils of mining have been reaped and spent by Polymet and it's parent company. The environmental risks are far too great, and the number of sustainable mining jobs are far too few, for this mine to make sense in MN. If this mine is allowed to proceed and operate, I'm fearful that my children, and future generations of Minnesotans, will never have the opportunity to enjoy the wild beauty that is Northern Minnesota.	GEN	NS	X	1	
Jim Cashman	Thank you for taking on my comments. While I'm in favor of jobs and Northeast Minnesota my heart tells me that we need to make sure that the water in northern Minnesota and in all Minnesota is taken care. From what I have seen, leaching will be an issue for a long, long time. If this mine is approved, please make sure that the company puts significant dollars in a fund for future mitigation. This money needs to be able to cover any future costs associated with closing the mine. This money also needs to be protected from bankruptcy.	FIN	NS	X	1	
Annie Francoise	Please do everything possible to minimize mining and its impact on the environment and population. What is in the ground should stay in the ground. People have to adapt to new less destructing and polluting solutions. Mining only benefit companies who are only interested in immediate monetary rewards to their stockholders and disregard the Greater Good of the earth and our civilization. Thank you for hearing the McCuen family request.	GEN	NS	X	1	

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David Romportl	Any additional mines in Minnesota, and this project in particular, will have such drastically negative effects on our water quality than even the best possible economic or other positive results of this project would be far outweighed. We do not want future generations to deeply regret what we did for a short-term gain, but which will have lasting negative consequences that will make lives and communities worse for many decades beyond the end of any benefits from this mine. Minnesota water quality is already very bad, and we must take extremely huge measures to fix this. Approving this mine will do the opposite, and make Minnesota water even more contaminated, which will have enormous negative environmental, social and health effects. We simply should not take any actions at all that will make water quality worse. We must draw a line and firmly reject more contamination and pollution of water, and put our efforts and resources towards projects that can make water cleaner and make our environment healthier. The economic opportunities for green industries are limitless, while those for dirty and polluting industries is very limited and is detrimental to future economic growth. We as a state should totally turn our focus to creating a green economy, and this will not only help improve water, air, and soil quality in our state, but will improve public health, and will also create an economic boom and so many well-paying jobs that will improve prosperity for Minnesotans and attract talented, productive people to our state which will make our states economy continue to grow far beyond its current level. Please reject this mine and shift your focus to promoting green industries in our state. Thank you so much, and I look forward to your reply to me.	GEN	NS	X	1	
TC Cowboy	The crown jewel of Minnesota is the Boundary Waters area. Allowing this mine is a huge mistake and we will pay for it long after the Polymet and the rest have left the scene!	GEN	NS	X	1	
healing line	DO NOT allow sulfide mining in our pristine Boundary Waters! No amount of human car can render it safe. No industrial promise can justify the scar upon the wellspring of our Boundary Waters.	GEN	NS	X	1	
Jessie Kruchowski	Get Polymet open already!!	GEN	NS	X	1	
Patricia Richard Amato	We only have one EARTH. Why not protect it?	GEN	NS	X	1	
JOHN ESCHEN	Let me see, if I got you right on this, you want to destroy for profit? Our country, does not need more mines. Every time I turn around, I am hearing about another accident, another toxic sludge tank, leaks into another fresh water source, for hundreds of millions of people. The company declares protection, and walks. So who wins, it not the people, they are left holding the bag and the cost of any clean up. The people, must live with the damage caused. How about for once, you, don't just let the companies get their way. How about holding the dirty corporations accountable? Humans, have put an environmental imprint on this planet. And the planet is doing everything to re-balance itself. This planet, is a living, breathing, thing. A delicate balance has been altered by our growth and consumption. We humans, our own worse enemies. We keep destroying the environment, thinking that we will survive, its only by GOD'S blessings, have we survived this long. What ever happens between now, and CHRIST coming. What happens, will be the result, of human choice. Our choices, either good, or evil, will reflect on where we go not just as a nation, but as a world as a whole. What will you choose?	GEN	NS	X	1	
jamie ness	I would like to submit the following as a comment to the DNR about Sulfide Mining in Minnesota: Minnesota should not allow Glencore Glencore Documentary (DOKU HD) 2013 (Panorama S60 E15) Glencore Documentary (DOKU HD) 2013 (Panorama S6... View on www.youtube.com Preview by Yahoo to profit from polluting our water. These clean waters are an enormous wealth that we have to pass on to our kids and grandkids, and we should resist anyone who wants to profit from polluting it. Minnesotans don't like conflict, we don't like saying "no", but when it comes to the wealth and the well being of future generations we need to fight for what's best for us, and not just give in to self-interested business people, unions, and politicians.	GEN	NS	X	1	

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Scott Frank	I strongly disagree with any form of copper/nickel mining in the state of Minnesota, especially in such a fragile ecosystem as northeast Minnesota. Unfortunately from what I've seen, it looks like this form of mining will become reality in Minnesota; and for what? To employ a few hundred people for the next 10 years until the copper/nickel commodities market drops, and then those miners will become unemployed like the steel workers are. It seems ridiculous. I have been in counties in Colorado where the water table in the entire county was undrinkable because of copper mining. Please, please, please reconsider your acceptance to these mining plans!!	GEN	NS	X	1	
Scott Einbinder	Water is the most valuable natural resource we have and this project puts our water resources at risk. The trade-off of a few jobs is not worth that risk. I am against this project.	WAT	NS	X	1	
Sue Ramthun	On December 9, the Quetico Superior Foundation Newsletter contained information regarding an error in the water flow analysis. It said that the DNR acknowledged that the water flow analysis was flawed and that untreated mining discharge would flow towards the BWCA waters. If this information is correct there should be several follow up steps: 1. The FEIS needs to be corrected with an accurate water flow analysis 2. The FEIS verbiage regarding the water flow analysis needs to be modified to reflect the corrected analysis 3. The FEIS needs to include mitigation procedures for the untreated mining discharge flow towards the BWCA The water flow analysis is a very big deal in this mining proposal. If the flow cannot be mitigated and BWCA waters protected, the mining should not be allowed. Please protect our water and other natural resources.	WAT	S	O	8	SDEIS Theme WR 165
Bill Polesnak	Please protect our land and water.	WAT	NS	X	1	
Jose de Arteaga	Please do not permit mining to destroy the environment of Minnesota. Including Lake Superior, northern lakes and rivers and the Boundary Waters. Tourism is a much greener and more sustainable than mining. There are species on the endangered species list that will be further threatened like wolves and moose.	GEN	NS	X	1	
V Johnson	I don't think it such a great idea to go ahead and build this plant because of the environmental impact that it will have. It may create some jobs but I still think the environmental risk is too great and why does so much have to be cleared and bulldozed for corporate profits. Wildlife, birds and everything else suffers because of all the deforestation that is going on in Minnesota.	WI	NS	X	1	
Jean Public	i am noit in favor of this land exchange. i am not in favor of this mine., this comment is for th epublic rtecord. please receipt.	GEN	NS	X	1	
Tim Harrison	Please, no further delays. GET IT DONE!	GEN	NS	X	1	
Steve Johnson	officer. Not only our family, but our entire state depends on the health of the land and water in our entire state. We have tough winters and getting people to visit let alone relocate to Minnesota is sometimes tough and we have to understand what our strengths as a state are. To me these strengths are the beautiful and healthy natural resources and the well educated people here. Adding the Polymet mine would be shortsighted and would not be a good return on investment as the long term damage inflicted would negatively affect an area that is still pretty well intact. Please keep it that way.	GEN	NS	X	1	
Dustin Rosemark	Please, Please Stop Polymet! We cannot afford to damage the BWCA	GEN	NS	X	1	
Amanda Schultz	the proposed PolyMet site is located near the community of Hoyt Lakes, within an existing mining district where operating and former iron mines and processing facilities already exist and, with the existing infrastructure in place, the site is viewed as conducive for such an initiative without threatening our region's environment ; and	O	NS	X	1	
Amanda Schultz	the Northeast region is well positioned to support the addition of PolyMet Mining to the complement of local employers due to the high availability of skilled and dedicated workers and a comprehensive employment and training system to develop the appropriate workforce; and	O	NS	X	1	

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Amanda Schultz	WHEREAS, as the primary administrator of workforce development programs and funding in the region, the Office of Job Training is actively engaged in supporting a responsible natural resource-based economy through the investment of millions of dollars in job training for a skilled workforce. Particularly during the last decade, we have witnessed a decline in job opportunities within our region. For this reason, we welcome responsible economic opportunities such as those provided through the proposed PolyMet initiative.	O	NS	X	1	
Amanda Schultz	the Itasca County Board of Commissioners declares its support for the adequacy of the final environmental impact statement (FEIS).	MEPA	NS	X	1	
Amanda Schultz	We support the success of these projects, for the above stated reasons and believe by meeting Minnesota's strict environmental standards through a comprehensive environmental permitting process, PolyMet will be poised to play a significant role in contributing to the sustainability of our region's economy by mining the metals we need every day without harming our region's air and water quality.	PER	NS	X	1	
Forrest Johnson	Please note that I do not support copper-nickel mining in Minnesota. The PolyMet project and any other copper-nickel effort at this time is a threat to water sources in the Lake Superior and Hudson Bay drainages and will prove to be a financial/environmental disaster at some point within the next 200-500 years. There are few, if any, copper-nickel mines that haven't proven to be detrimental to local waters and end up costly to taxpayers in the form of cleanup and impacts to the environment. To imagine a company agreeing to provide adequate wastewater treatment for centuries is ludicrous. There are no financial guarantees that a company can be held responsible for such lengths of time when the company simply will not last as long as is necessary to ensure clean water. Also, exchanging thousands of acres of public land in order to allow access to the ore body in exchange for 20 years of potential jobs is also a ludicrous and losing proposition in terms of the ecosystem and water sources. Reverse osmosis treatment will not work on the scale needed to effectively treat all wastewater and to bank on management of the cleanup effort for 200-500 years long after profits (I don't believe it's profitable at this point anyway with low metals prices) are gone. The ore body may be immense in the eyes of geologists and but the overburden and waste will dwarf the actual product. This project isn't tapping into a clean vein of copper-nickel. It is trapped in sulfide bearing rock and will take mountains of energy to extract, further adding to the chain of climate change. These are but a few of my concerns as we look at the viability of the project.	WAT	NS	X	1	
Nancy Aronson Norr MP	I am submitting this comment as to the adequacy of the Final Environmental Impact Statement (FEIS) for PolyMet's proposed mine on behalf of Jobs for Minnesotans, a coalition representing 55,000 men and women of the trades, 2,300 businesses and hundreds more mayors, local chambers of commerce and citizens. The correct steps have been taken to move the PolyMet NorthMet Mine to permitting. The Minnesota Department of Natural Resources, U.S. Army Corps of Engineers and U.S. Forest Service have determined that PolyMet's mine can comply with strict state and federal environmental standards. This assessment is detailed in the FEIS and concludes more than 10 years of thorough study and review.	MEPA	NS	X	1	
Nancy Aronson Norr MP	We are confident in the environmental review process for the project and the FEIS is a culmination of the dedicated efforts of many agencies. Thousands of public comments and questions submitted during the review periods for the draft and supplemental draft environmental impact statements have been addressed and incorporated in the FEIS.	MEPA	NS	X	1	
Nancy Aronson Norr MP	The agencies considered the project's potential effects on air and water quality with respect to human health and identified no adverse health risks. Water modeling shows that PolyMet's treatment and mitigation plans will meet all water quality standards and prevent acid mine drainage. Furthermore, the FEIS states that any possible groundwater flow would be prevented and therefore will not affect the Boundary Waters Canoe Area Wilderness or Voyageurs National Park.	WAT	NS	X	1	
Nancy Aronson Norr MP	Based on my review and the level of detail included in the FEIS, it is clear the document meets all state and national environmental requirements.	PER	NS	X	1	

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Nancy Aronson Norr MP	The FEIS is more than adequate and the DNR should affirm this fact so permitting can get underway.	MEPA	NS	X	1	
Steve Timmer	This is a comment to the Final Environmental Impact Statement on the proposed PolyMet NorthMet copper-nickel sulfide mine. It is offered in opposition to the issuance of a permit to mine. This comment focuses on the very real financial consequences to the state and its citizens of a tailings dam failure at the former LTV processing facility, or the persistent pollution of surface and groundwater either from the processing facility site or the mine pits themselves.	PER	NS	X	1	
Steve Timmer	[Mining], without question, would fundamentally change the character of this region, taking what is today the crown jewel of the national forest system in the eastern two-thirds of the country, and converting its heart into an almost continuous industrialized zone. And this is, perhaps, the biggest flaw in the just-released FEIS on PolyMet. When the DNR opted not to examine the cumulative impacts of this scale of development on the Superior, they chose to ignore the elephant in the room. They opted not to take the hard, scientific look they promised and produced a political document, instead.1	CUM	S	O	7	FEIS Section 6.2.2.1.1
Steve Timmer	The widely-reported problems with the water model, the potential effects on human health – just brushed aside by state officials on December 7th – and the failure to explain in any meaningful way how regulators will require financial assurances, all illustrate that the FEIS is not completely vetted, and these underlying problems are either not understood or just ignored.	MEPA	NS	X	1	
Steve Timmer	The fact that the FEIS was ten years in the making is an indictment of the process, nothing more.	MEPA	NS	X	1	
Steve Timmer	Financial assurances in Minnesota law do not even address themselves to the losses incurred by the public. Only a solvent mine owner, and current, adequate liability insurance will do that. The governor has stated that he will only permit a mine that stands on a solid financial footing, and after a sobering tour of the Gilt Edge mine in South Dakota, Commissioner Landwehr stated that a “bankruptcy proof” plan would be required for PolyMet.	FIN	NS	X	1	
Steve Timmer	The permit applicant: PolyMet Mining, Inc. Even when consolidated with its British Columbia parent, PolyMet Mining Corp., PolyMet Mining, Inc., a Minnesota corporation, has very little in liquid assets. It is not now, nor has it ever been, an operating business. The stock of the parent has always been just a stock play, and valuation isn’t based on earnings (there never have been any) or even the liquidation value of the company. Well, a stock play and a vending machine for company executives through stock options. The idea that regulators would consider taking this flyer – because that is what it is – is preposterous. Putting a little money in at eighty-nine cents a share as a gamble on the penny stock market is one thing; gambling the legacy of pristine water in northern Minnesota is quite another. PolyMet officials say on the one hand, Well, we’re good Minnesota folks. We’d look after the environment. But on the other hand, they say, A permit to mine could be assigned; we can assign it to somebody with the wherewithal to operate a mine. In a commercial lending environment, the applicant PolyMet would be laughed out of the room and told, Come back, Junior (mining company), with a real partner. The only reason that PolyMet has even continued to exist for the last several years is because of the periodic allowance it gets from its practical parent, Glencore PLC. Glencore’s fingerprints – footprints, really – are all over the PolyMet balance sheet. PolyMet lives, moves (such as it does), and has its being because of Glencore. PolyMet exists on the continuing edge of bankruptcy. Glencore has a first-lien position in all of the assets of PolyMet. The extensive debt owned by Glencore on PolyMet’s balance sheet means that it would be difficult and expensive to replace Glencore with another investor to assign a mining permit to. Doubly so because Glencore has an off-take agreement with PolyMet for the first several years of production from any opened mine. But the Land and Minerals Division seems to want to pretend that Glencore doesn’t exist. There are a lot of adjectives that could be used to describe this, and none of them are flattering. Simply recognizing that Glencore is a real party in interest, maybe the real party in interest, and requiring it to be on the application and any subsequent permit – and be responsible for the financial and environmental obligations imposed on a permittee would not eliminate the bankruptcy risk that the Commissioner worries about, but it would mitigate it... A. On the issuance of a permit to mine to PolyMet, the current permittees, Cliffs Resources and Minnesota Power, would have their permit to mine closed	FIN	S	O	8	SDEIS theme FIN 02

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	<p>and be relieved of liability for the currently-leaking tailings dam at the crushing facility. (The fact that it is and has been leaking into the groundwater for some time is a demonstrated failure of regulators to enforce the regulations they are charged with enforcing.) PolyMet would pick up that the liability for the tailings dam. The cost to fix the tailings dam is about ten times what PolyMet has in current assets. The day that a permit is issued to PolyMet, it starts in a \$70 million+ hole. A junior banker approving the novation of this liability from two substantial obligors to a lightweight like PolyMet would be cashiered on the spot. B. In a press conference subsequent to the Gilt Edge visit, in response to a question about how to handle the very long liability tails after the mine is closed, Commissioner Landwehr said that PolyMet's mining permit would be kept open, so that it would continue to be on the hook for its environmental liability. With due respect to the Commissioner, that's a little like telling a gravely ill person – or one already dead – that he doesn't have permission to die. A charming sentiment, perhaps, but unenforceable as a practical matter. Loan agreements always prohibit a borrower from becoming insolvent or going bankrupt, too, but it's useless, of course. C. Insolvency and bankruptcy are no respecters of permits, or Commissioners, for that matter. And it isn't a solution to say, "We'll just get sureties." Sureties become insolvent too. Moreover, surety bonds are not available for a term that is even a fraction of the time horizon for a serious adverse event at the proposed mine or crushing plant, at least now that AIG is no longer around to offer them. The FEIS pays only glancing attention to the issue of financial assurances. A few pages in three thousand. And the language in these pages is full of words like "appropriate" and "propose." Dancing around the issue, in other words. There is no assurance – there's that word again – that the public will ever have an opportunity to review and comment on what the DNR concludes is adequate. Or know, without periodic data practices act requests, when the DNR allows PolyMet backsliding, as it obviously has for other mining companies over the years. Quoting from 3.2.2.4.2 of the FEIS: ... It seems that it is expected that PolyMet would "propose" financial instruments that would change over time. All of the above-identified "instruments" (except cash) require somebody to buy them – and continue to buy them on some periodic basis. (I doubt that many of these "instruments" are available for more than a few years, at most, at a time.) D. As soon as PolyMet hit a rough patch at the mine – and you know it would, given the cyclical nature of the commodities markets – it will be back asking to be relieved from financial assurances obligations, or some regulatory requirement. Or the miners will get it. It might be a rough enough patch that PolyMet couldn't buy or pay for renewed financial assurance "instruments." This is entirely probable after the mine closes. There will no longer be revenue from mining operations to pay financial assurance renewals. The need to pay for water treatment, tailings dam maintenance, and possible dealing with a catastrophic failure of pollution treatment systems will continue for probably at least a couple of centuries. Will PolyMet still be around buying "instruments" in say, year 92 after the mine closes? I think we all know the answer to that. Even PolyMet recognizes the absurdity of the proposition. 3.2.2.1.10 - Reclamation and Long-term Closure Management in the FEIS includes this statement: Water quality modeling performed in support of this FEIS indicates that water treatment systems would be needed indefinitely at the Mine Site and Plant.6 PolyMet hopes to rely on "non-mechanical" treatment systems after only fifty-five years.7 In other words, turn off the pumps and hope for the best. But non-mechanical treatment proved ineffective at the Dunka Pit, and the 2009 PolyMet DEIS was rejected by the EPA for relying on it... The real party in interest, Glencore PLC, must be brought in on the permit to mine and associated applications and named as an obligor on any permits issued. The applicants must put up adequate cash, for financial assurances, and to fix the leaky tailings dam, as a condition of the issuance of a permit to mine. What is adequate must be determined, not by PolyMet and the DNR only, but after hearing and comment by the public. It cannot be assumed that the permittees will be able to buy financial assurance instruments in the future; it is naïve to so assume. If these things are not done, the Commissioner's words about a "bankruptcy proof plan" for PolyMet will be hollow words, indeed.</p>					

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Mark Colbeth	PolyMet is suggesting a couple hundred jobs, for how long? 20 years maybe and at what potential risk to the environment and cost to tax-payers left with the ongoing expense of clean-up and monitoring for 200-500 years? I know PolyMet will be required to fashion a so-called financial assurance package, but how do you put a dollar figure on this is unknown? On the other hand, you have an ever expanding group- The "Downstream Business Coalition". They have an ever expanding membership that currently exceeds 1000 employed by over 50 small businesses. I believe this number will continue to grow if their water does not become poisoned by the likes of PolyMet. What if PolyMet's presence destroys peoples desire to visit the BWCA? How much negative impact will that have on the local economy? What is the downstream risk of re-polluting the St. Louis river? What sense would that make of the multi-million dollar already investment to improve it's quality? Some may think they can't live without this copper-nickel mine, but we ALL know we can't live without clean water.	SO	NS	X	1	
Tom Thompson	I am writing in opposition to the FEIS for the Polymet Northmet Copper Nickel Sulfide mining permit because it is inadequate. I also object to the land exchange in the Superior National Forest being proposed to accommodate the Polymet mine. Such an exchange could negatively impact or destroy over 8000 acres of wetlands and conflicts with Federal policies protecting wetlands. It would also harm habitat for a number of endangered, threatened and species of concern. The FEIS also fails to have an adequate plan for mitigating damage to these wetlands.	LAN	S	O	8	SDEIS Theme LAN 01
Tom Thompson	Furthermore, I oppose any issuance of 404 permits allowing polluted discharge from Polymet or destruction of any existing wetlands.	GEN	NS	X	1	
Tom Thompson	The mining industry has never mined copper/nickel without polluting water in the area concerned. Polymet has never mined. This combination is an unacceptable combination to be unleashed on North East Minnesota.	GEN	NS	X	1	
Tom Thompson	There is a proposal to use reverse osmosis to treat water decreasing the chance of surface waters containing sulfides from polluting other surface water. This will need to be done for at least 500 years of indefinitely. What assurances are there that Polymet will be able to do that. Of course they won't. Reverse osmosis does not treat water seeping into local ground water underneath holding ponds. What will be done with this?	WAT	NS	X	1	
Tom Thompson	Such holding ponds are proving in other places not to always work. Mount Polley is one example of the disaster that could occur if dams holding the Polymet ponds together fail. There is not an adequate plan for protecting the surrounding area from a disastrous breach or protecting Minnesota tax payers from having to pay for resulting damage. Nor does the FEIS adequately deal with the existing seepage from the ponds held back by dams already 40 years old to be used by Polymet.	GT	NS	X	1	
Tom Thompson	Other questions need answering. What impact will Polymet have on children, workers, and surrounding communities that rely on fishing, wild rice and drinking water that will be impacted by copper/nickel mining? What will be done about potential asbestos issues? Or will we just wait and deal with it if it arises. Sulfide rock being mined will increase methyl mercury adding to mercury levels in fish and plants. Children in North East Minnesota already have elevated levels of mercury in their bodies. How will this be handled?	HU	NS	X	1	
Tom Thompson	I find it objectionable that there is not more in the plan for decreasing the carbon footprint or considering the carbon footprint that Polymet will have. Mining is already one of the biggest users of electricity in Minnesota. Added mining and processing will increase this. Is this the right time for increasing Minnesota's carbon footprint when the world is battling its disastrous effects? Does Polymet have a plan for being carbon neutral? Polymet needs a plan in its FEIS for the fossil fuels that will be burned to accommodate or eliminate them. This should also include the carbon that won't be absorbed when wetlands are destroyed, peat bogs are torn up and forests cut down and not replanted.	AIR	NS	X	1	
Tom Thompson	Please reject this study as inadequate and reject permitting.	NEPA	NS	X	1	
Richard Nolan	I write to voice my support for the state and federal review process for PolyMet's NorthMet project and the Final Environmental Impact Statement (FEIS). In my view, the decision whether or not to go forward with PolyMet and new mining on the Range is about process, not politics. PolyMet has always been candid in its willingness to comply with every rule, regulation and financial assurance the process requires to protect our environment and the clean water we all depend	O	NS	X	1	

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	on. Moreover, the FEIS represents a plan - and execution of that plan will require vigorous monitoring and enforcement. With those factors in mind, the reasons to support the project are clear.					
Richard Nolan	First, as everyone knows, we need the jobs. With hundreds of miners laid off due to the illegal dumping of millions of tons of foreign government subsidized steel into our marketplace, PolyMet will bring hundreds of good paying new jobs to the Range. With more bad trade agreements like the Trans-Pacific Partnership threatening to exacerbate the crisis, we need the project up and running soon.	SO	NS	X	1	
Richard Nolan	Second, our nation needs the copper, nickel and other precious minerals within the Duluth Complex to meet our needs in defense, manufacturing, high technology, health care, environmental "green" industries and medical research. In the future, essential minerals for groundbreaking new cancer treatments should come from northeastern Minnesota, reducing our reliance on platinum compounds we must now import from South Africa. The hybrid cars, wind turbines, solar panels, phones, computers, scanners and other high tech devices that have transformed the world all require copper and nickel. Yet despite the rich deposits we have right here in our own backyard, we are still importing 35% of all the copper used in America, and almost 100% of the nickel. That makes no sense. Moreover, access to minerals is a potential national security issue. The U.S. Geological Survey reports that the United States is 100% dependent on foreign suppliers for 17 critically important minerals - and more than 50% dependent on foreign sources for at least 24 others.	O	NS	X	1	
Richard Nolan	The third big reason to support the PolyMet project is our obligation to the earth and environment - or as Pope Francis likes to say, "our common home." By continuing to import the minerals we need for our products and technologies from China and other nations that sacrifice clean air, water and timber resources for short-term gain, we perpetuate a system that exploits the planet and harms workers. By doing copper and nickel mining the right way, PolyMet can establish a global standard for environmental stewardship worthy of our workers, our region and our great nation. Therefore, with these considerations in mind, I urge the co-lead agencies - the Minnesota Department of Natural Resources, the U.S. Army Corps of Engineers and the U.S. Forest Service - to move forward so the NorthMet project can be permitted and operational at the earliest possible date.	O	NS	X	1	
Gregory Beckstrom	I support the PolyMet project. It's good for Minnesota, it will be managed responsibly and I know that we can mine better here than anywhere else in the world. On a more holistic level, people who opposed this mine fail to realize how important copper is to a civilized society. Anyone who opposes this project should stop using their cell phones, computers, electricity and all other modern conveniences that we rely on.	GEN	NS	X	1	
John Goetz	I urge you to reject the Polymet mine. My reasons are three. 1. Water is Minnesota's most precious resource, and mines are always dangerous to water. No matter how safe they are designed or supposed to be, they present a risk of disaster. 2. This mine would be a blight on the landscape, another precious Minnesota resource, especially in the northern part of our state. 3. The number of jobs that might be created does not justify the above drawbacks.	GEN	NS	X	1	
Robert and Catherine Kohlmeier	Regarding Polymet mining in Northern Minnesota, at this point my wife, Catherine, and I are opposed. Along with everyone else, we are fully aware of known negative health affects of water pollution runoff caused by sulfide mining. It has been acknowledged in the FEIS report that there will be a small percentage of hazardous pollutants caused by the Polymet mining process which will end up in Lake Superior by way of the St. Louis River and the Embarrass River. We drink the water from Lake Superior and therefore it is unacceptable for us to support this project. Further, we wonder why anyone, including the Minnesota DNR, Governor Dayton, or even Polymet themselves could go forward with this knowingly harmful and risky project. Until we can get assurances of zero percentage of water pollutants from the Polymet mining process can we lend our support to this project.	WAT	NS	X	1	

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Alexa Douglas	My Family and I are Asking you to Oppose the PolyMet FEIS plan, the Land Exchange, require an Independent Review for Clean Water Act Permit for the sulfide mine. And, make PolyMet pay for All Toxic Clean Up for the 500 years period. We urge you to protect Minnesota waters and communities by denying all parts of the PolyMet mine proposals in the Boundary Waters Wilderness and surrounding areas. You must deny this Destruction and Toxic Dump in our pristine Federal Park Lands owned and declared for use by the citizens. There is no way this horrendous act could be called "safe". Run Off into Lake Superior will effect Tourism... our Biggest source of Revenue in Cook County.	GEN	NS	X	1	
Alexa Douglas	Do not allow a Foreign Company, Glencore... one of the worst in the world for environmental and human rights abuse, to destroy this land and poison the earth, the animals and the people, for their own personal profit. Sure this state will make a few dollars, get a few jobs for a short time. In contrast, the long term trade off is inhumane. The toxic clean-up could take 500 years or more and even then it will never be restored to its original purity. And in those 500 years...how many children, adults, wildlife, fish will have been poisoned. There is no accountability for this kind of destruction in the proposals and no amount of money can replace this kind of death.	FIN	NS	X	1	
Alexa Douglas	Almost 98% of the 58,000 public comments were opposed to the mining. Minnesotans do not want this mine.	GEN	NS	X	1	
Alexa Douglas	First.....STOP! the land swap of public land give away.	LAN	NS	X	1	
Alexa Douglas	Second....Appoint an independent environmental analysis on water modeling. It seems all information is coming from PolyMet, obviously biased! There is not even a liner under the toxic dump.	WAT	NS	X	1	
Alexa Douglas	Third....check with Water Legacy for well researched and positive alternatives.	ALT	NS	X	1	
Lynn Bottge	No to the proposed PolyMet Mining Inc. project.	GEN	NS	X	1	
Matt Huang	I would like to address my concerns and objection of issuing permit to allow Polymet open mines near the BWCAW. As a resident of the state, a visitor of the area, a conscious citizen. I found the arguments on the benefits of the project are nearsighted and not strategic. It won't benefit the residents near the area, the temporary workers for the project, the tourism industry of the area, the local economy, the environment, and the long term reputation of the state. The BWCAW is not just a treasure for the state. It is a treasure for the region and the entire nation. As shortage of fresh water becoming a global issue, we should protect every resource we have. We can't risk the future of our younger generation and generations to come. Please do not approve the poly project!	SO	NS	X	1	
Claudia Gibson	Just don't let it go forward. It's a bad deal for the ecology. It's a scourge upon the land. It destroys all that has real value, that which cannot be replaced, for some private interest that will leave you in their waste when they're done. Just because one is Able to do something does not mean he ought to do it. There must be a measure of right and wrong. A long view of -if it will help or harm the people you swore to protect and serve! What you're legacy is. The big polluter or the realist, protecting his constituents from harm to their water and Their waterways	GEN	NS	X	1	
Ken Evenstad	I THINK THE ENVIRONMENTAL IMPACT STATEMENT --IS ADEQUATE	GEN	NS	X	1	
Catherine Keim	Please allow no more mining.	GEN	NS	X	1	
Gene Cooper	I am totally against this project. It will pollute the water for years to come, and destroy the environment. It will destroy some pristine forests, all for a few jobs. It will take hundreds of years to repair the damage this project would do!	GEN	NS	X	1	
Mike Malling	I oppose the mining project at North met. There's no guarantee that it will not harm the environment and that the public will be responsible for future cleanup costs if there is harm. The impact to wetlands alone is reason enough to oppose this project. Minnesota should be proud of his wetlands water quality lakes and rivers. Recent news Of impaired waters	GEN	NS	X	1	

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	especially in southern Minnesota troubles me. Approving this project would contradict the governors buffer program and lead to continued concern by citizens who care about clean water, The environment, and health.					
Doris Braley	Mining in this area really concerns me. What will happen when the water is contaminated and wild rice will be destroyed. I have kayaked in a few of the lakes up there and feel this will be destroyed. Along with the fish I could see swimming in the clean lakes. I really do not feel there will be many jobs especially with the changes in the cost of gas, going to renewable energy and changes in how copper etc are being used. Also the health of the people living near the area, their water, the air they breathe, and how much will be left in the earth. Will they be able to grow crops, orchards etc. after the mining industry leaves. I have not seen a pretty sight in any of the areas that mining has been done in Minnesota. We have a beautiful state. Sometimes what is in the earth need to stay there. I will be north of Duluth after Christmas. A trip we enjoy so much.	GEN	NS	X	1	
James Henderson	I am opposed to the NorthMet Mining Project, known as PolyMet. I am so opposed to it I cannot tell you how much in words. I have a visceral disgust at the thought of the project and the destruction and pollution this mine will cause, for so little and for so temporary a gain. There is no logical way to talk against this mine because the very concept of it is so illogical. Why, I ask myself, would anyone even propose such an awful thing? It would be another part of our world sacrificed, our water made undrinkable, and our land destroyed for monetary profit that cannot hope to ever compensate in financial gain for what is lost in our Minnesota way of life.	SO	NS	X	1	
Doug Jones	I am opposed to approval of the Poly Met mine. I do not believe that the State and the Northern portion of our State will be well served by this new mining operation. The potential pollution during operation and pollution after the operation ends are not worth the minimal benefits. We can create jobs without compromising the environment.	SO	NS	X	1	
Doris Lavender	No we don't want this polymet plant open until you'll company install an cement wall ,reverse spill in own property.In, case of flooding it,want spill into drinking waters.plus company need sceintist studies what happens in water, insure of safety of our waters. No dont open polymet company until Scientists reseach testing and build an cement wall that reverse poison unto own property safty hazardous waste bin.	WAT	NS	X	1	
Douglas Delaney	I'm so frustrated over all the meaningless discussion over the Poly met proposal I could scream. Poly met has spent millions and millions of dollars doing studies to endorse their plan, their plan has been approved and has been found reasonable and safe. Meanwhile, the media gives coverage to folks from anywhere that want to shut this plan down faster than a house fire. Senseless. If the criteria is satisfied for safe mining of critical minerals, MAKE it happen. All the mean folks at Poly met want to do is make money, provide valuable jobs in a part of Minnesota that has few jobs that one can raise a family, pay taxes, and be productive. I'd like to think the time has come that our State and Federal Governments stop cow towing to special interest groups that think they can save the world if we all live in tents and tee pee's, all the while using their laptops and cell phones to distribute their message.... the very same devices that rely on mining for their operation. I've lived and paid taxes in this state for most of my 54 years and find it terribly tiring that our politicians pander to special interest groups using fear tactics. Mining has been a way of life here for a long, long time and if a mining company like Poly met can show they can safely mine minerals and elements, LET THEM DO IT!	GEN	NS	X	1	
Sue Carver	I find it particularly offensive that you have scheduled this comment session during the fall and winter Holiday season. It is difficult for everyone concerned, staff and citizens alike, to find adequate time to review the mountains of literature and to then compose a concise and comprehensive reply. I can't but help to think that the timing of this comment session was done with no good forethought.	O	NS	X	1	
Drew Johnson	I'm very concerned about the health impact of the Polymet mine and the process (or lack thereof) for accurately assessing it. Please extend the comment period and support an independent health assessment of the Polymet mine.	HU	NS	X	1	
Stan Burns	I am against the Polymet mine. Not only is there significant probability of environmental damage but it is bad for the range economy. Look at the boom-bust cycle in taconite; now in a bust phase. The taconite companies don't care a wit about the people and area when there is a market downturn. There has to be diversification in the range economy for the steady state	SO	NS	X	1	

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	prosperity of the families living in the area.					
W.E. Lavin	This is NOT the time to take a chance of polluting our fresh water for only 300 jobs.. With the loss of aquifers around the country and world, we must be vigilant and protect our waterways at all costs.	SO	NS	X	1	
Terry Auger	As a visitor of many years to the boundary waters, I have grave concerns about any mine in this area. Extractive industries have a doubtful record of meeting their proposed environmental commitments. Please reconsider the wisdom of this mine. We need to recognize as a society that some minerals, due to their location, should remain in the ground.	GEN	NS	X	1	
Emy Minzel	I am an avid nature lover and as you are aware we already are fighting global water pollution. Please consider that we may need this clean water in the Boundary Waters Canoe Area in our very near future to survive. Please put people and environment over corporate profit! Lets also look at PolyMet's history of disaster clean up and business ethics. What company has the resources or integrity to stick around for hundreds of years for environmental clean-up if there is an "accident"?! I know of none in our history. They declare bankruptcy and leave the clean-up bill to the tax payers whose land they raped and ravage for profit. Not to mention the thousands of businesses downstream that would undoubtedly suffer if there were such a disastrous tragedy. Please do your job and protect OUR environment for our future generations!!!!	FIN	NS	X	1	
Vincent James	I want to add my name to the list of real Minnesotans who want to preserve our state's natural resources, heritage and the Boundary Waters area. Minnesota does not need to allow International mining companies to come into our state, bribe our representatives, exploit our natural resources and leave a massive economic burden on the tax payers. There is no reason for these mining projects and they will damage the real economy of Norther Minnesota—Hunting, Fishing, Recreation, Arts, etc.	SO	NS	X	1	
Mary Jo Wiatrak Uhlenkott	Please protect the earth from extraction harm.	GEN	NS	X	1	
David Myers	I fully support the Polymet project. We've spent millions in tax payer money on the EIS. We also pay the DNR and others to do the studies. These people are professionals and if they deem the Polymet project as permit able then there is no reason to say otherwise. Northern MN also needs the jobs and tax base Polymet will bring. I also believe it will be done in an environmentally friendly manner. Please allow the project to move forward.	SO	NS	X	1	
Rome Jeffrey D. M.D.	I am writing to express my concern about a number of aspects of the Final EIS. The significant potential for degradation of water quality as result of proposed sulfide-ore mining operations in Northeastern Minnesota, both in the near term and, more importantly, in the long term, has very important ramifications for human health. The adverse health impacts of surface and groundwater acidification are a result of, among other things, the likelihood of increased exposure to heavy metals (such as cadmium) and other known carcinogens. It is my opinion that these risks to human health have been dealt with in only a cursory fashion in the FEIS.	HU	S	O	8	SDEIS Theme HU 01
Rome Jeffrey D. M.D.	This risk is underscored by the fact that the validity of the water model itself has been challenged in a credible analysis by GLIFWC. If the water model itself is in dispute, certainly the implications for human health remain uncertain and require further study before sulfide-mining can be permitted.	WAT	NS	X	1	
Rome Jeffrey D. M.D.	Additionally, it is untenable to try to establish a meaningful financial assurance package for risks that occur hundreds of years in the future. Economic cycles, climate changes, and political forces, in addition to inherent volatility in the boom and bust mineral extraction industry, invalidate projections of what it might cost hundreds of years in the future to remediate ecological damage from sulfide ore mining in the in water-rich region of northeastern Minnesota.	FIN	NS	X	1	
Rome Jeffrey D. M.D.	Finally, recent mining disasters (the Mount Polley Mine disaster in British Columbia is a prime example) are a stark reminder of the magnitude and consequences of damages caused by mining accidents. The FEIS provides insufficient reassurance to the citizens of Minnesota that our lands, waters and health can be protected by the professed good intentions of the mining	GT	NS	X	1	

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	industry.					
William Cunningham	I oppose the Polymet mine license. Despite the changes in the draft EIS, I believe that the mine will eventually harm the water quality and environment of northern Minnesota. Perhaps this damage won't occur during the 20-year active life of the mine, but eventually, long after the mining company has left Minnesota, the safeguards will break down and no one will be willing or able to maintain water monitoring and protection. I believe, further, that despite the claims of the company, a significant leakage of contaminated water out of the St. Louis watershed and into the Kawishawi River will occur. This will lead to disastrous pollution of the Boundary Waters Canoe Area. It's bad enough to contaminate Lake Superior and 20 percent of the world's clean, freshwater supply, but it's even worse to pollute the BWCA. I realize that there's vehement support for this project among many residents of northern Minnesota because of the desperate need for local jobs, but I am convinced that only a small number of temporary jobs will be offered to current residents of the Arrowhead. I regard it as folly to sacrifice long-term environmental protection and the potential for sustainable ecotourism-based jobs for short-term gain. In coming decades, clean freshwater will be in far shorter supply and much more essential to our state than copper or nickel, and I urge you to reject this project.	SO	NS	X	1	
Dr. Jill D. Greer	I would like to express my grave concerns over the safety and negative environmental impact of this NorthMet Mining Project. Please consider this message in your weighing of public opinion on the matter. I am not a resident of your state, but the effects of environmental toxins and pollutants do not respect state boundaries, particularly through the riverine and estuary connections across the entire Midwest. Nor do our wildlife confine themselves by our human-created state boundaries. Thus, it is imperative to include the views of all Americans (and Canadians, for that matter) when weighing the consequences of such large destructive undertakings. Thank you for your consideration as you attempt to wisely approach this serious decision. Remember that the proper way to measure effects is to ask what are the harmful effects of NOT allowing the project, and would these effects be more than a simple financial loss to a particular corporation? The continued habitability for the future earth we are leaving to our children's children must be the ultimate yardstick for our decisions today. Too many hasty decisions have already marred that future. Let the tide turn back toward preservation and conservation, for those precious generations to come.	GEN	NS	X	1	
Rebecca Vincent	I urge you to reject Polymet's proposed mine for Northern Minnesota. Polluting and destroying Minnesota's natural treasures is not the way for a sustainable future for the region.	GEN	NS	X	1	
Rebecca Vincent	Minnesota's natural and wild areas are treasures that need to be protected and preserved for the present and future. To pollute and destroy these lands and waters for the short term gain of a mining company is unconscionable.	GEN	NS	X	1	
Rebecca Vincent	Please do what is morally right and protect the land you are commissioned to protect by rejecting PolyMet's proposed sulfide mine.	GEN	NS	X	1	
Katie Jensen, Svetta, Mollie and Erik Palmer	Hello, I personally oppose the mining operations. A few hundred jobs aren't enough to risk some of the only natural places we still have left.	GEN	NS	X	1	
Shelley Robshaw	After a thorough read of the documents provided to the public, I believe that the review of the NorthMet Mining Project and Land Exchange was conducted using mostly data provided by Polymet. PolyMet's proposed sulfide mine would require 500 years of treating polluted water. Nowhere did I see a plan to even escrow funds to cover treatment of pollution that is likely to occur, if not immediately, at some time in the future. There is absolutely no way the state could get Polymet to guarantee coverage of containment and/or clean-up in the likely event of soil and water contamination. All that a business like Polymet would need to do is declare bankruptcy and the taxpayers would be on the hook. This doesn't even take into consideration the permanent damage to our precious environmental resources in the Boundary Waters and Lake Superior, plus nearby	FIN	S	O	8	SDEIS Theme FIN 01

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	wetlands, streams and rivers. The unemployment issues of northern Minnesota deserve a better long solution, and one that benefits a local business, not an international one with no ties or concerns for our community. Our State Department of Natural Resources should be advocating to preserve our environment, not pander to the business community's short term profits.					
Kyle Nelson	It's a crying shame this project has been held back this long from special interests and now prolonging it further once again is pathetic. Yes the Dnr has followed all the rules along with the state and all other entities tied to this project. The EIS has been followed and them some. No better place for it to happen and follow the rules. Bottom line.... Get this thing passed so the company does not have to pay any more than it already has. Kyle Nelson..... A born and raised Northerner whose family established Lutsen Resort in 1885. Pass this project Please!!!	GEN	NS	X	1	
Al Gustaveson & LeeAnn Baker	The DNR also glosses over modeling that shows the proposed plant site would need to be treated for pollutants for at least 500 years. If the DNR were to follow Minnesota state law — Chapter 6132.3200 Closure and Postclosure Maintenance: "the mining area shall be closed so that it ... is maintenance free" — PolyMet would not be permitted. Are you kidding...500 years? Stop this nonsense.	PER	NS	X	1	
Elizabeth Heck	I am strongly opposed to the PolyMet NorthMet copper-nickel sulfide mine project for the following reasons. 1) The PolyMet FEIS has not adequately assessed the potential for water pollution caused by the project which poses serious risks to drinking water, aquatic life and human health.	WAT	NS	X	1	
Elizabeth Heck	2) The FEIS has not sufficiently explored alternatives to minimizing environmental harm.	ALT	NS	X	1	
Elizabeth Heck	3) Potential negative environmental effects to the BWCAW are unacceptable.	GEN	NS	X	1	
Elizabeth Heck	I am also strongly opposed to the Superior National Forest because Land Exchange due to destruction of wetlands, impairment of groundwater and violation water quality standards. Several endangered, threatened and species of concern species would be harmed by the exchange. Finally, I am opposed to any federal Clean Water Act permit for PolyMet for these same reasons.	LAN	S	O	8	SDEIS Theme LAN 01
David Ellis Hollenhorst	make sure the financial assurance after the initial mining is completed is very substantial. Mining companies tend to disappear long before the environmental damage is rectified and cost continue to escalate.	FIN	NS	X	1	
Karl Meller	As I have said before there is a danger of moving too fast on Poly Met. The state seems to back off a health assessment due to possible liability. Another thing that worries me is that the state seems to take some of Poly Met's data at face value. Doing that is like letting the company investigate itself. When some one negotiates with themselves they never lose. If the state guesses wrong on the copper mine and the water is ruined, the relatively few jobs for a rather short period of time would not be worth the damage. While it is true that good paying jobs are needed on the Iron Range these jobs should not be at the cost of enviornmental damage. If the water is damaged that could impact in negative way the tourist industry which has provided jobs for many years. The last thing Minnesota needs is a rush to judgment on Poly Met which could cause long term damage to the state and the region	SO	NS	X	1	
David Witt	I STRONGLY SUPPORT the current PolyMet NorthMet copper-nickel sulfide mine proposal.	GEN	NS	X	1	
David Witt	The PolyMet Final Environmental Impact Statement (FEIS) is adequate under both federal and state standards;	MEPA	NS	X	1	
David Witt	I support the U.S. Forest Service proposal to exchange Superior National Forest land for the PolyMet proposal;	ROD	NS	X	1	
David Witt	I also support issuing all federal permits allowing PolyMet to utilize wetlands that help to preserve water quality.	PER	NS	X	1	

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David Witt	The PolyMet FEIS is adequate under federal and state laws and regulations because: - It evaluates pollution risks to drinking water, fish, wild rice and human health using realistic assumptions about how much polluted seepage will be captured and treated during operations, reclamation, and closure.	WAT	S	O	8	FEIS Ch. 5
David Witt	The PolyMet FEIS is adequate under federal and state laws and regulations because: - It analyzed health risks and impacts on children, workers and communities who rely on fish and wild rice for subsistence, including risks from asbestos-like particles and methylmercury.	HU	S	O	8	FEIS Ch. 5
David Witt	The PolyMet FEIS is adequate under federal and state laws and regulations because: - It evaluated the impacts of polluted seepage north of the mine site on the 100 Mile Swamp and the Rainy River (Boundary Waters area) Basin.	WAT	S	O	8	FEIS Section 6.2.2.3.1
David Witt	The PolyMet FEIS is adequate under federal and state laws and regulations because: It also recognizes that the ground and surface water divide located just north of North Shore's Peter Mitchell mine prevents northerly water flow. In addition, there is no regional groundwater under the proposed PolyMet mine site.	WAT	S	O	8	FEIS Section 4.2.2
David Witt	The PolyMet FEIS is adequate under federal and state laws and regulations because: - It adequately considers alternatives to minimize environmental harm, reduce polluted seepage from unlined permanent waste facilities, mitigate wetlands destruction, and reduce the threat of catastrophic dam failure.	ALT	S	O	8	FEIS Section 3.2.3.3
David Witt	I support the proposed NorthMet Mining Project Land Exchange in the Superior National Forest because: - It is federal policy to allow mining when the project protects wetlands, by using established procedures that replace or exchange other wetlands for those wetlands in the project area that are impacted. - It would not degrade surface and groundwater, violating the Superior National Forest plan and state, federal and tribal water quality standards. - It would not harm endangered, threatened and species of concern, including the northern goshawk, great gray owl, lynx and moose any more than any of the already permitted mining projects on the Mesabi Iron Range. - It is in the public interest to support mining of necessary strategic minerals that contribute to moving forward toward more "green" energy technologies in the long term. It would not impair tribal resources, and would not result in an uncalculated loss of ecological services.	LAN	S	O	8	SDEIS Theme LAN 01
David Witt	I support all federal Clean Water Act permits for PolyMet discharge and wetlands exchange because: - PolyMet discharge of pollutants and utilization of wetlands will not cause impairment or significantly degrade surface and groundwater or violate federal, state and tribal water quality standards.	GEN	NS	X	1	
David Witt	PolyMet discharge of pollutants and wetlands utilization would not significantly impair or have adverse impacts on municipal water supplies, aquatic life, wildlife, human health and welfare, environmental justice and special aquatic sites.	GEN	NS	X	1	
David Witt	The PolyMet proposal does adequately considers alternatives to reduce harm to wetlands and water quality and is the Least Environmentally Damaging Practicable Alternative for a huge mineral deposit that happens to be located where it is not where humans wish it was located. In fact it is located in a 100+ year old mining district with essentially all necessary infrastructure in place.	ROD	S	O	8	SDEIS COOP Comment #3021
David Witt	- The PolyMet proposal quantifies for mitigation of indirect loss of up to 8,264 acres of wetlands, and provides adequate mitigation plans for direct destruction of 913 acres of wetlands within the Lake Superior Basin.	WET	S	O	8	FEIS Section 5.2.3
David Witt	I request the Minnesota Department of Natural Resources accept the PolyMet FEIS as adequate	MEPA	NS	X	1	
David Witt	the U.S. Forest Service support the proposed exchange of Superior National Forest lands for the PolyMet project; and the U.S. Environmental Protection Agency and the U.S. Army Corps of Engineers issue all Section 404 permits that will allow PolyMet discharges and wetlands utilization.	ROD	NS	X	1	
David Witt	I support the land exchange under the Forest Service Rules found at 36 CFR 218; the responsible official for that decision is Superior National Forest Supervisor Brenda Halter. I submitted comments on the PolyMet SDEIS and I support the claim that the objection process can be limited to people who commented prior to the draft land exchange Record of Decision.	ROD	NS	X	1	
David Witt	I request a specific response to my comments.	O	NS	X	1	

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Janice Burns	I am opposed to copper nickel mining. First it is an environmental disaster waiting to happen and second these are jobs that are simply not good long term steady employment. Money needs to be invested in finding truly sustainable jobs on the range.	SO	NS	X	1	
Kay Brandt	Temporary jobs do not justify the environmental impact that will eventually happen as we are humans whom make lots of mistakes in monitoring and doing everyday tasks. I put no faith that this will go fourth with complete and perfect monitoring. The ecosystem is more important and will be here long after us. The jobs are temporary. Not worth the small monetary gains compared to our earth.	SO	NS	X	1	
Gary Anderson	I do not believe copper-nickel mining can be done safely in the water rich environment of northern Minnesota. Until safe mining practices are proven- I urge the DNR to deny mining permits.	PER	NS	X	1	
franww@andrews.edu	Please do everything possible to protect the Great Lakes from mining contamination.	WAT	NS	X	1	
Myrt and Gary Carlson	The PolyMet Final EIS should be rejected as incomplete because it fails to accurately model water seepage from the tailings basin, some of which will flow north towards the Boundary Waters Wilderness, due to alteration of the Laurentian Divide from Nearby taconite mining. THE mine plan does not detail plans to protect the Boundary Waters from centruies of toxic drainage, instead, it assumes the planned clay-lined trench will collect 1005 of groundwater seepage which is patently impossible and it requires only monitoring of groundwater flows leading north to the Boundary Waters. Keep our Boundary Waters and Lake Superior in prestine condition. Once it is harmed there's no turning back.	WAT	NS	X	1	
Amalie A. Duvall	The Federal land exchange of protected Superior National Forests to facilitate PolyMet's destructive and polluting open pit sulfide mine is not in the public interest and must be denied. Even though I don't reside in the state of Minnesota I'm an avid outdoors person and spend many of my vacation hours and dollars in the state and I want to do all I can to protect Lake Superior and Minnesota's Arrowhead. We all bear responsibility for what we will leave behind for the generations ahead.	LAN	NS	X	1	
Amalie A. Duvall	Public scrutiny is essential to implementing NEPA. The comment and objection periods are inadequate and confusing. There is not enough time to review over 3,500 pages of documents in the complicated EIS and environmental review process for the proposed PolyMet project. An extension of the public comment and objection periods is reasonable, warranted and should be granted.	NEPA	NS	X	1	
Gerald Fisher	I want to Push for the Passing of legislation and get this project underway!!!!!!!!!!!!!!!!!!!!!!	GEN	NS	X	1	
Roth Indihar	I support PolyMet, this will be a great business for this area. As person in the mining industry, PolyMet will run in a sound manner. With the passion of the workforce in northern Minnesota the operation will be run to the standards set the State. In terns of being a greenfield operation the EIS has lead to every stone being turned over. Thank you to the DNR for a good road map. The public has had a HUGE voice in the operational process of the operation. AND to the people in the cities, 350 JOBS is huge for this area! The environment will be protected by these 350 people.	SO	NS	X	1	
Carly Hawkinson	Due to its negative consequences on both the environment and on the citizens of Minnesota, sulfide mining (PolyMet project) is indubitably unethical and should not be pursued further. Sulfide mining is unethical because it jeopardizes and damages the overall well-being of the greater biotic community. As Aldo Leopold (highly recognized conservationist and author) states, "A thing is right when it tends to preserve the integrity, stability, and beauty of the biotic community. It is wrong when it tends otherwise". Sulfide mining clearly does not adhere to stability, integrity, or beauty.	GEN	NS	X	1	
Carly Hawkinson	As I've listened to individuals speak up on both sides of this issue, I noticed a few things. The large majority of those in favor of this PolyMet project are not giving any substantial proof or evidence to discount items raised by those against it. I have not heard any quality, educated honest truth to prove the opposing side wrong. Those in favor of this project are driven by money. It doesn't matter what kind of mining it would be, they just want more jobs. There are no jobs being taken away from anyone – no one is being laid off their job here. This project would just be creating brand new jobs – and as PolyMet	SO	NS	X	1	

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	<p>has stated it would create ~300 jobs (as a guess). Those guesstimated ~300 jobs would not necessarily be given to people from the Iron Range or Minnesota. PolyMet is an international business, so it is very possible that people they hire will not be from Minnesota. Another point that many people have already stated is that the project would be for ~20 years (also a guesstimate). Only 20 years. That certainly goes by very fast. Twenty years ago it was 1994 – that wasn't that long ago. Another hap-hazard statement was made in the late 1800's. A politician was quoted in saying that there was enough old-growth timber across the U.S. that it would take a century just to make a dent in it. In less than 20 years, the old-growth timber was cut down. That was devastating and we are now repairing it by replanting as we have learned about conservation practices. Sulfide mining is not repairable. It is traumatic and its' damages/death last forever. PolyMet says it will take 500 years to clean up. I can't seem to comprehend why "we" are even discussing this project with them, with their incomprehensible and irrational data. Again, PolyMet is making a guesstimate...500 years to clean up. I would think that with that number, PolyMet either... 1)has no idea how long it would take to clean up, but they know this is highly toxic so it certainly will take a long time...2)they really know it would never be able to be cleaned up but instead of saying "Never or Forever", they just threw out a big number instead...3)they don't care what number they say because they aren't going to clean it up and why would they, it's not even their country to care about. And what company would even last 500 years, let alone follow through with their clean-up in a foreign country in which they only got 20 years of product out of? It's very rare that you hear of companies that are 100 years old. Researching this PolyMet company shows that they are not trustworthy, unethical, and have no concern for the land, water, and people (and workers) who live, work, and recreate in the area they are after. Those in favor of this sulfide mine are seeing dollar signs or at least hope to. But, it doesn't matter what kind of mining it is, they just want more work/more money. There is a waxing and waning with many professions and skills, and if the people who are living on the Iron Range are not willing to move to a different location to find it (which is what many people have to do in order to find work), then a new type of profession/skill needs to be created in that area – however, jobs such as; drug dealers, prostitution, cock-fighting, the mafia, and sulfide mining are not ethical and all of them damage the overall well-being of the greater biotic community, environmentally and socially. The only reasoning behind any support for this mine comes from people wanting jobs in one area of the state that sees waxing and waning from any type of mining operation. The destruction that this type of mining would be irreversible and any local people who might get one of the few jobs created by this mine would likely end up with severe health problems and live in an undesirable environment. The new wave of the future rests on renewable and sustainable. Why not bring in jobs to the Iron Range area that would be on the leading edge of those green industries?</p>					
Carly Hawkinson	<p>The laundry list of negative factors from sulfide mining is outstanding. Another thing that I've noticed listening to both sides of this issue is the wide diversity of people who oppose it. I'm happy to see that it's not just the typical environmentally-friendly tree-huggers standing up for the health and well-being of the planet and all of us who live upon it. The soil is planted for all of us to eat, the air moves for all of us to breathe, and the water cycles for all of us to drink. So, it's nice to see that others also "get it". I noticed farmers, doctors, lawyers, Pollution Control Agency employees, teachers, loggers, recreationists, old people, young people...all oppose sulfide mining and they voiced not just their personal concern but also physical and scientific proof of its disastrous, negative effects. But, regardless of any proof, it just takes common sense to realize what irreparable damages and hazards will occur if it were to be done. Other areas of the country and world have not used common sense, pushed away their cares, and sought after the money. And now, we as a global community are suffering from it. Let's not follow in those mistaken footsteps.</p>	GEN	NS	X	1	
Carly Hawkinson	<p>Whether it's been said by others or not, I'd also like to add that the St. Louis River Watershed is one of the largest watersheds in Minnesota. The St. Louis River is the largest U.S. river flowing into Lake Superior (the largest freshwater lake in the world). Another large watershed that would be affected by this harmful activity flows water into the Boundary Waters Canoe Area Wilderness and into Canada and Hudson Bay. The health of our entire ¼ of the state, as well as our neighboring country and global waters, is in the hands of some politicians and greedy companies. The sulfide mining process would bring about demise to the health of our own bodies and those not yet born. The PolyMet workers and their families, others living</p>	WAT	NS	X	1	

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	in the area of the mine, those people living along the major rivers and streams in the watershed, the plants, wildlife, fish, birds, soil, air, water, etc. – the health and life of all these living organisms would be affected. But remember, life is circular. What is affected in one area eventually affects all others. Groundwater moves, food is transported, migration occurs, travelers travel, the wind is blown.					
Carly Hawkinson	Minnesotans also have a desired sense of place to their state parks and recreation areas, as well as fishing and hunting locations. Can you imagine the loss of all the polluted tributary rivers, streams and lakes across this expansive watershed area? Jay Cooke State Park was set aside for the people of Minnesota and its visitors to protect its unique features of its diverse plant and wildlife species that live along the impressive and world-known geologic features of the St. Louis River. The negative impacts of sulfide mining would turn this Minnesota gem park into an undesired wasteland.	LU	NS	X	1	
Carly Hawkinson	Think of the harm and lasting negative, irreversible impacts that one company could do to so many lives. Many will suffer, many will die, many will lose their jobs across a wide variety of job fields (including state jobs), many will lose their way of life. The high quality of life that Minnesota has with regard to the bountiful and HEALTHY natural environment will be lost if a senseless activity like sulfide mining is allowed. Please, do not permit this type of mining. This type of mining activity does not bode well for the citizens of Minnesota, the visitors to our state, or the flora, fauna, soil, and water resources that we place as highly valuable to our livelihood and well-being. There is real fear sweeping across this state – please, DO NOT allow sulfide copper mining into this beautiful state we call Minnesota (Mni Sota = clear waters that reflect the clouds).	SO	NS	X	1	
Lee Kaplan	Now, you may think this is a perfectly good plan. Look at all the jobs that will be created. Hundreds of them! What could possibly go wrong? The risks inherent in the PolyMet plan are obvious; the potential benefits do not justify taking these risks. It's not even a close call.	SO	NS	X	1	
Arly Piri	I am against any more degradation of Minnesota's natural resources. Too much forest land, habitat, and water has already been ruined with mining, farming and ongoing trashing of our land. We share our land with other creatures and birds, not just humans. As with all proposed manufacturing, environmental impacts are never made clear until after the work is in progress or many years later. Let us not repeat the failures of the past to again imperil our land.	GEN	NS	X	1	
Paula Allmaras	Destroying the pristine waters of Lake Superior and leaving behind 500 years of toxic waste makes this a simple answer. Say NO NOI NO to Polymet mining in MN.	WAT	NS	X	1	
Jessica Ostrov	I work at YMCA Camp du Nord, and I am quite concerned about the proposed mines near the BWCAW. I urge you to please consider this global treasure as something future generations need. It would be shameful to disturb and destroy this space, one of few remaining natural areas on the globe.	WILD	NS	X	1	

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Wayne Madson	<p>While the proposed mining by PolyMet in the Great North Woods of Minnesota will hopefully not affect me in my lifetime, I am amazed that we as responsible adults are not thinking about our children, grandchildren and great grandchildren. I am a small voice, but the person that owns this voice has experienced Northern Minnesota with summer vacations, fishing trips, seminars and our yearly trip into the Boundary Waters Canoe Area (BWCA). When my son turned 13 we invented the "Guy's Trip"; 10-days into the BWCA. The last week of May each year we went on our adventure with a backpack and canoe. We did this until he graduated from college. During these trips I watched him mature into the man he is today, gaining confidence, self-reliance and a understanding of what we have that is unique to MN. He now looks forward to the day he can bring his son on the annual BWCA "Guys Trip". I am amazed the very people we put into office would jeopardize this great resource. The proposed Sulfide Mining will benefit PolyMet and its investors, it will provide metals that can be used for production of products and give a temporary influx of employment. It will also give MN a 500-year commitment for containment and clean-up of their mining. It will affect the groundwater, it will affect the lakes, it will affect the rivers and lastly it will affect the Father or Mother that is looking to bring their Son or Daughter on a "Guy's Trip" that will not only create fond memories, but will develop self-confidence, self-reliance and the very attributes we as Minnesotans are known for throughout the USA. MN is a great State for a reason, while we are heavily taxed, we shoulder this responsibility with a sense of pride knowing our dollars are going to the betterment of our citizens. It is a shame we would jeopardize the efficient use of our resources for a few. Tourism in Northern Minnesota could, perhaps will be changed forever. Ask Canada if we could recover from an "accident" involving the storage of the waste product, will our water stay the same crystal clear, will we not damage out Great North Woods beyond repair. Do not allow PolyMet to shift the burden of responsibility for the environmental impact to the citizens of MN. Strip our resources and leave. Please read the below clipping facts and keep them in mind when you are in the decision making process.</p>	GEN	NS	X	1	
Cat Thompson	<p>Hello. I am writing to express my very deep concern over Minnesota's continued push for mining in the water-rich regions of the state. In case you missed it, Brazil just had an iron ore dam collapse, killing an entire river, displacing thousands of people and devastating a huge region of the country. Their government is now suing the mining companies for \$5B http://www.theguardian.com/world/2015/nov/28/brazil-to-sue-mining-companies-bhp-and-vale-for-5bn-over-dam-disaster We all know that mining companies leave their mess behind and using shady legal tactics, skip town on their clean up responsibilities. Moving ahead with the PolyMet mine will guarantee human life will no longer be able to survive in our state at some point. From the MN Tourism Coalition website, the following numbers should explain why saying NO to dirty mines is a much smarter idea than turning over our pristine wilderness. \$32 million a day?? Mining cannot even come close to that. This mine would, at the most provide between 70-140 new jobs. Tourism can put hundreds of people to work. Investing in Tourism is Smart ? Tourism in the state of Minnesota is an \$11.9 billion industry – generating \$32 million a day. ? Tourism supports almost 240,000 leisure and hospitality jobs providing \$4.1 billion in wages. ? Tourism generates nearly \$769 million in state sales tax revenues, which is 17 percent of Minnesota's sales tax revenues. ? Travel and tourism creates jobs and generates sales in virtually every county of Minnesota ? Travel and tourism has a positive impact, supporting a wide variety of Main Street businesses across the state. Tourism Spending Return on Investment ? Every \$1 invested in state tourism marketing returns an estimated: \$8 in state and local taxes, \$22 in income and \$84 in spending by travelers. ? Explore Minnesota Tourism leverages state funding by generating private sector support through cash and in-kind matching funds. ? There are few ways government generates revenue and jobs – tourism does both. Tourism is Fueled by Promotion ? Minnesota's investment in tourism marketing has fallen to almost 1990 levels. ? Our funding level ranks 30th in the country. ? Minnesota is being outspent in tourism marketing by our competitors. ? Regional competitors like Michigan, Wisconsin, South Dakota, Illinois and Montana outspend us in tourism marketing. I urge you to consider that selling out the land to international corporations will cause the economic collapse of Northern MN. Please say no. Or, if you're insistent that you will sell out the state, then I think demanding a \$5B escrow fund for future spills (which we know there will be) is reasonable.</p>	GEN	NS	X	1	

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Mark C Brandenburg	Please do what you can to stop the Polymet mine from proceeding. This kind of risk to a treasure like the Boundary Waters is not worth undertaking, and the history of this kind of mining is not pretty. There are other areas to mine that aren't near a place like the Boundary Waters, please do what you can to stop this, thank you!!	GEN	NS	X	1	
nancy conger	Please do not approve a sulfide mine. As you know, EVERY example of these mines has leaked and poisoned its surroundings. As you also know, companies that promise "forever" tending of the toxic waste can go out of business or declare bankruptcy and leave Minnesota with a problem forever, at our expense. There is no way this is good for Minnesota --oh yeah, a handful of jobs, for a handful of years. In exchange for forever-corruption of our age-old and irreplaceable natural resources. Just because something is proposed doesn't mean we are obligated to say yes. This is a very bad deal.	GEN	NS	X	1	
Janell Oelrich-Schreiber	Having grown up in Hoyt Lakes and its surrounding forests, I have deep concerns about the long-reaching, and long-lasting effects of Polymet's proposed operations in regards to wildlife populations (particularly lynx, gray wolf, moose, and others), and am also concerned about air and water quality. I am aware too, of the lack of employment and growth on the Iron range, and do have grave concerns about this- however, in my view, without the healthy land and ecosystems seen in the area, all else becomes a moot point. I am not convinced that a large mining operation, nor its investors, have the best interests of the land and its inhabitants as a top priority. Money becomes the bottom line- but the life of and on the land itself is not something that can be readily renewed or brought back once damage is done. Put simply, I am not convinced Polymet is to be trusted, and I am also unconvinced that their operations will never cause lasting, unmitigated harm.	GEN	NS	X	1	
David Potter	My wife and I have lived and used National Forest land and especially undeveloped wild and wilderness areas for many decades. We are very much unhappy with the constatnt nibbling away of national forest lands or national forest values for private developments [and despoiling.] And, sadly, all too often it is with the approval of federal agencies charged with protecting and preserving the lands and waters. I suspect the intense lobby and other political pressures brought by big money corporations cause this. Please stand strong against the PolyMet and other mine schemes. Please think of clean forest lands for generations to come. Use your authorities to do the right thing. We 100% oppose the PolyMet NorthMet copper-nickel sulfide mine proposal. This type of mine, like many others, is highly likely - over time - to produce and eventually abandon significant pollution to air and water and aesthetic values. All this damage so a corporation can make short term profits. This is wrong. We read that the PolyMet Final Environmental Impact Statement is poorly done. I therefore support objections and the needs for vast improvements in this document. Here in my home Klamath County, the local federal Congressman is proposing the give away of 200,000 acres of national forest to two counties. The move to give away federal land is happening nearly everywhere. We again strongly oppose any give away or trading off of federal forest land to corporations. Helping them pollute by making land trades is wrong, very wrong! The public's land is not to be traded off! Please pull this whole process back for more review. And, we feel you should not permit this mine as planned at all. Just look at Colorado and so many more sites in our national forests where old mines continue to bleed pollution. We can not afford to clean up after past mine permittees. Please do not allow this one.	GEN	NS	X	1	
Thor Sorenson	A recent article said that close to 50% of young people have given up on the American Dream. Polymet will provide 300 plus jobs for our children to keep that dream alive. This company has done everything asked and more; to help prevent harm to the environment. This is a blessing for Northern Mn. Somebody somewhere will mine these precious metals that are needed in our hi-tech culture. They have my support !!!	O	NS	X	1	
Theresa Hentges	I am writing to day to oppose any mining. It has been proven over and over that mining has serious enviromental results. We have way too many lakes and rivers to try to protect from run off from the mines let alone the chemicals seeping into our water aquafillers. We need to be worried about causing shifts in our earth's cores digging mines and causing man made earth quakes. Who will pay for all damages caused by contamination of our water supply etc? What will happen to our wildlife that live in that area? We need to protect our enviroment with forests, wildlife, water, and open fields to keep our eco system in balance not take more away. Northern MN is beautiful with lots of wilderness, forests, and lakes please fight to protect them and not destroy them for mining. We need to be more about protecting what is left as this has a affect on climate changes and everything else. Please no mining.	GEN	NS	X	1	

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Sara Leow	Please approve the final EIS for the Polymet project. The in-depth review and analyses of the potential impacts of the project more than adequately demonstrate of the new mine as well as reuse of existing facilities with related infrastructure improvements can be constructed and operated in an environmentally responsible manner.	O	NS	X	1	
Gary Johnson	I believe the justification for accepting unknown environmental problems and after effects, in order to offer employment to 300 possible employees is not acceptable. It would be far cheaper to find or create other employment or pay other social costs to support these families through some other programs than to saddle future Minnesotans with high risk environmental problems.	GEN	NS	X	1	
Tara McNaughton	Please don't approve any sulfide mines in Minnesota. I've reviewed the proposal for containment, I don't think it is sufficient. The future health of our state, people, wildlife and environment in general is at stake. Why risk all this for a small, short term economic boost. Don't approve any mine which has even the remotest possibility of poisoning our lakes, rivers or ground water. Fresh water is such a rare resource, don't mess with it! Thank you for not sacrificing the future good of our state for a short term gain for a few.	GEN	NS	X	1	
Suzanne and John Davies	Writing to oppose the construction of Polymet in our Northern Minnesota area. There is no sulfide mining of this magnitude that has a track record that Minnesota would want to emulate. Our northern wilderness, Lake Superior Basin deserves better than allowing this foreign owned company to possibly pollute irreversibly for 320 jobs. Mr Cherry's assurances are hopeful scenarios and wishful thinking of sulfide mining history. It is toxic mining and in no way resembles our taconite industry. We have lived in the northland for 45 years and we can do better.	GEN	NS	X	1	
Stacey Schaefer	I cannot wait to go to the Boundary Waters with my family. Its natural wildness is a treasure we must preserve. Therefore, I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal. Too many accidents have happened for us to ignore the impact on the wetlands and water quality of this mine. Please do not let it happen. We must preserve our land, our water, our air and value them more than the short term benefit of the output from a destructive mine.	GEN	NS	X	1	
David Siebert	This is Ridiculous! The research has been done! Polymet has jumped through all of your hoops! They have proven the ability to mine safely. Stop stalling! Stop DELAYING and let Polymet mine!	O	NS	X	1	
Dietl Paul D HRD	I am writing in opposition to the NorthMet Mining Project and Land Exchange proposal. I have been going to the BWCA for the past 36 years and can tell you there is no other place like it on earth. The BWCA is a fragile eco system, one so pristine you can drink the water right out of the lakes. Please reject the mining project and protect this unique wilderness area.	GEN	NS	X	1	
Kari Miller	I'm concerned about the impact that PolyMet's proposed sulfide mine would have on Minnesota's water. I think PolyMet would do more harm than good. Pollution from PolyMet threatens our clean water legacy and would pollute water for hundreds of years after the mine has closed. I do not support this mine.	GEN	NS	X	1	
Jerome Ekre	I support the mining project in North East Minnesota. Reclaim old closed mine and use existing structure for better use. Both are great use of our resources in the United States and will provide jobs for Minnesota workers.	O	NS	X	1	
Steve Porter	7 whole days - big whoop!	O	NS	X	1	
Jeffrey Ballou	Please reject sulfide mining as it has not been shown to be safe and previous mining operations prove this.	GEN	NS	X	1	
Rebecca Wiinanen	Concern for jobs in the area of the proposed mines is real as it is in many places, but the drastic devastation of the ecosystem cannot be justified for a few temporary jobs. I am saddened that we Minnesotans have thus far buckled to the unrealistic promises of unethical conglomerates. I write this letter because I optimistically believe Minnesotans are capable of learning from the mining messes around the world and I give my support to my US and MN government to reject this mine. Please do not allow Polymer and others to mess up our waters then run. Please use our tax dollars to enable sustainable jobs and a diversified economy. Support small business lenders, the installation of broadband, and transition away from boom-bust industries such as hard-rock mining.	GEN	NS	X	1	
Barbara	Please don't be short-sighted. Don't let this happen. Don't assume everything will go perfectly. It won't. It's your job to	GEN	NS	X	1	

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Schlaefer	protect our precious waters, natural resources and recreational wilderness.					
Martin Dietl	I am writing in opposition to the Polymet mining proposal in Northern Minnesota! No gems are worth putting this unique habitat at risk! 500 years of cleanup is unacceptable! Let it be!	GEN	NS	X	1	
Sandra Fox	A very bad idea..I hope the State can find a way to stop this crazy project. The jobs argument is based on projections and we all know most of the tasks will eventually be done by robots or by software. How many real actual jobs do they guarantee for 20 years? I know the people in the area want jobs but this project is a false hope for the future. Sometimes people just have to move on when their jobs move elsewhere or cease to exist. This is life..we've all been there. Ask the exfarmers. I especially have no faith that the boundary waters won't be polluted or affected by this project. Where will this company be in 50 years when the leakage begins? Where were will you and I be when our kids remember what we did for some jobs for a few. This is a crazy project..unnecessary...we're better than this in MN.	GEN	NS	X	1	
Michael	I strongly feel that this project would do more harm to the environment that would not be repairable. It is not worth the economic benefit	GEN	NS	X	1	
Paul Garding	This mine has got to be the most insane proposal I have heard of in a long time. There is no way to do this safely especially in such a pristine area. This is nothing but a big con job where most of the money will eventually end up out of state if not out of the country. They cannot possibly put up enough money for keeping this safe for the next few hundred years. The gain to the local economy will be a net lost once the loss of tourism is factored in. Please use my tax dollars wisely for the benefit of all Minnesotans and fight this. We are not that desperate for these minerals that we need to put this area at risk	GEN	NS	X	1	
Donna Mienk	The area is not rich in minerals and it is one of the most pristine areas in the whole state. Reasons stated below why this is such a bad idea. Why would anyone even consider this, is more the question. Greed, yes greed. Do they really want to destroy wild rice beds? Do they want to destroy an area where many people world wide come to canoe and enjoy the beauty of the area? In one bio-chemical process, sulfates become sulfides which attach to wild rice roots, destroying entire wild rice beds in the most polluted areas, or greatly reducing plant yield in other stretches of the St. Louis River. Both fish and wild rice impacts affect the Fond du Lac, Grand Portage, and Bois Forte Bands of the Lake Superior Chippewa nation's treaty rights, as well as affecting fishermen, resort owners, and local residents. As sulfates, mercury and other pollutants work their way downstream, they impact the health and economy of both the Fond du Lac Tribal nation and the citizens of Cloquet, Duluth, MN and Superior WI. Of further concern are the loss of wetlands, destruction of wildlife corridors, and loss of public lands within Superior National Forest to a Canadian mining company whose major underwriter, Glencore, is taking a huge market hit, with shares falling approximately 60 percent over the course of the year. How will a company under financial duress manage to treat water pollution at the proposed plant site for at least the next 500 years, as projected in the Supplemental Draft Environmental Impact Statement? Thank you and I hope someone sees the light before it is too late.	GEN	NS	X	1	
Cathy A. White	There is NO WAY you can absolutely guarantee that there would be no environmental impact. There are no protocols in place that could replace any damage done to the environment. . If this wasn't a big money thing for a few you wouldn't even be wanting to do it.	GEN	NS	X	1	
r k	This is not common sense. The EIS must prove without a doubt that the operation will be safe and leave no hazardous waste. That doesn't appear possible with current methods. It could endanger pristine water sheds that are connected with streams and rivers of northern Minnesota, affecting human water supplies as well as the health of hundreds or thousands of acres of the environment. These ventures always become depleted, leaving devastation.	GEN	NS	X	1	
Charles Lininger	I am deeply troubled that undue financial interests are willing to sacrifice our nearly pristine wilderness for a temporary goal of enriching a few industrialists. I don't have time to research and comment on the details of the application, as a citizen however, I am familiar with the idea that a certain amount of accidental damage occurs with every big project. The area in which this is proposed will not endure "accidental damage" it will be spoild forever. Do not allow this folly to continue.	GEN	NS	X	1	

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Carl Johnson	Polymet Canada with an office in MN has no guaranteed source of funding on-going clean up expenses. Their "sugar Daddy" once having a potential of funds for a questionable guarantee to begin with, is fiscally broke! That is Swiss-based Glencore. Glencore is in trouble on a world wide basis. They have "a colossal net debt pile stood at 30 billion dollars as of June" and "currently busy derisking their business". Now, "Chinese copper producers to reduce production by 350,000 ton in 2016". The time has come to govern! Time to ban any/all sulfide mining in Minnesota is now!!	FIN	NS	X	1	
Keith Lerick	This process was far too long and dragged out. With todays computers and modern technology, this process should have never lasted 12 years. I am appalled at your delay. I do believe the EIS is more than adequate and the mining community is far more diligent than many give them credit. With that said, let us try to expedite the next steps in this process and get this operation going.	O	NS	X	1	
Lisa Mccolman	I feel that the potential environmental risks associated with NorthMet far outweigh the potential economic benefits. This project should NOT be allowed to move forward.	GEN	NS	X	1	
Lanny Olson	Minneapolis I am totally opposed to the mine because of its threat to the environment in northern Minnesota	GEN	NS	X	1	
Tom McMullen	It is my understanding there have been numerous studies completed for this project & the water treatment systems proposed are highly engineered. It is time to move forward with this project. I understand many of the concerns that have been stated regarding pollution but nothing is without some risk. The old mine sites that people are pointing to as examples were not engineered to today's standards. Let's create some jobs in this state, we need them.	O	NS	X	1	
Tom Steigauf	I strongly oppose the PolyMet mine project. This is not easy for me to say because metals are my life. However it is the right position to take. We have a cabin in Ely and see no upside to this deal. The land exchange is a horrible deal for the State. The mine plans to use old dam technology to contain waste water and slurry. There have been three large scale mining dam failures in the world within the last 18 months. The potential for pollution far exceeds the small, short-term economic gain the area might enjoy; especially given the record low prices of precious metals at this time. Please see the attached Heraeus precious metal price update. Mining companies have not been a friend to the State of Minnesota with Essar Steel being the most recent example. A small group of investors will make money if PolyMet opens and a small group of residents will be employed for perhaps 5 to 8 years. That will be the extent of the mine's economic impact. Then the investors and mining company will leave and we will have to deal with the consequences of the pollution. What will the people employed by the mine do then? The State may employ them to help clean up the pollution. Minnesota is on the map because of our natural resources. They are the most important thing we have. Our lakes and woods bring people to Minnesota from all over the world. Why would we jeopardize these resources for a possible, small, short-term gain? I realize many people in the Iron Range area support the mine. We see their signs on the way to the cabin but you have to consider the long-term, big picture. A polluted BWCA is worth nothing. No one is going to visit Minnesota to see what was once was a natural wonder. Please consider the future generations. We don't own the natural resources; we lease them from our children and grandchildren. Creating the State and National Parks weren't popular decisions at the time they were made. Today, the people responsible for their creation are revered for their forward thinking. It is time for Minnesota to say enough is enough with mining. Thank you for your time and consideration.	GEN	NS	X	1	
David Franseen	The Final EIS appears to address those elements that may significantly affect the quality of the human environment. Further, it appears that the consideration of state and federal environmental standards shows that this project can move forward with a high likelihood of compliance.	MEPA	NS	X	1	
David Franseen	I hope that the MDNR has the capacity to modify the 'passive voice constructions' in this FEIS (for instance the use of 'could' in the FEIS response to MDO#7) to an active voice in the subsequent permitting process, and to use the financial assurance section to require funding of monitoring where noted in the MDO as a future possibility as a consideration of assurance. Not defining who monitors, or how often results in failure to fund monitoring to assure that the potential compliance to state law becomes a certainty.	EDIT	NS	X	1	

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David Franseen	use the financial assurance section to require funding of monitoring where noted in the MDO as a future possibility as a consideration of assurance. Not defining who monitors, or how often results in failure to fund monitoring to assure that the potential compliance to state law becomes a certainty.	FIN	NS	X	1	
David Franseen	Notwithstanding these future permitting concerns, I support the issuance of a DA permit by the USACE, the land Exchange ROD, and the continuation of the MDNR's considerations of the financial assurances; as the FEIS clearly meets the requirements of Minnesota Rules.	PER	NS	X	1	
Rask Shelley	I strongly encourage the State of MN grant to Polymet a permit to begin mining. I also strongly believe that they have meet all the necessary criteria of the EPA and are in a good position financially. Not sure as to why the State of Minnesota keeps moving this process out on them, but they do and each time Polymet completes what the State asks for and meets the requirements. PLEASE MOVE THIS PROJECT ON, THE IRON RANGE NEEDS THE WORK!!!! And the State of Minnesota would benefit from the money generated from this project.	O	NS	X	1	
Gary Kluender	While most engineers,lawyers, politicians are used to the jargon used in an EIS most of us public people aren't. Why not simply say if it is good or bad for the Enviroment? From what I Have read about the results of this type of mining ,while it reaps fair results, it also RUINS the surrounding environment for decades. Therefore, I cannot accept the idea to let any type of mining like this to go forward. I'm a hunter and the area they proposed to use will no longer be good for any type of outdoor recreation or anything else, if this mining procedure goes thru as proposed.	GEN	NS	X	1	
Colleen Meyer	I am the child of a miner from Mid Minnesota. I grew up with a father who had a good job and was able to take care of his family. While I directly benefited from that, I do not believe that jobs at any price is worth the damage to our northern Minnesota landscape and potentially the Boundary Waters area that stand as a beacon of natural wilderness. This area is priceless and just like a one of a kind painting, or a baby, or anything else that is not replaceable, you do not take chances with for short term gain. Also note that this gain is for a small number of people over a short period of time with the potential damage having no time line but eternity. This is not an acceptable plan. Please stop this nonsense.	GEN	NS	X	1	
Valerie Ouellette	I am in total support for permitting and mining for the Polymet mine.	O	NS	X	1	
Brenda Doup	There is "no" amount of job creation or money worth jeopardizing human health and our fresh water resources. We know the affects please put a stop to this. As a mother who has watched their child go through chemo treatment for leukemia that is expected to be from a benzine spill. STOP the debate once and for all. Polymet is going to keep throwing money at this until self centered, greedy individuals make it happen.	GEN	NS	X	1	
Derek Madsen	It's simple to me. This mine has the potential to damage the environment around it. The BWCAW is within that environment. The BWCAW is the most visited wilderness area in our country. Why take the chance? For some temporary jobs in a failing industry that add no diversity to the economy in that region? How would I explain to my 7 year old who has visited the BWCA with me and his grandfather twice that people allowed it to be damaged? There is no answer to any of these questions. This mine going through would be another example of leaders not being willing to make the tough decisions, not willing to choose the higher path. Despicable.	GEN	NS	X	1	
jim or bev	What is wrong with you people 10+years of delays and moving targets, millions of dollars spent and now another delay, permits should be given and then if the company can live with them they can mine if not they can't. The entire northeastern part of the state needs this project to survive and you people keep listening only to the metro area people that view the area as there playground, get your act together	O	NS	X	1	
Jerry Pederson	I support the approval of the PolyMet project.	GEN	NS	X	1	
Joseph Loisel	I am very pro mining here in Northern Minnesota and in favor of the Poly Met mine. It has been a long time in the permitting process and with modern technology it can be an on going process to make sure the mining industry complies with MPCA and EPA regulations.	PD	NS	X	1	

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Joseph Loisel	It will be much more environmentally sound than the foreign companies that are producing similar products with little or no concern of sound environmental practices.	PER	NS	X	1	
Joseph Loisel	The people and tourists living & visiting here are the cause of 50% of the air and water pollution----no controls there. At least industry--with about an estimated 11-12% cause of pollution can be controlled and improved.	AIR	NS	X	1	
Chris Bohler	As a business owner in Minnesota I have taken time to review the environmental reviews and impact statements for PolyMet mining project. It looks like it will be safe to proceed. I would vote to go ahead with the project.	GEN	NS	X	1	
Chris Bohler	The iron range mining is slowing down and with so many miners unemployed it would certainly help the area.	SO	NS	X	1	
Chris Bohler	It would also be a fine example of public private partnership to see a sensible use of our State's mineral resources while still protecting our lakes, forestry, and wildlife resources.	GEN	NS	X	1	
James Kayfes	The Iron Range community deserves this mine and the jobs that go with it. We have been mining for years up there, we know what we are doing and most certainly DO NOT want to harm the environment. I was born and raised on the Iron Range, have you been up there lately, their communities need the work.	SO	NS	X	1	
Karen Holden	We must protect our environment, including our large fresh water reserves, from pollution from any kind of mining in the future. It's bad enough that the Iron Range is pock-marked with huge holes left from taconite and iron ore processing; we don't need to compound the problem further. Please do NOT allow any other kind of mining within the boundaries of this states.	GEN	NS	X	1	
Jim Pounds	The Poly Met mine is bad for MN on so many levels.	GEN	NS	X	1	
Jim Pounds	Jobs would be lovely but they can no longer come at the expense of reduced habitat and ground water contamination.	SO	NS	X	1	
Jamie Hendrickson	How can we trust that there will NEVER be a containment issue? One accident spells disaster for a wide area around the proposed mining site. I don't think the risk is worth the reward.	PD	NS	X	1	
Ray Desrocher	I believe Polymert should be given the go ahead already.	GEN	NS	X	1	
Carmen Elisa Bonilla Jones	I am writing to urge you to withdraw your proposal to allow PolyMet NorthMet copper-nickel mine. It would result in the industrialization of now-pristine backcountry. It would damage habitat for dozens of wildlife species including moose, lynx, gray owls and goshawks. And it'd destroy the rivers which are the life blood of all wildlife and humans with its pollution.	GEN	NS	X	1	
Carmen Elisa Bonilla Jones	Our public lands should not be used for corporate benefit and greed. I, as a US taxpayer, have allowed my taxes to be used for the purchase and maintenance of National Parks and Public lands. I have not agreed that the lands could be grazed by cattle, logged, mined or fracked. It is imperative that the government (local, county, state or federal) stand up for the rights of its people and future generations. All mining on public lands must be stopped. These lands are considered a place to relax and get away from the noise, pollution and stress of everyday life. A place to walk and contemplate life's miracles as well as a place to see all the natural beauty and wildlife placed on this planet by our Creator. No one in government has the right to sell off what the American people have bought without first obtaining our permission. I VOTE NO! It is time that all our national parks and public lands are protected from the greed of big corporations and corrupt politicians. Again, the American taxpayer paid for the parks and their up keep. The government does not have the right to lease, sell or exchange any of the land without the peoples consent.	NEPA	NS	X	1	
Hannah Anderson	This mine is a terrible idea. The air pollution is stated as not having a "visual impact". Well that's great, too bad Sulfer dioxide is a "major air pollutant and has significant impacts upon human health," according to the EPA; it also causes acid rain. Regarding nitrous oxide air pollution, even the EPA has several citations on the detriments and how to REDUCE Pollution. This mining project INCREASES this pollution. If this is not enough along with the greenhouse gasses that are also going to be released in the atmosphere, there are several other areas of pollution.	AIR	NS	X	1	

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Hannah Anderson	The pristine water that is going to be used is irreplaceable. It will cost the state of Minnesota innumerable amounts of money to to clean and replace.	WAT	NS	X	1	
Hannah Anderson	According to the projects own disclosure. They are going solve problems of "permanent damage." I could go on, but you need to read the disclosures carefully and thoroughly. It is your job to protect the land for Minnesotans. You need to do everything in your power to do so.	GEN	NS	X	1	
Victoria Thor	Exchanging our waters, environment and wildlife for temporary jobs is is irresponsible. The environmental impact of mining is forever.	SO	NS	X	1	
Victoria Thor	One of our favorite destinations is Jay Cooke State Park. This mining project jeopardizes the St. Louis River which runs through the heart of this beautiful state park.	LU	NS	X	1	
Victoria Thor	There is no such thing as environmentally friendly mining. We need to stop looking at our natural world as a "resource."	PER	NS	X	1	
Maurice Spangler	I think it's crazy to risk this unique area that has such clean waters, as well as risk the St. Louis River, for just a few years of mineral mining that carries with it the significant and likely risk of pollution for decades or even centuries. It's just not worth it for a few jobs. Northeastern Minnesota needs to wean itself off mineral extraction and onto other economies that won't damage their beautiful environment. The State needs to encourage and enable new economies there.	SO	NS	X	1	
rayoungsmn@aol.com	The most valuable resource in the world is clean water. DO NOT allow this mining venture to go through because they mine can just walk away and we will be stuck for generations with clean up.	WAT	NS	X	1	
rayoungsmn@aol.com	Who is cleaning that up? Our tax dollars and not the original mining company.	FIN	NS	X	1	
rayoungsmn@aol.com	I am aware of the need for jobs. A great marketing strategist should be able to find the strengths of the area and help create new jobs that do not pollute the environment for future generations.	SO	NS	X	1	
Leslie Limberg	Why must we continue to put our water at risk, water we need to survive? That is foolish.	WAT	NS	X	1	
Leslie Limberg	Our economy can grow in several other ways. Please find alternatives more sensible for people.	SO	NS	X	1	
Paul Winslow	I am not confident in the water flow projections and fear that run off will enter the Boundary Waters Canoe Area.	WAT	NS	X	1	
Paul Winslow	I believe this is a short term gamble with long term risks for enduring pollution and health risks.	SO	NS	X	1	
Paul Winslow	I have little confidence that Polymet can insure run off containment for the long term. Where will Polymet be after the mining is over and the pollution remains for hundreds of years?	PD	NS	X	1	
Paul Winslow	I also question the value of mining copper in a delicate and unique environment as the St. Louis River and BWCA.	NEPA	NS	X	1	
Michael Wahowske	I am against the NorthMet Mining Project. The potential and limited economic gains do not outweigh the known and significant environmental losses.	SO	NS	X	1	
Barbara E Knoth	I think the project should not be allowed to move forward. A project where the valuable material material is only 1% and waste is 99% is ridiculous. The risks to a major watershed is never worth it. The St.Louis river and Lake Superior are amazing places and a major water source. Forestland is meant to be protected not traded, stop this worthless effort now.	GEN	NS	X	1	
Judy Schiller	My husband, my relatives, my neighbors, and myself are all against the Poly Met mine operation . While we understand the need for jobs in the Range area, we who live in Northern MN have had the same struggles, but still have found work so we can remain in the Minnesota's most beautiful region.	GEN	NS	X	1	

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Harvey Thompson	I'm guessing it would be nearly impossible to make a comment that has not already been made. No one in their right mind would want to pollute our natural resources. One could also argue that no one in their right mind would want to see private business have to go through over ten years and millions of dollars to get a project off the ground. This exhaustive process is just plain UNBELIEVABLE. I would like to see Polymet get started already. I don't understand how our judiciary can allow law suit after lawsuit. I think we need to examine the judicial guidelines, if there are any.	GEN	NS	X	1	
Greg	30,000 comments on the adequacy of the EIS. Of the 30,000 respondents, how many are qualified to determine if the EIS is adequate? DNR, you do your job to ensure that the project meets regulations. If it meets regulations then proceed. If not, respond with what changes need to be made so it does. If there is no possible way that it can meet regulations, than that's that and be done with it. My layman's opinion is that this has taken way to long. Do not turn this into a political popularity contest; which, it seems, you and the governor have done. It has come to a contest of who can get the most people to cut and paste arguments, for or against, into an e-mail.	GEN	NS	X	1	
Kaitlin Seiberlich	I do not support the decision to allow PolyMet to construct a copper-nickel sulfide mine in Northern Minnesota for several reasons. However, those reasons are not the reason I am writing. Instead, I have been asked to address the problems in the Final Environmental Impact Statement (hereafter referred to as the FEIS) in relation to the prior draft.	GEN	NS	X	1	
Kaitlin Seiberlich	Some of the major issues I believe the FEIS does not adequately address are the following: purposeful downplaying of potential water pollution, willful ignorance of the state of existing infrastructure, necessity of water treatment after the plant and mine both close, the lack of demand for both nickel and copper, and the reputations of both Glencore and PolyMet. Individually, each of these are large concerns that bear examination. Together, they create a picture that is devastating to any environmentalist worth their salt.	MEPA	NS	X	1	
Kaitlin Seiberlich	The FEIS seems to be ignoring the fact that they are constructing an open-pit mine near several large bodies of water, all of which lead to even larger ecosystems. At the very least, the mine itself is located almost on the Partridge River, which then continues onto Lake Superior after merging with the St. Louis River. The plant site is located on the banks of the Embarrass River, which follows the same path. If any pollution were to enter the waters, this pollution would not simply remain in the same place. Instead, clean-up crews would have to pursue the pollution all the way into the Great Lakes, a task that would cost millions of tax-payer dollars.	WAT	NS	X	1	
Kaitlin Seiberlich	Another issue is that part of the proposed mine would be set right in the Hundred Mile Swamp (p. 4-21), a swampland that offers innumerable ecological services to the surrounding lands. These include but are not limited to: pollution filtration, animal habitat, reduction of greenhouse gases, flood control, and nutrient production. If the swamp were to be polluted by the mine, three of those five listed services would no longer be available. Pollution would continue to spread to other bodies of water.	WET	NS	X	1	
Kaitlin Seiberlich	Polluted water could also flow north into the Boundary Waters Canoe Area Wilderness (hereafter referred to as BWCAW) through groundwater or through other rivers or drainages. Because the waters there have no existing baseline of sulfide levels or other chemicals, there is currently no way to prove that the mine could be the reason for the theoretical pollution. No matter how perfect a scenario laid out on paper seems, there will always be room for unintended consequences. Pollution of the BWCAW, an unintended consequence, would not just disrupt social development in parts of Northern Minnesota, it would also disrupt economic development.	WAT	NS	X	1	
Kaitlin Seiberlich	The second issue identified in the FEIS is the use of existing infrastructure. The existing tailings basin that would be repurposed for this project is currently unlined and has a history of seepage. Even if the basin were to be restructured and updated for the current purpose, there is some 10% of the wastewater that is assumed to leak and make its way into surface- and ground-water. This is not taking into effect all the pollutants that would be washed into other sources with rain and snowmelt over the course of the 20 year mine longevity. That 10% of the leaked wastewater, laden with sulfides and other pollutants, would be more than enough to have ill effects on the ecosystems surrounding the plant.	WAT	NS	X	1	

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Kaitlin Seiberlich	Water treatment is another major issue with the PolyMet mine, one that is not adequately discussed in the FEIS. While PolyMet agrees that it will treat water for as long as is necessary, the fact remains that historically, many mining companies have not followed through on that promise. Many times, the mining companies will stay until they have all the resources they need, make an attempt at cleaning up, then pull out of the area after declaring it "satisfactory." In most cases, their attempts at cleaning up are simply backfilling the mine with waste rock, a far cry from the wilderness area they originally dug into. Even if PolyMet were to restore the area to as pristine a condition as possible, they would still end up treating polluted water for decades, if not centuries after the mine and plant both closed down. While this would allow for continued jobs, it would also present the problem of a continued point source of pollution for as long as the water existed. This would prevent the restoration of the mine to its previous pristine conditions.	WAT	NS	X	1	
Kaitlin Seiberlich	Jobs are a major reason for the introduction of the PolyMet mine to this area of Northern Minnesota. While this is a very understandable reason for the area, it does not make sense economically. There is considerably less demand for copper and nickel in 2015 compared to when the mine was originally proposed in 2010. Copper is one of the most reusable elements we are capable of producing. As of October 8th, 2015, it was estimated the demand for copper would begin to slow down and decline. It has been forecasted that China will not be demanding more copper this year. Nickel is undergoing the same issue – little demand, high supply, declining prices. At this point, it doesn't make sense to open a copper-nickel sulfide mine, especially when Glencore, the financial backer of the PolyMet mine, is temporarily closing some of its own copper mines due to inadequate demand.	NEPA	NS	X	1	
Kaitlin Seiberlich	The PolyMet mine is not a self-contained entity. Instead, it is largely funded by the Swiss company Glencore. Glencore has several staff members with dubious reputations that should make people reconsider the project in general. The company itself was founded by Marc Rich, and the company has gone on to be implicated in environmental disasters, human rights scandals, and labor violations. Many people are wondering why this company has been allowed to move forward with destructive procedures like mining after being founded by a man with less-than-pleasant motivations. Marc Rich was pardoned by President Bill Clinton after bribing officials in countries like Nigeria, and assisting Mossad, the Israeli intelligence agency. That pardon was a very controversial decision, one that was done without consulting the U.S. Attorney General or the U.S. Attorney who prosecuted him. However, this is not the only questionable person behind Glencore. The other man, who is a little more current to the times is Tony Hayward, the current Chairman of the Board of Directors at Glencore. He was in charge when the Deepwater Horizon oil rig spilled 4.9 million barrels of oil into the Gulf of Mexico. The fact that other companies are willing to allow him to Chair their Boards is a statement that environmental consequences are beginning to take the backseat to greed.	PER	NS	X	1	
Kaitlin Seiberlich	If you add in the fact that PolyMet is a new company that has never actually opened a mine, is proposing to open a mine both near and in sensitive wetlands, and the techniques it is proposing to mine with have never been tested off paper, it seems to be a recipe for disaster. Historically, sulfide mining has not been a clean process, resulting in massive amounts of environmental pollution, and in many cases, this was when the mines were not located near delicate ecosystems, pristine wilderness, and massive bodies of water. PolyMet insists that it is capable of overcoming that stigma, but I believe we should be doubtful. One of the more recent examples occurred in the US: the Brohm Mine in South Dakota accidentally produced acid mine drainage, one of the side-effects of which was turning a nearby stream more acidic than lemon-juice. The company in charge of the mine ended up going bankrupt. Only 1/8 of the clean-up costs were paid by the company because of the bankruptcy. The rest of the clean-up was paid for by American taxpayers. If the PolyMet mine were to end up polluting the surrounding wetlands and other ecosystems, it would have to be fully responsible for paying for the clean-up, no matter how long or intensive the process. I would also like to point out that just because a company can, does not mean they should. Just because PolyMet has proven they can meet pollution standards on paper, does not mean they will be able to do so in action. Just because PolyMet is capable of creating 620 acres of mining area and removing just over 88 million pounds of copper, nickel, cobalt, and precious metals from those mines, does not mean that it is the best course of action. Instead of focusing on the importance of unspoiled wilderness areas or clean water sources, people are being blinded by	PER	NS	X	1	

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	greed and desire to become the first to tap untouched natural resources. Human greed is blinding common sense, and I implore you to reconsider allowing this mine to be established.					
Kaitlin Seiberlich	In summary, I would argue that the FEIS proposed is in no way complete. There are many questions and problems that are left to answer, and in many ways the mine does not seem feasible or logical. I have only addressed five issues. I am certain there are many, many more. I would encourage people to think critically, and also not to simply look at the economic effects of the mine, but also at the social destruction that would result from the establishment of the mine. Large sections of Northern Minnesota host recreational activities year-round for people that come from all over the United States. If the mine were to be established, that activity would either be forced to move, or cease entirely. That would result in a massive loss of economy and jobs to those areas. That is something that cannot be allowed to happen. If the PolyMet mine is allowed to establish itself, that is the beginning of the end for pristine wilderness. I urge you to think about the fact that though the mine could be established by 2018, those who will be responsible for the clean-up and restoration of the area are your grandchildren.	SO	NS	X	1	
Aleks Kosowicz	I'm writing today because I'm concerned about the impact that PolyMet's proposed sulfide mine would have on Minnesota's water and, thereby, other resources and inhabitants as well. There is no question in my mind that PolyMet would do more harm than good. Pollution from PolyMet threatens our clean water and would pollute it for hundreds of years after the mine has closed. In this age of fresh water shortages, it is unthinkable to me even to consider further jeopardizing the quality of one of the greatest sources of the very thing right in our own backyard. We are so very privileged to have access to such singular natural beauty and abundant resources. Please put Minnesota's water (and, therefore, all life that depends upon it) first when deciding on PolyMet.	GEN	NS	X	1	
Mary Ann Cunningham	Although I live in New York State, I have a strong interest in the BWCA Wilderness, the Superior National Forest, and Lake Superior, all of which are national treasures threatened by the PolyMet copper-nickel sulfide ore mining proposal. When the proposed PolyMet mine becomes an abandoned mine and a public liability like the other 500,000 abandoned hard rock mines in the United States, my tax dollars will be used to attempt remediation of environmental disasters associated with acid mine drainage. Much of the damage to waters and forests and biodiversity will be impossible to repair, however, at any cost.	FIN	NS	X	1	
Mary Ann Cunningham	As an environmental scientist, I am confident in saying that sulfide ore mining is all but certain to cause acidic mine drainage, groundwater contamination, air pollution, and forest destruction over a much larger area than the footprint of the mine. The mine will impact the public domain far more than the responsible parties will ever acknowledge.	CUM	NS	X	1	
Mary Ann Cunningham	This mining proposal is short sighted in every way: It will provide relatively few jobs, it will support a few years of production and cause centuries of environmental damage. It will destroy American public lands to provide income to a few multinational, Canadian, and Swiss corporations. In short, the PolyMet proposal is an unjustifiable plan.	SO	NS	X	1	
Mary Ann Cunningham	I urge you to reject the PolyMet proposal and all future proposals to develop sulfide ore mines in northern Minnesota.	GEN	NS	X	1	

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Dave Kisor	Look at the recent history of mining in both the US and abroad and you will find disasters where the mining companies poisoned the landscape and got off with chickenfeed fines. The coal mine in West Virginia did an enormous amount of damage and the one that just happened in Brazil was a major disaster. Allowing this to happen is like building dozens more nuclear facilities in Japan after Fukushima, which is still spewing radiation into the Pacific. It's already noted where the pollution will go, so that should be cause enough, but apparently short term corporate profits have taken a front seat to reason, sanity and logic, because that ratsucking so called citizens united gave corporations unlimited political spending, for which some members of Incongruous will be salivating over this potential disaster. This is only my opinion as a retired USFS Physical Science Technician with a BA and an MA in Geography, aside from being a Naval Veteran.	SO	NS	X	1	
Nancy Hauer	I am submitting my opposition to the Polymet mine. There is complete consensus that the toxic waste will have to be contained indefinitely, far past any of our lifetimes. There is no way to be sure that it will be contained properly into the distant future, and leaks would be highly toxic to people, wildlife, and the environment of the area overall. I consider it highly irresponsible to place this long-term burden on our descendants long after anything valuable has been extracted from the mine.	HAZ	NS	X	1	
Scott Kylander-Johnson	This plan is short sighted and highly unethical. We have a new epidemic destroying our children, especially our boys called autism and we aren't sure why. Who knows exactly what the cause(s) is but the pollution from mining cannot be overlooked. Don't think for a second that the jobs are worth the overall cost to the health of people and the planet. There isn't a mine on the planet that has helped make the community around it or improved it. Sadly, only the opposite has happened. Don't make the mistake of approving this plan.	SO	NS	X	1	
George Nemanich	I am a property owner in the area adjacent to the proposed copper-nickel mining development. I am concerned about the significance potential for water contamination and subsequent health issues with this happening to the surrounding water flowage in the area. I am a physician and astounded that the Governor and DNR have refused to have the Dept. of Health do a safety review of the project and permitting process. I think that before we allow this project to move forward we need to have a honest and thorough evaluation of the potential negative health and environmental effects.--simple logic would demand this!	HU	S	O	2	SDEIS Theme HU 01
Brandon Long	I oppose the proposed PolyMet NorthMet copper-nickel sulfide mine. This type of mining has been done nowhere safely and I urge you to consider the sustainable Eco tourism industries it would destroy for short term gains and the essentially irreversible pollution to our Minnesota waterways.	SO	NS	X	1	
Kathleen A. Anton	After learning what these mining projects do to our environment and our rivers, I feel it is imperative to reject this mining proposal for the health and safety of the environment and rivers. Especially when a company has a bad environmental record at it's past projects.	PER	NS	X	1	
David Heupel	I object to the issuance of a 404 permit to PolyMet Corporation, because: ? PolyMet's proposed mitigation is insufficient and inadequate for the scale of wetland destruction they propose. More than 2/3rds of the proposed mitigation occurs outside the affected watershed. The types of wetlands lost are not the types of wetlands to be restored. ? PolyMet does not propose specific mitigation for the potential loss of thousands of additional wetland acres due to partial or complete drainage. It is unacceptable to propose a permit for this mine without a complete understanding of wetland mitigation. ? PolyMet proposes the single largest permitted loss of wetlands in Minnesota history. The high quality wetlands in questions cannot be mitigated or replaced either in type or in the watershed. This permit should be denied as too damaging to the public interest in clean water.	COE	S	O	3	SDEIS Themes COE 01, WET 23. FEIS Section 5.2.3.3

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Michael Kinzer	I have had experiences with this kind of mining in Colorado, as I understand it. I have seen the disastrous impact of the leaching out of this kind of poison into the environment. This is a terrible idea for our state, for our environment, for our resources, for our people, for the animals and plants that will not understand why they are dying when they drink the water. I do not trust that there is any adequate way for Polymet or any other mining company to control the effluent that will certainly occur for hundreds if not thousands of years after they have extracted what is profitable. They will be gone and our descendants will be left with the mess, the cancer, the deaths, the depredated environment. You have the capacity to do the obviously right thing. Please do the right thing, the only right thing, and put a stop to this proposal now. If you are not sure whether this is hyperbole, go to Colorado. Go to the Climax Mine above Leadville. Go to Helena Montana. Ask them about swimming in the rivers in and around Missoula. Ask yourself this simple question: is there one single mine of this kind, of this scale, that has a long-term history of safe concealment after they have mined it out? Not one. Sure, there may be examples of mines that are still going in which the company has a strong economic vested interest in keeping things safe. I am talking about a mine in which sulfides encounter the exposed environment, and the mining is long done, and now you have to keep the exposure sealed, to a minimum. The idea is frankly impossible to achieve.	WAT	NS	X	1	
Steven T. Csargo	The Polymet proposed project, by everything that I've read & researched, would be a disastrous project for Minnesota. Our precious Water Resources are at stake. I believe that this project would be a detriment to Minnesota in the long run. Please Reject this mining operation for The Good of Minnesota. Instead, invest our energy & resources in Renewable Energy in creating jobs in Northern Minnesota. Following Denmark's commitment & progress is a great model.	GEN	NS	X	1	
Mike Tonne	The information released on the water impact speaks for itself. Not only will the water be protected but may actually be cleaner. The scientific advances of water recovery are overshadowed by past mine experiences.	GEN	NS	X	1	
Mike Tonne	There are measures in place that will protect the people, the environment and the local economy. They have taken scenarios from leading agencies that are reviewing this project and proven that this mine will be safe not just now but for future generations.	GEN	NS	X	1	
Mike Tonne	Do not base mining practices decades ago to current projects that have actively implemented systems that improve safety and performance. The Polymet project will have little impact on the environment beyond the production site. In addition, this has the potential to develop new standards for future mines. The science of mining has looked at the past, it took areas that could be improved and did just that. Today, technology has spread into all industries and has created a new world, mining is no exception. In conclusion, the Environmental Impact Study submitted is not only evidence that the Polymet project is able to perform in a responsible and caring manner to the environment and all its inhabitants; it has the potential to set a precedent for future mines and how they interact with the environment. This is something all Minnesota residents will be proud of, especially those that are initially against it.	GEN	NS	X	1	
Martha Roberts	I am writing you today in strong opposition to the PolyMet NorthMet copper-nickel sulfide mine proposal. Allowing this sort of mining to occur in Minnesota will set our state down the path towards final destruction of what remains of our fragile, unique, natural resources in northern Minnesota.	GEN	NS	X	1	
Martha Roberts	I am actually shocked that the state, and the leadership of administrative agencies (who are tasked with protecting Minnesota's natural resources and human health) are (shamefully) considering this kind of mining. I am outraged that the Commissioners of the PCA and the DNR and the U.S. Forest Service and the Army Corp of Engineers, are currently marching lock step with international corporate mining interests whose ONLY interest is to extract minerals, make a lot of money and leave. These "employers" will depart from our great state (I give them 10-20 years max) and leave us with a cesspool of toxic, poisonous chemicals that will permanently pollute our drinking and natural water supplies, and destroy crucial habitat for many important animals and plant species for 100s if not 1000s of years. This form of "economic development" will eliminate our way of life and decimate a vital resource that will soon be worth far more than minerals--I am talking about WATER--on a planet escalating into climate change.	GEN	NS	X	1	

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Martha Roberts	It's time for Minnesota's Commissioners of key agencies, the Governor and federal agencies to understand and see that WATER and Minnesota's other natural resources are far more important and valuable in this equation, and these resources determine our survival and the long-term health and well-being of both the wildlife and our human families who drink the surface and ground water, who hunt and fish from Minnesota's streams and lakes, who harvest wild rice from the wetlands, who hike and ski in the forests, who live and work and raise our families in this great state. The economic benefit to the state will be tiny in comparison to the permanent and lasting environmental damage that this kind of mining will reek on our forests, wetlands, water quality, wildlife and human health.	SO	NS	X	1	
Martha Roberts	The mining interest and state agencies have failed to evaluate pollution risks to drinking water, fish, wild rice and human health using realistic assumptions about how much polluted seepage will be captured and treated during operations, reclamation, and closure.	WAT	NS	X	1	
Martha Roberts	Agencies tasked with protecting our citizens have failed to analyze health risks and impacts on our children, workers and communities who rely on fish and wild rice for subsistence, including risks from asbestos-like particles and methyl mercury.	HU	NS	X	1	
Martha Roberts	The assessments conducted do not evaluate the impacts of polluted seepage north of the mine site on the 100 Mile Swamp and the Rainy River (Boundary Waters area) Basin. Allowing mineral extraction near to the Boundary Water Wilderness Area and posing this kind of threat to the water and environment within and surrounding this irreplaceable designated wilderness area is both immoral and illegal.	WAT	S	O	8	FEIS Section 6.2.2.3.1
Martha Roberts	I strongly and unequivocally oppose the PolyMet NorthMet copper-nickel sulfide mine proposal. I challenge you to be smart, be visionary, be compassionate, and most importantly, be BRAVE. Do the right thing for the future people, animals, plants, water and land of Minnesota. Do it for planet earth. Do it for humanity. Please REJECT the PolyMet NorthMet copper-nickel sulfide mine proposal.	GEN	NS	X	1	
Mary E. Jones	As a lifelong citizen of Minnesota, I strongly oppose the Polymet Northmet copper-nickel sulfide mining proposal.	GEN	NS	X	1	
Mary E. Jones	Federal and Minnesota agencies should withhold permits from all sulfide mining operations at this time because they are unable demonstrate proven ability to operate and close down their operations without lasting environmental harm.	PER	NS	X	1	
Mary E. Jones	When rain falls on open pit sulfide mining ore waste, sulfuric acid mine drainage is produced. Although two waste water treatment plants are planned for the acid mine drainage, these treatment plants must stay operational for at least two hundred years. If not, this acid mine drainage will contaminate drinking water, damage or destroy fish and wildlife habitat in lakes and rivers, and harm human health. Will Polymet be maintaining their treatment plants' operation after they've extracted the copper and nickel over the expected twenty year mine's lifespan? I doubt it very much.	FIN	S	O	8	SDEIS Theme FIN 05
Mary E. Jones	The planned use of an existing tailings basin is unacceptable since this basin is unstable and already leaking. Acid mine drainage from the planned Northmet mine would make the leakage even more damaging to the environment. A major breach of the polluted water would be catastrophic to one or more of these watersheds: The Partridge and Embarrass Rivers which flow into the St. Louis River and then into Lake Superior and/or polluted groundwater from the mine site flowing northward into the pristine Boundary Waters Canoe Area Wilderness. Two recent sulfide ore mining disasters clearly demonstrate the great environmental risks of allowing this project to proceed: the August, 2014 Mount Polley Mine disaster in British Columbia and the August, 2015 Gold King Mine wastewater breach in Colorado.	WAT	S	O	8	FEIS Section 5.2.2.3.5
Mary E. Jones	Sulfide ore mining has not taken place in Minnesota before and the sulfide mining industry has a track record of environmental and financial irresponsibility elsewhere. We must not allow the Polymet mine proposal to succeed and set a risky precedent for more sulfide mining operations in our state.	GEN	NS	X	1	
Audrey Kramer	It would contaminate the St. Louis River in northern Minnesota, and ultimately Lake Superior because the St. Louis River empties into Lake Superior at its estuary near Duluth, MN and Superior, WI	WAT	NS	X	1	
Audrey Kramer	Because the copper-nickel mineral is a low grade, less than 1 percent of the mineral could be utilized. Therefore 99 per cent of waste rock and fine ground tailings would end up leaching toxic, heavy metals and acid mine drainage into both the	WAT	NS	X	1	

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	surface water and the ground waters which later feed aquifers.					
Audrey Kramer	ground water seepage at the mine closure would flow in a northerly direction into the Rainy River which is the Boundary Waters Canoe Area, Minnesota's pristine wilderness area.	WAT	NS	X	1	
Audrey Kramer	A copper-nickel sulfide mine as proposed would contribute to the mercury/sulfate load that is currently creating a problem in the St. Louis River. These toxins would in turn leave residues in fish which we humans would then consume and be demented. (New birth babies along the North Shore already have high levels of mercury in their blood----jeopardizing their brain development.)	HU	NS	X	1	
Audrey Kramer	Sulfides attack wild rice roots, destroying entire wild rice beds.	VEG	NS	X	1	
Audrey Kramer	This in turn would cause law suits as the Fond du Lac, Grand Portage, and Bois Forte Bands of the Lake Superior Chippewa nation's rights would be trampled.	CR	NS	X	1	
Audrey Kramer	It would also be detrimental to resort owners, local residents at Cloquet, Duluth, MN and Superior, WI.	SO	NS	X	1	
Audrey Kramer	The pollutants left behind by a copper-nicket sulfide mine would require 500 years or more of constant care which would never be covered by the Canadian mining company as they would be long gone or debunked.	FIN	NS	X	1	
Audrey Kramer	Canada does not need to come into America and damage our waters, forests, wildlife forever.	NEPA	NS	X	1	
Audrey Kramer	The US Forest Service knows strip mining is prohibited on land set aside for watershed and forest protection.	ROD	NS	X	1	
William Haapala	Based on my observations of this project I believe that other than the loss of natural land surface and ecological communities in the directly destroyed areas, it is technically feasible to mine and produce economically valuable metals from this deposit.	GEN	NS	X	1	
William Haapala	The economic benefit to the region and the nation would be significant.	SO	NS	X	1	
William Haapala	It appears that the environmental impacts could be mitigated or prevented using current and some possibly leading edge and yet to be proven methods.	GEN	NS	X	1	
William Haapala	However, based on my experience in air, water quality, solid waste, chemical, and hazardous waste management, my greatest concern is not with the engineering, science, technology and design of the project, but with the environmental ethics, knowledge and commitment of the people who will take charge in the future. From what I gathered now the current group understands that commitment. What I worry about is the change of future command, operations becoming routine and complacent and loss of institutional memory. That also impacts commitments to future remediation plans. Permits will be issued. People have to comply. Build in some provisions for changes in leadership and economic conditions so that the human factor is taken into account.	PER	NS	X	1	
Allen Andrys	I don't agree to opposition to the mining and mineral extraction by principal. However to do so in a way when the technology entails running the risk of causing a disaster we are, frankly, incapable of cleaning up and the reality of putting ourselves in a quagmire of "indefinite treatment and containment", does not make scientific or economic sense! The benefit of a few million dollars being made by large foreign investors and a few hundred jobs being created in the local area in no way outweighs the very definite reality of being stuck with treating the toxic waste for hundreds of years, nor the threat which that waste poses to human and environmental health for as long as it is contained.	GEN	NS	X	1	

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Allen Andrys	Recent history gives a lesson to draw upon involving the San Juan River of Colorado. A mining operation of striking similarity, which had long since closed but where toxic waste was being stored indefinitely, was being reviewed by the EPA. Control of the containment facility was compromised. The waste began draining and quickly made its way to the San Juan River, causing hundreds of miles to turn bright opaque-orange. This spill caused the river to become contaminated with dangerous concentrations of metals. The threat this containment facility posed became a very real attack on the local environment and the lives of the people living in that area. The effects have caused devastating harms toward the people of the Southern Ute Reservation and the Navajo Reservation, (thru which over 200 miles of the San Juan flows), the extents of which are yet to be seen. These nation's sovereignty, economic health and well-being of the individuals are dependent and are in every way intertwined with the integrity and health of the San Juan River. Just as our state's integrity is intertwined with the health of the of Indigenous Nations', and just as all of our health is intertwined with the integrity of Minnesota's clean water.	GEN	NS	X	1	
Allen Andrys	When it finally comes down to it, perhaps years from now, when the toxic waste being stored indefinitely is leaked, if the company has closed shop and left with their profits...(or sometimes even if they haven't) who ends up paying for the "clean-up"? The people do. We have seen this time and time again in an alarming number of man-made disasters despite major corporations' environmental safeguard. Or lack-there-of.	FIN	NS	X	1	
Allen Andrys	Lastly, I say (above) "clean-up" because, simply, no matter how much money is promised to be available should disaster strike, even if those funds are delivered there is no way to reverse the effects entirely. Permanent harm will be done, which will impact generations to come.	GEN	NS	X	1	
The Rev Donald Rudrud	In the last ten years the Rio Tinto Mining Company, the current owner of the mining rights, has been forced to engage in a mulit-year over 100 million dollar clean up of the mines pollution and continued chemical threat to the clean mountain water. Now in 2015 (some 77 years since the first copper extraction) Rio Tinto hopes to compete one of the most expensive environmental protection projects in American history.	FIN	NS	X	1	
The Rev Donald Rudrud	PolyMet, or whoever they sell the mine to, would do more harm than good.	SO	NS	X	1	
Jon Marcaccini	It is clear that polymet can be a safe and productive project for northern Minnesota	GEN	NS	X	1	
Jon Marcaccini	in the year 2015 we can and should mine the natural resources we have.	NEPA	NS	X	1	
Jon Marcaccini	It can be done in an environmentally sound manner that will be the showcase for the world and all future local mining projects. This is not a 1850 gold mine somewhere in Wyoming this is a 21st century mining project with everything this century has to offer in way of protection, monitoring and safe mining practice.	PD	NS	X	1	
Jon Marcaccini	This is slated to be 20 year mine, do you thing in 20 years we will abandon our environmental goals and standards? I think not	NEPA	NS	X	1	
Catherine Fontanazza	We have experienced many problems with companies coming in mining and abandoning the mines and leaving huge environmental problems behind. It is better for the people, the air, the water and the land if the minerals are left in place and the mining companies spend their profits cleaning up the last place they were mining.	GEN	NS	X	1	
Kelley Haldeman	My heart deflates when I think of the ugly responsibility and burden we bestow on future Minnesotans if we approve this mine.	GEN	NS	X	1	
Tim Callister	I object mostly on the grounds of; irrepairable environment damage, future financial hardship to the state of Minnesota due to degraded recreational opportunities and the harm that will have on the tourism industry in the state, and good business in general.	GEN	NS	X	1	
Tim Callister	A large majority, if not all, mines of this proposed magnitude have a long term detrimental effect on the environment around them no matter what promises are made in the beginning. The State has embarked on a long overdue process to	MEPA	NS	X	1	

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	clean up Minnesota's lakes and streams. This type of mining will be in direct conflict with that goal.					
Tim Callister	the PolyMet mine will employ a few hundred personnel in the beginning to get it operational and then that number will dwindle to a very few. In the meantime the economic loss to the state from fewer visitors to a prime wilderness area will mean that resorts and other attractions (that currently employ an equal number of personnel on a long term basis) will provide less employment and send fewer tax dollars to the state.	SO	NS	X	1	
Tim Callister	It's time for Minnesota to listen to it's citizens who voted for and still champion the clean water goals of the Legacy Amendment.	GEN	NS	X	1	
Bethel Anderson	The plan is lacking a true assessment of the health effects of such mining, not only for the miners and nearby residents, but also for the rest of us living downstream. In looking at the authors of the FEIS, I do not see one medical doctor, nurse, or health professional. Likewise, looking at the responders to the previous iterations of the EIS, there is a lack of health professionals represented. A few weeks ago, our Governor was supporting a Health Risk Assessment of the PolyMet proposal, then he reversed that decision under political pressure. Many health care professionals feel we still need it.	HU	S	O	3	SDEIS Theme HU 01
Bethel Anderson	I am concerned about ground water contamination of adjacent private water wells. Questions about the validity of the ground water models have been raised. The FEIS must re-evaluate ground water contamination.	WAT	S	O	3	SDEIS Theme WR 041
Bethel Anderson	We know that sulfate in a watershed increases methylation of mercury. We know that for 20 years of operation and for over 100 years after closure, PolyMet will be releasing massive amounts of sulfate to the Lake Superior watershed. The Minnesota Dept. of Health found that 10% of newborns in the Lake Superior watershed were already born with unsafe levels of mercury in their blood. Therefore, the plan presented in the FEIS is a direct threat to our children. The FEIS must be revised to address this inadequacy.	HU	S	O	3	SDEIS Theme HU 03
Bethel Anderson	This FEIS fails to protect the health of our citizens in our water-rich State of Minnesota.	HU	NS	X	1	
Gary Fifield	I oppose the PolyMet mine.	GEN	NS	X	1	
Kelley Haldeman	PLEASE DO NOT permit PolyMet to build its copper-nickel mine in the Superior National Forest.	GEN	NS	X	1	
Eric Snyder	I am strongly opposed to the proposed PolyMet mine in MN.	GEN	NS	X	1	
Eric Snyder	1. It's unacceptable for the state of MN to knowingly allow any deterioration of water quality, whether groundwater, or that of waterways. Even a slight risk to health of ecosystems, wildlife, or humans, should be strictly unacceptable.	WAT	NS	X	1	
Eric Snyder	2. Not only is the mining operation itself reckless for the above and other reasons, but so is the review process thus far. One example is the concurrence of the DNR with the view that dry stacking of tailings should be scuttled in favor of much riskier wet basins. This is unacceptable and raises the question as to whether the DNR is prioritizing the interests of the environment and public health, or whether it is doing something akin to working as a lobbyist for PolyMet. It certainly raises the appearance, at the very least, of corruption. It's not the DNR's interest to help make a determination as to whether wet basins will help save PolyMet money. The DNR must first and foremost protect the environment and public health.	PD	NS	X	1	
Eric Snyder	As the public has seen repeatedly, mining companies have repeatedly taken such shortcuts (as above) resulting in environmental disasters.	GEN	NS	X	1	
Eric Snyder	There's also excellent basis for assuming that mining companies will not be held fully financially accountable for such disasters and that such environmental disasters will be remediated to the fullest possible extent.	FIN	NS	X	1	
Eric Snyder	In conclusion, this mining permit process has caused me to fundamentally lose confidence in state officials and the integrity of our public institutions. The permitting process raises serious doubts as to whether the DNR and state officials have the interests of MN in mind, or whether, as happens all too often in our corrupted and failing democracy, private profiteers can overrule the best interests of environmental and public health.	PER	NS	X	1	

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Eric Snyder	I urge all government officials to reject the permit for the PolyMet mine.	PER	NS	X	1	
Eric Snyder	Please respond specifically to my comments.	O	NS	X	1	
Bryan Wyberg	The main reason for my immediate opposition to the PolyMet Final Environmental Impact Statement (FEIS) is that it is wholly inadequate under both federal and state standards.	MEPA	NS	X	1	
Bryan Wyberg	It does not fairly and scientifically analyze the likelihood or severity of the cumulative impacts of this development on the regional watershed.	CUM	NS	X	1	
Bryan Wyberg	You are aware of independent studies that differ in conclusion from the industry developed analysis chosen for the FEIS. In light of that knowledge, I believe that a decision to ignore independent analysis and accept the FEIS as it is, biased in favor of the project, is unethical and an abrogation of your legal duties as stewards of these public lands for future generations of Americans. Therefore, I oppose issuing any federal permit allowing PolyMet to destroy wetlands and impair water quality. Period. No permits until they explain how they will provide for water quality control for the next five hundred years.	GEN	NS	X	1	
Bryan Wyberg	The future is conveniently ignored in their plans. They say pollution will be a problem for hundreds of years, yet somehow avoid taking action to ensure the effectiveness of their promises of protection from the tailings of mining operations beyond a few decades into the future.	PD	NS	X	1	
Bryan Wyberg	The full cost of five hundred years of monitoring, maintenance of containment pools and structures, and the reconstruction one would expect would just naturally be required every couple of decades would require PolyMet to pony up billions of dollars today to ensure the bond lasts five hundred years. Without that, no permit should be granted.	FIN	NS	X	1	
Bryan Wyberg	Given the inadequacy of the analysis, and the bias in the FEIS towards approving this unsafe mining proposal, I believe that it is inappropriate to use this crap as the basis for any decisions that involve permanent degradation of public lands. I therefore further object to the U.S. Forest Service proposal to exchange Superior National Forest land for the PolyMet proposal.	LAN	NS	X	1	
Jeff Schroeder	Any potential threats to the water quality should be addressed before this permit is allowed to go any further, there is no place for assuming that future problems will be able to be mitigated as necessary.	WAT	NS	X	1	
Jeff Schroeder	I think that the BWCA issue is a convenient distraction, as though, if it can be shown that the risk to the BWCA is addressed there are no further issues to review.	WAT	NS	X	1	
Jeff Schroeder	As I understand it, the consequences of more sulfate mining is that the states water quality will deteriorate, the question becomes is the long-term environmental degradation worth the temporary increase in the number of good paying jobs and a temporary increase in state revenues?	SO	NS	X	1	
Jeff Schroeder	Is there really a problem with viewing environmental regulation from a more conservative perspective, better over regulating and dealing with cleaner water than under regulating and dealing with polluted water? Why does the state have to prove the need for regulation when the corporation requesting a permit requires so much less. Are possible lawsuits by Poly-met a good enough reason to issue a permit when there are threats to the environment that have not been addressed?	MEPA	NS	X	1	
Jeff Schroeder	Relying primarily on data presented by the permit requester seems unwise. It is not in the best interests of Poly-met to examine/document/acknowledge potential problems that the permit process has not required them to address. I hope that you are thoroughly investigating potential environmental threats suggested by those organizations and agencies that are not also charged with promoting mining interests. Their complaints should not be viewed as obstructing a permit process which you feel obligated to bring to a successful conclusion (Poly-met wins).	NEPA	NS	X	1	
Jeff Schroeder	There are mines with permits attempting to deal with sulfate contaminated water right now aren't there. How successful have they been?	PD	NS	X	1	
Jeff Schroeder	All this risk is being taken for some state revenue and about 350 jobs? When the mines accounted for thousands of jobs, maybe the balance favored accepting more risk. I realize that an operation like this will a large but temporary economic impact on the entire Iron Range community but what about the impact over the next 200 to 500 years? The most likely winners are the owners of the mine, Good luck finding a way to stick them with paying for remediation or damages after the	FIN	NS	X	1	

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	mine and plant are retired.					
Jeff Schroeder	Corporations have so many ways to avoid liability, give them 200 years to figure out how and they will rewrite the laws by buying off a few key legislators. Sorry for being so cynical but really do you think that the public won't be the ones to pay for any environmental consequences, they always have.	FIN	NS	X	1	
Mary Adams	The location of the proposed mine, south of the BWCA, in the midst of northern forests, pristine lakes and rivers could very well contaminate waters with heavy metal, mercury and sulfates. We are told that would not occur due to holding ponds never to be broached, and water treatment going out for hundreds of years. What kind of guarantee is that?	PD	NS	X	1	
Mary Adams	It is human nature to think in the moment, jobs, economy, profits, but where is the long-term vision in this proposal? Putting Minnesota's treasure, our water, at risk is shortsighted. Corporations can declare bankruptcy, and citizens left with the responsibility of forest, wetland and restoration of contaminated waters.	FIN	NS	X	1	
Mary Adams	We know how important wetlands are to watersheds and wildlife. Compensatory mitigation and possibly an identified management plan is cold comfort.	WET	NS	X	1	
Mary Adams	The Canada lynx, gray wolf and long-eared bat could be affected for decades. Human activity, noise and vibration, rail and vehicular traffic, decreased habitat will affect thirteen state-listed species.	WI	NS	X	1	
Mary Adams	Sulfates are harmful to plant species and native wild rice, economically important to the Ojibwe people of northern Minnesota. Water running from the mine site would be hundreds of times the safe level for wild rice. 1854 Ceded Territory Treaty needs to be honored.	CR	NS	X	1	
Mary Adams	Physicians have requested a study be done as to the health of residents living in the area due to air pollutants and noise. That request has been recently denied. Stripping and excavation requiring heavy equipment and explosives, creating open pits must be taken into account.	HU	NS	X	1	
Mary Adams	This proposal looks "oh, so good" on paper. The iron range has been here before. Good for a few boom years and then, back to square one. Long term, sustainable jobs are needed, that do not cause significant environmental impacts.	SO	NS	X	1	
Mary Adams	Exchanging land in the Superior National Forest for land of equal value raises a red flag. What does that mean and how is equal value determined? What are the potential environmental impacts of such an exchange?	LAN	NS	X	1	
Mary Adams	Electrical power consumption and greenhouse gas emissions was not addressed in the EIS.	AIR	S	O	2	SDEIS Theme AIR 02
Mary Adams	The section ES-12 through ES-24 made this project look like a done-deal. The construction, operations, processing, closure and post-closure maintenance looked quite slick within this document. What could possibly go wrong? Is their technology so great that they assume no environmental damage will occur? That is deeply troubling.	GEN	NS	X	1	
Mary Adams	I understand numerous permits requiring financial assurance for premature mine closing land reclamation and risks to the environment are to be negotiated. One hundred to five hundred year sounds like we are placing northern Minnesota, and our children's children in jeopardy.	GEN	NS	X	1	
Margaret A. Redmond	There are very strong hazards to land and health which appear to have been ignored, or glossed over, or been relegated to a hazy "we'll figure that out once we've given the go-ahead" status in the FEIS.	GEN	NS	X	1	
Margaret A. Redmond	The concept of having to treat water from 200-500 years is, de facto, a commitment to operating a sophisticated mechanical system "in perpetuity." a. Is this not illegal under state law—ie, placing faith and trust in something "in perpetuity"	PER	NS	X	1	
Margaret A.	b. What possible assurances could be given regarding 200-500 years of reliable and successful maintenance? What examples exist of mechanical systems (much less highly complicated ones) operating 200-500 years? Though this could be glossed	PD	NS	X	1	

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Redmond	over to the permitting phase, it would seem this phase should require an accurate and realistic plan.					
Margaret A. Redmond	c. What possible assurances could be given regarding 200-500 years of financial support of both the mechanical systems PLUS the labor to operate and monitor it?	FIN	S	O	2	FEIS Section 2.7
Margaret A. Redmond	2. What examples exist of corporations that have been operating for 200-500 years? (Again, the issue of “in perpetuity.”) Why should we be the ones who “experiment” with this concept? What happens if PolyMet (or its succession of purchasers over 2-5 centuries) fail, go bankrupt, or split off, or find a way to shed the obligation?	FIN	NS	X	1	
Margaret A. Redmond	Thus, the FEIS acceptance of this reliance on corporate maintenance of complicated technology appears to be pure fantasy in a document which should require the most hard-headed reality-based thinking. This is not a “defer consideration to the permitting phase” issue.	PER	S	O	2	FEIS Section 2.6
Margaret A. Redmond	3. How much more danger exists for Minnesota’s waters--given the 2015 Legislative exemption of sulfide mining operations from solid waste regulations? Does this not amount to a “free pass” for pollution? This FEIS was mostly written before that legislation—and clearly does not adequately treat what seems to be a new license to pollute.	MEPA	S	O	5	FEIS Section 2
Margaret A. Redmond	4. Despite being basically brushed off in the FEIS, the issues of mining in rock containing asbestiform minerals do exist. The Minnesota public has not been well treated by its state agencies regarding health effects of these substances when they are mined and turned into breathable particulates. That is, previous Health Department studies have withheld information from the public for years when higher levels of resultant disease were uncovered on the Iron Range. Thus, the issue of this type of mining needs to be carefully analyzed and regulated in any permitting. This would include provision for and funding supporting scrupulous health monitoring of workers, and nearby residents (for air and water issues).	HU	S	O	2	FEIS Sections 5.2.7.5, 7.3.4
Margaret A. Redmond	5. There is a credible case to be made for the argument that a significant proportion of the wastewater will flow north, not south, as regarding the composition of the north side of the proposed wastewater pit, and issues of height and pressure of the water contained therein. Thus, the possibility of wastewater flowing into the Kawishiwi River and thence the BWCAW has not been adequately examined. Recent admission by the DNR that the flow could in fact go North AND South should clearly send this FEIS back to the drawing board. -Given this ambiguity, where’s the FEIS analysis of the possible (probable?) water flowing north. -Where is the analysis of possible environmental impacts on water quality, fish, wildlife? -Where’s the modeling and the planning for this contingency? These issues should be settled before the permitting phase.	WAT	S	O	2	SDEIS Themes PD 38, WR 080
Margaret A. Redmond	6. There has never been a mine of this type which has not polluted its watershed. Never. The so-called “model” Eagle Mine in Michigan visited by Governor Dayton discharges wastewater into the groundwater aquifer without cleaning it. That feeds the streams flowing into the Salmon River. (It is my assumption that these mines ALL met their respective EIS’s...)	PD	NS	X	1	
Margaret A. Redmond	How is it that Minnesota thinks that it’s OK to run yet another experiment so close to such a fragile area as the BWCAW and its surrounding waters? Tourism, recreation, second homes, and related services bring in a large amount of money, and are utterly dependent on clean water.	SO	NS	X	1	
Margaret A. Redmond	7. The so-called-clean mining at that Eagle Mine also changed the design of its filters for particulates from the mine itself from the highly effective bag-house filters to NO filters for its emissions. Evidently, this was done between the initial impact statement and the permitting phase. How is that acceptable? Are we seriously supposed to consider this as a good model that will reassure us? How gullible are we?	PD	NS	X	1	
Margaret A. Redmond	8. The parent company of PolyMet, the foreign-owned Glencore, has had complaints about its mines polluting waters in many countries on different continents. Interestingly, one of its Directors is Tony Hayward, head of BP during the tragic Gulf Oil spill in 2010. Did anyone there look at this company’s record via Google? It’s not at all good... This does not lead to confidence in the company’s trustworthiness nor good will; rather, any Glencore/PolyMet enterprise should be incredibly closely planned for, set up and monitored—rather than having so many blank spots in the FEIS that seem to be dependent on the good will of the applicants.	PER	NS	X	1	

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Margaret A. Redmond	9. Although this is not within the purview of the EIS, the amount of money needed for escrow to be sure Minnesota taxpayers are not left paying for cleanup (possibly "in perpetuity") has got to be utterly colossal. How do we even calculate it? Would in not have to be in the billions of dollars?	FIN	NS	X	1	
Margaret A. Redmond	Given the weakening of legislation and of real input opportunities, and given the FEIS's missing or cavalier treatment of many issues of concern raised by citizens and scientists, I think that granting a permit to mine in such a fragile, interconnected system of waters would be a great wrong. And would do great harm.	GEN	NS	X	1	
Michael Koch-Weser	While sometimes it needs to be done, mining is an incredibly damaging activity. Recently, surges in acid mine drainage discharges from abandoned mines in Colorado have been in the news. Most of this AMD is "forever" in terms of human existence. All we can do is "manage it;" it can't be stopped and threatens water quality, fish, and wildlife in perpetuity. Mining is far more suitable in arid and semi-arid areas where runoff is less of a problem. Northern Minnesota is hardly a semi-arid area. It hosts some of the most pristine fresh water ecosystems left in the United States and those ecosystems should not be threatened under any circumstances. We don't have many left.	GEN	NS	X	1	
J.M. Alexander	I oppose the current PolyMet NorthMet copper-nickel sulfide mine because it doesn't appear that there are ANY copper-nickel sulfide mines anywhere that have successfully operated for at least 10 years without causing significant environmental damage.	GEN	NS	X	1	
J.M. Alexander	IF the mine is approved, owners of the mine should have to deposit all proceeds, less the wages of the workers, but NOT the salaries of the executives, and actual operating costs, for at least 10-20 years into a trust fund to pay for clean up. If by the time the mine closes, it has not caused environmental damage, the funds can be returned to the mining owners. If it has, the funds should be used for clean up and a penalty payable to the State for further environmental efforts. Please be advised that I consider this a dramatically inferior option to just prohibiting the mine from going forward in the first place.	FIN	NS	X	1	
Steve Jay	a. Both National Environmental Policy Act (NEPA) and Minnesota Environmental Policy Act (MEPA) require that 'potential environmental consequences of proposed actions' are considered in the decision-making process. The MEPA process informs permitting and approval and 'describes mitigation measures that may be available.'	NEPA	NS	X	1	
Steve Jay	Throughout this FEIS, the Cumulative Effects (CE) sections fail to provide rationale for assumptions used in estimating CE and fail to demonstrate methodology for estimating CE in highly complex systems such as NorthMet Mining Project and related human activities. For example, the most profound meteorological changes in human history have been occurring recently at increasing rates, caused primarily by CO2 emissions and related GHG pollution from burning fossil fuels, yet the FEIS appears to not have used in their projections scientific data regarding the estimates for past, current and future severe weather events and related ecological impacts of Climate Change. The NorthMet proposed project adds small but measurable emissions to the known 'drivers' of climate change; but more importantly, the rapidly changing meteorological conditions of climate change will impact directly and indirectly the proposed NorthMet mining activities themselves. I found no detailed systems analyses of CE that incorporate current science into projections of the potential impacts of this NorthMet project and related human activities. This is one of several deficiencies that impair one's ability to accurately assess the extent to which the FEIS addresses both the 'letter and the law' of NEPA and MEPA.	CUM	S	O	2	SDEIS Theme AIR 01
Steve Jay	a. Weather data from 2 stations (Fig 4.2.2-1). The measurements end at 1984 and 1986. Given dramatic changes in weather patterns over the past two decades resulting from GHG emissions, more recent measurement periods should be used. Rainfall projections must incorporate the latest meteorological data from UNIPCC and U.S. sources: NASA, NOAA etc.	WAT	S	O	3	SDEIS Themes PD 22, WET 22
Steve Jay	b. The NorthMet project would degrade surface and groundwater, violating the Superior National Forest plan and state, federal, and tribal water quality standards.	WAT	NS	X	1	

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Steve Jay	c. The assumptions in this proposal regarding both quantity and directional flow of contaminated ground water are flawed. It is critical that estimates of the amount of groundwater that leaves the mine (10 gallons/min or 100's of gallons/min) are correct. Scientists have come to different conclusions about the total groundwater flow rates and the direction of flow from the proposed mine. Specifically, work by scientists at Great Lakes Indian Fish and Wildlife Commission show that after mine closure, a million gallons of polluted groundwater a day could flow north, into the Peter Mitchell pit, and then Birch Lake. This raises the prospect that the NorthMet project could contaminate both the St. Louis River and the Boundary Waters watersheds, simultaneously. The co-lead agencies must address this question given the potential threat to the Boundary Waters Canoe Area Wilderness. The assumptions about the impact of extreme weather events should be incorporated into these analyses.	WAT	S	O	2	SDEIS Themes PD 38, WR 080
Steve Jay	a. Wetland mapping and delineation was conducted using data from 1987 to 2010. Given recent and projected meteorological changes in weather patterns, these data should be updated and projections that incorporate recent and projected future impacts of extreme weather events and climate change.	WET	NS	X	1	
Steve Jay	a. The Functional Assessment Tools should be updated to incorporate recent dynamic changes in meteorological impacts of climate change. Does MnRAM 3.0 include such? Table 4.2.3-3, under Human Disturbance (past and present) includes "other alterations to the landscape"—does this include human activities such as burning fossil fuels, with attendant meteorological impacts?	WET	S	O	2	SDEIS Theme WET 21
Steve Jay	b. The NorthMet proposal does not adequately consider alternatives to reduce harm to wetlands and water quality and is not the Least Environmentally Damaging Practicable Alternative.	WET	NS	X	1	
Steve Jay	a. 4.2.7.1 Regional Climate and Meteorology. The data in this section are out of date. In the Figure data are from 2001-2005. b. 4.2.7.2 Table does not have CO2, the major air pollutant impacting weather patterns. Please add CO2 to this table.	AIR	S	N	3	FEIS Section 4.2.7.2
Steve Jay	a. It is stated that "The NorthMet Project Proposed Action would have the potential to affect groundwater and surface water hydrology and quality in both the Partridge River and Embarrass River watersheds. ...the rivers do not flow to or affect the water quality of the BWCA." The assumptions upon which this statement are based are not delineated in the FEIS nor data presented that eliminate the possibility of alternative conclusions.	WAT	S	O	2	SDEIS Themes PD 38, WR 080
Steve Jay	a. This section does not mention CO2, the global impacts of which are profound for forecasting meteorological changes, including air quality and catastrophic weather patterns. Please include CO2 in Table 5.2.7-1. The technical reasons for excluding CO2 should not preclude lead agencies for this FEIS from following the current science and common sense regarding this topic. Informing the public of the issues using the best evidence should be a priority of the parties.	AIR	S	O	2	SDEIS Theme AIR 01
Steve Jay	5.2.7.1.2. This section mentions (p5.478) adverse effects on human health as determined by an Air Emissions Risk Analysis (AERA). AERA does not mention CO2 as a major driver of atmospheric change that is having major adverse impacts on human health. The science based trend projections are that human injuries, disease and death will continue to increase for the foreseeable future. http://www3.epa.gov/climatechange/impacts/health.html . Minnesota's gross emissions of GHGs grew by 32% between 1990 and 2005, twice the national average of 16%. (MN Climate Change Advisory Group, 2008) Projected increase in CO2 for 2025 was an increase 68% in MMT Tons of CO2e over 1990 levels. Minnesota has recognized that climate change is occurring and has developed mitigation and adaptation efforts to address the problem. http://www.pca.state.mn.us/index.php/topics/climate-change/climate-change-in-minnesota/adapting-to-a-changing-climate.html . The EPA includes CO2 in its assessments for evaluating climate policy options. http://www3.epa.gov/climatechange/EPAactivities/economics.html . Either the individual sections of this FEIS should be changed to reflect the recent climate change impacts or the section 6.2.7.10 (Climate Change) should be expanded to more fully inform the public about this issue. There are critically important social, legal, moral, economic and scientific dimensions to this problem.	AIR	S	O	8	FEIS Section 5.2.7
Steve Jay	a. The land exchange proposal is not consistent with Forest Service Rules found at 36 CFR 218. Removing 6,495.4 acres from the Superior Forest management and public use is detrimental to the integrity of this forest and current uses.	LAN	S	O	2	SDEIS Theme LAN 01

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Steve Jay	a. PolyMet discharge of pollutants will have adverse effects on municipal water supplies, aquatic life, wildlife, human health and welfare, and present significant environmental justice inequities.	SO	NS	X	1	
Steve Jay	a. The project is not in the public interest, would impair tribal resources, and would result in an enormous loss of ecological services.	CR	NS	X	1	
Steve Jay	a. NEPA/MEPA require "assessment of potential cumulative effects" and CEQ defines it as "...reasonably foreseeable future actions regardless of..." The Anthropogenic impacts of global warming/climate change are being addressed at the highest levels of science and government world-wide. CO2 and other GHG emissions have major "potential cumulative effects." Existing and projected increase in climate change in MN have potential for major disruption from extreme weather events of mining activities proposed in this FEIS.	CUM	NS	X	1	
Steve Jay	a. The statements that minimize the significance of GHG emissions from this project ("several orders of magnitude lower..." are accurate but miss the point. Rapidly changing climate conditions may alter assumptions and conclusions regarding this project impacts on the environment. This language should be modified accordingly.	AIR	NS	X	1	
Steve Jay	The statement that "...determining the significance of any single project is beyond the capabilities of current science" suggests that wise, precautionary decisions can't be made without case- by- case estimates of the risks. This is silly. We are in the midst of an unprecedented global challenge where an enormous body of science is being used daily by world's leading scientists, public health and policy experts to make just such decisions. The language in this section should be changed to better reflect the realities of climate change in 2015 and the cumulative impacts of human activities that are driving the changes. (Stein Univ CO Law Review 2013)	CUM	NS	X	1	
Steve Jay	b. More important than absolute GHG emissions projected in this FEIS is the potential impact of increasing climate instability on the project itself. (Rainfall, drought, rising water levels, snow packs, storm patterns.) The past, present and projected future impacts of climate change on air, water, land, ecosystems, and public health have not been estimated adequately in this FEIS.	CUM	NS	X	1	
Steve Jay	a. Human risks to drinking water, fish are naïve and unrealistic. b. Assumptions about how much polluted seepage will be captured and treated during operations, reclamation, and closure are not clear. Public health implications are lacking.	HU	NS	X	1	
Steve Jay	c. There are no data regarding the health risks, including methylmercury and asbestos- like fibers on children and workers who subsist on wild rice and fish.	HU	S	O	2	SDEIS HU themes
Steve Jay	d. There is no evaluation of the impacts of polluted seepage north of the mine site on the 100 Mile Swamp and the Rainy River (Boundary Waters area) Basin and potential health impacts.	WAT	S	O	2	FEIS Section 5.2.2
Steve Jay	e. The FEIS fails to consider alternatives to decrease environmental harm, reduce polluted seepage from unlined permanent waste facilities, mitigate wetlands destruction, and reduce the threat of catastrophic dam failure, all of which have environmental and public health hazards.	ALT	NS	X	1	
Steve Jay	This FEIS does not address numerous substantive questions of critical importance to providing the public with a clear understanding of the purpose, nature, scope, and environmental and public health impacts of the project. I recommend that MN DNR reject the NorthMet FEIS. Second, the USFS should not accept the proposed land exchange and the US EPA and US Army Corps of Engineers should deny any Section 404 permits that would allow NorthMet to pollute wetlands.	GEN	NS	X	1	
Steve Jay	I recommend that the lead agencies organize and conduct a Community Health Impact Assessment to fully review the evidence of the short, mid and long-term adverse health impacts of the proposed sulfide mining. There are well- established models for conducting such reviews. They include the National Association of County and City Health Officers (NACCHO) Community Health Assessment and Improvement Planning process. http://www.naccho.org/topics/infrastructure/CHAIP/index.cfm The CDC Health Impact Assessment process is also science based and an independent and objective methodology for addressing the potential human health impacts of proposed projects. http://www.cdc.gov/healthyplaces/hia.htm .	HU	S	O	2	SDEIS Theme HU 01

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Karen Kormann	In addition to the objections made by many individuals and organizations on the obvious flaws in the EIS, I am greatly disappointed that state officials have allowed a mining nightmare bedazzle the public for this long.	GEN	NS	X	1	
Karen Kormann	It's been made clear, most recently by the Paris talks, that mining of any kind is a thing of the past. In particular, the mine proposed by Polymet, and supported by a very few interested parties is not invested in the future health of people or the area.	GEN	NS	X	1	
Karen Kormann	Of nearly equal significance is the lack of attention given to the real issue in Northern Minnesota: the economic needs. With or without Polymet, this area needs fresh approaches to creating a healthy and liveable area with opportunities for a different kind of livelihood and reputation.	SO	NS	X	1	
Michael Hagge	I do not believe the short term benefits (jobs) outweigh the potential negative environmental impact. I am against approval of the PolyMet mining operation.	GEN	NS	X	1	
Scott Wolff	I am opposed to the development of copper and nickel sulfide mines proposed for NE Minnesota.	GEN	NS	X	1	
Scott Wolff	I am opposed to the present proposals because I think an intact, unspoiled environment is more in the interests of northern Minnesota rather than the short term gains that PolyMet would afford. The long term losses exceed that. Despite their assurances, there is no track record that this can be done without environmental harm. The jobs they promise are non-sustainable over the long term, and when the jobs are gone in 10-20 years, we are right back where we started from, with the only legacy of a damaged if not irrevocably harmed environment. The current tourism based economy is sustainable, and PolyMet jeopardizes that.	SO	NS	X	1	
Scott Wolff	If senior executives of PolyMet (wherever they may be) are so sure this can be done without environmental harm, then I request they put up as collateral their personal assets (residences, savings, trust funds etc). They need to demonstrate "skin in the game". The pattern of this sort of thing is many grand promises, then years down the road things go awry, they leave with huge profits, and the local people and taxpayers are left holding the mess and the bill.	FIN	NS	X	1	
Scott Wolff	I object the the antagonism that this project introduces to our region (e.g. labor-union members boycott local businesses who have and the courage to oppose this project, and this does reduce their business short term). This pits neighbor against neighbor. I do have empathy for those who look to gain employment through this. Mining is extractive and short term. In the long run, I hope their children look for other training and education. I did.	SO	NS	X	1	
Lyle and Rita Powers	Please do not allow any kind of mining in the northern part of our beautiful state of Minnesota!	GEN	NS	X	1	
John Buschette	The inevitable spill of sulfuric acid and toxic metals will cost thousands of tourism related jobs for hundreds of years. This is a job killer not a job creator.	SO	NS	X	1	
Thomas H. Hayden	Not not allow any kind of mining in the Superior National Forest. The Boundary Waters Canoe Area Wilderness is inside its borders and would be negatively effected. If cell towers are tall enough to see are not allowed in the portal zone from the BWCAW, how does it follow that the noise, water pollution, spoiling the land of mining is permitted?	GEN	NS	X	1	
Terrance Wilm	It is inconceivable to anyone in 2015 that what has been proposed by PolyMet that irreparable damages will not happen as a result of mining that will only benefit PolyMet.	GEN	NS	X	1	
Terrance Wilm	As the mining industry as proven time and again throughout the U.S.; the choice is always is to destroy watersheds, release any and all toxic substances and then WALK AWAY with a disaster that is impossible to remedy.	FIN	NS	X	1	
Terrance Wilm	The political pundits will choose "jobs creation" as their mantra to justify proceeding with the proposed project. As is generally seen in the iron ore industry; as well as other commodities; when the price is low the layoffs begin. We have witnessed this time and again-including the present situation on the "iron range". It will be NO different with ANY mining corporation, when the price point is low there will be NO WORK ! Therefore it is incumbent to change the mindset of the workforce to move AWAY from mining as an occupation/career. It is time to break the cycle of layoffs and the only thought being more mining is the answer. Environmentally and economically mining needs to go away in northern Minnesota.	SO	NS	X	1	

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Terrance Wilm	It is also imperative that since this project will get crammed down our bodies that PolyMet is forced to set aside the billions of dollars that will be required to attempt to clean this up.	FIN	NS	X	1	
Alaina Pilate	We have many concerns regarding the Final Environmental Impact Statement, object to a land exchange of the Superior National Forest as well as any issuing of a federal permit to allow PolyMet to destroy wetlands and also impact water quality. We request a more thorough review of many components within the FEIS and do not see how the statement is adequate under federal and state guidelines.	GEN	NS	X	1	
Alaina Pilate	Our concerns are many. They include the failure to fully evaluate many pollution risks to drinking water, human health, fish and wild rice habitats, particularly in response to how much pollution will actually leech out during operations, reclamation, and final closure.	NEPA	NS	X	1	
Alaina Pilate	We also recognize and want an evaluation of impacts of the polluted seepage that will be north of the mine site flowing into the Boundary Waters Area basin.	WAT	S	O	2	SDEIS Themes PD 38, WR 080
Alaina Pilate	Health risks to children, workers, and communities that rely on wild ricing and fishing are not well analyzed as well as impacts of asbestos-like particles and methylmercury.	HU	NS	X	1	
Alaina Pilate	We ask that alternatives be more thoroughly considered to limit the environmental harm, reduce pollution seepage from unlined permanent waste facilities, wetland destruction, and also the evaluate potential of a catastrophic dam failure.	ALT	NS	X	1	
Alaina Pilate	The direct destruction of 913 acres of wetlands and impairment or destruction of over 8,000 wetlands does not align with federal policy to protect wetlands. The imminent degradation of surface and groundwater violates water quality standards of the Superior National Forest as well as state, federal and tribal guidelines.	WET	NS	X	1	
Alaina Pilate	We are concerned of the impact and harm to endangered and threatened species like the lynx, moose, great gray owl, and the northern goshawk.	WI	NS	X	1	
Alaina Pilate	Please fix the plan to recognize Glencore as a responsible party for permitting.	PER	NS	X	1	
Alaina Pilate	Please fix the inaccurate water data and redo the water model in the Polymet's Plan. Please inform Minnesotans how long polluted water will need treatment.	WAT	NS	X	1	
Alaina Pilate	Please require a Health Impact Assessment, as the plan does not adequately address how its existence will affect public health for Minnesotans, Please fix the plan to accurately assess health risks to workers and the public. Please require the PolyMet plan to better address the mercury pollution problem especially for MN children.	HU	NS	X	1	
Alaina Pilate	Please fix the plan with improved wetland protection and replacement.	WET	NS	X	1	
Alaina Pilate	Please consider alternatives such as underground mining and require clean energy practices to reduce pollution.	ALT	NS	X	1	
Alaina Pilate	Please confirm the accuracy of tax estimates in the PolyMet plan and address how it currently doesn't protect MN taxpayers.	FIN	NS	X	1	
Alaina Pilate	Please better analyze impact on threatened species and better protect wild rice habitats.	VEG	NS	X	1	
Alaina Pilate	We ask that the U.S. Forest Service reject the proposed exchange of the Superior National Forest lands for the PolyMet project.	LAN	NS	X	1	
Alaina Pilate	We also request that the U.S. Environmental Protection Agency veto and the U.S. Army Corps of Engineers deny any Section 404 permit that would allow PolyMet polluted discharge and wetlands destruction.	COE	NS	X	1	
Alaina Pilate	We also object to the land exchange under the Forest Service Rules found at 36 CFR 218. We reject any claim that the objection process can be limited to people who commented prior to the draft land exchange Record of Decision.	ROD	NS	X	1	
Robert	This would be a total disaster to have something like this happen up here in the Northland.	GEN	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Taylor						
Solfrid Ladstein	the proposed mining project poses incalculable risks to the pristine environment of northern Minnesota.	GEN	NS	X	1	
Solfrid Ladstein	The new jobs that might result-- a mere 350--are in no way worth the irreversible damage that such a mining project will cause. Surely there are better ways to provide income to the few workers who would benefit. Every place in the world where such mining has taken place gives evidence of permanent ravages of the land for the short term gain of the few.	SO	NS	X	1	
Julie Young-Garayt	I am very opposed to this mining proposition. Over and over we hear about the failed promises and environmental degradation from the mining industries. Can't we learn from the oil spills, the derailed trains, the blonde mountain tops, the nuclear waste problem that these promises often go awry. The boundary waters region is such a beautiful and sensitive area that we should be extra cautious here.	GEN	NS	X	1	
Cheryl Kallio	We are deeply concerned about the reliance on "adaptive management" in lieu of complete scientific analysis of the existing hydrologic regime and likely hydrologic impacts of the PolyMet mine prior to mining commencing. The hydrologic impacts are critically important because they will determine whether Lake Superior, Hudson Bay, or both, ultimately receive mine waste water, how much water is discharged and the characteristics of the waste water. Surface water quality impacts will be different and will require different management depending on how the mine's waste water moves through the landscape and where it expresses to surface water. Of particular concern is the movement of water through the Peter Mitchell taconite pit about a mile north of the proposed mine. Rock in that pit is known to be acid-forming and yet the EIS does not take that into account in any way, even though it acknowledges that water is likely to move through that pit and discharge eventually into the Rainy River watershed. Adaptive management is entirely inadequate and inappropriate for addressing the formation of acid mine drainage, heavy metal, sulfate and other mine pollutants and their movement through watersheds.	WAT	S	O	3	SDEIS Themes WR 071, WR 081
Cheryl Kallio	There is significant disagreement among the coordinating agencies regarding whether the mine's waste water will flow south to Lake Superior or north to Hudson Bay. The modeling performed by consultant ERM makes a blatant error in the elevation of the land surface. That error forms the basis for their conclusion that water will flow south and remain in the Lake Superior basin. If the water flows north, it will violate the Great Lakes and St. Lawrence River Basin Water Resources Compact, a binding agreement in which Minnesota committed to not divert water out of the Great Lakes Basin. Without further investigating the question of where waste water will end up, any attempt to respond to this issue is nothing more than a guess. This use of adaptive management to address this concern is inadequate and inappropriate.	WAT	S	O	3	SDEIS Theme WR 081. MDNR et al. 2015c
Cheryl Kallio	In other parts of the country, EPA has expressly rejected the idea that adaptive management can replace due diligence during the planning phase. Instead, adaptive management is appropriate as a tool to monitor and adjust management actions during the life of the mine based upon information that becomes available over time. There is simply no reason that groundwater flow and quality cannot be better understood prior to mining. Importantly, it is required. We encourage you to reject the adaptive management approach as a means to avoid answering the essential question of where the mine water will end up and what its characteristics will be. The country's largest fresh water lake is at stake.	WAT	NS	X	1	
Cheryl Kallio	More than 66 percent of the Great Lakes' original wetlands have been filled in or destroyed. Wetlands provide essential services for people such as reducing flooding, preventing erosion and improving water quality. They also provide vital habitat to wildlife, waterfowl and fish, and are the backbone of the region's outdoor economy. The PolyMet project would destroy over 900 acres of wetlands. Additionally, the mine will adversely "impact" between 6,600 and 7,500 additional acres of wetlands. The sheer physical impact of this immense amount of habitat destruction and its impacts to wildlife remain undisclosed, as do the effects of the loss of the ecological function of these wetlands. We believe this would be the single largest permitted destruction of wetlands in the Great Lakes basin since the passage of the Clean Water Act, over 45 years ago and should not be allowed.	WET	S	O	3	SDEIS Theme WET 07

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Cheryl Kallio	Finally, the EIS does not consider the cumulative impacts of its enormous footprint that straddles the Great Lakes and Hudson Bay watersheds. The mine controls over 21,000 acres. The EIS does not even attempt to quantify the cumulative physical or chemical impacts of the proposed mine. In order to fully understand the effects of this mine on the environment and human health, these cumulative impacts must be considered.	CUM	NS	X	1	
Cheryl Kallio	For all of these reasons, we urge you to determine that this Environmental Impact Statement is "Inadequate" under state law and the National Environmental Policy Act (NEPA). An EIS is inadequate when it fails to adequately assess potentially significant environmental impacts. This letter points to just some of the inadequacies; therefore, this EIS and project should be formally rejected.	NEPA	NS	X	1	
James and Marianne Potratz	We certainly support the approval of Polymet's ability to mine without environmental damage. They have met all the requirements of the DNR, US Army Corps of Engineers, and US Forest Service.	GEN	NS	X	1	
James and Marianne Potratz	The first phase of the Polymet production initiative will result in 350 permanent well-paying jobs. The economic fallout will be enormous at the local, county, and state levels. This is in addition to hundreds of construction jobs in the rehab of the old steel mill.	SO	NS	X	1	
Scott Meyer	My concern is the impact Polymet will have on the lives of the people and animals living here. I believe Polymet is a hazard to every living thing here. I know most of the people here are just looking at the jobs and how much money they would make and not looking at the environmental impact their mining would have and the hazards it would bring. This is just my opinion but Polymet is a hazard to the communities up here on the range.	GEN	NS	X	1	
Kenneth Swanson	I have not seen any more information on the sulfur run off created from this type of mining that shows Poly met has the method that will keep from ruining our state water shed.As far as I know every tailings pond is designed to leak not hold water.so how is this going to contain any run off from the overburden of this mine.	PD	NS	X	1	
Kenneth Swanson	Hoyt lakes Mn is in the middle of three different water sheds north to Hudson's bay east and south to lake superior and west to Mississippi all three are some of the most important water sheds in the continent and no body seems to care. The partridge river just miles from poly met has been leaking since the 70's and no one has figured out how to stop it yet.	WAT	NS	X	1	
Kenneth Swanson	It seems that all other copper mines have a bad history of pollution so how is this one going to be different. Why can't we try to figure out how to clean up the problem mines we have now before ruining a great place in northern Mn. The minerals aren't going anywhere people have known about these deposits since the 40's they will be there long after we figure out how to mine with out ruining the surrounding area.	PD	NS	X	1	
Kenneth Swanson	these companies are not us companies so clean up is not their concern. They just mine then go bankrupt and leave superfund sites.	FIN	NS	X	1	
Kenneth Swanson	Ive been told that copper is one of the best metals to reuse since it recycles easily and works just as good the second or third or thousandth time so why make more use what we got!	ALT	NS	X	1	
Kenneth Swanson	Yes Hoyt lakes Mn. is struggling all the mining town on the range are but 20 years of jobs does not make up a good reason to pollute for centuries	SO	NS	X	1	
Jeffery D.	I would like to extend my support for the Polymet Project and feel that a very in depth study has been completed to allow the construction of Polymet.	GEN	NS	X	1	
Alan Andrae	After 10 years of study and review the final EIS has been shown to support that copper nickel mining can be done in a safe and environmentally friendly way. I fully support this project to bring much needed jobs to northern Minnesota. With all of the agencies prior studies and continued monitoring after the mining operations commence I feel the state can permit this project without further delays.	GEN	NS	X	1	
Mary Handt	Thank you for the opportunity to give my opinion to the proposed mine in Northern Minnesota. I'm 100% in favor provided that we get a guarantee that our water, air, natural resources,and ricers have a 100% guarantee nothing will pollute them EVER!	GEN	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Lois Dalsin	What happens to the wild rice, and the water, the air, and the land is crucial to the well-being of all of us who dwell in Minnesota and in the watersheds contiguous-to, and connected-with, these sites being considered for sulfide mining.	GEN	NS	X	1	
Lois Dalsin	In a particular way, American Indian peoples who rely on wild rice, clean water and air, thriving land, for subsistence, are affected by negative consequences of sulfide mining. The well-being of their culture and spirituality is at stake.	CR	NS	X	1	
Lois Dalsin	It is not an option as to whether or not Minnesota and/or Federal agencies choose to involve the Tribal Cooperating Agencies, American Indian peoples and their governing units in the study, research, discussions, diplomacy, and determinations which are part of the EIS process for the PolyMet/NorthMet Mining Project and Land Exchange. There are treaties and laws to be taken into account. For the FEIS to measure up to its goal and purpose of being "a disclosure document," the environmental and socio-economic impacts of the proposed sulfide mining project, as described in the FEIS, must guide the essential continued disclosure of the differences of opinion over major scientific premises — e.g., does the groundwater flow north, or south, from the proposed mine; and must promote active listening to, and responding to, the concerns of the Tribal Cooperating Agencies and American Indian peoples governing units, as well as individuals. My expectation for continuing "disclosure" includes disclosure and a continuing hearty, robust dialogue on the part of all interested peoples. The health, and the longevity of even our planet, rest upon the actions we take now.	NEPA	NS	X	1	
Lois Dalsin	Five hundred years of cleanup and remediation is quite unthinkable. And un-doable. We have better uses for the energies of our peoples than that of tending a failed project. I wholeheartedly oppose this proposed PolyMet NorthMet copper-nickel sulfide mine	GEN	NS	X	1	
Randy	Let this project go forward the jobs and economy needs this they proved that it can be done safe and will be good Stuarts to the environment	GEN	NS	X	1	
Crystal Yakacki	Polymet is not trustworthy, the venture is inherently flawed, it has only lead to bad things wherever it has been attempted, and it should not be attempted so close to our precious resources, the Boundary Waters and Lake Superior.	WAT	NS	X	1	
Crystal Yakacki	And nobody is going to make a dime but non-minnesotans and non-working-class people. We cannot afford these kinds of short-sided decisions anymore.	SO	NS	X	1	
Crystal Yakacki	Let's put money into building long-lasting jobs, and protect what makes Minnesota special -- our clean water and wilderness.	WAT	NS	X	1	
Crystal Yakacki	I am also extremely concerned about the public health repercussions from releasing toxins into the environment. Our children, and the bodies of our childbearing-age women, must be protected.	HU	NS	X	1	
Eleanor R Wagner	I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal. Even though it would create jobs, the risk to our environment it too great to allow this project to go through.	GEN	NS	X	1	
David Herold	This issuance of a 404 permit to PolyMet Corporation should be denied as too damaging to the public interest in clean water.	COE	NS	X	1	
Andrew Comfort	The following is an excerpt from the November 5, 2015 letter to Interested Parties from Lisa Fay, MDNR Project Manager: "The FEIS shall be determined adequate if it: A) Addresses the potentially significant issues and alternatives raised in scoping ... in conformance with Minnesota Rules, part 4410.2300, items G and H; B) Provides responses to the substantive comments received during the draft and supplemental draft EIS review concerning issues raised in scoping; and C) Was prepared in compliance with ... Minnesota Rules, parts 4410.0200 ... " The FEIS is inadequate for at least the following reasons: • It is not in conformance with Minnesota Rules part 4410.2300, item G • It does not respond to my substantive comments submitted in response to the SDEIS • It is not in compliance with Minnesota Rules, part 4410.0200	NEPA	S	O	5	SDEIS Theme NEPA 08
Andrew Comfort	Minnesota Rules 4410.2300, item G states: "The alternative of no action shall be addressed." The alternative of no action is not properly addressed in the FEIS, so the FEIS is inadequate. For further discussion of this topic see the section titled "Scenarios" in Exhibit A, page 11. It is unclear (and unlikely) that the mining of Polymet and the further Duluth Complex would provide a net financial benefit to the State of Minnesota. So the alternative of not mining non-ferrous metals should be seriously studied prior to beginning a new era of non-ferrous sulfide mining in Minnesota.	ALT	S	O	5	SDEIS Themes ALT 14, NEPA08

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Andrew Comfort	There is political pressure to proceed with mining from a pre-existing mining lobby. This faction would like to keep doing more mining to continue a tradition of mining that began with iron mining in Minnesota. By this logic, mining just continues generation after generation, until at some point the mineral resources just run out. Then, a post-mining economy will be the only choice. In northeastern Minnesota, there is currently a large eco-tourism and vacation economy that would be seriously negatively impacted by mining all resources including throughout the BWCA. Since mining is of dubious profitability for the mining companies and even less like to produce any lasting wealth for Minnesota, Minnesota would be better off in the long term to ban all sulfide mining and make the shift to a post-mining economy now. In this way, the amenity of a pristine wilderness environment can continue to support an eco-tourism and vacation economy in perpetuity - and simultaneously act as a draw for families and workers interested in working in the post-mining economy. This post-mining economy could be characterized by (among other opportunities) small business entrepreneurship making use of high speed data connections to the rest of the world.	SO	S	O	8	SDEIS Themes FIN 10, SO 07
Andrew Comfort	My substantive comment to the SDEIS was submitted by email in March 2014 with the written commentary in the body text of the email and a series of 14 map-based figures attached as a pdf I note that the 14 map-based figures were included in the set of 4 CDs comprising the FEIS, yet the written commentary necessary for a reader to understand the figures was not included in the FEIS. Since I have now learned that a pdf attachment to an email submission is accepted, I am submitting this FEIS comment with accompanying new figures and exhibits as a single pdf attachment. Because the text of this FEIS comment and the SDEIS comment make reference to the figures and exhibits, it is necessary and helpful to any interested reader of these to receive them together as a single pdf. Since my SDEIS comments were not responded to in the FEIS, I resubmit them, here, in full as Exhibits A and B. Exhibit A is the original written comment to the SDEIS which was in the body text of my email submission. Exhibit B is the set of 14 map-based figures. Generally, my SDEIS comment considers the inadequacy of the Cumulative Effects analysis. The "themed" responses (CU 01 through CU 20) in the FEIS regarding Cumulative Effects do not address the nature of my SDEIS comment with respect to Cumulative Effects and are therefore inadequate, thus I resubmit the SDEIS comment in whole. I look forward to receiving an actual response from the DNR upon this resubmission.	O	NS	X	1	
Andrew Comfort	As also noted in my SDEIS comment, the FEIS too, is inadequate due to non-compliance with Minnesota Rules, part 4410.0200, which states: " .. the RGU must consider: ... whether future development is indicated by historic or forecasted trends ... " In my SDEIS comment, I outline a series of Historic Trends and a further series of Forecasted Trends. For this FEIS comment, I will add numbering to each of the trend sub-headings as follows: HISTORIC TRENDS: 1) Hull Rust Mahoning Mine (See Figures A-D) 2) High Grade Ore to Low Grade (hematite to taconite) 3) Highway 53 4) Maturi Southwest and Maturi West 5) The Shifting Laurentian Divide 6) Sulfide Ore Mines Pollute FORECASTED TRENDS: 1) Wall Street 2) Polymet Brochure (See Exhibit C) 3) Minnesota Minerals Coordinating Committee (See Exhibit D) 4) Bedrock Geology Map Minnesota Rules 4410.0200 states that the RGU "must" consider historic and forecasted trends. It does not say "may" or "can" or "should", it says "must." I prepared this partial list of six Historic Trends and four Forecasted Trends for the SDEIS. The FEIS is inadequate because it does not address these trends as it "must". With my resubmission of my SDEIS comment, I look forward to a specific response from the DNR with respect to these trends.	NEPA	S	O	5	SDEIS Theme NEPA 08

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Andrew Comfort	<p>Polymet forecasts 4 billion tons of ore, not just on the Polymet site, but across the lease holding of several other mining companies. as well as stated in their brochure of Exhibit C: "There are more than 4 billion tons of copper+nickei+PGM resources within many deposits along ~40 miles of the edge of the Duluth Complex near Babbitt, MN. This graphic shows the locations of the deposits, the state mineral leases held by six companies and notes where resource estimates [NI 43-101 compliant] were completed." The largest iron mine pit in the world is the Hull Rust Mahoning Mine of Figures A-D. The DNR says 2 billion tons of rock have been removed (Figure A). So the mining projected by Polymet in a 40 mile stretch is two times as big a Hull Rust Mahoning. Since Polymet has a facility for processing ore and will have excess capacity and has made this brochure as a means of communicating value to investors, some of the value being from Polymet's future ability to assist in the processing of ore from other mine sites, this projected 4 billion tons of ore from Polymet to Lake One is nothing other than a "forecasted trend" that MUST be considered according to Minnesota Rules part 4410.0200. I look forward to MDNR making the FEIS adequate by properly addressing the Cumulative Impact of the removal of the 4 billion tons of ore as projected by Polymet.</p>	CUM	S	N	5	<p>The Final EIS identifies the relationship of the NorthMet Deposit to the full extent of mineral resources contained in the Duluth Complex in Section 3.2.2.1.2. The NorthMet Deposit is believed to be the second largest deposit within the Duluth Complex and represents nearly 25 percent of the known mineral resources in the area. The Final EIS's cumulative effects analysis and treatment of cumulative actions considered (Final EIS Section 6.1.1.2.1) and speculative actions (Final EIS Section 6.1.1.2.2) is consistent with the requirements of Minnesota Rules part 4410.0200, subpart 11a. The FEIS identifies 30 past, present, and/or reasonably foreseeable actions related to mining activity, and also identifies 10 speculative mining-related actions, all of which indicate the potential for future development by historic or forecasted trends. Minnesota Rules, part 4410.0200, subpart 11a, defines "cumulative potential effects" to involve "the incremental effects of the proposed project in addition to other projects in the environmentally relevant area that might be reasonably expected to affect the same environmental resources." The EIS defines reasonably foreseeable as those actions that are included in approved planning documents and have approved funding, are permitting, or have a currently active federal or state permit or site plan application under review. DNR asserts this approach is consistent with cited rule. See Final EIS Section 6.1.1.1.</p>
Andrew Comfort	<p>In the FEIS Section A.5.6 discussion of themes CU 01 through CU 20, there is reference made to following the guidance of Considering Cumulative Effects under NEPA by CEQ, January 1997. On page 4 of this document CEQ states: "Many times there is a mismatch between the scale at which environmental effects occur and the level at which decisions are made. Such mismatches present an obstacle to cumulative effects analysis. Cumulative effects analysis should be the tool for federal agencies to evaluate the implications of even project-level environmental assessments (EAs) on regional resources." Those preparing the FEIS are suffering from the problem of such a mismatch and missing that the Cumulative Effects of the Polymet proposal impact the regional resource which is the Boundary Waters Canoe Area (BWCA). In addition, on page 19, CEQ states: "... the analyst should use the best available information to develop scenarios that predict which future actions might reasonably be expected as a result of the proposal. Such scenarios are generally based on experience obtained from similar projects located elsewhere in the region." This aligns the guidance of CEQ with the requirement of Minnesota Rules 4410.0200 regarding historic trends. So the way the FEIS ignores these historic trends goes against both state and federal rules and guidance.</p>	NEPA	S	N	5	<p>The Co-lead Agencies believe that the analysis of the Project as presented in the EIS meets the procedural and analytical requirements of NEPA and MEPA, and is consistent with CEQ Guidance. SDEIS Theme NEPA 08.</p>

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Andrew Comfort	The FEIS states on page 6-21: Teck is considering operations to mine the Mesaba deposit near Babbitt, St. Louis County, Minnesota, approximately 3 miles east of the NorthMet Mine Site, for nonferrous metals (copper-nickel). The current phase is exploration and drilling. The project may require a joint State-Federal EIS. Preliminary data collection to support environmental review and permitting is underway. The Teck lease holding, however, is not 3 miles away. It immediately neighbors the Polymet site. The two sites touch. They are zero miles apart. I have layered maps from MNGS and Polymet and others and imported into CAD software for analysis and show a detail of this in Figure J. In Figure J, it is clear that Polymet (bounded in red) and Teck (bounded in yellow) touch. Figure K shows the proposed mine pit locations as provided by Polymet. Measuring the distance between these in CAD shows they are less than % miles apart. Exhibit B, Figure 12 also shows that the current Laurentian Divide passes through this % mile gap. So, my key SDEIS comments were ignored by MDNR (ie regarding the Laurentian Divide and the likelihood that Polymet and Teck would eventually form a single Teck-Polymet Mine Pit Lake) when preparing the FEIS. But worse than just being ignored, this total inaccuracy about Teck being 3 miles away is included in the FEIS. I am just a citizen and do not have time to go through the several thousand page FEIS, particularly when we are only given 30 days for review, rather than the customary 90 days. So I have just taken a "deep dive" in this particular area and in this "deep dive" I find the wild inaccuracy of Teck being "3 miles east" of Polymet. This undermines my confidence that any of the FEIS has been conducted with rigor- that this level of sloppiness suffuses the entire effort. So the FEIS is inadequate, additionally because it does not properly state the geographic relationship between Teck and Polymet. When the preparers focus their attention on the actual proximity of these two lease holdings, I request that they also focus their attention on the continuous band of ore that connects the two proposed pits and the many historic trends in Minnesota that strongly suggest that a band of ore will be fully mined and that Teck and Polymet will then become one mine pit and that at closure, this mine pit will drain into the Dunka River and onward to the BWCA. Minnesota Rules 4410.0200 requires that they MUST do this. CEQ guidance suggests that they should do it as well. Future Minnesotans will thank them for having done it, for I think it will lead to the conclusion that, ultimately, non-ferrous mining in Minnesota should be forever banned.	CUM	NS	X	1	
Lyndon Nurmi	I sent my comment via e-mail a couple of hours ago and got a response stating the comments ended in March or whatever. Is this a joke?	GEN	NS	X	1	
Joel Roberts	The project design has evolved to a point where it now relies totally on computer modeling. It is now completely differentiated from the design of seepage barriers at existing mines and processing facilities; hence the responses and the FEIS do not include citations of meaningful real-world precedents. Nothing specific is said about how things will be handled if system performance is not up to the stated criteria.	WAT	S	O	8	As discussed in the responses to themes WR 018, WR 019, WR 020, WR 021, and WR 022, the assumed capture efficiencies of the groundwater containment systems are justified and supported by modeling. The FEIS reports or reference documents that justify the assumed capture efficiencies. The Barr 2015e and Water Modeling Data Packages for the Mine Site and Plant Site (PolyMet 2015m and 2015j, respectively), cited in the FEIS) are based on issue-specific groundwater modeling or credible hydrogeologic interpretations.

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Joel Roberts	There is no concrete indication of what (if anything) the Co-Lead Agencies may have done to independently verify the data that was provided by PolyMet and its contractors. Indeed, the finished product gives a strong appearance of being largely based on data that was provided by PolyMet.	NEPA	S	N	3	All modeling was subject to QA/QC assessment prior to use. See Thematic Response WR 189. The Co-lead Agencies reviewed data, reports, and other materials related to the EIS analyses submitted by the proposer and its consultant. Final SDD Section 6.0 explains that the EIS will require state/federal agencies or the EIS contractor to review thereports and studies supplied by the Proposer.
Joel Roberts	In my SDEIS comments I said that the presence of Rainy Lobe till, containing many boulders and cobbles, would provide serious obstacles to construction of the seepage barrier (a slurry wall), and to keying it into the bedrock. A brief excerpt is quoted under Comment ID 18386, which was assigned to thematic response PD07. A typical quote from that response says that "the slurry cutoff wall and collection trench approach has been used for many decades, beginning initially as a means to facilitate construction of deep foundations in locations of shallow groundwater and difficult soil conditions, and subsequently expanding to other uses such as the containment of contaminated groundwater emanating from unlined waste disposal facilities (e.g., landfills, stockpiles, etc.)." However: • There is no specific mention of the use of this method in any sites that are closely comparable to PolyMet's proposed tailings basin site. • While Thematic Response PD07 says that the presence of boulders and cobbles is handled, along with some other site-specific conditions, it does not say how those conditions are handled. This Response PD07 is much less specific than some other thematic responses.	PD	S	O	3	The expected capture efficiency of the FTB Containment System was determined by reviewing industry use of similar systems, groundwater modeling, and hydrogeologic assessment. As detailed in Attachment D of PolyMet 2015h, academic, governmental, and industry authorities, as well as construction markets, have acknowledged the efficacy of the combined use of a cutoff wall and a collection system. This type of containment system is commonly used at facilities, such as landfills, tailings basins, and paper sludge disposal operations, where there is a need to manage groundwater flow and surface seepage. The response to comment theme PD 07 notes: "Design criteria for the Tailings Basin are based on well-established geotechnical design standards with significant precedent in Minnesota, in the greater United States, and worldwide." See Thematic Responses PD 07, WR 019; see PolyMet 2015h and PolyMet 2015i. "Key design considerations for the containment systems include, but are not limited to, the local geologic and hydrogeologic characteristics of the site, the depth to bedrock or other confining unit from the ground surface, the presence and prevalence of cobbles and boulders in the glacial till, the ground surface topography along and adjacent to the containment system alignment, the soil types to be encountered along the alignment, and the constituents in the groundwater to be contained." <i>Id.</i> The comment will be forwarded to regulatory agencies and the proposer.
Joel Roberts	2. The response to Comment ID 19577 (submitted by the Fond du Lac band) probably is the most relevant to the overall quality of the comment responses. Here is a quote from that response. The Co-lead Agencies acknowledge that there are existing water containment systems at other mine sites that do not operate with a high degree of capture, but these are	WAT	S	O	8	The expected capture efficiency of the FTB Containment System was determined by reviewing industry use of similar systems, groundwater

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
	different designs and cannot be compared to the system proposed for the NorthMet Project Proposed Action. The proposed containment system uses pumping on the tailings side and discharge on the opposite side to reverse hydraulic gradients across the slurry wall and in underlying bedrock. Relatively few containment systems have been built with this degree of pumping and discharge to ensure effective containment. The conceptual hydraulics of this type of system provides evidence that it would achieve complete or nearly complete capture. Here are some observations • The source of the discharge on the opposite (presumably, downstream) side of the seepage barrier is not specified. Is it coming from the Waste Water Treatment Facility, or from somewhere else? What is the magnitude of the discharge? It probably would be some hundreds of gallons per minute. • The fact that the proposed system is different from the water containment systems at other mine sites is presented as a basis for claiming (or at least hoping) that the performance will be better. Many of those other systems operate at less than 60% capture efficiency, but it is claimed that the proposed system will operate at better than 90% capture efficiency. While there may be reason to expect some improvement, no tangible reason is presented that would give an impartial observer confidence that such a dramatic improvement actually will happen. Unfortunately, almost everything is based on computer simulations, and very little is cited in the way of actual experience or testing. • The collection pipe is roughly four miles long (two miles along the north side and two miles along the west side), and it is perforated so that water can be collected. Very little is presented about specifications for the pumping system, such as: o How many pumps are used, what is the spacing between them, and what is the power rating? o What (negative) pressure has to be generated in order to achieve the desired hydraulic gradients?					modeling, and hydrogeologic assessment. As detailed in Attachment D of PolyMet 2015h, academic, governmental, and industry authorities, as well as construction markets, have acknowledged the efficacy of the combined use of a cutoff wall and a collection system. Attachment B of PolyMet 2015i, cited in the FEIS, contains the Permit Support Drawings for the FTB Containment System. The system will be designed and constructed in accordance with applicable requirements of Minnesota Rules, part 6132.2500, subpart 2.. See also Themes PD 07, WR 019, WR 020, and WR 117; PolyMet 2015i.
Joel Roberts	• Although the Co-Lead Agencies claim improvement in the project design compared with what was reported in the SDEIS, it comes at the price of relying even more heavily on unproven technologies for the control of seepage from the Tailings Basin.	WAT	S	O	8	SDEIS Theme WR 128
Joel Roberts	The amount of new material in the FEIS is at least as extensive as what was new in the SDEIS. A comparable amount of time would be required for evaluating it adequately. The present comment period really has been insufficient for this purpose.	NEPA	S	N	5	The FEIS review period initially identified in the Federal Register and EQB Monitor notices was consistent with NEPA and MEPA regulations. Nonetheless, the review period was then extended for an additional week beyond the regulatory requirements. SDEIS Theme NEPA 07.
Tom Smith	I feel that the company is padding the number of jobs created,that the ratio of construction jobs to fulltime jobs is like 10 to 1-ridiculous	SO	NS	X	1	
Tom Smith	project. a water treatment plan proposed to be effective for 500 years! most mining companies do not last 5 years!	PD	NS	X	1	
James S.	Pollution of the pristine environment is inevitable, even if later rather than sooner. There is no container for the polluted water and chemicals that will last forever, and even in a container they will eventually pollute the aquafir. This is evident in recent stories about pollution of a river and aquafir from a gold mine, barrels of atomic waste leaking and involved in underground fires, and other such examples.	PD	NS	X	1	
James S.	The employment opportunities can be significant but only for a limited number of years. I implore the responsible parties to think long term rather than short term.	SO	NS	X	1	
Timothy Weulander	The majority of our economy up here is mine based and has a great history of going into ruin based on the mines operating or not, this current situation is just another of many times the mines have proved there value (and lack of) to its employees. It's not just northern Mn that is affected either, as we all know, but this is probably not the best place for the political side of ideals. We just need better than mining, mining, and more mining. We need to diversify and this mine prevents that, and continues the cycle of the "Iron Range".	SO	NS	X	1	
Timothy Weulander	The nickel and other metals, for technological purposes, would be better served to be done away with, and a safer and more viable metal or synthetic could/should be used.	ALT	NS	X	1	
Timothy Weulander	sorry I dont have the time or means to download a 3500 page file, let alone read through and fully understand the jargon:	NEPA	NS	X	1	

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Timothy Weulander	Potential groundwater flow northward from the Mine Site to the Northshore Mine, if determined possible through monitoring, would be prevented. - to me, this reads that if we are able to determine underwater flows heading north, they would be prevented. Well, what if they are not determined? What if not all are found? This particular statement is worrisome to me.	WAT	NS	X	1	
Timothy Weulander	In-pit underwater disposal of the most reactive waste rock to minimize chemical reactions that could affect water quality. - This statement seems to admit and recognize that there will be reactive waste and chemical reactions. Just at what level, apparently. The only level that should be acceptable is none.	WAT	NS	X	1	
Timothy Weulander	There are 1,579.6 acres of wetlands that have been identified in the proposed NorthMet project area, of which about 913 acres would be directly affected and permanently impacted by activities related to the proposed NorthMet project. Activities that would directly affect wetlands include filling, excavation, and construction and operation of the proposed NorthMet project. - Filling in the wetlands should not happen. I'm quite sure that there is a fancy plan to reinvent those wetlands somewhere else. For the sake of the animals and plant life that would be terminated on site, this is not acceptable. Just because new ones will be made elsewhere, no rights should be given to allow the destruction of old ones. Thought I have personally witnessed the DNR not really caring of wetlands being filled in, as I have personally reported such actions happening on Lake Vermilion, and nothing has happened. Actually something did happen, the land owner was told they were not wetlands at all. I have photographic evidence otherwise, but by the time anyone arrived on his newly purchased cabin/land in Greenwood Township, perhaps it was filled in enough to not look it; but any walk in the woods on the property, or any adjacent properties would show it.	WET	NS	X	1	
Timothy Weulander	the DNR is not what it once used to be. I mean no offense by that, but my father worked over 25 years of his life for the DNR, between Cook, Orr and Tower offices. He cared about the land and wildlife, so did most of his co-workers. They took great pride in their jobs/careers and the land and wildlife were of great concern. It certainly does not appear to be much of the case anymore. Whether it's the powers that be, prohibitive laws, lack of funding, or what-have-you, I along with anyone I have ever talked to about this Polymet matter, have little to no faith that the right thing will be done.	PER	NS	X	1	
Timothy Weulander	And please, explore that worst case scenario. A major pile of their sulfuric residue spills, contaminates waters in the Superior Watershed or northern traveling underground waterways, you are dealing with nothing less than an international disaster as there is no way Canadian waters do not get affected.	WAT	NS	X	1	
Timothy Weulander	Also, something I have not come across lately is an up to date map of potential mines. Just because they have operations on one site, doesn't mean they won't acquire land elsewhere to mine. Or open up chances for other mines. I do remember a map that had once shown what locations mining companies had leased to drill, to see if it was viable land. One of those areas was right on the shore of Lake Vermilion. This whole mine seems like the potential for opening up a big can of worms.	CUM	NS	X	1	
Maureen Johnson	The FEIS is still inadequate to properly predict impacts on wetlands, ground water, and surface water. The error here is that the FEIS allows the Proposed Action to be infinite in its ability to treat its effluent and ground water contamination through Adaptive Management which also has infinite capabilities to devise answers and implement them with infinite finances, all for an infinite amount of time! This approach is just as equally impossible to perform infinitely in practicality. Polymet's or its successor's money will not be infinite, and the financial assurance will not be infinite. A few Responses to Comments condition the adaptive mitigation measures used as those that are shown to be "cost-effective", but the FEIS does not use this condition.	FIN	S	O	2	SDEIS Themes FIN 01, FIN 05
Maureen Johnson	In addition, in almost every case in which my and other comments provided additional and often more recent and more applicable references, the FEIS response does not include a discussion as to why the references are not utilized in the FEIS; they are simply ignored. This is a fatal flaw – valid scientific comments are not truly addressed, just side-stepped with Response Themes instead of actual scientific responses. My SDEIS discussion of the importance of Minnesota's narrative standards is an example.	NEPA	S	O	3	SDEIS Themes NEPA 08, NEPA 11

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Maureen Johnson	On top of this, the FEIS does not discuss what might happen if serious mismanagement were to occur in which no one would be able to respond, such as an electrical brown out causing pumps shutdown, or money became unavailable due to a financial depression . Adaptive engineering cannot resolve those in time to prevent surface and ground water pollution exceeding standards for a long time, causing impact on aquatic life and wildlife. These illustrate the importance and relevance of the DNR goal for non-mechanical maintenance of waste containments to meet water quality standards.	FIN	S	O	2	SDEIS Themes FIN 05
Maureen Johnson	The Hydrometallurgical Residue Facility (HRF) is planned to contain some of the most concentrated and toxic wastes produced by the PolyMet project. Yet, the FEIS discloses the complete chemical composition of only some of these materials and only recently upon commenters' request conducted a critical analysis on only the disclosed materials to determine whether or not they would pose hazards to the environment. The PolyMet plan selects an unsuitable location for the HRF, increasing risks of instability and liner failure at this permanent waste storage facility. The FEIS inappropriately denies the potential for releases as result of liner leakage from the HRF.	PD	S	O	2	SDEIS Themes PD 17, PD 18, PD 19
Maureen Johnson	References listed in the A.5.25 References Cited in Thematic Responses have been provided for commenter review, but many of the references listed in these Responses references have not been provided so we could understand the full context of the thematic responses and comment on the FEIS appropriately.	O	NS	X	1	
Maureen Johnson	Barr Engineering. 2006. Environmental Sampling and Analysis Hydrometallurgical Process Liquids and Solids Sampling Results Pilot Test – NorthMet Deposit. Draft-02. May 15, 2006. This reference and a discussion of its contents have not been provided to inform the public about the hydrometallurgical processing liquid. This processing liquid becomes waste liquid remaining in the pores of the HRF residues; upon collection at the bottom of the HRF, it will be treated at the WWTP unless some leaks through the bottom composite liner. Without adequate information on the wastewater a determination of appropriate regulation at the HM facility cannot be made. Similarly, no characterization or volume/mass estimate have been provided for the all of the wastes proposed for deposit in the HRF, nor their effect on the other wastes and their regulatory status. So we do not know whether the liner proposed will be adequate, and the probabilities of leakage increase.	PD	S	O	2	SDEIS Themes PD 17, PD 18, PD 19
Maureen Johnson	The FEIS does not tell decision-makers or the public what concentration of acids, salts metals and other components is predicted for the hydrometallurgical process wastes and filtered sludge that would be deposited in the HRF. No documents among the FEIS references model the overall chemistry of the hydrometallurgical residue facility at any relevant time period. Neither the FEIS nor any document identified to date documents apparent verbal explanation of any analysis that was done by any regulatory agency to determin whether the HRF should or should not be characterized as hazardous waste.	WAT	S	O	2	SDEIS Themes WR 66, WR 68, WR 145
Maureen Johnson	Humidity cell tests reported in the 2007 RS33/RS65 PolyMet report, using water, rather than hydrometallurgical process fluid/waste fluid, predicted that solid form residues would not reach the level of corrosiveness to be characterized as hazardous. The TCLP is designed for solid waste landfills, and although a required test, the TCLP is different from actual conditions that will exist in the HRF or in the HRF leachate.	WAT	S	O	2	SDEIS Theme WR 033
Maureen Johnson	RS33/RS65....This report concluded, "Eventually, it is expected that acid buffering minerals will be exhausted and the residues will become acidic unless additional buffering capacity is added. (Id., p. 28, 29). Report). Apparently, theoretical calculations will be used to combine lime or limestone with residue prior to disposal in the HRF in the hope that this addition will prevent acid generation from exceeding the neutralization capacity of the residue. (PolyMet 2014r, Residue Management Plan, Dec. 12, 2014, p. 6). It is unknown whether the limestone will be sufficiently distributed into the natrojarosite and whether it will be effective to prevent formation of acidity over time. This approach did not work well enough at two other sites to prevent acidity. In addition, the potential for deposit of any toxic metal ions and formation of toxic metal ions and transport prior to neutralization of acidity has not been addressed.	WAT	S	O	4	SDEIS Themes PD 18, PD 34, WR 027
Maureen Johnson	The DEIS noted that residue composition of this experimental process at an operational scale might differ from laboratory and small-scale pilot tests. (Id.) Certainly, since the hydrometallurgical processing liquid was not produced and/or analyzed, this will be new information during operations that PolyMet has not made public. PolyMet has avoided like the plague providing the public with any significant information about this waste liquid and its changes over time due to the natrojarosite decomposition that may or may not be inhibited by lime or limestone addition. This uncertainty should require	PER	S	O	5	SDEIS Theme PER 12, HAZ 02

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	the HRF to be designed as a hazardous waste facility in every aspect of the federal and state rules that apply.					
Maureen Johnson	The FEIS does not discuss the chemical composition or process by which the WWTF will produce filtered sludge. I found no analysis of the volume or chemistry of the filtered sludge proposed to be deposited in the HRF. However, levels of sulfates and metals in reject concentrate, even before dewatering to form sludge, indicate that sludge may pose a hazard if released to the environment.	WAT	S	O	8	SDEIS Theme WR 145
Maureen Johnson	I found no estimate of volumes of treatment facility wastes going to the HRF. There is no description found for the detailed management of wastes at the WWTF and WWTP.	WAT	S	O	8	SDEIS Theme WR 145
Maureen Johnson	The PolyMet FEIS does not include a requirement that the HRF obtain a permit as a hazardous waste facility. Neither does the FEIS contain any analysis of whether the HRF should be treated as a facility for storing hazardous wastes. This is because they have not piloted waste production for analysis. This analysis is long overdue. The Minnesota Pollution Control Agency (MPCA) has the delegated authority to enforce Resource Conservation and Recovery Act (RCRA) regulations in Minnesota. No generator can treat, store, or dispose of hazardous wastes in Minnesota without a hazardous wastes facility permit. Minn. R. 7045.0211, subp. 1; Minn. R. 7001.0520, subp. 1.	PER	S	O	5	SDEIS Theme PER 12, HAZ 02
Maureen Johnson	FEIS Theme HAZ 02 response states: "Minnesota Rules, part 7045.0120, subpart 1.I provides exemption to waste from extraction, beneficiation, and processing of ores and minerals in regard to storage, labeling, transportation, treatment, processing and disposal." Theme PD17 and other locations submit that "Mining wastes associated with extraction, beneficiation, and processing of ores and minerals are typically excluded from the RCRA definition of hazardous waste by regulatory definition." These FEIS responses do not clarify, as the referenced hazardous waste exclusion in the Regulation does, that only 20 processes are specifically identified as exempt from hazardous waste rules, and any other processing wastes are subject to Hazardous Waste rules. The precious metals and PGE hydrometallurgical processing wastes are not listed as exempt and are not exempt from hazardous waste rules. processing; I read the rule to say PolyMet's process shown on FEIS Figure 3.2-26 is not exempt from hazardous waste rules.	PER	S	O	5	SDEIS Themes PER 12, HAZ 02
Maureen Johnson	In all of its pilot tests, PolyMet chose not to collect a representative sample of the hydrometallurgical processing liquid for proper characterization.	WAT	S	O	8	SDEIS Themes WR 068, HAZ 02
Maureen Johnson	Minnesota law precludes establishment or construction of either a hazardous waste facility or an industrial solid waste facility in a "wetland" or in a location "where the topography, geology, hydrology, or soil is unsuitable for the protection of the ground water and the surface water." Minn. R. 7045.0460, subp. 2; Minn. R. 7035.1600. Location of the HRF on top of wetlands is prohibited pursuant to Minnesota rules. There are two directly impacted wetlands located in the HRF covering 7.51 acres (Large Figure 10). The type of direct wetland impact includes fill (100%). The wetland type that will be directly impacted includes shallow marsh (100%) which is currently a low quality wetland. The PolyMet FEIS proposes to construct the PolyMet hydrometallurgical residue facility on two shallow marsh wetlands totaling 36.1 acres.	WAT	S	O	3	SDEIS Themes PER 12, WET 07
Maureen Johnson	There is also a fault running directly beneath the proposed HRF location. (See Map of Faulted Bedrock and Surface Topography provided by WaterLegacy). Rather than investigate the condition and conductivity of the fault, the FEIS admits no faults at PolyMet have been investigated and assumes with no evidence that the fault will not be a risk to the project.	WAT	S	O	8	SDEIS Themes WR 008, WR 010, WR 012, GT 11
Maureen Johnson	The dip in the north edge of the exempt wetlands appears to be due to remains of a tailings dam failure. It also appears an upper bypass dam has been constructed around a weak area near the top of the TB. Note this is the vertical dam series against which the HRF will be built. The integrity of the dams appears breached or breachable. No reinforcement with cement pillars has been proposed for this area, so the HRF liner could shift two ways, inward toward the HRF center or outward into the TB if the pressures shift either way. See my previous SDEIS comments on the evidence that the TB has internal shifting such that sampling wells have been bent so badly they were put out of commission. No cement pillars	GT	S	O	8	SDEIS Themes GT 11, GT 12, GT 14, GT 15

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	around the outside will prevent this shifting on the inside. This shifting could gradually but seriously affect the integrity of the liner of the HRF. This indicates that PolyMet thinks the south end of Cell 2W is still settling. So instead of building on Cell 2W, they think that building against Cell 2W with no reinforcement will be stable. This makes no sense to me.					
Maureen Johnson	In addition there may be continual seepage from Cell 2W groundwater mounding along and under the HRF Liner, necessitating the proposed drainage system. If the capacity of this system is insufficient or if it clogs, or if the pumps stop running from a power plant breakdown, the consequences should be discussed.	GT	S	O	8	SDEIS Theme GT 11
Maureen Johnson	However, "The new dams will be located beyond the extent of the emergency basin and will be founded on existing silty sand, gravel glacial till, and Giants Range granite. Foundation preparation for all new dams will consist of removal of surficial peat (if any) until bedrock or glacial till is encountered." (November 26, 2014, NorthMet Project Geotechnical Data Package (Volume 2) Hydrometallurgical Residue Facility, Version: 5 Page 28.) This statement does not indicate that any unsuitable types of glacial deposits will be searched for and removed prior to beginning the dams outside of the emergency basin. Maps in this document show depths of till to be generally 25 to 100 feet thick. I have found no indication that site-specific evaluation of the underlying glacial deposits existing under the Emergency Basin or even under the proposed new dams was conducted. Without validation that there is no unsuitable clay or geological deposit that is subject to drained and/or undrained pressures, one should assume based on the geology of the area that the same conditions that caused the Mount Polley spill (lack of detailed identification of deposits underlying the dams so that design can accommodate them) can occur here with similar drained/undrained conditions. Drains are planned below the HRF, but not below the consolidated Emergency Basin materials. I am not a geologist, but these inconsistencies concern me. In addition, the FEIS should simply state whether or not all of the stability calculations and all actions like consolidation are sufficient to compensate for the similar risk of drained/undrained glacial deposits and shifting pressures that caused the Mount Polley spill.	GT	S	O	8	SDEIS Themes GT 01,GT 02, GT 03, GT 06
Maureen Johnson	If the Coal Ash Landfill is moved into the HRF, the action must comply with new coal ash landfill regulations under Subtitle D, Solid Waste, explained at http://www2.epa.gov/coalash/coal-ash-basics .	PER	S	O	5	SDEIS Themes PER 12, HAZ 02
Maureen Johnson	The assumption that the liner design will function for 500 years is based on a test of 174 days, less than a year, using an estimate of what Barr thinks will be the important components of the processing liquid waste, not actual analyses. PMet 2015q. p. 44-45. February 13, 2015 NorthMet Project Waste Characterization Data Package Version: 12 Groundwater Impact Assessment Planning summary memo, stated, "it is assumed that the HRF will have negligible leakage and there is no compelling need to model the leakage from this source." This memo makes the decision but does not describe the basis on which the decision was made. It is not in and of itself sufficient basis to exclude the predicted leakage from the FEIS and modeling, especially since the nature of the HRF processing waste water is unknown.	GT	S	O	8	SDEIS Themes GT 12, HAZ 02, PD 17
Maureen Johnson	The FEIS fails to provide any analysis of the impacts of liner leakage on modeled water quality. Since the DEIS was released in 2009, the Co-Lead Agencies made the strategic decision that, with a double liner system, it can be assumed "that the Hydromet Facility will have no leakage." (Water Resources/Groundwater IAP Memo, SDEIS reference MDNR et al 2011b, pdf p. 13). Because "it is assumed that the HRF will have negligible leakage . . . there is no reason to model the chemical loading from the HRF." Thus, "the HRF will not be included as a source in the probabilistic water quality modeling." (Waste Characterization Data Package, Feb. 13, 2015, FEIS reference PolyMet 2015q, pp. 44, 155) This position is indefensible. ... Even under normal operations, liners leak. The HRF leakage collection system would reduce the amount of leakage passing through the most recently available (2014), technologically more efficient, geosynthetic clay liner, but any leakage through that lower liner would be groundwater seepage. Minnesota Rules do not explicitly prescribe allowable flow rates through liner systems. Maximum allowable permeabilities of equal to or less than 1 x 10 ⁻⁷ cm/sec are typically required by the Minnesota Pollution Control Agency for liner systems. (November 26, 2014,NorthMet Project Geotechnical Data Package (Volume 2) Hydrometallurgical Residue Facility Version: 5. Page 4).	WAT	S	O	8	SDEIS Themes WR 067, WR 069
Maureen Johnson	As a result of the liner stress posed by the proposed location of the HRF on top of shallow marshland, peat, slimes and other unconsolidated glacial materials, failure of liner integrity is more likely.	GT	S	O	8	SDEIS Themes GT 11, GT 12

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Maureen Johnson	In addition, both the HRF process and the chemical trains for filtered sludge involved limestone or lime, creating high concentrations of calcium. The presence of these ions will increase the likelihood of failure of the second liner, the geosynthetic clay liner. "Ions such as those of calcium and sodium are known to have potentially detrimental effects on the long-term permeability of GCLs [geosynthetic clay liners]; the GCL permeability has the potential to increase in the presence of such ions, particularly when these ions are present in high concentrations." (Geotechnical Data Package – Hydrometallurgical Residue Facility, SDEIS reference PolyMet 2012a, p. 54).	GT	S	N	12	SDEIS Theme GT 12. The FEIS provides sufficient detail to evaluate both the potential impacts associated with the proposed liner systems and whether additional mitigation measures are appropriate. Detailed engineering of liner systems would be further addressed during permitting.
Maureen Johnson	The question of the number of years that the liner will function is still unresolved, though. 500 years is a very long time and unreasonable to predict.	GT	S	O	3	SDEIS Theme GT 12
Maureen Johnson	The Hydrometallurgical Residue Management Concept lacks and must include ground water monitoring wells to prove no leakage occurs through the lowest geomembrane liner.	WAT	S	O	11	SDEIS Theme WR 139
Maureen Johnson	Leakage through the composite bottom liner will not be detected, since the FEIS has proposed no leakage monitoring specific to the HRF (NorthMet Project Water Management Plan – Plant, Version 4. March 10, 2015 (PolyMet 2015i), Large Table 15 Monitoring Plan – Internal Streams – NorthMet Plant Site). Groundwater monitoring is required at Minn. Rules 6132.2200 REACTIVE MINE WASTE. Subp. 2. Requirements. "A mining operation must meet the requirements in items A to D...C. The reactive mine waste storage facility design shall: ...(2) identify monitoring locations to ensure compliance with the design;". The NPDES/SDS permit should also include this requirement, since the groundwater in the area of the FTB will also move likely northward to surface water, and a portion of this ground water and surface water will not be captured by the Northwest Toe collected seepage system.	WAT	S	O	11	SDEIS Theme WR 139
Maureen Johnson	With a facility this large that does not have sufficient toxicity information on all of the wastes it will contain until they are produced – after the facility is constructed, the FEIS should clarify that the facility be designed and built as a hazardous waste facility and managed accordingly until the wastes analyses are completed. Minnesota rules ensure that a facility issued a hazardous waste permit or a state disposal system permit will be properly inspected and maintained and that long-term closure will reduce the risks that caustic or toxic wastes will be released. There is no such assurance for the HRF.	PER	S	O	11	SDEIS Themes PER 12, HAZ 02
Maureen Johnson	The FEIS should assure a schedule for monitoring liquids removed from the leak detection system, or for inspections to ensure that the pumping system is not clogged due to solids accumulation. Although the FEIS p. 5-109, claims, "mitigation measures would be undertaken if there was any indication of potential solute releases to groundwater or surface water" from the HRF, the nature of these measures is not specified.	WAT	S	O	11	SDEIS Theme WR 139
Maureen Johnson	The FEIS must be revised to provide detailed disclosure of the chemical composition and pH of all individual wastes proposed for disposal in the HRF, including but not limited to hydrometallurgical process wastewater and WWTF sludge.	WAT	S	O	8	SDEIS Themes WR 068, HAZ 02
Maureen Johnson	FEIS must be revised to analyze the chemical composition of all HRF wastes based on additional leachate testing that reflects the current hydrometallurgical and WWTF sludge formation processes, and must evaluate chemical changes over time.	WAT	S	O	8	SDEIS Themes WR 068, HAZ 02
Maureen Johnson	The FEIS must be revised to provide a current mass balance for mercury, including a current analysis of the mass of mercury that would be deposited in the HRF from all wastes, including but not limited to hydrometallurgical process wastes and WWTF sludge.	MERC	S	O	8	SDEIS Theme MERC14, MERC17
Maureen Johnson	The FEIS must be revised to provide a rigorous analysis of whether the HRF wastes or any part of them are hazardous wastes under Minnesota law, requiring issuance of a hazardous waste disposal permit.	PER	S	O	5	SDEIS Theme PER12, HAZ07
Maureen Johnson	• The FEIS must be revised to reject any location for the HRF on top of wetlands, compressed peat, slimes or unconsolidated materials, and to reject any location on top of faults or fractures, unless detailed hydrologic analysis has demonstrated lack of hydraulic conductivity to shallow groundwater.	PER	S	O	3	SDEIS Themes PER 12, WET 07
Maureen Johnson	• The FEIS must be revised to conclude that the location for the HRF in the PolyMet proposed action is unacceptable.	PER	S	O	3	SDEIS Themes PER 12, WET 07
Maureen Johnson	• The FEIS must be revised to model water quality impacts from the HRF based on a reasonable and conservative range of liner leakages under normal conditions.	WAT	S	O	8	SDEIS Themes WR 067, WR 069

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Maureen Johnson	• The FEIS must be revised to model water quality impacts from HRF discharge in the reasonably foreseeable event of liner failure or stability failure.	WAT	S	O	8	SDEIS Themes WR 067, WR 069
Maureen Johnson	• The FEIS must be revised to evaluate alternatives to mitigate leakage in the long term from the HRF including completely dewatering and solidifying HRF materials.	GT	S	O	8	SDEIS Themes GT 07, GT 15
Maureen Johnson	The FEIS must be revised to evaluate the potential that materials deterioration and maintenance lapses over time would increase liner leakage and water quality impacts.	GT	S	O	3	SDEIS Theme GT 12
Maureen Johnson	Climate change FEIS p. 4-20, Table 4.2.2-1 with 1986 as the last date of record is 30 years out of date. Leave this in showing the past and add another chart for the missing 30 years to show the difference in climate that must be addressed in this FEIS. A third chart should be created that projects the anticipated climate changes during the life of the proposed project.	WAT	S	O	3	SDEIS Themes WR 180, WR 196
Maureen Johnson	Major precipitation events must be acknowledged; several 500- and 1000-year events have occurred already: More 500 and 1000 year events can be anticipated to occur due to climate change's more intensive storms. If all the basins for tailing, hydrometallurgical processing, mine waste water, WWTF and WWTP storage and pre-treatment, and stormwater are designed based only on annual precipitation from before 1987, they are not sufficient to prevent single event volume overflows that contaminate surface water, ground water and soils.	WAT	S	O	3	SDEIS Themes WR 077, WR 180, GT 05, PD 11
Maureen Johnson	on the basis of data that is 30 years old. See WR 071 acts as if no climate change is occurring now! Theme PD11 response, ap. 2546, Tailings Basin pond is designed to hold the PMP event, which is a catastrophic event consisting of 38-inch storm event within a 72-hour period. However, the remaining containments are designed only for a 100-year, 24-hour storm event plus one foot of freeboard.(PD 22 response, ap. 2552). This is inadequate to protect resources and a storm event can cause overflow and contamination of soils, surface water, and ground water with the contained waste. All containments of untreated water, especially the hydrometallurgical residue facility, should meet the PMP event of 38-inch storm in 72 hours.	PD	S	O	8	SDEIS Themes PD 22, WR 176
Maureen Johnson	4.4.2 Hydrometallurgical Residue Facility (HRF) Similar to the FTB, the HRF will function as a closed system, with the pond level managed to remain at the design level (Section 4 of Reference (4)). Precipitation falling within the HRF will flow to the HRF pond. Overtopping of the dams will be avoided by operating the HRF pond with sufficient freeboard to accommodate pond water level bounce due to a severe precipitation event, as described in Section 4.1 of Reference (4). Water level bounce from storm events is expected to be minimal, because the tributary area for the HRF is relatively small, as described in Section 2.5 of Reference (4). The cell is sized to accommodate up to 3 feet of freeboard so that some wave run-up and water level bounce can safely occur. Initial operations will be used to refine the minimum freeboard requirements. Major storms can also cause electrical outages, causing pumps to stop, so all containments of waste must be designed to accommodate at least a 1 in 1000 year storm.	PD	S	O	8	SDEIS Themes PD 22, WR 176
Maureen Johnson	CLASS 4A IRRIGATION standards On the discharger's argument about no irrigation exists -- EX. Response to Theme AQ 14 does not even acknowledge violations of irrigation standards. The current rule, 7050.0140, Subp. 5. Class 4 waters, "...all waters of the state that are or may be used for any agricultural purposes..." [italics are mine],.... These definitions literally (1) provide for future agricultural purpose where capable in the present, (2) indicate present agricultural use is not a requirement as a basis for the implementation of the standard, and (3) prevent uses that would subvert future agricultural purposes.	PER	S	N	12	As stated in FEIS response to comment theme AQ 14, violations of the irrigation standard are not expected. This topic would be further addressed in permitting.
Maureen Johnson	PolyMet 2015i, Large Table 5 Estimated Tailings Basin Seepage Water Quality from the South Toe, demonstrates unacceptable readings in the seepage at the South Toe. This indicates monitoring of the ground water should be planned all around the southern edge and at areas downstream that would show the capture at SD026 is adequate to protect ground water all around the outside of the capture zone.	WAT	S	O	8	SDEIS Themes WR 118, WR 133, WR 139
Maureen Johnson	Theme Response WR039 does not address my comments #16678 about allowing contamination to progress to property boundaries. The response discusses the presence of wells near to property boundaries. My comments discuss compliance with Minn. R. 7060 which does not allow contamination of ground water at all. So all potential sources (HRF, waste water storage/equalization ponds, waste rock piles, other containment with liners, FTB containment system, any existing ground	PER	S	O	5	SDEIS Themes PER 09, PER 10

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	water contamination, pits) must be monitored to be discovered and mitigated at the source to achieve the most practical capture when and where the pollution is concentrated and not dispersed to the property boundary where capture becomes nearly impossible.					
Maureen Johnson	The theme Response GT01 did not respond to my comment about underwater disposal and the potential for meromixis in #16667 and 16678. Development of this condition is inappropriate and requires removal of the wastes that cause it.	WAT	S	N	12	The East Pit is not expected to behave like a lake because it is backfilled. The saturated backfill in the East Pit would undergo pumping, treated water would be added to it, it would receive water from precipitation, and overflow would be directed to the West Pit. These activities would lessen the chance of stratification during reclamation. The East Pit water is correctly modeled as mixed. If stratification were to occur, it would likely lessen project impacts because water with higher concentrations of pollutants would be ensconced in lower permeability bedrock instead of being released as surface water to the West Pit or through the East Pit surficial aquifer, which of note can transmit water at higher flow rates than the bedrock units. See: FEIS page 5 - 37; PolyMet 2015m, page 80.
Maureen Johnson	FEIS p. 5-447. 5.2.5.2.3, Open Water end. states, "Surface water quality standards do not apply to the pit lake or Tailings Basin." The FEIS should explain the how ground water discharging to surface waters of the US when filling the pit becomes a waste water that is no longer governed by surface water regulations unless it overflows.	PER	S	O	5	SDEIS Themes PER 09, PER 30
Maureen Johnson	40 CFR. § 122.4(i) prohibits the net increase of any pollutant that will cause or contribute to a numeric or narrative water quality standard violation. 40 CFR. § 122.44(d) requires effluent limits in permits to ensure discharges do not cause, have a reasonable potential to cause, or contribute to the violation of a numeric or narrative water quality standard. The Theme PER 09 Response pushes narrative standards compliance off to permitting, but narrative standards should not be ignored in the FEIS.	PER	S	O	5	SDEIS Themes PER 09, WR 109
Maureen Johnson	The FEIS Glossary definition does not match the Chapter 5 text explanation of P90. Neither explains definitively whether the P90 used in the modeling is the P90 of the likely maximum or the P90 of the anticipated concentration range of possibility.	WAT	S	O	2	SDEIS Theme WR 192
Maureen Johnson	This response, FEIS PER 23, ap. 2569, about variances and available state tools being effective for compliance, should be clarified and completed with: State tools include choosing not to enforce, not including effluent limits in the permit so there is nothing to enforce, giving repeated variances allowing discharge of pollution that can cause loss of sensitive aquatic species populations in violation of narrative standards that are also not enforced, allowing partial caps instead of complete caps on wasterock piles resulting in partial pollution reductions, and minimal studies, penalties and action when the public requests enforcement. All these tools result in "compliance" with the permit -- but not with the standards and rules. The effectiveness of all these tools are demonstrated by the Dunka Mine Duluth Complex wasterock NPDES permit history. This utterly failed permit and other lax mining permits are the reasons I encourage MPCA not to use the above tools, rather, MPCA should require everything that the FEIS says in the NPDES/SDS/stormwater permit, more detailed parameters than proposed, and detailed source monitoring to assure compliance with every regulation and rule, more than the FEIS has proposed.	PER	S	O	5	SDEIS Themes PER 09, PER 23

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Maureen Johnson	Tailing Basin Monitoring Proposed monitoring of the TB is insufficient. Monitoring should include sets of ground water wells/piezometers monitoring ground water in the wetland, in the till and in the bedrock, at a distance unaffected by the containment pumping from the containment boundary and a distance apart that enables identification of any escaped TB/HRF leakage all around the Flotation Tailing Basin to prove the model's conclusion of 90% or more containment. A set includes one well in the upper bedrock, one in the lower ground water to catch sinking contaminants, and one in the upper ground water to catch rising contaminants. The sampling should be at least monthly on a set date, pre- and post-spring thaw, and during and post-large rainfall events. The wells are also required to prove capture of contaminated surface water and ground water on the south end, where only an assumption about surface water capture now guarantees 100% capture; the upper bedrock groundwater must also be captured.	PER	S	O	11	SDEIS Themes PER 09, WR 071, WR 139
Maureen Johnson	Background wells The wells that have been chosen for background are not far enough away to escape influence from the LTV Tailing Basin seepages. The basis for this is the FEIS-admitted fact that Chloride from the TB has been transported all the way to the Embarrass River. This has been going on for many years since the 1950's, so there has been ample opportunity for transport of other light and heavier contaminants especially during spring thaw and heavy rainfall events, on top of molecular dispersion of higher concentrations. Sampling for the range of possible contamination is inadequate and should be part of the plan for remediation of contamination not captured by the Containment System. Appropriate capture of all species of Mercury should be included in all studies.	WAT	S	O	3	SDEIS Themes WR 203, WR 204, PER 09
Maureen Johnson	No estimate has been made of the damage that would occur if PolyMet reneges and asks for variances (which MPCA has been very liberal about giving out).	PER	S	O	5	SDEIS Theme PER 06
Maureen Johnson	PolyMet has not committed to full control of its pollution because it cannot -- the technology is all fully experimental -- that is why they have an "adaptive management" plan -- if one pollution control technique doesn't work, they will try to figure out another -- that is "cost-effective" or, the option is always there, to ask for a variance from the MPCA, and MPCA has been generous with variances	WAT	S	O	4	SDEIS Themes WR 119, WR 122, WR 127, WR 137, WR 138, WR 148, PER 06 WR 119, WR 122, WR 127, WR 137, WR 138, WR 148, PER 06
Maureen Johnson	As far as the state legislation mandating long-term economic gain, let's talk about what long-term means: in PolyMet's case, long-term is 500 or more years of having to "mitigate" its pollution, which means pollution will only be partly resolved in waters from the tailing basin, the dump and the mining pits that will turn meromictic...Mining is not a long-term economic gain.	WAT	NS	X	1	
Maureen Johnson	One of the pollutants that PolyMet has admitted it has not found a control for is Mercury. It will release from the tailing basin in the seepage that is not captured to creeks to the already Mercury-impaired Embarrass River and worsen the drinking water and fish conditions of the St. Louis River.	MERC	S	O	2	SDEIS Themes MERC 16, MERC 18, MERC 19
Maureen Johnson	Some Mercury will not be able to be captured by the air controls on the production systems.	MERC	S	O	2	SDEIS Theme MERC 08
Maureen Johnson	The FEIS should itemize and describe each loss of Superior National Forest that has already occurred and the reasons, to provide perspective on what this land exchange would mean.	LAN	S	O	3	SDEIS Themes LAN 06, CU 07, CU 08, CU 10
Maureen Johnson	Speaking of people, loss of SNF also means loss of land for hunting, recreation, and traditional cultural uses for both Minnesotans and Native American tribes. Impairment of fishing and hunting because SNF did not retain the land is predictable and must be discussed. What other future loss of SNF is planned or allowed must also be discussed, so that a full and honest presentation of the shrinkage of the SNF is clear.	LAN	S	O	3	SDEIS Themes LAN 03, LAN 06, CU 08, CU 10

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Maureen Johnson	The proposed exchange meets five of the seven "USDA Forest Service Strategic Plan FY 2007-2012 Goals." You should provide all of the goals so that we can see which goals are NOT being met and can see for ourselves as to which are important and how the goals meet the Forest plan. We are now in 2015. What are the goals for this 5-year period? I did not see the overall "mission" or "purpose" of the Superior National Forest to contrast with the "strategic plan goals" to resolve the controversy. You have not even mentioned the effect of this exchange on the the SNF as a whole. These must be part of the discussion: From the Introduction to the 2004 Forest Plan: "The purpose of the Forest Plan is to provide management direction to ensure that ecosystems are capable of providing a sustainable flow of beneficial goods and services to the public." "The Organic Administration Act authorized the creation of what is now the National Forest System. The law established forest reserves "to improve and protect the forests within the boundaries, or for the purpose of securing favorable water flows, and to furnish a continuous supply of timber for the use and necessities of citizens of the United States..." "Multiple-Use Sustained Yield Act In this Act, Congress again affirmed the application of sustainability to the broad range of resources over which the Forest Service has responsibility. This Act confirms the authority to manage the national forests "for outdoor recreation, range, timber, watershed, and wildlife and fish purposes." " The National Forest Management Act requires that National Forest System land be managed for a variety of uses on a sustained basis to ensure in perpetuity a continued supply of goods and services to the American people. Endangered Species Act One of the purposes of the Endangered Species Act is to provide a means whereby the ecosystems upon which endangered species and threatened species depend may be conserved. The Act requires Federal agencies to carry out programs for the conservation of endangered and threatened species in consultation with the US Fish and Wildlife Service. " 3-29 Forest Plan: Standards and Guidelines: "Minerals S-UB-6 Federal mineral exploration and development activities that disturb the surface are not permitted."These goals for the entire SNF would be undermined by relinquishing existing SNF lands to the State. If SNF lands are exchanged, they should be exchanged on conditions that they be maintained with the same purposes as the SNF, which excludes the surface development for minerals.	LAN	S	O	3	SDEIS Themes LAN 01, LAN04
Maureen Johnson	In addition to opposing the transfer of Superior National Forest land to the State of Minnesota, I request: Analyze the following potential significant adverse impacts of the transfer of Superior National Forest land out of federal ownership and the reasonably foreseeable exploitation of that land for maximum profit: 1) loss of biodiversity, 2) impairment of fish, plant (including wild rice), old growth forest, bird, and mammal communities, 3) reduction of critical habitat and corridors for endangered species, 4) air pollution, 5) pollution of surface water; 6) pollution of drinking water, 7) mercury contamination of fish, 8) reduction of public, including tribal, access for hunting, fishing, and ricing, 9) reduction in outdoor recreation opportunities, 10) losses to recreation and tourist economies, 11) impacts to climate change; 12) impairment of tribal consultation and environmental justice, 13) impairment of public health as a result of pollution and resource destruction. •Analyze all potential significant adverse impacts listed above considering cumulative impacts across Northeastern Minnesota of past, present and proposed mining, logging, fossil fuel combustion and habitat destruction.	LAN	S	O	2	FEIS Section 5.3; FEIS Chapter 6. SDEIS Themes LAN 01, CU 02
Maureen Johnson	The FEIS admits that TDS and other contaminants will not be controlled unless they are told to do so in permitting. The feasibility and expense of treating these contaminants must be studied, and the commitment of PolyMet to treat them is required in the FEIS.	WAT	NS	X	1	
Maureen Johnson	The FEIS has not discussed available data and narrative standards, including maintenance of species, and failed to analyze the effects and cumulative effects of the pollutants governed by the state narrative standards, as described in EPA's own guidance. No effort has been made to evaluate the use of any methods to assure compliance with the narrative standards.	NEPA	NS	X	1	
James Burpee	I think this is a very bad idea.	GEN	NS	X	1	
Timothy Nybo	I just don't understand why this process can not be made better, better recovery of materials, less environmentally hazardous chemicals, better end result by recovery and neutralizing of these process chemicals. There is a better way, AMERICAN ingenuity out west proves this.	ALT	NS	X	1	

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Bruce Johnson	My comment 15326 regarding the toxicity and degradation products and toxicity as it relates to environmental impacts was responded to with Theme Code HAZ 04. The Theme code answered my comment stating that the MSDS answers my question. Before I wrote the first comment I reviewed all MSDS's. They did not answer my comment thus I commented on the lack of analysis in the SDEIS. MSDS's are written for the health and safety of workers that handle a product. The MSDS are not required to provide any environmental health or chemical degradation or mixture information. For example, Flotec Pax (Potassium Amyl Xanthate, Potassium Isoamyl Xanthate) is proposed by PolyMet to be used extensively in the beneficiation process. The MDDS has a small section that describes some ecological information: it is acutely toxic to rainbow trout at >10 -100 mg/l. an acutely toxic to water flea >1-10 mg/l. It states that it is "toxic to aquatic organisms, may cause long term effects in the aquatic environment", it further states: "this matter is not biodegradable". The MSDS contains no mixture toxicity information when it is mixed other reagents in the beneficiation process. Clearly the use of this chemical with others in large amounts for 20 years and then discharging them into the tailing basin adds toxics to the basin. Assuming the FEIS prediction of 90% collection of seepages from the basin actually works as hoped. It would return the seepage into the basin. Once returned to the basin an unknown amount and concentration will accumulate and at an unidentified point the remainder will be pumped the wastewater treatment plant. This plant does not have removal rates for any of the flotation chemicals. One would expect an undetermined amount to be sent to both the hydrometallurgical facility as sludge where it will concentrate. The remainder will be returned to the tailing basin where it will further concentrate to a yet undetermined concentration. Another unspecified amount (at least 10%) and concentration will be lost to seepage and enter receiving waters through the shallow groundwater and ultimately the surface water. The DEIS impacts from this have been ignored in the FEIS. This is a critical omission that will have substantial surface and ground water impacts.	WAT	S	O	6	Final IAP Memo: NorthMet SDEIS Water Resources Impact Criteria, Table 2
Bruce Johnson	My comment 15325 regarding the lack of bicarbonate analysis in the surface water was answered by theme code HAZ01 this answer is nonsensical. Bicarbonate is NOT a hazardous waste, it is a waste produce by the decomposition of minerals from tailing and waste rock. As state in my original question it is regulated under Minn. Rules 7050.0220 Subp. 5. At 5 meq/l. The question remains unanswered.	HAZ	S	O	6	Final IAP Memo: NorthMet SDEIS Water Resources Impact Criteria, Table 2
Bruce Johnson	The FEIS assumptions regarding Ammonium Nitrate Fuel Oil (ANFO) blasting agents described in the NorthMet Project Waste Characterization Package version 12, February 13, 2015 Section 8.4.2 amounts to nothing more than assumptions and speculation with no scientific validation. The open scientific literature and the Minnesota and Federal rules are in disagreement with these assumptions.	WAT	S	O	3	PolyMet 2015q
Bruce Johnson	- The FEIS assumes that the property boundary is the compliance point for surface water discharges. This is incorrect. The point of compliance for discharges to surface waters is where the discharge enters waters of the state or nation. This is documented	PER	S	O	11	Groundwater evaluation locations used for the EIS provide adequate characterization of potential environmental effects of the proposed Project. See NorthMet EIS Groundwater IAP Summary Memo June 30, 2011. SDEIS Theme PER 09
Bruce Johnson	The FEIS assumes that leachate from the explosives will rinse off the waste rock and tailing in one year. The open scientific literature from Canada has documented that the Nitrogen has been documented to take 5 years to reduce concentrations (Morin & Hutt 2009, p1550).	WAT	S	O	3	PolyMet 2015q

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Bruce Johnson	The FEIS oversimplifies the impacts of ANFO. In Canada ANFO release has been studied and it has been necessary to regulate a Canadian report states ANFO is regulated in surface water using the following statement: Because of the potential adverse environmental effects of ANFO, its use in Canada is regulated by Section 36(3) of the Fisheries Act (1985), which prohibits the deposit of deleterious substances into waters frequented by fish, unless otherwise permitted by regulation. There is no regulation pursuant to the Fisheries Act that permits the deposit of by-products resulting from the use of ammonium nitrate-fuel oil mixtures. Also, the use of ANFO near bodies of water is not recommended by the Institute of Makers of Explosives, which stipulates that No use of ammonium nitrate-fuel oil mixtures occurs in or near water due to the production of toxic by- products (ammonia). The report concludes: "The literature review indicates that the most common environmental issues associated with the use of ANFO are related to dissolution of AN and to oil wicking. Nitrates and ammonium are readily soluble in water, and thus can very easily reach groundwater. Nitrates exceeding the CCME guidelines (2003) of 13 mg NO3-/L for freshwater (or 16 mg NO3-/L for the protection of marine life) are at risk of causing methaemoglobin, especially in babies. In addition, the presence of nitrate in marine water will cause algal blooms and eutrophication. The toxicity of the ammonium ion is low, but the ammonium in water is in equilibrium with ammonia, which is characterized by a much higher toxicity. Aquatic life is affected when concentrations of ammonia exceed 0.019 mg/L (CCME, 2000). In addition, ammonia in concentrations above 25 mg/m3 for a 15-minute period or the IDHL of 210 mg/m3 (NIOSH, 2007) poses a health hazard to humans. However, this situation is not likely to happen to CF members, given the fact that ANFO is usually handled outside." (Defence R& D Canada, Jan 2010). - The FEIS failed to evaluate impacts from oil wicking of ANFO (Defence R& D Canada, Jan 2010).	WAT	S	N	3	Section 8.4.2 of PolyMet 2015q
Bruce Johnson	- Another report states the field literature documents that between 5-15% of ANFO leaches into drainages. In one site an ammonia mass balance showed between 9-27% of ammonia was found in the mine water, and 26-47 % was found in the mill circuit (Morn and	WAT	NS	X	1	
Bruce Johnson	The FEIS assumption that the ANFO release is a one-time load dependent and is not a ongoing load is simply incredible (FEIS p96). The Mine operation is estimated 20 years. ANFO blasts will occur at least weekly. Liter states the leaching of blasts have been documented to leach for 5 years. Thus, assuming the ballast size and frequency remain constant over 20 years, leaching concentrations will increase for the first five years and remain stable for the next 20 years and decrease for the remaining five assuming closure after 20 years. This discharge is therefore not a one tome load dependent discharge as the FEIS states but and ongoing discharge that will last until 5 years past mine closure.	WAT	S	N	3	Section 8.4.2 of PolyMet 2015q, page 96
Bruce Johnson	My Comment 15312 was "answered" using thematic response WR 32. The response fails to answer the impacts from nitrates. It assumes only the rock in the pit contains residual nitrates. It fails to discuss the treatment levels if the water is internally recycled in the system and not discharged. The literature has documented the tailings also contain residual elevated nitrates. The FEIS proposes the tailing water will be recycled and at an undetermined concentration in the basin and will be sent to the mine site treatment plant. It will be treated to an undetermined extent by the treatment system since it is not being discharged. The undetermined concentration of nitrates in the sludge will be sent to the hydrometallurgical process and concentrate to undetermined higher levels. The "treated" water (treated to a undetermined level) will be sent to the tailing basin where it will accumulate to an undetermined concentration since it will not be controlled under NPDES Permit. That which is not captured at the basin for reuse, will discharge and undetermined concentration of nitrates into the shallow groundwater and discharge to area streams. This entire sequence is undefined and must be addressed to protect both surface water and drinking water.	WAT	S	O	3	PolyMet 2015q Figure 8-21, Barr 2013f, FEIS Figures, 5.2.2-37, 5.2.2-41

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Bruce Johnson	My comment 15313 regarding discrepancies in the amount of ANFO used in a blast was answered with theme code GT01. The Theme code GT01 response has nothing to do with my question. Thus my question remains unanswered.	WAT	S	O	3	FEIS Table 3.2.-5 is consistent with PolyMet 2015a. PolyMet 2015q Table 8-9 is consistent with PolyMet 2015a and FEIS Table 3.2-5. Equation 8-30 in PolyMet 2015q was used to estimate environmental effects in this case. SRK 2007b (Reference 3 of PolyMet 2015q) is not referenced in Section 8.4.2 of PolyMet 2015q.
Bruce Johnson	Comments Regarding 90% recycling of Tailing Basin Water. The proposal in the FEIS is to concentrate the water accumulated in the pits, and waste rock and other ancillary areas discharge will be "treated" at the WWTF and discharged to the Tailing basin. The WWTF treatment sludges will be discharged to the hydrometallurgical facility. "At least" 90% of seepage from the tailing basin will be captured and treated for reuse in the beneficiation process. This "recycling" process ignores a number of critical issues:	WAT	NS	X	1	
Bruce Johnson	Since no direct discharge is planned to surface water surface NPDES water standards will not apply to internal "treatment" concentrations, as long as a discharge does not occur to surface water. This means the treatment process is internal and will not have to meet any surface water regulatory standards, or predictions in the FEIS. Thus if the treatment facility could meet surface water standards, which has not been demonstrated using seepage wastewater from field sites such from the Dunka Mine, will not be required. Thus the plant will not be required to meet a set of standards under a NPDES permit. As a result the plant will be operated in such a manner as to not allow the production process to be fouled. This level of "treatment" has not been describe or evaluated.	WAT	NS	X	1	
Bruce Johnson	2. The pumping seepage water from the tailing basin back to the basin will allow the chemicals and minerals are found in beneficiation process that have dissolved as it travels trough the copper nickel and taconite tailings to be added to the existing beneficiation water to concentrate to a undefined saturation point until such a time that the process is hampered by a chemical or element or series of elements. At such a time the concentrate will be processed in the WWTF to an unknown level.	WAT	NS	X	1	
Bruce Johnson	3. Loss of these concentrated seepages that escape containment will have a definite impact on surface waters. It is likely that they will contain numerous beneficiation reagents, elevated specific conductance, calcium, magnesium, potassium, chloride, sulfate, nickel, cobalt, and potentially zinc, as demonstrated from the Amax tailings study (Minnesota Department of Natural Resources, 2004).	WAT	NS	X	1	
Bruce Johnson	The FEIS page 5-131 & 5-132 and Themes WR 002, WR007, and GLIFIC 147 discuss saline groundwater. I find the FEIS responses dated, overly simplified and scientifically inadequate. The FEIS responses comments follow a pattern of citing outdated or inappropriate science and answering with a final statement that if we are wrong we will treat the waste to standards for as long as necessary (FEIS page A539 paragraph 4). I find the discussion of saline groundwater inadequate for the following reasons:	WAT	NS	X	1	
Bruce Johnson	1. The FEIS assumption that saline water is found in only in ground water pools in fracture areas (FEIS p 5-132) ignores current science on the subject. Two published geological research reports have conclusively identified the source of brackish water (salt) within the Duluth Complex. The salt is contained within dry micro-fractures within troctolite rock (Dalberg, Sanini-Eidukat, 1991; Pasteris, Harris, Sassani, 1995). When this rock is exposed to water, in fracture zones or by crushing, the salt dissolved into the water. The absence of water in 12 drill core wells is not an indication of absence of salt but an absence of water in the core.	WAT	S	N	3	FEIS pg 5-132. SDEIS Themes WR 010, WR 078
Bruce Johnson	2. The proposed PolyMet pit is troctolite (Patelke, 2010). The same rock that contains the micro fractures.	WAT	NS	X	1	

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Bruce Johnson	3. The FEIS (p. 5-131) unproven allegation suggests that PolyMet pit depth is shallow compared to the Amax and is not in the same rock units. This is inaccurate since the rock units dip downward to the southeast from PolyMet. Thus Unit 1 at Amax is at the bottom of the mine and Unit 1, and the other units at PolyMet are on the surface (Patelke, 2010). Additionally Dahlberg stated the inclusions were found "Within drill cores at distances ranging from 11.3 to 917.5 m (37 to 3009 ft) from the foot wall (footwall is defined as the mass of rock beneath a fault, ore body, or mine-working) of the Duluth Complex,...". Thus, it is highly probable chloride inclusions will be encountered by PolyMet.	WAT	S	N	3	FEIS pg 5-132. SDEIS Themes WR 010, WR 078
Bruce Johnson	4. The chloride concentrations would be expected to be the highest in the tailing since the surface area would be the largest, exposing the micro fractures. This would be consistent with the results observed at the Amax tailing test plot (MNDNR, 2004). As a result chloride concentrations are drastically underestimated in the tailing basin table (Large table 10 thru 14, Annual Summary of Concentrations Statistics north, northwest, west, south, and east toe of the tailing basin).	WAT	NS	X	1	
Bruce Johnson	The Theme Response WR173 makes unsubstantiated assumptions that it is "assumed that the oxidation in submerged wall rock and waste rock was negligible." Major ion dissolution from underwater disposal of waste rock and pit sidewall leaching has not been addressed.	WAT	S	N	3	PolyMet 2015q Section 9.6.4
Bruce Johnson	The MNDNR Division of Fish and Wildlife reported taconite abandoned mine-pits have elevated concentrations of Ca, Mg, Na, Mn, SO4 at neutral to basic pH. Elevated ion concentrations are represented by both individual chemical composition and specific conductance as well as ionic imbalances when compared with unimpacted natural waters. These elevations are further reflected in aquatic benthic invertebrate impacts in the area.	WAT	NS	X	1	
Bruce Johnson	Numerical standards are not the only applicable surface water standards surface water is also regulated by narrative standards. In Minnesota whichever of these standards is more restrictive takes precedent.	PER	S	O	11	SDEIS Theme PER 09
Bruce Johnson	Beyond failing to evaluate major ions underwater concentrations, the FEIS ignores addressing impacts of noncompliance with narrative standards from such releases to surface waters directly or through shallow groundwater upwelling.	WAT	S	N	3	Final EIS Section 5.2.2.1. SDEIS Theme PER 09
Bruce Johnson	Subaqueous disposal is used in the US for superfund remediation where mitigation of contamination is the goal, rather than prevention.	WAT	NS	X	1	
Bruce Johnson	Direct discharges or shallow underground upwelling's from flooded pits must meet water quality standards once they enter waters of The state i.e.". and must meet All surface water standards.	PER	S	O	11	SDEIS Theme PER 05
Bruce Johnson	Water in abandon pits become waters of the state once The permit is terminated through Mine closure. Thus they must also meet All numerical or narrative standards. The state should not be left with contaminated sites that do not meet standards.	PER	S	N	11	
Bruce Johnson	The FEIS response to narrative standards concerns is that they are relegated to permitting (Theme Per 09, p A-458). In delaying this critical evaluation, it cannot be concluded by the FEIS that substantial impacts will not occur, Or can be controlled to existing standards for 200 years.	WAT	S	N	3	Comment noted.
Bruce Johnson	- Theme AQ 09 makes the inaccurate assumption that once Duluth Complex waste rock is placed under water in anoxic conditions the only release that would be biologically harmful underwater would be sulfate. Additionally, Theme WR 173 states: "Goldsim model	WAT	S	N	3	PolyMet 2015q Section 9.6.4, There is no assumption that anoxic conditions result in water quality standard compliance
Bruce Johnson	A report by the DNR studied subaqueous leaching with flask laboratory experiments using the Virginia Formation and Partridge River Formation rock Units 1, 2, 3, 4 5, 6, 7, 8. The report disregarded initial leachate flushes that were apparently quite elevated. These type flushes will occur under operation conditions and should not be ignored. The remaining leachate collected demonstrated that concentrations in anoxic conditions are reduced from oxygenated. (Lappako et. Al. June 2013). The resultant copper, nickel, cobalt, zinc, sulfate will all exceed chronic surface water standards for receiving waters with hardness of 50 mg/l which comprise most of the unimpacted wasters in the area.	WAT	S	O	3	Accepted procedures were followed to produce reliable results.

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Bruce Johnson	In 1980 the Regional Copper Nickel Study tested Duluth Complex Rock under various oxygen levels and found that anoxic conditions demonstrated that nickel was released slowly to 1 mg/l after 800 hours (33.3 days) a order of magnitude above the 2B standard for these unimpacted waters (Eger P. Lapakko K.). The MinnAmax (Amax) the closed test underground mine is 3.2 miles from the proposed PolyMet pit that is 2.7 miles long. The shaft is 14 ft. in diameter and approximately 1750 ft. in depth. It was constructed through low-level Duluth Complex rock and is constructed in the Partridge River Deposit. The mine has been abandoned and shaft was sealed and filled with water for many years. The surface area is exposed to anoxic leaching. The sidewall surface area exposed is small compared to both the PolyMet pit sidewalls and the disposed waste rock surface area. On October 10-11, 1985 DNR minerals sampled the water in the shaft to a depth of 300 ft. Results from the sampling on October 3rd demonstrate nickel, cobalt, chloride, specific conductance all exceeding 2B surface water numerical standards averaging Yet pH has a mean average of 7.5. (DNR AMAX Shaft Test Data). The shaft contains low concentrations of sulfide bearing rock and has a small surface area exposed to leaching compared to PolyMet's high sulfur waste rock and high sulfur Virginia Formation and waste rock sidewall in the proposed east pit. The chronic standards for waters in the area is nickel is 0.088 mg/l (hardness 50mg/l), cobalt 0.005 mg/l (not hardness related), chloride 230mg/l. The average values observed were nickel 0.0908mg/l, cobalt 0.0383mg/l. Chloride 647mg/l.	WAT	NS	X	1	
Bruce Johnson	Although the nickel is slightly over standard It must be considered that the PolyMet Virginia formation and the category of waste rock proposed to be disposed of underwater is high sulfur and other heavy metals and will release much higher concentrations of metals, in anoxic circumneutral pH conditions.	WAT	S	N	3	PolyMet 2015q Section 9.0. SDEIS Theme WR 025-15
Bruce Johnson	Another FEIS omission is that major ion balances and specific conductance are ignored. Both of which are well identified to have toxic effects. At the Amax shaft the specific conductance averaged 2,414 uS/cm. This is far above the values that EPA found impacting benthic invertebrates in West Virginia and Kentucky, and in Minnesota (Johnson and Johnson).	WAT	S	N	3	Final EIS Section 5.2.2.1. SDEIS Theme AQ 14
Bruce Johnson	The FEIS has not addressed impacts of bicarbonates, a major ion that has a numerical standard of 5 meq/l. and major ions and ion imbalances in subaqueous disposal of waste rock or pit sidewalls from runoff and inundation. It further employs limestone as a "treatment" for metals release on the east pit sidewall. This will further elevate major ions concentrations and specific conductance impacting benthic invertebrates in any discharges or seepages.	WAT	S	N	3	The Final EIS assesses potential alkalinity concentrations; see Final EIS Section 5.2.2.1. SDEIS Theme WR 060-4.
Bruce Johnson	must be considered after mining operations this water will need to be treated for at minimum as long as the United States has been a nation. Is this practical financially or otherwise? Can the RGUs demonstrate any industry treatment for a close industry site that the same industry treatment is being operated with or without financial assurance today?	FIN	S	O	3	SDEIS Theme FIN 03
Bruce Johnson	Specific conductance is reported to impact the areas inundated iron ore, and iron ore mine glory holes. Three pits in the area are chemically stratified with elevated specific conductance and temperature with depth (Miners Pennington and Sagamore). All pits are characterized by high sulfate, alkalinity, hardness, and organic nitrogen. Both density and diversity of invertebrates colonizing artificial substrates are low when compared to oligotrophic natural lakes. (Pierce Rodney B., Tomcko Cynthia M., November 1989). Since iron ore is low in sulfate compared with Duluth Complex it further demonstrates that what the FEIS describes as "assumed as negligible" is in gross error.	WAT	S	N	3	PolyMet 2015q Section 9.6.4
Bruce Johnson	Area field data demonstrates that subaqueous disposal of elevated sulfide waste rock coupled with mine pit sidewall will further drastically increase using subaqueous disposal. This demonstrates that underwater disposal of waste rock and sidewall leaching of Virginia formation will not meet surface water standards for hardness, specific conductance, nickel cobalt and zinc. Once waste is in place underwater it will never meet surface water standard for these parameters and will be impossible to remediate to standards.	WAT	NS	X	1	
Bruce Johnson	The literature also demonstrates similar concerns over subaqueous disposal. As a result of laboratory testing Y.T. Kwong makes the following conclusions: 1. Sub aqueous disposal reduces the rate of sulfide oxidation but does not eliminate it. 2. With the progress of sulfide oxidation underwater the alkalinity will determines the net acidification 3. Potentially deleterious trace elements like arsenic and antimony with multiple oxidation states are susceptible to remobilization under water with changing redox conditions. In summary he states: "it should be apparent that subaqueous disposal as a panacea for managing all types of reactive mine wastes is a myth.(Kwong Y.T. 2004).	WAT	NS	X	1	

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Eugene Ollila	However, I cannot see ruining the future to be in ALL of our best interests, wherever we live. I do not believe Polymet can contain the toxic substances as they so blithely feel they can.	GEN	NS	X	1	
Eugene Ollila	can. As a physician, I also feel that many of the side effects of toxic substances take decades to show up, long after the mine's owners have decamped. Iron ores are relatively tame compared to sulfur byproducts and other "waste" materials. We thought DDT on the farm in the 50s was safe. If we believe all the discussion, there will be lots of bridges for sale, as in Brooklyn Bridge.	HU	NS	X	1	
Lyndon Nurm	We also do not want our beautiful area ruined forever. That being said, we also want the jobs so our young people can stay up here, find jobs in 'GOD's Country'. Our voices should be heard as going with the outcome of the research already done for many years. I (we) would say the project should be a 'go' if that is what the technology shows can be done safely.	GEN	NS	X	1	
Lyndon Nurm	We would also recommend or hope the state would have a 'BIG STICK' to use in a timely manner if things appear to be going wrong. No monkeying around, just shut it down. Sure hope that is not how it works out.	PER	NS	X	1	
Rodney Booth	I am writing as a private individual to express my support for the final NorthMet Mining EIS. The document is very thorough in detailing how the State of Minnesota will control and limit the environmental impact of this project. I believe that it is time for the permits to be issued and this project to begin.	GEN	NS	X	1	
Lynn Grano	In addition to the specific criticisms below, and despite numerous objections raised in response to the preliminary EIS, this more "final" result is a joke because it fails in any manner to seriously address the complete inability of any possible financial instrument(s) to adequately cover the never-ending (well, at least in excess of a 500 year period) liability raised by the sulfate tailings / tainted ground water / etc. generated by this project. Here's yet another example of privatizing the gain (whatever profit PolyMet takes from its 20 year run projected operation of this mine) followed by socializing the cost (leaving Minnesotans to be on the hook forever thereafter for any damage). It's now quite clear from the DNR's complete failure to address this issue in any manner that the citizenry could consider that said agency is either incompetent or corrupt when it comes to preparing an unbiased assessment of the risks raised by this project. It now seems beyond dispute that the DNR's charge to promote mining has rendered the agency unfit and unable by such an inherent conflict of interest to prepare the unbiased and comprehensive EIS that is required by both State and Federal law.	GEN	NS	X	1	
Ruth E. Ulvog	I find it completely and totally unconscionable, personally offensive, incomprehensible, and utterly embarrassing that the three government entities/Agencies whose mandates are to safeguard the Natural Resources which belong to the citizens of Minnesota and to the citizens of the United States, to allow themselves, individually and severally, to be blindsided and broadsided by either allowing only information from studies from PolyMet Mining, institutions such as Cornell University, whose researchers were, have been, and are on PolyMet's payroll, as well as their business partners and business interests who are undoubtedly colluding with government agencies and entities so they can make more money at the expense of the health of the citizens of Minnesota and the United States. Not only is there collusion in this area, there is obviously collusion on the part of all these entities that negates any concern for the Federal mandate to safeguard, care for, and keep in Sacred Trust PUBLIC LANDS that include unrenovable resources: including recreation, clean, unpolluted air; clean, unpolluted water, clean, unpolluted lakes; healthy fish and wildlife, and the health of all who utilize an area that is a highly regarded and worldrenown part of Minnesota that is owned by the citizens of the United States. These multinational business industries have an abysmal environmental record and are being led by business people who worship the "Almighty Dollar" and care absolutely NOTHING about the environment or the health of anyone or anything--except lining their already very deep pockets. I have read the final reports, and believe them to be completely biased in favor of the industry. Any reports from other sources--whether they be so-called independent sources or biased in favor of environmental groups, have either been blatantly ignored at worst; and demeaned and negated, at best. Follow the numerous sources from the reporting of Minnesota Public Radio, as they delved into this issue. You will find that ALL BUT ONE of the PolyMet Mining sites in the world; in North and South America in particular, have been nothing short of a complete and utterly embarrassing debacle when it comes to environmental compliance.	GEN	NS	X	1	

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The Lesters	I don't believe PolyMet or the State of Minnesota is going to be alert to those problems for 500 years. Somewhere in that time, also, major damage will have been done to the environment and, likely to the health of people affected by those poisonous tailings.	PD	NS	X	1	
The Lesters	Three open pits will be located within the Superior National Forest on public land. PolyMet is trying to get control of that property through an exchange of other land. Congress would need to approve this, correct? If so, without this approval, the whole project falls through.	LAN	NS	X	1	
Daniel Iverson	Copper nickel sulfide mining is bad mojo. You don't need a degree in biology or economics to realize , based on the history of the mining corporations and their key people that Minnesota is being played the fool.And, I am sure that Poly-Met and Twin Metals are growing impatient after sinking millions of dollars into manipulating politicians, scientists,data and public opinion.But, the sad truth is most Minnesotan's are unaware of the dangers of sulfide mining and the very real threat to our treasured sky blue waters, betrayed by doctored up EIS documents, silence, sworn lies and blackmail reminiscent of Watergate.Minnesota shining star of the north, land of 10,000 lakes..please.	GEN	NS	X	1	
Ann Santo	PLEASE, PLEASE protect the Boundary Waters Canoe Area, the St Louis County watershed & Lake Superior!!! They are all in danger from the proposed copper- nickel sulfide mining in Northern Minnesota. This type of mining has NEVER been done successfully in the world without MAJOR pollution!! The abundant fresh water in this BEAUTIFUL area of the world is very valuable & needs our protection.	GEN	NS	X	1	
Ann Santo	The mines & the accompanying pollution would ruin this area & then after the mines play out, the companies declare bankruptcy & leave & go back to their foreign countries -- they have NO vested interest in this state or protecting it. Then we will clean up the horrendous pollution???? State of Minnesota, federal government??? It would become a Super Fund site. PLEASE DON'T approve these mines!!	FIN	NS	X	1	
Ann Santo	Plus, the BWCA is one of the last areas in the world where people can have a wilderness experience. PLEASE don't jeopardize this wonderful state!!!	WILD	NS	X	1	
David Paulson	The Revised Final EIS is inadequate because there are two major and fundamental flaws with the described current PolyMet NorthMet Project plan for preventing and treating wastewater (in order to prevent significant water pollution). Importantly, both flaws are easily remedied. Although ore and tailings wastewater discharge is expected from the start of mining operations, treatment of the pollution and potential for future pollution characteristic of these wastewaters is delayed for decades, while it is (hopefully all) collected and stored in various locations. It is exactly such wastewater storage decisions (e.g. delayed treatment) that have led to both increased levels of pollution, and to the catastrophic site failures that have plagued hard rock mine sites in the USA and worldwide, and continue to do so where treatment is postponed. The membrane technology (reverse osmosis etc.) which has been often cited as the insurance of water pollution prevention that the pubic and regulators should accept, is not planned for use until decades into the future. This is a major planning error. Further, membrane technology is not even mentioned as a possible treatment to prevent acid mine drainage, which is admitted as a possibility. It is a major omission to not address this as an alternative treatment - by continuous treatment of the relatively low volume of ore and tailing seepage expected from the start of operations. This is a relatively low cost and feasible alternative Nor is it addressed for future impounded wastewater treatment of heavy metal bearing ore and tailings, should acid mine drainage accumulate as it has at a majority of sulfide bearing hard rock mines. These are both serious planning oversights, which ignore an efficient and proactive solution while postponing treatment. This is a major planning error because of simple risk-cost principles.	ALT	S	O	4	SDEIS Theme ALT 13
David Paulson	The justification for this delay in treatment is based on several optimistic assumptions, including the most-suspect assumption that acid mining drainage will not occur at any of the several long-term tailings storage dumps planned due to buffering capacity of the rock. This high risk decision is based on only the mining companies own short-term jar testing and "computer modeling". These optimistic projections all involve circumstances and projected outcomes that do not align with the overwhelming historical record of pollution control failure in similar mines.	WAT	S	O	8	SDEIS Themes WR 001, WR 023

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David Paulson	To summarize our point and the problems of the RFEIS: It would involve only an incremental cost to use the same technology that the EIS relies on to assure compliance by actions on the future, but in a proactive manner which would greatly reduce the chance for environmental degradation. That is, use reverse osmosis and related membrane technology at the start of mining operations to remove pollutants and purify waters, and plan for its use for treatment of any AMD that does accumulate, which is certainly a statistical possibility. Although addressed nowhere in the RFEIS in discussion or alternative actions cited, both of these uses are proven in the industry in mine sites that are similar to NorthMet.	ALT	S	O	4	SDEIS Themes ALT 13, WR 023
David Paulson	Importantly, if membrane technology were employed proactively on all "seepage" from the ore and tailings, and other wastewater that is acknowledged and anticipated, the potential damage from metals and other pollutants, and future acid mine drainage –should it occur – would not only be better mitigated. But such actions would also prove from the start of mining operations that the pollution control technology actually works as planned, allowing time to test, revise and refine the technologies and their specific use at the site. A positive pollution control outcome would be more likely by a very high degree. This approach would go much further to assure the realization of several promises made in the RFEIS, AND would proactively prove the plans for water pollution mitigation are sound, AND would reduce future clean-up costs which are the subject of negotiations for bonding costs.	ALT	S	O	4	SDEIS Theme ALT 13
David Paulson	The current plan for control of water pollution is complicated by multi-step ore and tailings placement and movement, repeated and changing over time, and based on risky extrapolations. The resulting complicated plans and optimistic assumptions for impounding and postponing treatment rely on modelling, instead of the real world experience which is available. This increases inherent risk. Acid mine drainage (AMD) from hard rock, sulfide-bearing rock is the norm at such mine sites, based on a hundred if not several hundreds of examples worldwide. This AMD formation has occurred at other so-called lower sulfide content rock mines including recently at the Brohm / Gilt mine in South Dakota. This mine's highly significant AMD pollution demonstrates the inherent risk in planning on low sulfide rock and delayed actions as an acceptable approach.	WAT	S	O	8	SDEIS Themes WR 001, WR 023
David Paulson	Also not addressed in the RFEIS is the fact that successful examples of using membrane technology to prevent pollution by, instead of impounding and storing wastewater, treating and returning water to mining operations or the aquifer or surface water discharge has been shown to be successful method. In a rigorous cost-benefit analysis, such proactive wastewater treatment plans are far superior to postponing the gain of knowledge of the necessary treatment, and delaying action as an economic decision.	WAT	S	O	8	SDEIS Theme WR 023
David Paulson	Many or most of the scores of known failures of treatment or impoundment at sites with AMD, and related pollution, would have been prevented by such proactive treatment. Many were catastrophes that would have been prevented by deploying membrane technology at the start of mining activities, not delaying treatment until after closure. That strategy has failed in scores of documented cases.	ALT	S	O	4	SDEIS Themes ALT 13, WR 023
David Paulson	Membrane technology (specifically RO) has repeatedly cited by both the PolyMet Project and the regulators who have addressed it. However, they have missed describing two beneficial uses at this site. Various other uses are described in the EPA Reference Guide to Treatment Technologies for Mining-Influenced Water, #EPA 542-R-14-00. Given the cost of the project, a relatively small-scale investment in using membrane technology at the start can make the mine a zero liquid discharge site. These technologies' full potential may not be understood by the engineers and technologists in these organizations. The evidence for this statement is that this option has been ignored in all EIS drafts, plus ignored in the "Fact Sheets". To not even list this approach as an alternative is an omission that may indicate an ignorance of the modern mine sites currently operating with proactive treatment, instead of impoundment, storage and treatment plans postponed for decades and predicated on optimistic water chemistry projections and storage basin stability outcomes.	ALT	S	O	4	SDEIS Themes ALT 13, ALT 15
Jennifer Church	The PolyMet NorthMet proposal is deeply flawed -- especially in its failure to ensure that the resulting pollution is adequately limited.	GEN	NS	X	1	

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Jennifer Church	Even if it is correct to assume that there is only a 2% chance of serious breaches in relevant containment structures, it would require billions of dollars to clean up the resulting mess and it would cause untold damage to the long term health of people in the area. The company, probably long gone, is not going to cover the costs of such a catastrophe. No one has the right to risk the lives of others' children for the sake of such short term profits.	FIN	NS	X	1	
Jennifer Church	We have all witnessed the disasters resulting from breaches in the containment structures at nuclear power plants -- despite continuing assurances that the probability of such breaches is infinitesimal. We must not be complacent in this case.	GEN	NS	X	1	
Tyler Kaspar	Under the proposed project, it appears that long term (perhaps perpetual) water treatment, site maintenance, and monitoring will be needed after closure to protect the environment and meet water quality standards. We don't believe that this meets the goal of a maintenance free closure, which is required under MN Rule 6132.3200: "To receive a permit to mine, the permittee must be able to close the mine in such a way that it is stable, free of hazards, minimizes hydrologic impact and release of substances, and is maintenance free."	PER	S	O	8	SDEIS Theme PER 04
Tyler Kaspar	Evaluating the duration of water treatment necessary during/throughout operations and after project closure does not give the public an opportunity to have an informed opinion on the project as a whole, does not properly inform permitting decisions, and does not provide for a reasonably accurate evaluation of financial assurance before the project is initiated. There needs to be a reasonable evaluation and estimate of how long water treatment would be needed before the project starts. This would also inform whether the project would be "maintenance free" at closure.	WAT	S	O	8	SDEIS Themes FIN 05, WR 035, WR 036
Tyler Kaspar	Effectiveness of the proposed water treatment and seep collection methods are vital to the project meeting water quality standards. Analysis and design detail are lacking in the FEIS as a whole. More detail is needed on water treatment and seep collection, including long-term operation and maintenance, since they are essential components of the project meeting environmental standards. The seep collection system around the tailings basin is modeled to have a capture efficiency of 99% (100% of shallow surface seepage and greater than 90 percent of groundwater seepage) along the northern, northwestern, and western portions and 100% along the eastern portion (section 5.2.2). Description is needed on how this efficiency rate was determined. We question if such a high capture rate can be achieved, and it would be helpful to include examples and citations of other projects operating seep collections at that efficiency rate. Further, if such capture rates are not achieved, the resulting impacts to water quality and quantity should be described in the FEIS.	WAT	S	O	8	SDEIS Themes WR 018, WR 019
Tyler Kaspar	Concern exists over the methods used to estimate baseflow in the upper Partridge River (sections 4.2.2.2.2 and 5.2.2.2.2). XP-SWMM model estimates of Partridge River baseflow presented in the FEIS have been found to be three times lower than observed values. The XP-SWMM projections, which are based on USGS hydrometric station data from 17 miles away collected from 1978 to 1987, do not align with the rating curve from the Minnesota Department of Natural Resources (MNDNR) winter monitoring data, or the results of the Great Lakes Indian Fish and Wildlife (GLIFWC) projections taken from two years of recent data from the Dunka Road gage in the XP-SWMM model. Co-Lead Agencies have worked with Cooperating Agencies on this issue, but it is not addressed in the FEIS regarding how it may affect modeling results. The models may be under-predicting the amount of water and contaminant load that will need to be treated and contained at the Mine Site. Questions have also arisen on data use, including if new data is being utilized and how existing data was selected (or not selected) for use. Although the FEIS includes a groundwater baseflow sensitivity analysis that considers the effect of variable groundwater baseflow inputs on water quality, additional analyses should be performed and included in the FEIS that investigate how the XP-SWMM model predictions may change with using more recent baseflow measurements for the upper Partridge River and how that may affect the MODFLOW and GoldSim model predictions.	WAT	S	O	8	SDEIS Theme WR 091. SDEIS COOP Response #9046. MDNR et al. 2014b

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Tyler Kaspar	Significant uncertainties exist with groundwater flows and related contaminated water transport that are not adequately addressed in the FEIS. In particular, the potential for groundwater to flow north from the proposed Mine Site to the existing Northshore Mine, ultimately to the Rainy River Watershed and Boundary Waters Canoe Area Wilderness (BWCAW), has been largely ignored. Although some details for the potential of a northward flow path is acknowledged in sections 5.2.2.3.5, 5.2.2.3 .6, and 6.2.2.3.1, it is portrayed as being unlikely and little detail is given on the potential impacts that would occur and how those impacts could be avoided/mitigated. Given that a northward flow path currently cannot be ruled out, greater detail on the potential impacts need to be included in the FEIS. There should also be inclusion of additional analyses performed by GLIFWC and provided to the Co-lead Agencies that details how a northward flow path could occur and is likely to occur since their results have not been refuted.	WAT	S	O	8	SDEIS Theme WR 085
Tyler Kaspar	Of the potential contingency mitigation options provided in Section 5 .2.2.3 .5 of the FEIS (grouting, pit lake depression, ground water extraction wells, and artificial recharge), none of which have supporting literature and/or examples provided to support their potential use nor any detail about the potential cost for implementation and how that would affect financial assurance for the project as a whole. What is clear in the FEIS is that the existence of a northward flow path and the feasibility of using any mitigation option would not be determined until the project is up and running. This is a major concern and inadequacy of the FEIS. Not knowing if there will be groundwater flow to the north (impacting the Rainy River Watershed, an entirely different watershed than what is described in the FEIS) and the feasibility of the proposed mitigation options until operations have commenced is unacceptable. If a northward flow path is determined while in operation, it is likely that impacts will have already occurred and mitigation (not avoidance) will be the only option. Also, there should be an explanation of what will happen if, while in operation, a northward flow path occurs and it is determined that none of the proposed mitigation options are feasible. As the project is currently proposed, this is a possibility and should be addressed.	WAT	S	O	8	SDEIS Themes WR 089, WR 167
Tyler Kaspar	We disagree with the conclusion in the FEIS that the NorthMet project is not predicted to result in any significant changes to groundwater and surface water flows when compared to existing conditions in the Partridge and Embarrass Rivers (Executive Summary, page ES-36 and Section 5.2.2). Augmenting stream flow to tributaries with treated water treated at the WWTP will impact surface water hydrology. We believe that the interaction of the project's impacts with natural variability in precipitation would be more adverse than reported in the FEIS. This is because effects of climatic variability are additive to the project-related change, which would be especially true for drier periods. It is also noted in the Executive Summary (page ES-38) and in Section 5.2.3 that indirect effects on wetlands are expected due to groundwater drawdown. Groundwater drawdown will impact groundwater hydrology and it's connectivity to the surficial aquifer, which will likely impact surface water hydrology.	WAT	S	O	8	SDEIS Theme WR 077. SDEIS COOP Response #3123
Tyler Kaspar	Disagreement exists over application of the 10 mg/L wild rice sulfate standard (Section 5 .2.2.1.2, page 5-22). Although some of these comments relate more to Minnesota Pollution Control Agency (MPCA) determinations and permitting issues, they are important considerations for the project to meet water quality standards and should be clearly addressed in the FEIS. It is arbitrary to define how much rice presence is required for an area to be defined as a water used for the production of wild rice, especially given the lack of long-term monitoring data in the receiving waters of this project. Application of this standard may be evolving/changing as research has been completed and the standard is currently being evaluated by the MPCA.	WAT	NS	X	1	
Tyler Kaspar	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). In the Partridge River, the 2009 survey identified rice near SW-004b, also upstream of the proposed compliance point. Barr Engineering conducted the survey and has indicated a possible error in the 2009 survey, bringing into question the accuracy of these upstream wild rice locations in the Partridge River. Currently, the wild rice water quality standard is not being met in portions of the Embarrass and Partridge river systems. The FEIS states that the wild rice sulfate standard would be met for the Embarrass River, assuming the containment and seepage collection system would capture seepage presently going to the Embarrass tributaries. However, the Partridge River will exceed the standard during low-flow conditions. We question how this will be handled in permitting.	PER	S	O	8	SDEIS Theme PER 10

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Tyler Kaspar	We disagree that the proposed project will result in a net decrease in mercury loading to the Embarrass and Partridge River aquatic systems (Section 5.2.2.3.4). For the Embarrass River, we disagree that the tailings basin will function as a mercury sink. The FEIS does not provide enough evidence to support his conclusion. Regarding flows of the Partridge River, Embarrass River, or their tributaries, we disagree that the project would not significantly impact flow and water level fluctuations, thus leading to an increased potential for mercury methylation and bioaccumulation, which taken together may be sufficient to impact habitat leading to alterations of species composition and food web structure.	MERC	NS	X	1	
Tyler Kaspar	Potential mercury contributions from peat stored at the Overburden Laydown and Storage Area is also a concern. More detail and data are needed to describe how much downward seepage from the peat to groundwater would be limited by the compacted soil bottom. A liner system should be reconsidered for this area unless sufficient data can be provided that shows soil compaction can be as or more effective.	ALT	S	O	2	SDEIS Theme ALT 07
Tyler Kaspar	Mercury-related concerns are present for created wetlands at the East Pit and mercury concentrations in water discharged from the West Pit. Air-related mercury emissions provided in the FEIS do not account for sources from energy generation or vehicle use at the site. For the Lake Superior watershed, any additional mercury releases to the environment are exacerbating already existing impairments including fish advisories set for recreational fishing. Increased fish mercury levels will also have direct impacts on both the cultural and recreational resources of the region.	MERC	NS	X	1	
Tyler Kaspar	We suggest removing or revising this statement. The analyses provided in the FEIS regarding mercury methylation and fish bioaccumulation are not robust enough to draw this conclusion. There are too many uncertainties regarding the water modeling and hydrologic changes that will occur due to the project as well as a lack of understanding of what will influence mercury methylation and fish bioaccumulation.	MERC	S	O	3	FEIS Section 5.2.3.4
Tyler Kaspar	We disagree with the rationale provided in the FEIS for performing the indirect effects analysis for wetlands. On page 5-259 in Section 5.2.3 .1.2, the FEIS states "The indirect effects analyses performed for the EIS were not performed to characterize impacts but were done to inform where monitoring should take place for those areas that were identified as having a potential for indirect wetland effects. The Co-lead Agencies agree that multiple actors can affect whether a wetland would experience indirect effects due to a project. This FEIS quantitatively assessed all potential indirect wetland effects from the NorthMet Project Proposed Action that may result from one of the following six factors: 1) wetland fragmentation; 2) changes in wetland hydrology from changes in watershed area; 3) changes in wetland hydrology from groundwater drawdown resulting from open pit mine dewatering; 4) changes in wetland hydrology from groundwater drawdown resulting from operation of the Plant Site, including groundwater seepage containment; 5) changes in streamflow near the Mine Site and Plant Site, as well as associated effects on wetlands abutting the streams; and 6) change in wetland water quality related to atmospheric deposition of dust and rail car spillage associated with Mine Site and Plant Site operations. The methodology and evaluation criteria used for assessing potential indirect wetland effects are described in detail below. The monitoring and mitigation for potential indirect effects would be determined during permitting. Section 5.2.3.3 of this FEIS includes a detailed discussion on the monitoring and mitigation plan for the indirect wetland effects. The proposed wetland impact, avoidance, minimization, mitigation and monitoring plan presented in this FEIS would be reviewed, modified as required, and approved during permitting; therefore, this information could change during permitting." This does not meet the NEPA requirements for an EIS. The purpose of an EIS is to inform potential impacts that may result from the project and not just where monitoring should take place. If the project detects impacts to wetlands after the start of operations instead of understanding where impacts could/would occur before operations, it will be too late to evaluate ways to avoid those impacts and mitigation (assuming proper mitigation is feasible) will be the only option. The analytical methods and data necessary to estimate the potential indirect impacts on wetlands is available and should be used as such in the FEIS. Please revise/remove this statement and context from the FEIS. The project as a whole puts too much emphasis on using adaptive management in lieu of collecting additional data where data is lacking and performing analyses to better characterize and estimate potential impacts.	WET	S	O	8	SDEIS Theme WET 08

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Tyler Kaspar	We disagree with the analysis provided in the FEIS regarding indirect impacts to wetlands from mine pit dewatering and believe impacts may be underestimated (Section 5.2.3.2.2). We do not believe the proposed analog method of assessing potential indirect impacts from mine site pit dewatering is adequate, and as such should not be the sole means of indirect impact assessment for the FEIS. Resource assessment areas of concern include wetlands, groundwater, and surface waters. We do not believe the impact zones and distances are well described. Accounting for these factors, GLIFWC conducted an independent assessment using the same methods as the Colead Agencies, along with additional analog data from other mining-impacted sites. The assessment found an estimated total of 5,719.75 acres of wetlands would be potentially susceptible to severe indirect impacts from mine pit drawdown. We also disagree with the conclusion that the Partridge River would act 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 (page 5-279). The upper Partridge River is located in Zone 2; GLIFWC's independent analysis estimated drawdowns of 3 to 5 feet under the river, which would severely reduce baseflow in the channel, indirectly impact riparian wetlands downstream, and affect other surface water features. GLIFWC's analysis should be considered in the FEIS for estimating potential indirect effects on wetlands from mine pit dewatering. This would also have implications for the cumulative effects analysis presented in Chapter 6, Section 6.2.3.4.4.	WET	S	O	8	SDEIS Themes WET 08, WET 10
Tyler Kaspar	We disagree with how the mitigation for directly and indirectly impacted wetlands are proposed (Section 5.2.3.3.2). Much of the proposed mitigation (Aitkin and Hinckley sites) for directly impacted wetlands is outside of the watershed and 1854 Ceded Territory. This is a permanent loss to these areas and should be discussed in the document. Mitigation options within the watershed and 1854 Ceded Territory should be re-visited. Proper compensation ratios are important. Upfront mitigation for wetlands susceptible to severe indirect impacts is currently not proposed, and we believe that the USACE should require up front mitigation for all severely impacted wetlands. We also contend that additional up front mitigation should be considered for wetlands that are classified in the moderate to severe category, with robust monitoring being required for wetlands in the moderate category.	WET	S	O	8	SDEIS Themes WET 01, WET 03
Tyler Kaspar	It is stated in the FEIS that "Since this initial effort, the Co-lead Agencies have received the results of water quality and quantity modeling. The APE has been revised based on these results" (Section 4.2.9.2.3, page 4-313). This suggests that the APE is based on, at least in part, the water modeling which is a concern. Flaws in the water modeling have been identified and brought to the attention of the Co-lead Agencies by the Tribal Cooperating Agencies and supporting analysis has been provided by GLIFWC in Appendix C. Details about the major difference of opinion (Chapter 8) over the water modeling results and how the APE would change due to these flaws (Appendix C) should be provided.	CR	S	N	12	The Co-lead Agencies remain confident in the water modeling conducted for the EIS. Revisions to the APE are unwarranted.
Tyler Kaspar	Section 5.2.9.2.2 contains little information on game species such as moose, deer, bear, grouse, waterfowl, and fur bearers. These species are important to the bands for the exercise of treaty rights, and further analysis is needed and should be provided in this section and not just refer to what is provided in Section 5.2.5. In the FEIS as a whole, further information and analysis is needed for deer, bear, grouse, waterfowl, and furbearers.	WI	S	O	8	SDEIS COOP Response #3144
Tyler Kaspar	This section also contains language about "1854 Treaty Authority-regulated species". We suggest removing or altering this language. The Fond du Lac Band also exercises treaty rights in the 1854 Ceded Territory, and has their own regulations. Further, the 1854 Treaty Authority maintains seasons and limits on some species, but these are not the only species of importance.	WI	S	O	2	SDEIS COOP Response #3145
Tyler Kaspar	It is further stated in the FEIS that "Construction and operation of the NorthMet Project Proposed Action is not likely to significantly reduce overall availability of 1854 Treaty resources that are typically part of subsistence activities in the 1854 Ceded Territory. Some individuals and localized populations may be affected, but overall species populations are expected to remain available. Additionally, noise and other consequences of operations would affect migration or other animal species behavior. " It is important to consider the cumulative impacts of the proposed project. The project would result in one more piece off he 1854 Ceded Territory permanently altered and impacted. When taken in combination of all the mining operations across the Iron Range and other general development, the Ceded Territory and related exercise of treaty rights have been significantly impacted and the project would be an additional impact.	CUM	NS	X	1	

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Tyler Kaspar	The analysis included only looks at the economic benefits of the project, and not the environmental "costs" and impacts. The FEIS states that these impacts could have real and/or perceived economic costs, but that these "non-market values" are not typically expressed in monetary value. Stating the economic benefits of the project, while not stating economic costs to resources and related uses, does not allow for a fair comparison or overall view of the project. Environmental economic tools do exist to value resources and the services they provide, and perhaps some would be applicable and beneficial for the FEIS. The FEIS should address this with further analysis or description in sections 5.2.10 and 6.2.1 0. Please reference "The Value of Nature's Benefits in the St. Louis River Watershed" completed by Earth Economics for the Fond du Lac Band in the FEIS and include results from their analysis of the St. Louis River watershed.	SO	S	O	8	SDEIS Theme SO 07
Tyler Kaspar	The FEIS should be updated to incorporate the land appraisals and draft decision from the USFS Draft ROD for the NorthMet Project Land Exchange. The analyses and information provided in the land exchange sections (4.3, 5.3, and 6.3) should be updated to reflect these findings It is confusing to see the FEIS still present information on lands that were proposed for exchange (e.g. Tract 5, McFarland Lake) and be issued in conjunction with the USFS Draft ROD (does not include Tract 5). It should also be clarified in Section 5.3.1.2.1 that the proposed exchange loses one large tract of public land for several smaller tracts and the project results in permanent impacts and changes to the resources regardless of ownership.	LAN	S	O	5	SDEIS Theme LAN 06
Tyler Kaspar	The FEIS puts too much emphasis on the current lack of access to the Forest Service lands (Section 3 .1.2.1). This is seemingly done to minimize the impact of losing it. Access can always change. The text should be revised to make these issues clear in Section 3.1.2.1.	LAN	NS	X	1	
Tyler Kaspar	On page 5-687, the FEIS states that the proposed land exchange would result in a net increase of wild rice beds to the federal estate. Please revise. Wild rice in these locations are found in public waters and would not be on federal lands or under federal ownership/management. Some resource protection advantages may exist to gaining adjacent federal ownership as it relates to land management, but it is not accurate to state that they would be under federal ownership/management.	WAT	S	O	8	SDEIS Theme WR 155
Tyler Kaspar	Even though the proposed land exchange would increase habitat availability to the federal estate, the overall result of the project is permanent impacts, loss, and changes to the resources of northeastern Minnesota and the 1854 Ceded Territory (Section 5.3 .5). This should be clarified in the FEIS. Regarding habitat availability and impacts from the proposed land exchange, there is little mention of effects on game species such as moose, deer, bear, grouse, waterfowl, furbearers, and others in Section 5.3.5.2.5 nor in Section 6.2.3.6 from the cumulative effects analysis. Moose is of particular concern+P101 given the declining population and closure of hunting seasons. Further analysis should be included in both sections for these species as well as any others that may be affected.	WI	S	O	8	SDEIS COOP Response #3157
Tyler Kaspar	Under the proposed project and land exchange, it is anticipated that Minnesota Biological Survey sites of High Biodiversity Significance would be decreased by 6,025.8 acres on Superior National Forest lands (Table 5.3.4-1, page 5-702). Further, much of this impact will be permanent on the project site. These and other resource values should be taken into account and given greater consideration on lands proposed for exchange.	WI	NS	X	1	
Tyler Kaspar	We believe that limiting the cumulative effects analysis area (CEAA) for water resources (Section 6.2.2), wetlands (Section 6.2.3) and aquatic species (Section 6.2.6) to the Partridge and Embarrass River watersheds is too small. These CEAA's should be expanded to include the St. Louis River watershed. Impacts associated with United Taconite's proposal for 1,200 acres of wetland destruction to build a new tailings basin within the St. Louis River watershed should be included. The NorthMet project would add to the load of pollutants in the St. Louis River and would reduce tributary flows to the river. Impacts that may occur due to the project could be underestimated (due to modeling concerns), and would not stop before reaching the St. Louis River. Further, any added impact from the project to the St. Louis River watershed would in turn impact Lake Superior. We believe that this is the appropriate scale to analyze cumulative effects for these resources.	CUM	S	O	8	SDEIS COOP Response #3161. SDEIS Themes CU 01, CU 02

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Tyler Kaspar	We disagree with the conclusion that no cumulative effects to groundwater resources would result from the project (Section 6.2.2, page 6-31). Bedrock and surficial ground water pollution is already documented at the old LTVSMC site (i.e., plant site; area pits 5, 6, and 9S) and the Dunka Pit. Cumulative effects at these locations should be assessed with the proposed project along with potential groundwater pollution from the Peter Mitchell Pit, Laskin Energy, ArcelorMittal, United Taconite, and US Steel Minntac.	WAT	S	O	8	SDEIS Theme WR 024
Tyler Kaspar	A future action that should be considered in the cumulative effects analysis is any potential future backfill of Virginia Formation waste rock for in-pit disposal at the Cliffs Peter Mitchell Pit. Potential dewatering-related interaction effects between the proposed NorthMet Project and the Peter Mitchell Pit should also be evaluated for cumulative effects.	WAT	S	O	8	SDEIS COOP Response #3163
Tyler Kaspar	The FEIS appears to be missing an important section, Cumulative Forest Service Land Actions, that was included in the SDEIS as Section 6.3.2. The U.S. Forest Service identified four current and reasonably foreseeable land exchange and land acquisition actions that would be cumulative to the Land Exchange Proposed Action. These projects included the Cook County Land Exchange, Crane Lake Land Exchange, Fall Lake Land Acquisition, and Wolf Island Phase 2 Land Acquisition. The SDEIS included a brief description for each of these land exchange and land acquisition actions. We suggest adding this section to the FEIS with the addition of the proposed School Trust Lands Exchange. The project would entail exchange, purchase, or some combination of both for the Forest Service to acquire the school trust lands within the BWCAW.	CUM	S	O	8	FEIS Section 6.1.2.2
Tyler Kaspar	We realize that details have not been finalized, but this project (along with all federal land exchanges) can affect treaty rights. Treaty rights are exercised on public lands in practice, but exchanges even when remaining in public ownership can raise some concerns. The Forest Service has a trust responsibility to the bands and is required to consult on a government to government basis. This relationship is not as well defined with state or local governments. Changes to or loss of federal ownership (and federal oversight, trust responsibility, consultation, etc.) impact the exercise of treaty rights. The loss of federal lands also could result in changes to management, increased development, or even loss of public lands through sale. In addition to any direct resource impacts, these concepts should be kept in mind during land exchange processes.	LAN	NS	X	1	
Tyler Kaspar	The FEIS states that financial assurance requirements for the project are not included in the document, but will instead be determined during the permitting phase. We are concerned about this approach given the potential for long-term/perpetual treatment, maintenance, and monitoring that may be needed from the proposed project. The environmental effects, expensive cleanups, and bankruptcies at other precious metal mines raise a significant red flag. This project may stand on its own, but completing financial assurance disclosure during the EIS process will help understand the needs to safeguard the environment and protect the public from significant expenditures.	FIN	S	O	8	FEIS Section 3.2.2.4
Tyler Kaspar	Research has indicated that planned/expected impacts from mining operation are almost always inaccurate. Impacts are typically greater. Mining operations also change over time (e.g. 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 FEIS 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.	PER	S	O	8	SDEIS Themes PER 03, PD 22
Matthew Miltich	The NorthMet Mining Project is poised to do unprecedented environmental damage to northern Minnesota and three watersheds originating in our region.	GEN	NS	X	1	
Matthew Miltich	For state institutions with the public trust as their highest priorities, seriously to consider the project at this time is itself something like a betrayal of public trust.	PER	NS	X	1	
Matthew Miltich	Water, we know, is life-giving. Poison, we know, kills. This project will poison our water.	WAT	NS	X	1	
Matthew Miltich	I beg you to do the right thing and deny permits to projects such as this one until the science of mining advances to the point where Minnesotans' birthrights to clean water, clean air, and healthy land are truly assured.	PD	NS	X	1	
Matthew Miltich	We are given soft assurance by those who propose this project that it will provide jobs, and will be safe. A history of sulfide mining belies these assurances. Who profits? Those who live far away from the project. Will such a project be safe? Consider	GEN	NS	X	1	

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	this question: When do accidents happen? Answer: All the time.					
Jennifer Church	The PolyMet NorthMet proposal is deeply flawed — especially in its failure to ensure that the resulting pollution is adequately limited.	GEN	NS	X	1	
Jennifer Church	Even if it is correct to assume that there is only a 2% chance of serious breaches in relevant containment structures, it would require billions of dollars to clean up the resulting mess and it would cause untold damage to the long term health of people in the area. The company, probably long gone, is not going to cover the costs of such a catastrophe.	FIN	NS	X	1	
Jennifer Church	No one has the right to risk the lives of others' children for the sake of such short term profits.	SO	NS	X	1	
Meredith Hanson	I do not support the NorthMet Mining Project. The harm to the air, water, land, animals, and human health is too great. Please do not allow NorthMet to open this mine in our State.	GEN	NS	X	1	
Mark Johnston	As a recent MBA graduate from St Thomas, this proposal does not make business sense to Minnesota. I need more details, but initially I understand the cost-benefit analysis as follows: Benefit: the proposal may create 300 jobs for the mining community, and I assume there would be tax revenue generated for MN. I also assume that the profits would go to the mining company. I'm curious what the expected Return on Investment (ROI) will be for PolyMet. Cost: I believe 250,000 visitors come to the BWCAW each year. When they come, they add to local economies by purchasing gas, food, supplies all of which generate revenue and jobs in the region. Once the water is polluted, I expect those visitors to go elsewhere. Water is 10 lbs/gallon so it would not be logical to think campers can carry in their own drinking water. I suspect the fishing appeal would also diminish. Also, the pollution will last for generations-probably much longer than PolyMed will stay in business. After PolyMed is no longer a corporation, MN will be on the hook for any ongoing cleanup. This is a big liability for MN. With these costs and liabilities in mind, I would like to see what the expected ROI is from the MN perspective.	SO	S	O	2	SDEIS Theme SO 01
Paula Maccabee	WaterLegacy is a non-profit organization formed to protect Minnesota's water resources and the communities that rely on them. We have approximately 10,000 members and supporters across the state of Minnesota who may be affected by the adverse impacts of the proposed PolyMet NorthMet sulfide mine due to their exposure to pollutants in air, drinking water, or food, their use of affected resources for fishing, gathering wild rice, hunting or recreation, and due to potential impacts on their patients and communities of sulfide mining health impacts, financial and socioeconomic liabilities and loss of ecological services.	GEN	NS	X	1	
Paula Maccabee	The Final Environmental Impact Statement (FEIS) for the PolyMet NorthMet open-pit copper-nickel mine project is a huge, cumbersome and repetitious document. It would be tempting to put it on a scale and deem it adequate by sheer weight alone. However the PolyMet NorthMet FEIS fails to comply with the National Environmental Policy Act (NEPA), 42 U.S.C. §§4321 et seq., and its implementing federal regulations or with the Minnesota Environmental Policy Act (MEPA), Minn. Stat. §116D.01 et seq., the state environmental review law patterned after NEPA, and its implementing state rules.	NEPA	NS	X	1	

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Paula Maccabee	Under both NEPA and MEPA, the purpose of an environmental impact statement (EIS) is to lead government decision makers to take a “hard look” at the environmental impacts of their decisions before those decisions are made. See e.g. Mid States Coalition for Progress v. Surface Transportation Board, 345 F.3d 520 (8th Cir. 2003); Sierra Club Northstar Chapter v. Kimbell, 2008 U. S. Dist. LEXIS 107239, 68 ERC (BNA) 1664 (D. Minn., Feb. 19, 2009); Citizens Advocating Responsible Development (CARD) v. Kandiyohi County Bd. of Comm’rs, 713 N.W.2d 817, 834 (Minn. 2006). At the most basic level, an EIS must analyze the significant environmental impacts of a proposed action and provide a full and fair discussion of significant environmental impacts. Minn. Stat. 116D.04, Subd. 2a; 40 C.F.R. §1502.1. To ensure this important objective, a final EIS must provide responses to the substantive comments received during draft EIS review. Minn. R. 4410.2800, Subp. 4(B). The EIS must also disclose and respond to any responsible opposing view. Minn. R. 4410.2700, Subp. 1; 40 C.F.R. § 1502.9(b); Ctr. for Biological Diversity v. U.S. Forest Service, 349 F. 3d 1157, 1167-1168 (9th Cir. 2003). Data and analyses in an EIS must be commensurate with the importance of the impact and the relevance of the information to a reasoned choice among alternatives and the consideration of the need for mitigation measures. Minn. R. 4410.2300(H). Impacts must be discussed in proportion to their significance, so the EIS concentrates on the issues that are truly significant to the action in question, rather than amassing needless detail. 40 U.S.C. §1500.1(b), §1502.2(b). An EIS must provide a thorough discussion of both direct and indirect potentially significant beneficial or adverse effects. Minn. R. 4410.2300(H); 40 C.F.R. §1502.16(a), (b). In describing adverse effects, an EIS may not use a listing of mitigation measures and an unsupported assumption of their success to conclude that effects of a proposed action will be minimal. Kentucky Riverkeeper v. Rowlette, 714 F. 3d 402 (6th Cir. 2013); Ohio Valley Envntl. Coalition v. Hurst, 604 F. Supp. 2d 860 (S. D. W. Va., 2009). An EIS must meet basic standards for quality. Environmental impact statements are required to be analytic rather than encyclopedic. Statements must be concise, clear, and to the point, and must be supported by evidence that the agency has made the necessary environmental analyses. 40 C.F.R. §§1500.4(b); 1502.1; 1502.2(a). “The information must be of high quality. Accurate scientific analysis, expert agency comments, and public scrutiny are essential to implementing NEPA.” 40 C.F.R. §1500.1(b).	NEPA	NS	X	1	
Paula Maccabee	These requirements have been specifically applied to modeling. An EIS may not manipulate models, rely on flawed mitigation analysis, work backwards to achieve a desired result, or otherwise use scientifically unsound analyses to draw conclusions as to the environmental impacts of a proposal. See Environmental Defense v. U. S. Army Corps of Eng’rs, 515 F. Supp. 2d 69, 74 (D.D.C., 2007), appeal dismissed, 2008 U.S. App. LEXIS 28182 (D.C. Cir, Oct. 10, 2008). NEPA requires up-front disclosures of relevant shortcomings in the data or models. See Lands Council v. Forester of Region One of the U.S. Forest Service, 395 F. 3d 1019, 1032 (9th Cir. 2005); Native Ecosystems Council v. U. S. Forest Service, 418 F.3d 953, 964 (9th Cir. 2005). Absent baseline groundwater information, conclusions in an EIS of “negligible impact” fail to comply with NEPA’s “hard look” requirement. Gifford Pinchot Task Force v. Perez, 2014 U.S. Dist. LEXIS 90631, 2014 WL 3019165, slip. op. 103-106 (D. Ore. July 3, 2014).	NEPA	NS	X	1	
Paula Maccabee	In addition, an agency cannot exclude pertinent information from an EIS. The EIS must include information relevant to reasonably foreseeable significant adverse impacts and a choice among alternatives if the information can be obtained within the state of the art and costs of obtaining it are not exorbitant. Minn. R. 4410.2500; 40 C.F.R. § 1502.22(b). Under NEPA, an EIS must include in its analysis reasonably foreseeable impacts that have catastrophic consequences even if their probability is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture and is within the rule of reason. 40 C.F.R. §1502.22(b). An EIS must also meet basic standards of independence and integrity. An EIS cannot be based on conclusory statements of a project proponent, unsupported by substantial evidence. See CARD v. Kandiyohi, supra, 713 N.W. 2d at 837, fn. 18. “Agencies shall insure the professional integrity, including scientific integrity, of the discussions and analyses in the EIS” and “shall identify any methodologies used and shall make explicit reference by footnote to the scientific and other sources relied upon for conclusions.” 40 C.F.R. §1502.246	NEPA	NS	X	1	

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Paula Maccabee	One of the most significant roles the EIS must play is to facilitate the consideration of alternatives. An EIS must discuss appropriate alternatives to the action and their impacts and must compare the potentially significant impacts of the proposal with those of other reasonable alternatives to the proposed project. Minn. Stat. 116D.04, Subd. 2a; Minn. R. 4410.2300(G); 42 U.S.C. §4332(C)(iii) and (E); 40 C.F.R. §1502.1. Under NEPA, the alternatives section of the EIS related to alternatives is “the heart of the environmental impact statement.” The EIS “Should present the environmental impacts of the proposal and the alternatives in comparative form, thus sharply defining the issues and providing a clear basis for choice among options by the decisionmaker and the public.” 40 C.F.R. §1502.14. The EIS must (a) Rigorously explore and objectively evaluate all reasonable alternatives, and for alternatives which were eliminated from detailed study, briefly discuss the reasons for their having been eliminated, and (b) Devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits. Id. Under MEPA, The EIS must address one or more alternatives of each of the following types of alternatives or explain why no alternative of a particular type is included in the EIS: alternative sites, alternative technologies, modified designs, modified scale or magnitude, and alternatives incorporating reasonable mitigation measures identified through comments received during the comment periods for EIS scoping or for the draft EIS. Minn. R. 4410.2300(G).	NEPA	NS	X	1	
Paula Maccabee	An EIS must also analyze adverse impacts of a proposed action in conjunction with other environmental impacts. An EIS must provide a thorough discussion of potentially significant beneficial or adverse cumulative effects. Minn. R. 4410.2300(H). This analysis includes cumulative impacts that result from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency or person undertakes such other actions. Minn. R. 4410.022, Subp. 11; 40 C.F.R. §1508.7.	NEPA	NS	X	1	
Paula Maccabee	Perhaps most important, an EIS may not be used to justify a decision already made. Minn. R. 4410.0300, Subp. 3; 40 C.F. R. §1502.2(g). An agency must exercise independent judgment and independently investigate a proponent’s claims that there are no practicable or less damaging alternatives that would satisfy the project’s purpose. See Sierra Club v. Antwerp, 709 F. Supp. 2d 1254, 1263-1264 (S. D. Fla. 2009), aff’d 362 Fed. Appx. 100 (11th Cir. 2010).	NEPA	NS	X	1	
Paula Maccabee	WaterLegacy’s comments on the PolyMet NorthMet FEIS demonstrate that the environmental review provided for Minnesota’s first proposed copper-nickel sulfide mine fails each of these tests for the quality, integrity, and content of an EIS. Even where the FEIS has appeared to respond to comments, that response has been inadequate, if not affirmatively misleading	NEPA	NS	X	1	
Paula Maccabee	The FEIS is highly reliant on the project proponent’s modeling and on unsubstantiated assumptions from the project proponent for its conclusions. The FEIS not only fails to discuss opposing scientific views, it misrepresents peer-reviewed literature, the nature of tests conducted regarding the project, and even the documents contained in its own record. The FEIS discounts information as “unavailable,” where peer-reviewed literature and scientific best practices would have provided higher quality, if potentially inconvenient, analytic information.	NEPA	NS	X	1	
Paula Maccabee	The Project alternatives analysis, intended by law to be the “heart” of the EIS, is a scant few pages of the FEIS, and inadequate documentation is provided to support the rejection of substantive alternatives. Other than a smaller federal land exchange to facilitate the NorthMet open-pit sulfide mine, no alternatives are considered. Although the FEIS mentions in various places that project effects would not occur under a No Action alternative, the FEIS fails to provide a No Action baseline to compare impacts on water quality, thus biasing its results.	ALT	NS	X	1	
Paula Maccabee	The FEIS repeatedly provides a list of possible mitigation options without evidence of their efficacy rather than analyzing relevant and significant potential impacts.	ALT	NS	X	1	
Paula Maccabee	The FEIS manipulates models to avoid consideration of cumulative impacts on water quality and potential violations of the water quality standards. The FEIS fails to analyze issues of great significance and concern, including the synergistic effects of the project on mercury methylation, contamination of fish and resulting impacts to human health and environmental justice and the indirect and cumulative as well as direct impacts of the Project on wetlands and wetlands functions.	CUM	NS	X	1	

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Paula Maccabee	The PolyMet NorthMet FEIS is inadequate. For federal agencies, it cannot serve as a basis for decisions following the letter and spirit of NEPA, our basic national charter for protection of the environment. 40 C.F.R. §1500.1. For Minnesota agencies, reliance on this FEIS would defeat the purpose for which our environmental review laws were enacted – to “encourage productive and enjoyable harmony between human beings and their environment; to promote efforts that will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of human beings; and to enrich the understanding of the ecological systems and natural resources important to the state and to the nation.” Minn. Stat. §116D.01.	NEPA	NS	X	1	
Paula Maccabee	WaterLegacy’s comments on the SDEIS emphasized that the PolyMet NorthMet SDEIS was inadequate to analyze mercury and methylmercury impacts at the project site and cumulatively, in the St. Louis River as well as the Partridge and Embarrass River watersheds. The expert opinion of Dr. Brian Branfireun, one of the world’s leading mercury researchers, identified inadequacies in the SDEIS, including the failure to address the risk of mercury and methylmercury impacts from the project to downstream waters, including the St. Louis River.	MERC	S	O	3	SDEIS COOP Response #2996
Paula Maccabee	These comments update WaterLegacy’s concerns based on changes made and not made in the FEIS. Then, they summarize an additional expert opinion provided by Dr. Branfireun (Branfireun, 2015), based on new methylmercury data, issues raised in the FEIS and supporting documents and recently-published peer-reviewed scientific literature.	MERC	NS	X	1	
Paula Maccabee	In summary, this Section of our comments demonstrates that the FEIS’ dismissal of downstream impacts of mercury and methylmercury is based on scientific errors, inconsistencies and failure to appropriately evaluate significant and well-established mechanisms of mercury production and transport in the NorthMet project area. Dr. Branfireun’s analysis can be summarized as follows: There are no modifications to the FEIS from the SDEIS that change my opinion that the likelihood of downstream water quality impairments from mercury and methylmercury as a result of the proposed NorthMet development is not scientifically or rigorously evaluated in the EIS In conclusion, I reject as unsupported and without scientific justification, any statement or implication in the FEIS that the proposed NorthMet development would not increase risks of methylmercury production and transport in the Partridge and Embarrass River watersheds, particularly in ombrotrophic wetlands near the mine site and wetlands affected by tailings site seepage collection, changes to hydrology or atmospheric deposition. (Branfireun, 2015, pp. 25, 27)	MERC	S	O	7	Barr 2015g
Paula Maccabee	The FEIS also failed to resolve the deficiencies raised in WaterLegacy’s prior comments. In several instances, the FEIS added new language to justify its prior conclusions without providing any new substantive analysis. Gaps, inconsistencies and misrepresentations of research data identified in WaterLegacy’s comment on the SDEIS were not addressed. The FEIS continued to omit or mischaracterize data and research, thus minimizing or denying the impact of mercury and methylmercury on aquatic life, wildlife dependent on aquatic resources, human health and environmental justice.	MERC	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Paula Maccabee	The only change made in the PolyMet NorthMet project in response to WaterLegacy's comments regarding mercury is that the project no longer proposes to use untreated high mercury Colby Lake water for stream augmentation in the wetlands complex north of the tailings waste facility, identified in the SDEIS as a high-risk location for mercury methylation. The FEIS states that Colby Lake water will be treated at the tailings site wastewater treatment plant (WWTP) prior to use for stream augmentation (FEIS, 2-10). However, the benefit of this change is uncertain, since the FEIS fails to analyze how mercury inputs from Colby Lake water transfer would affect tailings pond, tailings seepage and the WWTP. These impacts are likely to be significant. Colby Lake water mercury concentrations substantially exceed the Great Lakes Initiative (GLI) and Minnesota water quality standard of 1.3 nanograms per liter (ng/L). Data provided in the FEIS state total mercury concentrations in Colby Lake are between 4.6 and 8.7 ng/L, averaging 6.0 ng/L (FEIS, 4-37 to 4-38). During operations, maximum plant site water appropriation of water from Colby Lake would be 15.1 million gallons per day (MGD) or 1,300 million gallons per year (MGY) (FEIS, 5-201, Table 5.2.2-40). This maximum is equivalent to 10,486 gallons per minute (gpm) from Colby Lake. Despite the high concentration of mercury in Colby Lake water and the volume of Colby Lake water that would be piped to the plant site, the FEIS' estimate of mercury in the inflows to the WWTP (FEIS, 5-230, Table 5.2.2-51) does not consider mercury inputs from Colby Lake water. Comparing the FEIS Table for Estimated Mercury Concentration of the Combined Inflows to the Plant Site WWTP to the same Table in the SDEIS (SDEIS, 5-206, Table 5.2.2-52), no adjustment has been made for an increased mercury concentration resulting from the need to treat Colby Lake water. The FEIS' prediction that the combined inflows to the WWTP will have a mercury concentration of precisely 1.3 ng/L, the GLI water quality standard, is unchanged. This prediction does not seem to reflect analysis, since the maximum volume of Colby Lake water (average mercury concentration of 6.0 ng/L) is estimated at more than four times the 2,425 gpm total combined stream inflow to the WWTP predicted in the FEIS (FEIS, 5-230, Table 5.2.2-51). The FEIS' failure to assess the ramifications of high-mercury Colby Lake water inputs is exacerbated by unsubstantiated assertions in the FEIS that the PolyMet NorthMet WWTP will be able to treat mercury through reverse osmosis or "equivalently performing technology" so that effluent will not exceed 1.3 ng/L (FEIS, 5-230, 5-238).	MERC	S	N	8	Barr 2013f Table 29; SDEIS Theme MERC 01. All surface water would be captured at the toe and treated before being discharged. The mercury removal rate quantified in the reverse osmosis pilot study indicates that Colby Lake water can be treated to meet water quality standards. The WWTF would be sized to treat Colby Lake water. Removing mercury from water in the natural environment through treatment would not cause a significant impact to water resources.
Paula Maccabee	No references are provided for the FEIS' conclusions about mercury treatment, but in various other places the FEIS cites PolyMet's "pilot testing" of reverse osmosis to reassure the reader that water quality standards would be met for all constituents of interest at both the WWTP and the mine site wastewater treatment facility (WWTF), once the latter facility is upgraded to a reverse osmosis or equivalent technology in approximately year 52 (FEIS, 3-65, 5-104, 5-147, 5-170, 5, A-639). On closer review, the reference to a pilot test for PolyMet NorthMet mine pollution treatment is somewhat of a misnomer, particularly as applied to mercury reduction. The single pilot test report cited in the FEIS is a Barr document (FEIS ref. Barr 2013f). This report does not substantiate the efficacy of NorthMet wastewater treatment to remove mercury in compliance with the 1.3 ng/L standard. The PolyMet pilot test was conducted on water drawn from a seep and an aquifer well at the existing LTVSMC taconite tailings waste facility (Barr 2013f, p. 11). Mercury was below detectible levels in the influent for the test (Id., autop. 64-69, Table 1, Table 2). The only conclusions regarding mercury in Barr report were based on literature and an inquiry to the membrane supplier. Barr reported, "Mercury removal by RO membranes is highly dependent on the type of membrane used. Mercury rejections [the percentage removed by treatment] ranging from 22 to 99.9% have been reported," (Id., p. 39). The report continued, "Mercury removal by RO is highly variable and dependent upon its speciation and the membrane selection. For these reasons, its removal is difficult to quantify," (Id., p. 41). Should mercury influent to the WWTP exceed 1.3 ng/L, the FEIS does not provide any basis to conclude that water quality treatment will result in compliance with the 1.3 ng/L GLI and Minnesota water quality standard for mercury.	WAT	S	N	3	Barr Eng. Pilot Testing Report v1 Jan. 2013 Reference 16. SDEIS Theme MERC 01
Paula Maccabee	The FEIS asserts with incomprehensible precision that mercury loading in the Partridge River would decrease from 24.2 to 23 grams per year as a result of the PolyMet NorthMet mine project, more offsetting the 0.2 gram increase (from 22.3 to 22.5 grams per year) in mercury loading to the Embarrass River (FEIS, ES-36, 5-462). The FEIS has neither recognized nor responded to concerns about inadequate analysis of mercury air deposition and mercury seepage to substantiate this central claim.	MERC	S	O	8	SDEIS Themes AIR 06, MERC 13

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Paula Maccabee	The FEIS still states, “Mercury air emissions and subsequent mercury deposition were not assessed for the Mine Site because potential emissions are less than 1.0 lb/yr,” (FEIS, p. 5- 462). The FEIS does not acknowledge that 1.0 pound per year is equivalent to 453.6 grams per year. This is an astronomical number when compared to the FEIS’ mercury loading offset calculations. If far less than one percent of NorthMet mine site mercury deposition found its way into the Partridge River, the net effect of the NorthMet project, with no other revisions or corrections, would increase mercury loading to the St. Louis River. Similarly, the FEIS failed to address concerns raised by WaterLegacy regarding mercury deposition near the NorthMet plant site. The FEIS cites the PolyMet Project Air Data Package (PolyMet 2015e) as its primary reference on mercury deposition. This PolyMet document states that the plant will emit 4.6 pounds per year of mercury and describes two scenarios for mercury speciation that affect local deposition, since oxidized mercury can “deposit readily” at a local and regional level and that some particle-bound mercury may also be deposited locally (PolyMet 2015e, autop.1042). If only 25% of mercury is elemental, the more conservative assumption, up to 3.68 pounds or 1,669.2 grams of NorthMet plant site mercury emissions may be deposited locally each year, within a 10-kilometer radius of the plant site (Id., Appendix C to Attachment U, p. 2, autop. 1091). PolyMet 2015e and the corresponding section of the FEIS analyze the effects of local plant site mercury deposition on the mercury Hazard Quotient in the Embarrass River chain of lakes. Yet, as with the mine site mercury deposition, the FEIS does not evaluate the effects that even a small fragment of the potentially 1,669.2 grams of mercury locally deposited would have on a mass loading calculation that claims mercury in the Embarrass River will only increase by 0.2 grams per year as a result of the PolyMet NorthMet project.	MERC	S	N	8	RS38B. PolyMet 2015e Attachment U Table 4. The Plant Site and Mine site together are estimated to emit about 5.2 pounds of mercury per year. The cumulative effects analysis (leaving out the Mine Site) used 79 lbs. per year to quantify potential impacts. The cumulative incremental percentage increase in fish tissue was estimated to be between 0.4% and 1.8% in selected lakes proximate to the Plant Site.
Paula Maccabee	The FEIS failed to provide high quality information pertaining to mercury requested in WaterLegacy’s prior comments on the SDEIS. The FEIS does not disclose its assumptions as to the mass or concentration of mercury in potential project sources of contamination, including peat, overburden, ore, waste rock, process water, tailings, reject concentrate, filtered sludge, hydrometallurgical residue, coal ash or other potential sources of mercury release from the project. Thus, the FEIS does not permit any verification that mercury projections prepared by PolyMet and adopted by the FEIS (FEIS, 5-226, Table 5.2.2-49, PolyMet 2015m) are consistent with good scientific practice and local geology.	MERC	NS	X	1	
Paula Maccabee	Responses to comments state that estimates for major mercury sources were based on studies done for PolyMet in 2004 and 2005 (FEIS, A-414), but these studies are not included in the FEIS reference documents and neither their methodologies nor numeric values are disclosed.2 The assertion that mercury loadings to the tailings waste facility will be 16.2 pounds per year (FEIS, 5-229) cannot be verified. The level of mercury assumed for peat placed in the unlined mine site overburden and storage area is not disclosed. Mercury mass loading and concentrations in the most highly concentrated waste facilities -- the mine site equalization pond, and the hydrometallurgical residue facility are not disclosed in the FEIS. Documents received by WaterLegacy in response to the Minnesota Data Practices Act (DPA), but not included among FEIS references, suggest that hydrometallurgical residue, for example, would contain a highly elevated level of mercury. A PolyMet 2007 mercury mass balance analysis stated that 85 percent of the mercury from the ore, estimated as 164 pounds per year of mercury, would be contained in hydrometallurgical residue.	MERC	S	N	8	RS66. Attachment A Mercury mass balance summary table; Response to SDEIS Comment 17735; FEIS pg. 5-118. The Mine Site equalization pond and hydrometallurgical residue facility would be double-lined and therefore would not be sources of mercury. Minnesota Rules, part 4410.2400, allows the incorporation of information by reference as long as it is reasonably available for inspection by interested persons within the time allowed for comment. The materials were available for inspection consistent with the cited rule.

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Paula Maccabee	Next, the FEIS mischaracterized applicable data to claim that mercury in tailings would be adsorbed to tailings. Discrepancies between claims in the PolyMet NorthMet SDEIS regarding mercury and mercury data in underlying documents were not resolved in the FEIS. The FEIS goes even further than the SDEIS in asserting “the ability of NorthMet tailings to adsorb mercury, in combination with the proven ability of the underlying taconite tailings to adsorb mercury, is expected to result in an overall increase in the adsorption of mercury and subsequent lower concentrations of mercury at the Tailings Basin with the addition of the NorthMet tailings,” (FEIS, 5-229). As explained in WaterLegacy’s SDEIS comments, this optimistic claim mischaracterizes the NTS bench study cited in the FEIS. The FEIS reports that the 2006 NTS bench study reduced mercury concentrations by 73 percent (from 3.3 ng/L to 0.9 ng/L) after 480 minutes. And, as in the SDEIS, the FEIS fails to disclose either that the plain water in a control flask reduced mercury concentrations by 22 percent in that timeframe or that the trend in the experiment, when it was discontinued after eight hours, was that the mercury was desorbing from the tailings and may have doubled since the fourth hour of the experiment when mercury was beneath the detection limit of 0.5 ng/L (FEIS reference Barr 2007d, autop. 157, 160). ⁴ Even more problematic, the FEIS’ assertion that adsorption of mercury by the existing LTVSMC tailings has been “proven” is inconsistent with the data and assertions in Section 4.0 of the FEIS itself. The FEIS states, Comparing the existing Cell 2E pond water quality with water quality at the toe of the Tailings Basin can define the effect that passage through the existing LTVSMC tailings has on seepage water quality. Such comparison shows that passage through the LTVSMC tailings apparently reduces the average concentrations of arsenic, fluoride, and molybdenum, although it is difficult to determine to what extent these reductions are simply attributable to the effects of dilution. The concentrations of several other parameters, such as calcium, manganese, nickel, and TDS, increase as they seep from the tailings pond to the toe of the Tailings Basin. (FEIS, 4-127) The FEIS narrative does not state how mercury concentrations are affected as they pass through the existing LTVSMC tailings, but the data is clear. Mercury in the existing Cell 2E pond has a mean concentration of 1.4 ng/L. Mercury in the toe of the existing tailings facility has a mean concentration of 4.9 ng/L (FEIS, 4-126, Table 4.2.2-23) Using simple arithmetic, the FEIS has proved that in passing through the existing LTVSMC tailings mean mercury more than triples.	MERC	S	N	8	SDEIS Theme MERC 06. A simple arithmetic comparison of means does not represent the processes impacting mercury concentrations as water flows through the tailings. Specifically, the mean well data are from a different time period (2007-2013) than the mean pond data (2001-2004), and therefore a direct relationship between the two cannot be drawn. It should also be noted that the pond sampling for mercury occurred from 4 to 11 years before the toe well sampling and, depending on hydrologic properties of the tailings, may not represent the starting pond composition of the water collected in the toe wells. The simple comparison being made by commenter implies a relationship between the data when there may be none because of the different time frames involved. It is also scientifically incorrect to compare well water in a tailing pond to water in a pore fluid environment outside the basin and conclude that mercury has been leached from the tailings along the flow path. This is because water in the tailings ponds is going to be affected by its own local environmental processes noted in the comment. In general, standing water tends to lose mercury over time as the mercury is lost to sediment or degasses Hg ₀ to the atmosphere.
Paula Maccabee	FEIS’ claims that mercury concentrations in untreated tailings basin seepage will be 1.0 ng/L (FEIS, 5-230, Table 5.2.2-51) cannot be supported. Given that more than two trillion gallons a year of tailings seepage are predicted for the NorthMet project, ⁵ the implications of mercury in tailings seepage are likely to be significant.	WAT	S	O	8	SDEIS Theme WR 019
Paula Maccabee	The FEIS, like the SDEIS text criticized in WaterLegacy’s prior comments, also understates potential mercury impacts from mercury in the West Pit. The FEIS claims a 92 percent burial rate for the total mercury load in the West Pit (FEIS, 5-226, Table 5.2.2-49 Initial and Final Parameter Values for the Mercury Mass Balance). The underlying literature cited, in fact, estimates actual mercury sedimentation rates at 80 to 90% (FEIS ref. PolyMet 2015m, p. 325). More important, the FEIS’ use of the term “burial” suggests that mercury in the West Pit would become permanently unavailable. The FEIS fails to discuss the well-established risk that mercury concentrated in lake sediments will cycle in and out of suspension, become methylated and bioaccumulate, affecting fish and wildlife. ⁶ The FEIS’ has again failed to provide high-quality mercury information, has failed to model mercury releases and has selectively reported mercury data.	MERC	S	N	8	PolyMet 2015m pg. 325. The NorthMet ore and waste rock contain trace amounts of mercury, but mass balance modeling and analog data from other natural lakes and mine pit lakes in northeastern Minnesota suggest that the mercury concentration in the West Pit Lake would stabilize at approximately 0.9 ng/L, which is a value that accounts for the mercury cycling identified in the comment.
Paula Maccabee	WaterLegacy’s prior comments in the SDEIS raise raised concerns about the implications on mercury methylation of unsubstantiated assumptions that 99.5 percent of seepage from the unlined tailings waste facility and more than 90 percent of seepage from the unlined Category 1 waste rock pile would be captured without effect on the environment. The FEIS uses the same unsupportable seepage capture assumptions and modeling. These assumptions substantially understate the potential for sulfate seepage, indirect discharge to surface waters and increases in mercury methylation both near the project site and downstream in St. Louis River sediments.	WAT	S	O	8	SDEIS COOP Response #2389. SDEIS Theme MERC 20

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Paula Maccabee	WaterLegacy has previously objected to use of projections of existing conditions as a baseline to evaluate NorthMet project impacts on water quality. This concern is discussed in more detail in Section XI, infra in addressing Alternatives, including the No Action Alternative. The FEIS makes the same strategic comparison to suggest that the NorthMet project would reduce sulfate discharge to receiving waters and the resulting potential for mercury methylation, when the opposite is more likely to be true. The FEIS compares NorthMet project impacts to the Continuation of Existing Conditions (CEC) scenario, even as it admits that the CEC model “does not include future expected additional mitigation such as water quality mitigation at the existing LTVSMC Tailings Basin,” (FEIS, 5-94). The FEIS acknowledges that water quality would improve if the project did not take place: “Seepage water quality from the existing LTVSMC Tailings Basin would be expected to improve over time as a result of the Cliffs Erie Consent Decree, other permit requirements (e.g., Permit to Mine), and natural attenuation of Contaminants,” (ES-49). The FEIS states that the NorthMet project would reduce sulfate loading by more than 40 percent in the Embarrass River at PM-13. (FEIS, 6-48), relying on an unsubstantiated nearly perfect tailings seepage collection rate of 99.5 percent. The FEIS did not estimate sulfate reduction achievable through natural attenuation and seepage collection by Cliffs Erie at the existing LTVSMC as a result of regulatory controls. Failing to do so biased the analysis of the NorthMet project’s impact on increased sulfate discharge and the resulting potential for mercury methylation.	ALT	S	N	8	The use of the CEC is a practical tool to model changes to the affected environment when future conditions without the project are not accurately quantifiable over time. FEIS pg. 5-93. Furthermore, comparing a modeled existing conditions scenario to a modeled future scenario provides an accurate assessment of how the environment may change over time.
Paula Maccabee	The EPA, in comments on the SDEIS, recommended that the FEIS model mercury using either GoldSim or a more suitable model, such as the Water Quality Analysis Simulation Program (WASP)3, which is commonly used by EPA to model elemental mercury. (EPA Comments on PolyMet NorthMet SDEIS, Comment #15, attached as Exhibit 1)7 Dr. Branfireun also commented in his review of the SDEIS that models exist to model mercury and that SDEIS had failed to make a reasonable attempt to model the potential impacts of changes in water chemistry impacting mercury and that models were available to do so. (Branfireun, 2014).8 The FEIS contains no modeling of mercury other than the simplistic mass balance analysis effectively dismissed as unusable by Dr. Branfireun below. Mercury has not been included in the GoldSim modeling for the NorthMet mine site or the plant site (FEIS, 5-223, 5-228), and no other model was used to model either mercury or methylmercury increases .	MERC	S	O	8	SDEIS Theme MERC 13
Paula Maccabee	As in the SDEIS, the FEIS assumed a simple linear relationship between mercury air deposition to a water body and fish tissue methylmercury concentrations (FEIS, 6-85). Dr. Branfireun’s expert opinion, summarized below, explains the need to assess scientifically recognized impacts of sulfate discharge and deposition and hydrological effects on wetlands and sediments in increasing mercury methylation.	MERC	S	O	8	USGS 2010
Paula Maccabee	The FEIS provides more data on the various types of sulfur-containing air emissions, spillage and dust from the NorthMet mine site and plant site and more text explaining the potential relationship between sulfate deposition and mercury methylation than did the SDEIS. However, rather than using this data to provide a critical analysis of the aggregate impacts of these various forms of sulfate in methylating environments – namely the wetlands closest to the deposition sources - the FEIS obscures and negates the potential impacts of local sulfur inputs on mercury methylation. The FEIS states that the NorthMet plant site would emit about 7 tons per year of sulfur dioxide, and about 1.9 tons per year of sulfur dioxide from the mine site (FEIS, 5-509). FEIS modeling then focuses on two lakes at least five miles away from the plant site and farther yet from the mine site (Colby Lake and Sabin Lake). The FEIS predicts that sulfur dioxide deposition would increase by 2 percent in each lake (FEIS, 5-510). The FEIS provides no estimates of impacts on wetlands, the methylating environments located proximate to sulfur dioxide sources. The FEIS then discusses sulfuric acid mist, emissions of which are estimated to be slightly more than 5 tons per year (FEIS, 5-510). Again, the FEIS only models deposition on the two lakes a considerable distance from the site, and dismisses deposition of sulfuric acid mist as a small percentage over the watersheds (Id.) Next, the FEIS discusses reduced sulfur compounds, including hydrogen sulfide (1.88 tons per year) and carbon disulfide (5.1 tons per year) with a total volume of 6.98 tons per year from the NorthMet plant site. The FEIS does not estimate the potential deposition of sulfur from reduced sulfur compounds, saying the local deposition “is uncertain, but it is not expected to exceed evaluation criteria,” (Id.). Finally, the FEIS discusses sulfur in particulate matter that would be emitted from the plant	MERC	S	N	8	SDEIS Theme MERC 08. It is correct that the Final EIS analysis does not include specific discussions on SO ₂ or sulfur aerosol mist (SAM) impacts to “wetlands,” although it does include discussion on impacts to lakes. The Final EIS does, however, include a discussion of the impacts to wetlands from the larger source of sulfur from particulates and fugitive dust (≥ approximately 80% of calculated potential sulfate additions). Considering another qualitative, but smaller, increment from SO ₂ and/or SAM to the quantitative impact analysis already conducted for particulate sulfur on wetlands in the FEIS does not change the overall conclusions of that analysis.

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	site. Again, focusing on Colby Lake and Sabin Lake, but without disclosing the tons per year emitted, the FEIS predicts that deposition of sulfate in particulate matter would be 4 percent of background, once more deemed a small percentage of background. (FEIS, 5-510 to 5-511). However, here the FEIS provides an important additional analysis. Based on the assumption that all sulfur in fugitive dust converts to sulfate and mixes with surface water in wetlands. Assuming that all sulfur in fugitive dust converts to sulfate and mixes with surface water in wetlands, the FEIS predicts a potential increase in wetlands sulfate concentrations of 4.2 mg/L. (FEIS, 5-339)					Emissions of mercury from the mine would be addressed in permitting. MPCA would determine, in the course of its decision-making for a permit governing air emissions, what regulations or controls should be imposed upon potential sources of mercury that could impact water resources, including fugitive emissions. Similarly, potential water quality concerns associated with mercury, sulfate, and methylmercury, would be addressed in the context of NPDES permitting as well as wetlands permitting, which could include the details of potential water quality monitoring.
Paula Maccabee	The FEIS admits, "small sulfate increases in sulfate-poor wetlands would be expected to increase the production of methylmercury in wetlands," (FEIS, 5-164). But the FEIS fails to explain that the three Upper Partridge tributary streams that drain relatively undisturbed watersheds --Wetlegs Creek, proposed West Pit Outlet Creek and Longnose Creek (FEIS, 4-83) - - reflect drainage from low-sulfate wetlands. Even according to the revised data in the FEIS, sulfate concentrations are 3.9 mg/L for Wetlegs Creek, 2.6 mg/L for proposed West Pit Outlet Creek and 0.91 mg/L for Longnose Creek (FEIS, 4-84).9 Increased wetlands concentrations from fugitive dust alone, without considering ore spillage or sulfur-compound air deposition would more than double sulfate in all three undisturbed mine site creek watersheds and more than quadruple sulfate in the Longnose Creek watershed. It is undeniable, based solely on FEIS data, that mine site sulfate deposition would be expected to increase the production of methylmercury in mine site wetlands. Dr. Branfireun's opinion below calculates sulfate deposition from dust as sulfate loading and concludes that sulfate deposition of this magnitude could nearly double methylation in affected wetlands. However, even his analysis is likely to understate potential impacts of sulfate deposition on wetlands, since the FEIS does not provide sufficient high quality data to aggregate the various sulfur-containing emissions or the combined impacts of sulfur-containing emissions, ore spillage and dust on the nearest or most ecologically sensitive waters.	MERC	S	O	8	FEIS pg. 5-313
Paula Maccabee	The FEIS' discussion of sulfur deposition as a result of spillage and dust are provided in other sections of the document. This discussion minimizes the impacts of ore spillage. The FEIS accepts as fact PolyMet's assertion that refurbishing old rail cars (at about one-sixth the cost of new rail cars) would reduce potential spillage from each car to 0.2 tons per year, a 97 percent reduction from the original calculation of 6.14 tons per year potential spillage from each car (FEIS, 5-164, citing PolyMet 2014a). The Co-Lead Agencies do not require verification that refurbishment will succeed; they simply assert the position taken in the SDEIS that no impacts from rail car spillage and dust on wetlands and streams are expected (FEIS, 8-24). The FEIS states that surface water quality in the mine site Upper Partridge tributary streams (Wetlegs Creek, Longnose Creek, proposed West Pit Outlet Creek and Wyman Creek) "would be affected by ore spillage from the rail cars," but fails to analyze either the magnitude of this effect or the impacts of ore spillage on wetlands and mercury methylation.(FEIS, 5-164) Approximately 543 acres of wetlands along the railroad corridor could be affected by rainfall contacting spilled ore and fines and releasing solutes (FEIS, 5-314).	WAT	S	O	8	SDEIS Theme WET 11

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Paula Maccabee	As explained in WaterLegacy's comments on the SDEIS, assessment of sulfate impacts on methylation in mine site wetlands should also consider the potential that mine site seepage in the surficial aquifer will daylight in wetlands. At the mine site, although predictions have been changed since the SDEIS to model fewer project impacts as compared to continuation of existing conditions,10 at P90 sulfate is predicted to more than triple along the overburden storage and laydown flowpath and along the West Pit flowpath (FEIS, 5-129, Table 5.2.2-23). There are 516 acres of wetlands within the mine site surficial aquifer flowpaths (FEIS, 5-320; Table 5.2.3-7). Rather than recognizing that the NorthMet project would increase production of methylmercury as a result of sulfate in wetlands adjacent to the mine site, the FEIS minimizes this significant environmental impact, stating "methylmercury produced in wetlands is not necessarily incorporated into food chains and concentrated to levels of concern" and proposing that the potential incremental change in methylation "may warrant future monitoring." (FEIS, 5-339)	WAT	S	O	8	NorthMet EIS Groundwater IAP Final Summary Memo. FEIS pgs. 5-319 to 5-320
Paula Maccabee	These statements contradict the purpose of an EIS and basic scientific integrity. It is beyond dispute that methylmercury is exported to streams as they pass through wetlands and that precipitation events and seasonal wetting cycles release methylmercury from peatlands into streams where that methylmercury can be incorporated into food chains. In fact, these points are both made in a recent Report of the Minnesota Department of Natural Resources (MDNR), one of the Co-Lead agencies preparing the FEIS.11 The FEIS does not discuss the potential that hydrologic changes resulting from mine dewatering and tailings seepage capture would increase mercury methylation. Dr. Branfireun's opinion below explains the effects of drying and rewetting cycles in increasing mercury methylation in wetland and peatland environments. Given potential mine site drawdown impacts on as much as 5,720 acres of wetlands (Section V, infra) and the combined impacts of sulfate loading and drying and wetting cycles, the methylation processes described by Dr. Branfireun presents a significant risk. Despite statements of concern regarding methylmercury by the U. S. Environmental Protection Agency (EPA) and Tribal Cooperating Agencies,12 as well as by WaterLegacy and medical organizations (see Exhibit 18, attached), the FEIS still makes no effort to analyze potential methylmercury effects from the NorthMet project. As Dr. Branfireun's expert opinions explain, the NorthMet mine, processing plant, waste facilities and ponds create conditions that increase production of methylmercury, including discharge and deposition of mercury, discharge and deposition of sulfate, and drying and rewetting of wetlands at both the mine site and tailings site. The FEIS fails to model mercury dynamics and claims that current scientific understanding of the factors affecting mercury methylation is too limited to perform an analysis (FEIS, 5-223).	MERC	S	O	8	SDEIS Theme WR 112. FEIS pgs. 5-21, 5-223, 5-231; 5-361; PolyMet 2015e Attachment U Section 6.1 and 6.2.
Paula Maccabee	The FEIS analyzes only NorthMet plant mercury air emissions to model changes in fish methylmercury concentration. Without qualifying its conclusions to explain the limited analysis done, the FEIS goes yet farther than any prior EIS document to broadly dismiss methylmercury human health concerns on the basis of the small increases in this limited analysis; "Given that evidence and finding, no potential change in human health risks related to the fish consumption pathway is expected," (FEIS, 7-16). The simultaneous failure to analyze methylmercury production in the FEIS and its categorical denial of methylmercury effects is unacceptable under either NEPA or MEPA environmental assessment laws. Denial that the NorthMet sulfide mine project will increase mercury and production of methylmercury results in the continued failure of the FEIS to consider adverse effects of the Proposed Project on water quality, human health, tribal treaty and reservation resources or environmental justice. This analysis is fundamental both to consideration of mitigation alternatives and to assessment of whether the PolyMet NorthMet project can be permitted under the Clean Water Act Section 404 and 401(a) as well as under applicable state laws.	MERC	S	O	8	SDEIS Theme MERC 03
Paula Maccabee	Dr. Brian Branfireun reviewed pertinent sections of the preliminary FEIS, the FEIS, supporting documents and recent peer-reviewed literature to update his opinions on the PolyMet NorthMet SDEIS (Branfireun, 2014). His opinion on the FEIS (Branfireun, 2015) is attached as well as summarized below.	WAT	NS	X	1	

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Paula Maccabee	Dr. Branfireun's prior Opinion 1 focused on characterization of the current methylating environment associated with and potentially impacted by the proposed NorthMet project and concluded that the data regarding mercury and methylmercury was insufficient to evaluate potential impacts of the proposed project. His updated opinion reviewed new data on mercury and methylmercury used for the FEIS (Barr 2014d) and found numerous errors and internal inconsistencies in the data as well as a failure to perform an uncertainty analysis. He concluded that the data could not be used to assess environmental effects on mercury or methylmercury and that the margin of error alone would discount the firm conclusions made in the FEIS regarding mercury mass balance calculation. (Branfireun, 2015, pp. 2-3, 5-9)	MERC	S	N	3	The data and analyses behind the mercury evaluation in the Final EIS is from multiple sources and timeframes. However, it provides a basis for a reasonable and defensible interpretation of the potential impacts of the project on downstream resources. Some aspects of the analyses do involve a degree of scientific uncertainty and that certain variables and conclusions are subject to interpretation. Even with these uncertainties in the analyses there is still high confidence in the overall determination presented in the Final EIS that the project will not result in adverse effects on downstream fish-tissue mercury levels or on the associated human health concerns of fish consumption. By reducing the contribution of sulfate in the Embarrass River watershed relative to current levels, the project is also consistent with the goals of the MPCA strategy (2006a) to address the indirect effects of sulfate on methyl mercury production for "high risk" settings such as exists over portions of the NorthMet project area.
Paula Maccabee	Dr. Branfireun also concluded, based on the methylmercury data in the Partridge and Embarrass Rivers and in mine site creeks, that the NorthMet project area is a highly methylating environment, making these watersheds sensitive both to hydrological impacts due to changes in surface or subsurface hydrology and to additional sulfate either from surface water or deposition. (Id., pp. 3-4).	MERC	NS	X	1	
Paula Maccabee	Dr. Branfireun" prior Opinion 2 criticized the SDEIS for failure "to consider scientifically documented factors beyond simple changes in mercury in the environment that govern mercury methylation and uptake when evaluating the potential impacts of mercury release as a result of the proposed development," (Id., p. 9). His updated opinion found the FEIS misleading in its implication that there is no relationship between methylmercury and sulfate. He explained that the sulfate limit of 10 mg/L to protect wild rice may still allow increased methylation to take place in wetlands or tributary catchments and that the mine site creeks demonstrate sulfate-limited conditions with a high potential for mercury methylation, where "even small additions of sulfate to sulfate-poor wetlands can increase methylmercury production." (Id., pp. 9-12). Dr. Branfireun opined that the FEIS "analyzed a very limited scope of the impacts the proposed NorthMet project would have due to changes in hydrology" and stated that augmenting streams to stay within a specified percentage of variation would not preclude increased methylation in soils and sediments adjacent to the streams. He cited evidence from rigorous peer reviewed science that demonstrates the role of drying and wetting of peat soils on sulfate regeneration and mercury methylation, and concluded in light of this evidence and the "contradictory mention and dismissal of the state-of-the-science on mercury methylation, the FEIS is simplistic if not misleading."	MERC	S	N	8	USFS 2010; SDEIS Theme WR 112. The Final EIS acknowledges that under certain localized conditions the introduction of sulfate to a water resource may contribute to the production of methyl mercury. However when taken as a whole, the project would result in a reduction of the loading and concentration of sulfate within the Embarrass River watershed. This overall reduction would likely not result in adverse effects on downstream resources from mercury methylation. It is this concept that formed the basis for the MPCA strategy (MPCA 2006a) to address the indirect effects of sulfate on methyl mercury production. It is recognized that water fluctuations in wetlands and the wetting and drying of peat soils has an effect on the potential generation and export of methyl mercury. The augmentation proposed for the tributary streams north of the tailings basin will help stabilize stream flows and minimize the degree of

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						water fluctuation within the adjacent wetlands and thus also minimize the generation and transport of methyl mercury.
Paula Maccabee	Dr. Branfireun's prior Opinion 3 concluded that the SDEIS had not made a reasonable attempt to model the potential aquatic system impacts of changes in mercury and sulfate water chemistry due to the NorthMet project. His updated opinion emphasized that "a mass balance model cannot by definition incorporate mechanistically the input and removal processes for mercury, and cannot address the biogeochemical aspects of mercury methylation across the landscape which are at the root of the potential impacts associated with the PolyMet proposal." He criticized the FEIS' continuing reliance on this "cheaper and easier" method when much more defensible approaches exist. (Id., p.13). Dr. Branfireun emphasized that neither the FEIS' statements of certainty based on grams of sulfate or mercury released nor conclusions from this asserted mass balance that the proposed development will not have appreciable impacts on water quality could be supported, given the level of uncertainty in the data. (Id., p.14) Dr. Branfireun also challenged the FEIS' assumption of proportionality between atmospheric deposition of mercury and mercury in fish tissue as "an archaic approach to this problem" that "does not reflect current scientific thought or the best available tools." He cited research in Minnesota's Voyageur's National Park published in 2014 demonstrating that fish tissue mercury will vary under the same atmospheric deposition, based on hydrology and other characteristics of that specific water body.	MERC	S	O	8	SDEIS Themes MERC 13, MERC 23
Paula Maccabee	Dr. Branfireun's prior Opinion 4 stated that ombotrophic bogs (peat-dominated, rain-fed, acidic wetlands) play important roles in methylmercury supply, and the SDEIS improperly considered them decoupled from project impacts. His opinion on the FEIS emphasized the significance of bogs as methylating environments, and concluded, "Since there is clear evidence that the watersheds in which the NorthMet development is proposed should be considered 'sensitive' with respect to the production of methylmercury (see Munthe et al., 2007), it logically follows that impacts on these watersheds and wetlands that could influence the methylating environment should have been considered in the EIS. Even small changes that increase methylation could have marked detrimental and cumulative effects downstream."	MERC	S	O	8	FEIS pg. 5-339

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Paula Maccabee	Dr. Branfireun's prior Opinion 5 criticized the use of an unproven analog system and the SDEIS' resulting failure to evaluate hydrological impacts of the proposed development on surrounding wetlands and subsequent changes in methylmercury production and release. His updated opinion acknowledged that the FEIS had reclassified ombrotrophic bogs to have a "low likelihood" of affect rather than "no effect." However, on closer review of the underlying documents (PolyMet, 2015b and Eggers, 2015), Dr. Branfireun found that PolyMet and the FEIS had misrepresented Eggers' conclusions, which did not suggest a "low likelihood" of effects to bogs, but rather "that the potential for indirect impacts to all bog communities within the 0-1,000 foot analog zone is acknowledged." (Id., pp. 16-18). Dr. Branfireun determined that the FEIS proposed no mitigative action, not even proactive monitoring, in ombrotrophic bogs despite this new classification and found the shift from a "no effect" classification "meaningless." (Id., pp. 18-19).	WET	S	O	3	SDEIS Theme WET 08. Eggers 2015 pg.4
Paula Maccabee	Dr. Branfireun then explained that monitoring done to evaluate changes in wetland vegetation would be insufficient to detect indirect impacts on methylation. "Even relatively small changes in water table position and wetting and drying frequency in the ombrotrophic wetlands at the NorthMet mine site have the potential to impact sulfate and methylmercury concentrations of receiving waters," and evaluating these changes would require baseline and future monitoring of flow volumes and water chemistry, including methylmercury and sulfate. He emphasized, "considering the potential for mercury methylation, bog wetlands around the proposed mine site must be considered to have a very high likelihood of indirect impacts from the proposed NorthMet development."	MERC	S	O	8	FEIS pg. 5-248, 5-257
Paula Maccabee	Dr. Branfireun then explained that methylmercury would be continuously exported from wetlands under base flows and during high flow events, such as spring snow melts, as well as during rain storms and that "all bogs shed water via outflows to downstream systems, and as such strongly influence the chemistry of receiving waters." He noted that none of these potential impacts of the proposed NorthMet project are considered in the FEIS. (Id., p. 20).	MERC	S	O	8	FEIS pg. 5-339
Paula Maccabee	impacts of the proposed NorthMet project are considered in the FEIS. (Id., p. 20). The next section of Dr. Branfireun's opinion recent applied peer-reviewed research to conclude that "stimulation of methylmercury production by the rewetting process is a ubiquitous process" in Minnesota bog-type wetlands and that "we must expect that a significant proportion of bog wetlands that are within the zone of drawdown from the proposed mine development will also exhibit sulfate regeneration and increased export of methylmercury, under natural rewetting cycles as well as storm events." (Id., pp. 20-21). Hydrologic changes as a result of drying and rewetting would promote methylation as well as contribute to repeat flushes of methylmercury and inorganic mercury from the proposed unlined mine site storage area. Dewatering of wetlands surrounding the tailings basin through seepage collection and even modest impacts on the water table resulting from dewatering could increase total mercury, methylmercury and sulfate in the Partridge, Embarrass and ultimately, the St. Louis River. (Id., p. 22). Dr. Branfireun applied recent peer-reviewed research to estimate impacts of sulfate deposition in methylation at mine site wetlands. Using background and deposition rates from Barr and PolyMet documents, Dr. Branfireun calculated that the increased sulfate loading resulting from the NorthMet proposal is, in fact 3.76 times background deposition. Based on results in experimental peatlands, he calculated that mercury export from sensitive peatlands near the mine site may increase up to 1.88 times. Given the magnitude of this potential impact, even if less than all sulfur is liberated to the environment as sulfate, there will still be a substantial stimulatory effect on peatland mercury methylation. Effects of sulfate deposition on peatlands will persist to some degree even after loading has ceased.	MERC	S	O	8	SDEIS Theme WR 112. FEIS pg. 5-257. FEIS Section 5.2.3.3.5
Paula Maccabee	Dr. Branfireun's prior Opinion 6 stated that the SDEIS inadequately addressed the potential for discharges of mercury and sulfate from the tailings site and understated the potential for downstream water quality impairments.	WAT	S	O	8	SDEIS Themes WR 018, WR 019
Paula Maccabee	His update to this opinion emphasized the inappropriate reliance in the FEIS on a mass balance model that "in the absence of a modeled cumulative error, presents us with mass loadings of sulfate, mercury and methylmercury to the Partridge and Embarrass Rivers that are unusable" because cumulative errors embedded within the estimates "cast serious doubt on the extremely small gains or losses used in the FEIS to claim that the NorthMet impact would have no net impact on downstream loading of inorganic mercury."	MERC	S	O	8	SDEIS Theme MERC 13

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Paula Maccabee	Dr. Branfireun found the FEIS has not changed its reliance on unsubstantiated assumptions regarding seepage collection from both the mine site and the tailings site. Based on the comments of environmental consultant Daniel Pauly, Dr. Branfireun reviewed the underlying Barr report (Barr 2013f) and concluded that the pilot test “includes no testing and provides no certainty concerning the removal of mercury or methylmercury from tailings basin seepage or other recovered waters” of the NorthMet project. He concurred with Pauly that biogeochemical lag time would mean that potential impacts may not be revealed in a way that would allow adaptive engineering to prevent a permanent downstream impairment.	WAT	S	O	8	SDEIS Theme WR 019: PolyMet 2015d Section 4.2.4.3
Paula Maccabee	Dr. Branfireun concluded that no changes to the FEIS altered his prior opinions that the PolyMet NorthMet EIS failed to rigorously or scientifically evaluate downstream water quality impairments from mercury and methylmercury or that the NorthMet project would result in potential impacts to ecosystems to human health, as a result of increased methylmercury in surface waters and the food chain. In fact, Dr. Branfireun stated that his prior opinions had been reinforced and strengthened as a result of new methylmercury data in the record and newly published peer-reviewed literature. (Id., p. 25). Dr. Branfireun summarized the known mechanisms of methylmercury production, export and transport to proximate streams and downstream waters. He then concluded, It is my opinion that the NorthMet development could create a substantial risk of ecologically significant increases in water column and fish methylmercury concentrations in downstream waters, including the St. Louis River. Finally, even if appropriate monitoring for biogeochemical changes in wetlands and sediments near the development were to be designed and implemented (a difficult and complex undertaking requiring collection of baseline data not supplied in the FEIS), it is highly likely that lag times for expression of methylmercury increases, multiple mechanisms of transport, and the likelihood of legacy regeneration of sulfate stored in the watershed would preclude effective adaptive management prior to irreversible impairment of downstream waters. (Id., p. 27).	MERC	S	O	8	SDEIS Themes MERC 02, MERC 03
Paula Maccabee	The PolyMet NorthMet FEIS does not address either WaterLegacy’s comments on the SDEIS or those of experts sponsored by WaterLegacy pertaining to insufficient data and unsubstantiated and unreasonable assumptions regarding the chemistry of mine site sources of contamination and the efficacy of contaminated seepage character. The opinions of chemist Bruce Johnson regarding insufficient and potentially biased sampling of mine site rock and inappropriate characterization of mine site chemistry have not been addressed or resolved in the FEIS.	WAT	S	O	3	SDEIS Theme WR 030
Paula Maccabee	Similarly, the opinions of mechanical engineer and hydrologist Donald Lee that the SDEIS contained unsubstantiated and unreasonable assumptions regarding seepage collection efficiency, liner impermeability beneath the toxic WWTF equalization basin, efficacy of subaqueous disposal in reducing contaminants, and regarding the risk of degradation of capture and treatment facilities over a time frame exceeding 100 years, apply equally to the FEIS.	WAT	S	O	3	SDEIS Theme WR 017. PolyMet2015m Attachment B Section 4.1.3; WR 018; WR 116 PolyMet 2015i Attachment C; PolyMet 2015q Section 9.6.4; Day 2008; FIN 05; WR 021
Paula Maccabee	The FEIS, similarly, makes no change and provides no additional justification for its use of “evaluation criteria” rather than water quality standards and its failure to determine water quality impacts at surface water locations closest to the source of seepage and discharge. The FEIS’ claims that the NorthMet mine would not violate water quality standards or would not increase the violations beyond the “continuation of existing conditions” scenario are based on these improper qualifications of the data as well as the unsupported assumptions of its modeling. WaterLegacy’s prior comments on the SDEIS regarding these issues still stand.	WAT	S	O	8	SDEIS Theme WR 110. NorthMet EIS Water Resources Impact Criteria IAP Final Summary Memo October 17, 2011; Water Resources/Groundwater IAP Planning Summary Memo June 30, 2011.
Paula Maccabee	WaterLegacy’s FEIS comments in this Section focus on mine site hydrogeology, and concerns raised in the expert opinions of Dr. Lee and geologist J.D. Lehr on the SDEIS. Our concerns have been exacerbated, rather than resolved, as a result of additional disclosures and investigations since the SDEIS was released and treatment of hydrogeology and water modeling issues in the FEIS. As a result of concerns about the completeness, accuracy and reliability of water modeling performed to date for the PolyMet NorthMet sulfide mine project and about the potential harm that would result from the project, WaterLegacy requests that federal agencies and state reviewers of the FEIS require that independent water quality modeling for the project be performed by the U. S. Geologic Survey or other undisputed experts.	WAT	NS	X	1	

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Paula Maccabee	<p>The connection between water in surficial materials and groundwater at the mine site is an important determinant of wetland drawdown impacts from mine dewatering and may affect water quality impacts on surface waters, groundwater and wetlands. When the SDEIS was released, geologist J.D. Lehr (Lehr, 2014) challenged its conclusion that there was a “weak” connection between bedrock groundwater and surficial water and its claims that a single 30-day pump test was sufficient:</p> <ul style="list-style-type: none"> • The single 30-day pump test cited in the SDEIS is insufficient to infer that there is a “weak” hydrologic connection between bedrock and surficial deposits. • It is likely that there would be significant interaction between ground water in surficial materials and bedrock along the lateral trends of bedrock fractures. It is undisputed that the FEIS still relies only a single 30-day pumping test conducted in 2006 at bedrock well P-2 to conclude that the “small amount of drawdown in the nearest deep wetland piezometer, and no detectable drawdown at other water table or deep piezometers” demonstrated “the hydraulic connection between surficial deposits and the underlying bedrock, although present, is weak or non-existent” and that there is a “general lack of interaction between the surficial and bedrock aquifers.” (FEIS, 4-47, 4-53, 4-173, 4-174). <p>Since the SDEIS was released, newly prepared and released documents call into question the sufficiency and scientific reliability of the P-2 pump test on which the FEIS relies to minimize the connection between the mine site surficial aquifer and groundwater. The location of the P-2 pump test is shown in FEIS Figure 4.2.2-8, attached as Exhibit 2. Reviewing FEIS Figure 4.2.2-8 alongside Large Figures 1 and 2 in the recent Barr Hydrogeology of Fractured Bedrock report (FEIS ref. Barr 2014b, Large Figures 1 and 2, provided as Exhibit 3), it seems that the P-2 test was located where it would be least likely to demonstrate a hydraulic connection. Although areas of high concern – the north side of the East Pit and the 100 Mile Swamp peatlands north of the East Pit -- are both located in more conductive Virginia Formation rock, the P-2 test was conducted at the edge of the rock unit for Duluth Complex. Conductivity data on Barr 2014b Large Figure 2 (Exhibit 3) illustrate the difference between Duluth Complex rock and Virginia Formation rock in the vicinity of the P-2 test. Hydraulic conductivity in Duluth Complex rock was measured between 1.3E-06 and 3.5E-06 centimeters per second and that of nearby Virginia Formation rock between 1.7E-05 to 2.5E-04 centimeters per second; hydraulic conductivity was up to 100 times greater in proximate Virginia Formation rock than the Duluth Complex rock. Barr Engineering’s report for PolyMet on the P-2 pumping test concluded that, with the exception of the deep piezometer located closest to the well, “the decrease in water levels in the piezometers are not attributed to pumping” and “significant and widespread drawdown of the water table within these deposits is not anticipated.” (Barr 2007a, p. 6, p.12). However, documents received through the Minnesota Data Practices Act show that both Tribal Cooperating Agencies and consultants for the MDNR disputed Barr’s conclusion that the RS10A pump test demonstrated a lack of wetlands impacts. GLIFWC’s John Coleman disagreed with Barr, stating that, “4 out the 5 wetland wells monitoring for drawdown showed noticeable drops in water level during the pump-test” and that “Although the pump-test was poorly designed and the results are ambiguous, if any conclusion could be made it would be the opposite of that stated in the report.” (John Coleman, GLIFWC emails to Stuart Arkley, MDNR, Sept. 10 -12, 2008, Exhibit 4). In addition, the MDNR’s own consultants, Jim Kunkel and Cory Conrad13 criticized both the conclusions and the methodology of the RS10A study. They concluded, “The bottom line is there was some impact on the wetlands and most likely other surface water bodies for this relatively short-term test.” (Reviewer Comments RS10A, Apr. 20, 2007, Exhibit 5). MDNR’s consultants urged additional analysis of distance-drawdown and vertical hydraulic conductivity between surficial deposits and bedrock to assess wetlands impacts. They proposed that the MODFLOW model should include a factor for surface water and groundwater interaction and, if MODFLOW could not calculate impacts to surface water during mine dewatering, a better conceptual model was needed. (Id.) A single pump test is insufficient to assess the connection between surficial deposits and bedrock, and a test solely in Duluth Complex rock seems calculated to understate the connection. Both Tribal Cooperating Agencies and MDNR’s reviewers challenged the conclusions of Barr’s consultants and recommended additional testing with better designs. Yet, seven years later, the FEIS still follows PolyMet’s lead and characterizes the P-2 pump test as demonstrating a “weak or non-existent” connection between mine site surface and groundwater without disclosing either the test’s design flaws or the scientific assessment that additional testing and modeling was needed. Both the P-2 test and the conclusions drawn from it in the FEIS fail to</p>	WET	S	O	3	PolyMet 2015b pg. 27-29. SDEIS Themes WR 010, WR 012. SDEIS COOP Response #2700

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	meet the requirements of scientific rigor, integrity and disclosure of opposing views required for an EIS.					
Paula Maccabee	When the PolyMet NorthMet SDEIS was released, WaterLegacy's comments and the expert opinions of J. D. Lehr and Donald Lee challenged errors and omissions in PolyMet's technical references adopted in the SDEIS to minimize the transmission of pollutants from the mine site's unlined sources of perpetual pollution, the Category 1 waste rock pile, the East Pit and the West Pit. Their opinions included the following: • Bedrock beneath the mine site is known to contain fractures and faults. Groundwater flow through bedrock occurs through fractures or other secondary porosity features. (Lehr, 2014)	WAT	NS	X	1	
Paula Maccabee	• It cannot be assumed that mine site bedrock fractures lack hydrologic significance. There is a potential that mine site bedrock fractures will serve as conduits for significant quantities of contaminated groundwater. (Id.)	WAT	S	O	8	SDEIS Themes WR 011, WR 012
Paula Maccabee	• Weathering from mine dewatering may increase the aperture of existing bedrock fractures. (Id.)	WAT	NS	X	1	
Paula Maccabee	SDEIS bulk horizontal and vertical conductivity values for Duluth Complex bedrock fail to consider transmission through faults, fractures and secondary porosity features. (Id.) • Average bulk conductivities for SDEIS surficial zone modeling fail to reflect and inappropriately exclude zones of much higher than average conductivity. Hydrologic significance of mine site bedrock fractures, faults and secondary porosity features should be evaluated through further testing. (Id.)	WAT	S	O	8	SDEIS Themes WR 011, WR 012
Paula Maccabee	• Fractured media are very conductive in the fractures but not conductive in the unfractured portion of the media. Consequently, pump test data interpreted as porous media yield an average value that underestimates the transport rate in the fractures. The connectivity of the fractures is also difficult to interpret simply from pump testing. Tracer testing is best used to establish the connectivity of fractures.	WAT	S	O	3	SDEIS Theme WET 08
Paula Maccabee	• The numbers presented in Table 5.2.2--8 [similar to data in FEIS Table 5.2.2-8] show very small recharge fluxes for the East and West Pits. These rates can be no more than assumptions that are not justified. Not only are the materials in the East and West Pits fractured, their fractures are certain to be further enhanced by the blasting associated with open pit mining. The assumed low conductivities result in lowered fluxes of contaminants from the pits with reduced concentrations. The information contained in this Table is misleading.	WAT	S	O	3	SDEIS Theme WR 016
Paula Maccabee	Although new illustrations showing the direction and location of fractures and bedrock mine site geology were provided in a Barr report (Barr 2014b, Figures 1 and 2, Exhibit 3), no such depiction of fractures appears anywhere in the 3,576-page FEIS. The FEIS still minimizes the potential impacts of fractures and focuses its discussion on the primary conductivity of Duluth Complex rock. (FEIS, 4-51 to 4-52) The FEIS agrees that secondary porosity affects groundwater flow (FEIS, 4-48), but provides no new testing or modeling of secondary porosity features or assessment of the impacts of these secondary channels as conduits for mine pollution.	WAT	S	O	8	SDEIS Theme WR 012
Paula Maccabee	As the end of environmental review approached, PolyMet updated its modeling of hydraulic conductivity. The purpose of this exercise was not to evaluate pollution or wetlands impacts, but "to estimate transient flows to the mine pits during operations and subsequent closure." (FEIS, p. 5-19, citing PolyMet 2015m). It is instructive. As a result of PolyMet's new MODFLOW calibration, several bulk horizontal and vertical conductivity values changed between the SDEIS and the FEIS. Mean horizontal conductivity of wetland deposits increased to 400 percent of that calculated in the SDEIS (from 5.6 feet per day to 23.7 ft/day), as did both mean horizontal and mean vertical conductivity in lower Virginia Formation bedrock (from 0.019 ft/day to 0.079 ft/day for horizontal conductivity and from 0.0019 ft/day to 0.0079 ft/day for vertical conductivity). (Comparison is based on SDEIS, 5-27, Table 5.2.2-7 and FEIS, 5-29 Table 5.2.2-7). Updated estimates of groundwater inflow rates to the pits (FEIS, 5-511) are also significantly different from the predictions in the SDEIS. There are modest decreases for most years in the predicted inflow to the West Pit, with a maximum decrease of 20 gallons per minute (gpm) inflow. However, for the East Pit, as a result of recent recalibration of hydraulic conductivity for Virginia	WAT	NS	X	1	

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	Formation bedrock, significant increases in inflows are predicted from year 1 through year 20. Total increased East Pit inflow for the 20 years increases by 5,890 gpm, with an average annual increased inflow of 294.5 gpm and an average annual percentage increase of nearly 300 percent (289%). (Comparison is based on SDEIS, 5-91, Table 5.2.2-18 with FEIS, 5-111, Table 5.2.2-19).					
Paula Maccabee	Although the FEIS is quick to deny that its newly-calibrated information could be used to predict mine site wetlands impacts due to the “complex geology with the presence of bedrock, surficial deposits, and wetland soils at the Mine Site” (FEIS, 5-111), WaterLegacy remains unconvinced that modeling NorthMet drawdown impacts on wetlands is infeasible rather than just a potential source of inconvenient truth. Tribal Cooperating Agencies have long maintained that an uncalibrated analog approach should not be the only method used for evaluating drawdown impacts on wetlands. (FEIS, App. C, autop. 2985, 2994). In his review of the SDEIS, hydrologist Dr. Donald Lee bluntly rejected the argument that MODFLOW could not be used to evaluate NorthMet wetlands impacts. At this stage of the SDEIS, where MODFLOW has already been used extensively to evaluate the consequences of the proposed action, suggesting MODFLOW cannot be used for wetlands assessment discredits all of the preceding analysis of hydrology and water quality. Suggesting MODFLOW cannot be used because of the nature of the surficial deposits is to say MODFLOW has not been appropriate to evaluate all of the preceding impacts of the proposed action contained in the SDEIS. This internal contradiction is sufficient to reject the analysis of hydrology and water quality in the SDEIS as inadequate. (Lee, 2014, p. 12) Mercury and wetlands expert Dr. Brian Branfireun also opined that wetlands impact modeling should be completed for the PolyMet NorthMet mine project. The reliance on the analog case to evaluate the potential extent and magnitude of the cone of depression and dewatering impact of surface wetlands and streams is completely unsatisfactory, in my opinion, given the availability of robust hydrogeological models that could reasonably evaluate potential impact scenarios. (Branfireun, 2014, p. 14). At this point in the development of the NorthMet project, when PolyMet has recalibrated its models to accurately address inflow to pits during mining and water balance needs, denying that models are available to evaluate secondary wetlands impacts strains credulity.	WAT	S	O	8	PolyMet 2015b pg. 27-29. SDEIS Theme WR 010
Paula Maccabee	New information on faults and hydraulic conductivity also underscores the need to effectively model impacts on water quality from the East and West mine pits. New mapping shows that inferred faults transect the locations where the West Pit and East Pit would be located. (Barr 2014b, Large Figures 1 and 2, Exhibit 3). The 100 Mile Swamp wetlands and the northern side of the East Pit are located in Virginia Formation bedrock. (Id.) Faults and higher measured conductivity could increase seepage from mine pits as well as affecting wetlands.	WAT	S	O	8	SDEIS Theme WR 012
Paula Maccabee	Neither the FEIS nor responses to comments addressed WaterLegacy’s comments or the opinion of Dr. Lee (Lee, 2014) that assumptions regarding seepage collection at the permanent, unlined Category 1 waste rock pile were unsubstantiated and unreasonable. The hydrogeologic conditions beneath the unlined Category 1 waste rock piles are not discussed in the FEIS. But comparing the Mine Site Plan (FEIS, Figure 4.2.14-1) with figures in the Barr Hydrogeology of Fractured Bedrock report (FEIS ref. Barr 2014b, Figures 1 and 2, Exhibit 3) shows that the majority of the Category 1 waste rock pile would be located on Virginia Formation rock, rather than less hydraulically conductive Duluth Complex rock. There are two faults confirmed by Barr and at least one additional inferred fault transecting the proposed site for the Category 1 waste rock pile. (Id.) The FEIS predicted, based on PolyMet’s modeling and assumptions (PolyMet 2015h), that more than 98 percent of affected groundwater seepage from the Category 1 stockpile would be captured by the containment system or would migrate as groundwater into the West Pit and East Pit. (FEIS, 5-7). PolyMet’s modeling (PolyMet 2015h), also adopted in the FEIS,	WAT	S	O	8	SDEIS Themes WR 017, WR 010. PolyMet 2015m Attachment B Section 4.1.3

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	predicted that only negligible volumes of uncaptured seepage would flow north. (FEIS, 5-65).					
Paula Maccabee	Reference documents undermine these claims for seepage collection. Although the FEIS refers to the containment to be installed to collect seepage as a “low-permeability cut-off wall keyed into bedrock” (FEIS, 5-7), the actual design provides for the use of “compacted soil” as a barrier around the waste rock pile. (FEIS ref. PolyMet 2015h, p. 10). Specifications for the hydraulic conductivity are 1 x 10 ⁻⁵ centimeters per second (Id., p. 13), which is generally classified as “semi-permeable” soil. The drainage system would consist of pipes and ditches and rely only on gravity for collection. (Id., p. 14). PolyMet admits that along the west, north, and east sides of the stockpile, there may be localized areas where the drain pipe cannot be installed at an elevation low enough to ensure that groundwater will not flow beneath the cutoff wall. (Id.)	WAT	NS	X	1	
Paula Maccabee	Dr. Lee has summarized after reviewing PolyMet’s seepage collection plan, “the proposed drainage system is unlikely to work as anticipated.” (Lee, Category 1 stockpile opinion, 2015).	WAT	S	O	8	SDEIS COOP Response #19649
Paula Maccabee	Failures of engineering controls for seepage are not counted in PolyMet’s modeling. Instead, “PolyMet assumed that water collection performance monitoring points will be defined in SDS permitting to confirm (via monitoring differential hydraulic head) whether or not post-construction seepage loss is occurring beneath the cutoff wall. If monitoring confirms that seepage losses are occurring to an extent potentially detrimental to water quality, then groundwater recovery wells can be installed to supplement the containment system. (Id., emphasis added).	WAT	S	O	8	PolyMet 2015d Section 3.0
Paula Maccabee	The FEIS’ predictions of minimal Category 1 seepage flow were also based on assumption that the cover placed on the rock pile would reduce infiltration by more than 99 percent (from 360 gpm to 2.8 gpm). (FEIS, 5-145). PolyMet’s document from which this conclusion is drawn admits that geomembranes have not been used for many waste rock stockpile covers and that use is generally limited to projects with an average size of less than 30 acres. (PolyMet 2015d, p. 45). Yet, PolyMet (2015d) and the FEIS calculate infiltration solely on the basis of liner defects per acre of liners, without considering the topography of massive waste rock piles. PolyMet identifies three mine sites where geomembranes have been used as a cover, but does not describe seepage results. One of these featured sites is the Dunka Mine (Id., p. 46). Unsurprisingly, the FEIS does not cite the Dunka Mine in its predictions that infiltration and seepage will be prevented. Despite its geomembrane, Dunka Mine waste rock seepage has resulted and continues to result in ongoing violations of Minnesota water quality standards for copper, nickel, hardness and specific conductivity. (See Dunka Mine DMR summaries, provided in Exhibit 34).	WAT	S	O	3	SDEIS Theme WR 173. PolyMet 2015m 5.2.2.3
Paula Maccabee	Prior comments by WaterLegacy and expert opinions of J.D. Lehr and Donald Lee disputed assertions in the SDEIS that all PolyMet NorthMet mine site surficial aquifer flow would migrate to the south or southwest. J.D. Lehr cited a PolyMet technical document (SDEIS reference PolyMet 2012s, Figure 2-3) showing flowpaths from the mine site north to Yelp Creek and the 100 Mile Swamp with travel times of 1-10 years. (Lehr, 2014, p. 30). Dr. Lee noted the fact that existing runoff from the northernmost part of the mine site currently drains north to the 100 Mile Swamp and stated that absent explanation or analysis, any conclusion excluding northern surficial flow was “simply unjustified.” (Lee, 2014, pp. 6, 12)	WAT	S	O	8	FEIS pg. 5-65

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Paula Maccabee	When the SDEIS was released, neither WaterLegacy nor the experts we consulted were aware that there was a risk that groundwater would flow north from the East Pit and across the Laurentian Divide to the Rainy River Basin. That changed in October 2014 when a proposal was submitted by Northshore Mining Company (Northshore) for a 108-acre expansion into high sulfur rock at the Peter Mitchell Pit. The Environmental Assessment Worksheet (EAW) for the Northshore expansion (Northshore EAW 2014, Exhibit 6) established that Northshore had already removed the pillar within the Peter Mitchell Pit that historically separated the two watersheds, maintaining the divide only by the placement and operation of pit sumps. (Id., p. 8). The EAW stated that the maximum level of the pit lake at mine closure would be 1,500 feet above mean sea level (AMSL) and that the outfall from the low point at the east end of the Peter Mitchell pit would discharge to the Dunka River in the Rainy River Basin. (Id., p. 5). Barr Engineering maps provided by MDNR in connection with the Northshore expansion (Barr Maps 12 and 13, Current and Post-Closure Pit Stratigraphy, Exhibit 7) showed current Peter Mitchell Pit depth of approximately 1,550 feet AMSL at its lowest point and planned expanding depth to less than 1,300 feet AMSL. (Id.)	WAT	NS	X	1	
Paula Maccabee	Not only had the MDNR allowed the Northshore Mining Company to do away with the watershed divide between the Lake Superior and Rainy River Basin. The planned expansion promised a significant increase in the hydraulic gradient from the NorthMet mine site down to the base of the Peter Mitchell Pit and the potential for inter-Basin transfer of water and contaminants from the Lake Superior Basin to the Rainy River Basin. As part of work on behalf of Tribal Cooperating Agencies to analyze mine site groundwater baseflow, GLIFWC examined documents related to historic and future Peter Mitchell Pit levels. GLIFWC then communicated to Co-Lead Agencies that PolyMet's most recent baseflow modeling erroneously assumed that water flowed out from rather than into the Peter Mitchell Pit from 1979 to 1988, resulting in an inaccurately low assessment of base flow groundwater in the upper Partridge River. (GLIFWC letter to Co-Lead Agencies Northward Flowpath & Groundwater Modeling, Aug. 11, 2015 with attachments and figures, Exhibit 8) Reviewing the expansion and closure plans for the Northshore Mine in conjunction with the PolyMet NorthMet project, GLIFWC informed the Co-Lead Agencies that "detailed (MODFLOW) and simplistic (MathCad) models predict that a northward contaminant flowpath is probable under likely closure conditions." (Id., p. 1). GLIFWC provided attachments and figures with the August 2015 Northward Flowpath letter to illustrate both the errors in baseflow modeling and the new prediction of northward groundwater flow, given the water levels expected at closure of the Peter Mitchell Pit. GLIFWC explained that water flows downhill and that the base of the Peter Mitchell Pit at closure and the surface elevation of the Peter Mitchell Pit lake under long-term reclamation would draw groundwater from NorthMet mine site features, particularly the backfilled East Pit. The hydraulic gradient would result in groundwater flow downhill between the saturated East Pit water level (1,592 feet AMSL) and the Peter Mitchell water level at closure (1,300 feet AMSL) and under long-term reclamation (1,500 feet AMSL). (Id., p. 4, Attachments autop. 13, 27) The volume of northward groundwater flow from the East Pit may be quite significant. GLIFWC's preliminary modeling using the PolyMet MODFLOW model suggests that approximately 90% of the post-closure outflow from the NorthMet East Pit would migrate north due to the higher conductivity of the Virginia Formation and Biwabik Iron Formation and the lower elevations of the Peter Mitchell Pit at closure (1,300 feet) and over the long-term (1,500 feet) as compared to the Duluth Complex rock and Partridge River elevation (1,548 feet) on the south of the mine site. At closure, when the Peter Mitchell Pit is 1,300 feet deep, northward outflow is estimated at 300 gpm, stabilizing at 75 gpm in long-term closure. (GLIFWC letter to Co-Lead Agencies Discharge from PolyMet East Pit at Closure, Oct. 20, 2015, Exhibit 9).	WAT	S	O	8	MDNR et al, 2014b; MDNR et al. 2015c
Paula Maccabee	GLIFWC also analyzed the potential that contaminants in the PolyMet NorthMet mine surficial aquifer would flow northward as a result of the increase in pit depth and future closure of the Peter Mitchell Pit. Given the proximity of the NorthMet Category 1 stockpile (0.8 miles) and East Pit (1.2 miles) to the Peter Mitchell Pit and the experience with other taconite pits where a cone of depression affecting surficial water can extend 1.4 to 1.5 miles from the pits, preliminary MODFLOW modeling showed northward flow of contaminants at the time of the Peter Mitchell Pit closure. (GLIFWC Northward Flowpath Letter, Exhibit 8, p. 5).	WAT	S	O	8	FEIS pg. 5-65; PolyMet 2015h Attachment E

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Paula Maccabee	The response of Co-Lead Agencies to the potential for northward flow was memorialized in an Interagency Technical Memorandum on October 12, 2015. (FEIS reference MDNR et al. 2015c). This Memorandum suggested that the PolyMet MODFLOW model used by GLIFWC might need to be adjusted to accurately predict northward flow, but admitted that “the well data and the NorthMet Mine Site MODFLOW model do not exclude the possibility of a future northward bedrock flowpath from the proposed NorthMet pits to the Northshore pits.” (Id., pp.1- 2). Without assessing the reasonableness of a “leakage” assumption or the consequences for wetlands if it were to be valid, the Memorandum then hypothesized, “If this leakage rate is large enough, a bedrock groundwater mound would form between the two mines and prevent water from the proposed NorthMet pits from flowing northward to the Northshore pits.” (Id., p. 1) This theory is carried forward in the FEIS. (FEIS, 6-40 to 6-41).	WAT	NS	X	1	
Paula Maccabee	GLIFWC’s analysis suggests that formation of a bedrock groundwater mound at the level necessary to prevent northward flow from the PolyMet NorthMet mine site as a result of the gradient to the expanded Peter Mitchell Pit is “hydrologically impossible.” (GLIFWC Northward Flowpath Letter, Exhibit 8, p. 5). In addition, if the Co-Leads’ theory were plausible and enough water could flow through the 100 Mile Swamp to create a large mound of water in bedrock, statements in PolyMet documents and in the FEIS that there is minimal connection between wetlands and groundwater north of the mine site would all be called into question. (GLIFWC email to MDNR et al. Bedrock-Wetland Connections at PolyMet Mine Site, July 29, 2015, Exhibit 10). The Co-Lead Agencies’ new “leakage” theory would suggest that secondary wetland impacts to the 100 Mile Swamp from NorthMet mine drawdown would be virtually certain and highly damaging.	WET	S	O	8	MDNR et al. 2015c Section 2
Paula Maccabee	The Co-Lead Agencies’ theory that leakage from rain through the surficial aquifer to groundwater could prevent northward flow of PolyMet NorthMet contaminants may or may not be correct. What is clear to WaterLegacy is that the potential consequences of the northward flow of NorthMet pollution into the Boundary Waters watershed and the potential consequences of a large leakage rate and significant secondary impact on 100 Mile Swamp wetlands should have been provided in the FEIS, preferably with an assessment of which risk is more probable.	WET	S	N	8	MDNR et al. 2015c Section 3.2. FEIS Section 5.2.3.
Paula Maccabee	The indefinite formulation in the Co-Lead Agencies’ Memorandum (MDNR et al. 2015c) and the FEIS (FEIS, 6-40 to 6-41) allows project proponents to have it both ways. When it is time to evaluate the adverse impacts of NorthMet mine drawdown on 100 Mile Swamp wetlands, it is claimed that there is little or no connection between wetlands and bedrock groundwater. Then, when it is time to evaluate the adverse impacts of PolyMet NorthMet pollution flowing north to the Boundary Waters, it is claimed that there is a robust connection, sufficient to form a huge underground mound of water preventing northward flow. Neither state nor federal laws allow this type of gamesmanship in environmental review.	WET	S	N	8	MDNR et al. 2015c. Section 1.2 pg. 5. FEIS Section 5.2.3.
Paula Maccabee	The PolyMet NorthMet FEIS uses a singular approach to environmental review. Rather than analyzing adverse environmental effects and mitigation alternatives so the permitting authority can make a reasoned decision about whether to permit the project and, if is permitted, which mitigation measures to mandate in the permit, the FEIS declines to analyze environmental impacts and then provides a laundry list of mitigation options that may or may not be effective and may or may not come to pass. This FEIS strategy may be convenient for a project proponent, but it is contrary to state and federal environmental law.	ALT	NS	X	1	

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Paula Maccabee	The FEIS contains a long list of “contingency mitigation” measures that would not be financially assured or triggered by any set of findings, but might be “appropriate” should monitoring or “refined modeling” demonstrate that they are “needed.” (FEIS, 5-239). Several of these measures pertain to the likely performance failures of engineered systems, such as liners and seepage collection systems. As reflected in WaterLegacy’s SDEIS comments, PolyMet’s work plans for the mine site (FEIS ref. Barr 2012c) and plant site (FEIS ref. Barr 2012d) required that performance of engineered systems be modeled as an “uncertain” input. Rather than conduct an experiment with Minnesota’s environment, the FEIS should require upfront disclosure of risks.	ALT	S	O	8	SDEIS Theme WR 128
Paula Maccabee	References in the FEIS to “refined” modeling and “contingency mitigation” in case water quality was “worse than expected” or as a result of “compliance issues” (FEIS, 5-239 to 5-240) should be setting off klaxons. Interception wells often ameliorate pollution at Superfund sites, but their potential future use should not justify creating a new contaminant source.	ALT	NS	X	1	
Paula Maccabee	The problematic nature of the “contingency mitigation” approach is underscored by the lack of evidence that mitigation options would be effective. It is suggested that if East Pit or West Pit fractures or faults create conduits to groundwater, use of grout “would be evaluated” to mitigate polluted seepage from pits. (FEIS, p. 5-239). However, the cited reference (FEIS ref. PolyMet 2014l) is only a “conceptual plan.” No data is cited to suggest that grout would effectively prevent seepage from a fractured mine pit for any extended period of time, let alone permanently. The “contingency mitigation” proposal for northward flow of NorthMet contaminants into the Boundary Waters watershed exemplifies the risks of this approach. Again, the FEIS proposes that grouting might be used to prevent northward flow even though “its effectiveness at the NorthMet site is uncertain.” (FEIS, 5-240). The next option on the list is lowering the water level in the East Pit and West Pit below the level (1,500 feet AMSL) of the Northshore Peter Mitchell Pit. (FEIS, 5-241). The FEIS notes that this option would “require a higher capacity water treatment facility and possibly additional treatment processes entailing additional expense.” (Id.) The FEIS does not mention that the East Pit and West Pit are both permanent sources of contamination or the fact that the GoldSim model upon which the FEIS relied to assume that oxidation would be minimal in the East Pit was based on a Geochemical Uncertainty Analysis stating that exposure of East Pit walls to air would increase sulfate levels by a factor of at least 823 times, with resulting increases in toxic metals leachate. (FEIS, p. A- 534 citation to Day, Geochemical Uncertainty Analysis, October 10, 2008, Exhibit 11). ¹⁴ At best, lowering the water level in the East Pit is an improbable mitigation strategy; at worst, it is an additional untenable threat to water quality. The third item on the contingency mitigation list is a system of groundwater extraction wells, the number, geographic extent and configuration of which are unknown. In addition to being unproved, this option would involve building roads, laying water lines, electrical lines and access pads across the 100 Mile Swamp. (FEIS, 5-242). The final option suggested is to dig an infiltration trench between the mine pits and the Partridge River, construct an undetermined number of wells, water supply lines and roads, ensure recharge water is free of particulates to prevent clogging and artificially create a bedrock groundwater mound. (FEIS, 242-243). Although the reference cited (Barr 2015b) to suggest this option might work uses the word “mound,” it is an unrelated document pertaining to mounding beneath the tailings waste facility. The FEIS states, “The exact type, location, scale, and timing of mitigation measures are not known at this time.” (FEIS, 5-240). They may never be known, may never be feasible beyond a conceptual stage, and may never be constructed, particularly since they would not be financially assured. Allowing fantasy mitigation instead of environmental impact assessment is not acceptable under either state or federal law.	NEPA	S	O	8	SDEIS Theme ALT 18. Barr 2015n. MDNR et al. 2015c

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Paula Maccabee	WaterLegacy would also emphasize that monitoring does not prevent pollution of surface or groundwater. Minnesota has a long history of monitoring pollution from mining facilities, including those that have gone into bankruptcy, leaving a legacy of contamination. In order to prevent irreparable harm to wetlands and water quality, environmental risks of a proposed mining project must be rigorously analyzed, publicly disclosed and mitigated before a project is permitted.	PER	NS	X	1	
Paula Maccabee	WaterLegacy believes the current FEIS is incomplete and unreliable in its characterization of the groundwater system at the mine site, in its description of the connection between surficial deposits and groundwater and in its characterization of the volume and direction of polluted seepage. We are concerned that the FEIS fails to evaluate environmental impacts, such as an increase in propagation of pollutants due to fractures, destruction or degradation of wetlands through mine dewatering, and northward groundwater flow of pollutant to the Boundary Waters watershed not because these impacts cannot be modeled, but because to do so could reveal significant environmental concerns. We have also found the MDNR's changes in position regarding the appropriate level of mine site groundwater baseflow15 both troubling and confusing.	WAT	NS	X	1	
Paula Maccabee	Although characterization of groundwater seems like an arcane issue, we share GLIWFC's perception that it is the key to understanding both the NorthMet project's impacts on water quality and its impacts on wetlands. As John Coleman explained in GLIFWC's recent letter to Co-Lead Agencies, Adequate characterization of the groundwater system at a proposed mine site is essential to understanding most of the potential impacts from the project. The amount of water entering the groundwater system, be it precipitation or discharge from the bed of lakes, rivers or mine pits, determines the direction of flow and dilution of contaminants, and dictates points of compliance for both ground and surface waters. The horizontal and vertical conductivity of the soil and bedrock materials determines how the groundwater system responds to stresses and the rate at which the groundwater flows horizontally and vertically. The character of interaction between surface water features and the groundwater system, whether it is loss of water from rivers or wetlands to the groundwater system, or discharge from the groundwater system to the surface water features, determines predicted impacts to surface water features by stresses such as mine dewatering. (GLIFWC Northward Flowpath Letter, Exhibit 8).	WAT	S	O	8	MDO #7
Paula Maccabee	With so much at stake, we believe it is incumbent upon responsible agencies to test a project proponent's modeling and verify the proponent's conclusions. According to GLIFWC's Preliminary FEIS Comments, this has never been done: We have learned from the MNDNR project managers that ERM and lead agency staff never ran the mine site MODFLOW model during their technical review. In fact, only the applicant's consultant (Barr Engineering) and Tribal staff have run the model and tested its functionality. It is surprising to discover that at no time during the eight years of project review have the lead agencies and/or their consultant tested how the model works. This fact leads to serious questions about the legitimacy of the conclusions reached by the ERM and lead agencies regarding the quality of the applicant's model. (GLIFWC PFEIS Comments, Technical Review of the Mine Site MODFLOW Model, Exhibit 12). By this point in project review, when the Co-Lead Agencies have already vouched for the FEIS and the modeling done by PolyMet's consultants, it is too late for these agencies to perform the role of independent review. WaterLegacy requests that the U.S. Geologic Survey or other undisputed and unbiased experts be retained to perform independent water modeling for the NorthMet project. The late timing of this review is certainly not ideal. But no other course of action would ensure that reliable information is available to assess significant environmental effects of the PolyMet NorthMet sulfide mine project on Minnesota's wetlands and waters.	WAT	S	O	8	ERM October 30, 2012 Phase 2 Quality Assurance; ERM February 25, 2013 NorthMet Mining Project GoldSim Water Quality Model - Phase 3 Quality Assurance; ERM November 11, 2015 Phase 4 Water Models Quality Assurance

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Paula Maccabee	One of the most basic requirements of environmental review is that an EIS must not rely on the unsubstantiated claims of a project proponent to draw conclusions as to the environmental impacts of a proposal. Fundamentally, EIS modeling and predictions must work forward from substantial evidence, not work backwards to model a desired result.	WAT	NS	X	1	
Paula Maccabee	Since WaterLegacy's comments on the SDEIS, the FEIS has made no change and provided no additional justification for its use of "evaluation criteria" rather than water quality standards and its failure to determine water quality impacts at surface water locations closest to the source of seepage and discharge. The FEIS' claims that the NorthMet tailings waste facility would not violate water quality standards or would not increase the violations beyond the "continuation of existing conditions" scenario are based on these improper qualifications of the data as well as the unsupported claims regarding chemistry and capture rates of tailing seepage.	NEPA	S	O	8	NorthMet EIS Water Resources Impact Criteria IAP Final Summary Memo October 17, 2011; Water Resources/Groundwater IAP Planning Summary Memo June 30, 2011
Paula Maccabee	Although the PolyMet NorthMet FEIS relies on many other dubious and unsupported claims, those made for seepage collection at the tailings waste facility are among the most clearcut and troubling. Former agency staff, engineers and hydrologists find the FEIS claims of nearly perfect seepage collection laughable, while citizen advocates refer to tailings seepage claims as The "Big Lie." Comments below summarize changes made since the SDEIS and remaining concerns about the analysis of tailings seepage collection that we believe must result in a finding that the FEIS is inadequate under applicable laws and insufficient to protect water quality.	WAT	NS	X	1	
Paula Maccabee	PolyMet NorthMet tailings would be deposited in a wet slurry on top of the existing unlined LTVSMC taconite tailings piles. (FEIS, pp. 4-427, 5-5, 5-185) The 4 ½ mile square LTVSMC tailings waste facility was built above wetlands and three small streams to facilitate drainage of water through taconite tailings piles. The historical development of the tailings waste facility over wetlands and streams is shown in Exhibit 13. The NorthMet tailings waste facility would not be lined to contain seepage. (FEIS, 3-104, 3-158). NorthMet sulfide mine tailings slurry would be deposited immediately above LTVSMC tailings and slimes. (FEIS, Figure 5.2.14-6) The completed tailings height of the NorthMet waste cells would be 1,735 above sea level. (FEIS, 3-104). That is 60 feet higher than the highest feature to the east and more than 200 feet higher than gradient on the west, northwest, north and south sides of the tailings. (FEIS, Figure 4.2.2-17). Elevations above surrounding land create hydraulic pressure for seepage. The PolyMet NorthMet project would produce 110,736 tons of wet tailings slurry per day, of which liquids would be 68.5 percent by weight or 86 percent by volume. (FEIS ref. PolyMet 2015q, autop. 621). The seepage rate from slurry tailings is considerably higher than that of either past or thickened tailings. The Senior Director of Geotechnical Engineering and Hydrogeology for Newmont Mining Corporation has estimated the seepage rate from slurry tailings at 6.4 gallons per minute per acre, the seepage rate from paste or thickened tailings at 0.06 gallons per minute per acre and the seepage from dry filtered tailings at 0.007 gallons per acre.16 As compared to dry filtered tailings, slurry tailings produce approximately 914 times as much seepage. PolyMet's wet slurry tailings waste facility is predicted to produce 3,880 gallons of tailings seepage per minute. (FEIS, 5-179, 5-181), equivalent to 2,041,000,000 gallons of contaminated seepage per year.17 PolyMet NorthMet tailings seepage would be collected from the toe of the tailings heaps and would contain sulfates and heavy metals from copper-nickel processing slurry, effluent from the mine site treatment plant, and LTVSMC tailings. (FEIS ref. NorthMet 2015j, FEIS Figure 3.2-12).	WAT	NS	X	1	

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Paula Maccabee	PolyMet’s modeling of seepage at the tailings toe is likely to understate actual tailings chemistry. Since leaching depends on surface area, data from MinnAMAX copper-nickel tailings would provide more comparable field experience than data from waste rock piles used in FEIS modeling. (FEIS, 5-62). Such data was not used. Leachate from MinnAMAX copper-nickel tailings contained maximum levels of cobalt more than 30 times the tailings seepage concentration predicted for the NorthMet project, levels of nickel more than 21 times the predicted P90 NorthMet concentrations, and sulfate concentrations more than 11 times higher than predicted NorthMet concentrations. (Johnson, 2015).	WAT	S	O	3	SDEIS Theme WR 030. PolyMet 2015q Section 10
Paula Maccabee	Objections raised by geologist J.D. Lehr in his review of the SDEIS have not been addressed in the FEIS. Mr. Lehr objected to the “simplistic and cursory treatment of the role that bedrock fractures may play in the transmission of groundwater” at the tailings site. (Lehr, 2014, p. 3). He objected to the assumption of a “no-flow boundary” beneath the tailings piles and the resulting implication that groundwater flow through bedrock at the tailings site “is so insignificant that it can be ignored.” (Id.). He commented that the failure to identify fractures or assess groundwater flow through fractured bedrock “was a major omission, resulting in unsupported assumptions and inadequate information regarding groundwater flow” at the tailings waste site (Id., p. 4) and raised concerns that neither the project proponent nor the Co-Lead Agencies have required any study of bedrock fractures or their hydrogeologic properties. (Id., p. 15) Mr. Lehr objected to language in the SDEIS interjecting ambiguity by stating that faults have been “inferred but not confirmed.” He explained, “Essentially all aspects of geologic maps are inferred because they usually cannot be viewed or measured directly. This fault’s location [beneath the tailings site] is mapped based on sound geologic inference or it wouldn’t be shown.” He noted that faults can only be “confirmed” by excavation along their entire length. (Id., p. 14).	WAT	S	O	3	SDEIS Theme WR 010. Bedrock Hydrology at the NorthMet Mine and Plants Site November 17, 2014
Paula Maccabee	Mr. Lehr also criticized the prior EIS for failing to include any hydraulic testing of bedrock in the tailings site area. (Id., p. 12, p. 15). He explained that analogies between Duluth Complex at the mine site and Giants Range Granite at the tailings site cannot be used to assume hydraulic conductivity of bedrock at the tailings site, since Giants Range Granite is 1,600 million years older than Duluth Complex and “would have experienced a different stress, weathering and erosional history than the Duluth Complex.” (Id., p. 15). Mr. Lehr emphasized that, to assess hydraulic conductivity, “What the SDEIS requires is data.” (Id., pp. 15-16). “Unless a solid scientific basis is provided, the SDEIS’ claims – both explicit and implicit – that groundwater flow through bedrock is minimal, cannot be sustained.” (Id., p. 16). Based on the scientific literature and his professional knowledge of the region’s geology, J.D. Lehr concluded, “bedrock fractures will play a significant role in groundwater and contaminant transport” at the tailings site.	WAT	S	O	8	Barr 2014b

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Paula Maccabee	<p>Anthony Runkel, the Chief Geologist for the Minnesota Geological Survey, echoed these concerns, in an opinion on the SDEIS attached as Exhibit 14. Mr. Runkel stated that the investigations done for the NorthMet mine and tailings site “are not sufficient to recognize the hydrogeologic features known to be characteristic of other crystalline bedrock” on the Canadian Shield and not sufficient to support the modeling used for the project. He described techniques needed to investigate the Hydrogeologic conditions of fractured bedrock and explained: When these techniques have been used in generally similar hydrogeologic settings elsewhere on the Canadian Shield, the results support hydrogeologic conceptual models that differ substantially from those proposed for the Duluth Complex and Giants Range Batholith described in the SDEIS. Of particular significance for solute transport, the conceptual models commonly include key fractures or fracture zones of relatively high hydraulic conductivity, and multiple flow systems within the bedrock at individual sites. These flow systems are variably connected to the surface water system, have variable residence times, can have upward and downward vertical gradients within a local area, and horizontal flow directions that differ from one another. (Runkel, opinion on SDEIS, 2014, p.1, Exhibit 14) Mr. Runkel stated that use of a Duluth Complex analogy to assume that Giants Range Granite has a similar stress, weathering and erosional history “is not valid.” (Id., p. 2). He noted that faults are known to be common across much of mapped extent of the Giants Range Batholith, including in the plant site/tailings basin area. Mr. Runkel explained that nearby fractures in the same bedrock have had significant environmental effects, reporting, “Hydraulically significant fractures in the Giants Range Batholith are documented to have transported contaminants at the Northwoods Closed Landfill (MPCA reports) several miles north of the Plant Site/Tailings Basin area.”</p>	WAT	S	O	8	SDEIS Theme WR 012. SDEIS COOP Response #19637
Paula Maccabee	The FEIS did not discuss these expert opinions or resolve their concerns.	MEPA	S	N	2	<p>The Final EIS satisfies the requirement to provide responses to substantive comments on the Supplemental Draft EIS. Specifically:</p> <ul style="list-style-type: none"> • Consideration of the no-flow boundary condition in the Plant Site modeling is addressed in Thematic Response 54. • Consideration of faults and fractures for groundwater flow is addressed in Thematic Response WR 012. • Consideration of assumed hydraulic conductivity of the Giants Range Granite relative to the Duluth Complex is addressed in Thematic Response WR 094.

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Paula Maccabee	Although fractures beneath the tailings site are mapped in an FEIS reference document (FEIS ref. Barr 2014b, Large Figures 1-2, Exhibit 3), the FEIS continues to minimize the significance of geologic evidence of fractures, stating “on published geologic maps, the faults in these areas are dashed and identified as conjectural with inferred (not exact) locations.” (FEIS, 4-445). The FEIS conceptual cross-section of the tailings basin groundwater containment system still characterizes the bedrock as an “assumed no flow boundary.” (FEIS, Figure 3.2-28). Responses to comments on the SDEIS state that the no-flow boundary has been changed at the “toe of the east embankment.” (FEIS, A-179, A-251, A-259, A-284, A-612). However this “change” is meaningless, since the FEIS assumes 100 percent collection of all seepage on the east side even without a no-flow assumption. (FEIS, 5-186). The FEIS also continues to use the mine site Duluth Complex bedrock for an analogy to assume hydraulic conductivity at bedrock depths in the Giants Range Granite beneath the tailings piles. (FEIS, 4-44). The FEIS contains no investigation of fractures beneath the tailings waste site. The FEIS estimates the hydraulic conductivity of the top 20 feet of bedrock around the plant site at 0.14 feet per day (FEIS, 4-113), but neither the FEIS nor the recent hydrogeology report prepared for PolyMet provide any information on hydraulic conductivity of tailings site bedrock beneath the top 20 feet. (See FEIS ref. Barr 2014b, pp. 21-22). Even the maps of geologic conditions identify only the top layers of schist beneath the existing LTVSMC tailings site. (Id., Large Figures 1-2, Exhibit 3).	WAT	S	O	8	SDEIS Themes WR 012, WR 018; SDEIS COOP Response #19637
Paula Maccabee	In addition to explaining EIS inadequacies in modeling transmission of pollutants through groundwater at the tailings site, J.D. Lehr demonstrated that NorthMet tailings seepage would emanate from the south and east sides of the tailings waste piles as elevations of tailings in Cell 1E increased above Spring Mine Lake, reversing topography and hydraulic flow. (Id., pp. 18-19).	WAT	S	O	3	SDEIS COOP Response #19637. SDEIS Theme WR 118
Paula Maccabee	On first reading of the FEIS, it might seem that the document addressed comments of WaterLegacy and J.D. Lehr’s opinion regarding seepage, since both south side and east side tailings seepage are now discussed. That impression would be mistaken. The FEIS mentions seepage on the east side of the tailings piles only long enough to assert that seepage containment “would be expected to capture 100 percent of tailings surface seepage and groundwater seepage.” (FEIS, 5-8). Similarly, on the south side, the FEIS simply asserts, “an existing seepage containment system would be upgraded by PolyMet to achieve 100 percent capture of tailings surface and groundwater seepage that otherwise would flow into Second Creek, a tributary of the Partridge River.” (FEIS, 5-102). The Change Definition Form documenting the direction given by the Co-Lead Agencies on modeling changes resulting from east pit seepage is instructive. The form states, “The capture efficiency of the East Side Seepage Containment System is assumed to be 100% (i.e., all water that reports to the East Containment System both surface and/or groundwater, is captured).” Thus, modeling can reflect 100% collection and 0% flow toward Mud Lake and no “eastern” flowpath need be added to the project description. (NorthMet Project CDF 251, East Dam GoldSim Modeling Changes, Sept. 12, 2014, Exhibit 15). Based on the information provided by PolyMet in its Water Modeling Data Package (FEIS ref. PolyMet 2015j) the FEIS claims that, during mine operations, 3,860 gallons per minute of the total 3,880 gpm modeled would be collected. (FEIS, 5-181, Table 5.2.2-37). This would be a nearly perfect collection rate of 99.5%. The FEIS and underlying PolyMet documents characterize all but 200 gpm (0.5%) of NorthMet tailings seepage as “surface seepage,” since that is the volume that currently seeps out of groundwater at the toe of the existing LTVSMC basin. (FEIS, 5-179, PolyMet 2015j). No analysis is done to determine if the increased volume and hydraulic head created in the tailings piles during NorthMet operations would result in more water being retained further into groundwater than under existing conditions. As Dr. Lee noted in his opinion regarding tailings basin performance, given the	WAT	S	O	8	NorthMet FTB East Dam Conceptual Model June 20, 2014; Groundwater Containment System Modeling in GoldSim v3 January 2015; Barr 2015b. Response to SDEIS comment theme WR 054 addresses potential flow at the east side of the Tailings Basin. As shown in FEIS Figure 5.2.2-15 and described in the FEIS text proceeding it, the natural groundwater gradient at the east side of the Tailings Basin is toward the Tailings Basin. This along with the containment system in that area would prevent flows from the Tailings Basin to the environment to the east. The response to SDEIS comment theme WR 117 and WR 118 discusses what can be done at the south side of the Tailings Basin to enhance water containment in that area.

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	lack of data on bedrock groundwater, it is an open question how much groundwater is actually flowing in bedrock. (Lee, tailings opinion, 2015, p. 4).					
Paula Maccabee	PolyMet’s underlying analysis (PolyMet 2015j) and the FEIS do not evaluate a range of tailings seepage collection performance or the effects of that performance on environmental quality; “for purposes of impact evaluation they are assumed to capture: 100 percent of the Tailings Basin’s surface seepage; 100 percent of the groundwater approaching the containment system from the Tailings Basin’s east and south toes; and 90 percent of the groundwater approaching the containment systems from the Tailings Basin’s north, northwest and west toes.” (FEIS, p. 5-186).	WAT	S	O	8	Barr 2015b
Paula Maccabee	The claims of capture efficiency on the northwest, north and east sides made in the FEIS are based on PolyMet’s assumptions and models: “The capture efficiencies in water quality modeling were provided by the PolyMet (Barr 2015e, as cited in the FEIS).” (FEIS, A-583). “[T]he assumed capture efficiencies of the groundwater containment systems are justified and supported by modeling.” (FEIS, A-578, A-612). “Performance modeling of the north and northwest flowpaths has indicated that the proposed systems would provide greater than 90 percent capture of surficial aquifer and bedrock groundwater to 100 ft below the top of bedrock. Containment systems are assumed to capture 100 percent of tailings surface seepage.” (FEIS, 5-77). On the south side of the tailings piles, the FEIS’ claims of 100 percent tailings seepage collection are based on a promise by PolyMet. Since 2011, the current owner, Cliffs Erie, LLC has installed a seepage collection system on the south side of the existing LTVSMC tailings waste facility at surface discharge location SD026. This system includes a cutoff berm and trench, seep collection sump, pump and pipe system. (PolyMet 2015i). Although neither the FEIS nor PolyMet documents specify what percentage of south tailings seepage is currently collected by Cliffs Erie, water is bypassing the cutoff dam, and improvements in collection would be required to comply with the Cliffs consent decree. “It is acknowledged that there is currently incomplete capture of impacted water at SD026.” (FEIS, A-625). Claims in the FEIS that the proposed NorthMet project will result 100 percent seepage capture on the south side of the tailings piles are based on a vague but repeated promise that unspecified future upgrades will achieve perfect collection: “PolyMet has committed to future upgrades to achieve 100 percent capture by this system if the NorthMet Project Proposed Action is approved.” (FEIS, 3-120, A-84, A-195, A-197, A-616, 3-120). Although several possible changes in the dam on the south side are listed, no evidence is provided that any of them would be effective in capturing all seepage that comes to the surface on the south side of the tailings piles. (FEIS, 3-120, 5-102). No discussion in the FEIS proposes to identify or collect contaminated groundwater seepage on the south side of the tailings site. Even though no investigation has been done of bedrock	WAT	S	N	8	NorthMet FTB East Dam Conceptual Model June 20, 2014; Groundwater Containment System Modeling in GoldSim v3 January 2015; Barr 2015b. SDEIS Themes WR 018, WR 118; PolyMet 2015i

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	groundwater at the tailings waste site, the FEIS assumes, “groundwater migration is not expected to the east or south.” (FEIS, 5-77) Dr. Lee reviewed the FEIS conclusions on tailings basin performance and concluded, “The analytical support for these conclusions is based on assumptions of performance that are not justified or supported by data.” (Lee, tailings opinion, 2015, p. 1). Dr. Lee’s concerns included the failure to verify modeling to show that the predictions of groundwater movement were representative of the tailings basin site (Id., p. 3) and the fact that the plant site model did not include bedrock or consistently describe groundwater flow in and around the tailings basin. (Id., p. 4).					
Paula Maccabee	In responses to comments, the Co-Lead Agencies explained, “The design basis for the containment system is . . .to reverse the pre-existing hydraulic gradient (and flow direction) across the facility.” (FEIS, p. A-547). They also acknowledged, “Relatively few capture systems have been built with this degree of pumping to cause a reversal of the pre-existing hydraulic gradients.” (FEIS, p. A-548). WaterLegacy’s research has disclosed no similar systems operating long-term to reverse hydraulic gradient.	WAT	NS	X	1	
Paula Maccabee	Field experience and local geological conditions do not support claims made in the FEIS that a bentonite slurry trench would serve as an impermeable “cut-off wall” (FEIS, p. 5-197), or that it could be “keyed into” the tailings site bedrock. (FEIS, p. 5-185). J.D. Lehr explained in his comments on the SDEIS that the granite bedrock at the tailings site would not be favorable to allow a keyed in trench. Large boulders and cobbles known to exist at the site would also impede construction of an effective slurry trench. (Lehr, 2014, pp. 17-18). Dr. Lee noted that the proposed slurry wall at a depth exceeding 40 feet in some locations was a significant undertaking, and that claims that a slurry wall would be nearly impermeable for the indefinite future were not justified. (Lee, tailings opinion, 2015, p. 3). These concerns are similar to those raised by Barr Engineering in a 2007 evaluation report of Tailings Basin Modifications to Eliminate Water Release via Seepage. (FEIS ref. Barr 2007f). The Barr 2007f report noted that variability in ground surface elevation would complicate construction, and both open trench construction and the “low strength of slurry walls” could also affect long-term embankment stability. Further, a slurry wall was “not suitable if boulders or cobbles are present.” (Id., p. 21).	WAT	S	O	8	SDEIS Theme WR 019. FEIS Figure 5.2.2-14; Barr 2007f

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Paula Maccabee	<p>WaterLegacy’s SDEIS comments reflected our efforts to find field experience verifying the feasibility and efficacy of the proposed seepage containment and pump-back system. FEIS reference CDs include a 2012 Barr Engineering memo for PolyMet citing the common use of slurry walls and collection trenches for water quality management. (FEIS ref. PolyMet 2015h, Attach. D, Groundwater Containment System: Degree of Use in Industry). This memo cites several examples of allegedly successful containment facilities. No information was found for any of these examples suggesting that the capture efficiency claimed for the PolyMet NorthMet tailings seepage collection system was achieved in practice. Barr’s memo highlighted the Fort McMurray tailings pond seepage containment system in Alberta Canada as an example of the successful use of slurry walls to isolate mine tailings seepage from downgradient water: Another example is the installation of a soil-bentonite cutoff wall around the perimeter of a mine tailings pond located in the province of Alberta, Canada. The cutoff wall is approximately 100-foot deep and 3 feet wide, and has a hydraulic conductivity of less than 1x10⁻⁷ cm/sec. The cutoff wall was used to isolate the tailings pond from downgradient surface water features including wetlands and the Athabasca River. (Id., pp. 1-2). However, information available since 2012 demonstrates that the Fort McMurray tar sands tailings seepage containment has been a serious failure. Canadian federal research using chemical profiling to confirm the contaminant source in the Athabasca River has shown that toxic chemicals from McMurray Formation oil sand tailings ponds are leaching into groundwater and seeping into the Athabasca River, despite ditches, cutoff walls, groundwater interception wells and a system where captured water is pumped back into tailings ponds. One dam has been reported to seep wastewater at a rate of 75 liters per second (625,200,000 U.S. gallons per year) into groundwater feeding the Athabasca River.²⁰ Industry is working to address the tailings seepage issue, budgeting more than \$1-billion in tailings-reduction technology. WaterLegacy is unaware of any data on capture of unlined tailings waste seepage that would support PolyMet’s modeling assumptions. In Minnesota, MPCA concluded in 2008 that the maximum estimated percentage of seepage to the Sandy River that could be collected from the unlined Minntac tailings waste facility was approximately 55 to 60 percent.²² In 2013, U.S. Steel confirmed that the dike and pump back system on the east side of the Minntac facility was collecting roughly 50 percent of the total seepage volume.²³ After extensive research, the highest rate of seepage capture identified for any unlined facility using slurry walls appears to have been at the Hill Air Force Base in northern Utah, where a combination of the slurry walls, landfill covers, groundwater interception and extraction wells, and treatment succeeded in reducing metals concentrations from a Superfund site by 80 percent. In the EPA’s recent Pebble Mine assessment, the Agency recently concluded, “Water collection and treatment failures are a common feature of mines.” EPA stated that the probability of potential failure of water collection and treatment during operations is 93 percent, and results include “exceedance of standards potentially including death of fish and invertebrates.” Post-closure probability of failure of water collection and treatment was “somewhat higher than operation,” and “failures are likely to result in release of untreated or incompletely treated leachates for days or months. If the site were to be abandoned, EPA noted that failure of water collection and treatment was “certain.”</p>	WAT	S	O	8	SDEIS Theme WR 020
Paula Maccabee	<p>The NorthMet Plant Site Water Modeling Plan stated that “performance of engineered systems” is an “uncertain input,” for which a probabilistic distribution should be defined. (FEIS ref. Barr 2012d, pp. 1-2). Although slurry walls, trenches, and pumps to capture tailings seepage are engineered systems, the FEIS contains no modeling of impacts for a reasonable range of tailings seepage capture probabilities. It assumes near-perfect collection for the indeterminate future.</p>	WAT	NS	X	1	

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Paula Maccabee	As with the potential mine site contamination discussed previously, the FEIS proposes a combination of monitoring and “contingency mitigation.” It is suggested that we wait and assess fractures “that could function as high-permeability conduits for groundwater” or “lead to violation of water quality standards” by monitoring once the PolyMet NorthMet project is in place and contaminated seepage is detected. At that point, unspecified “contingency mitigation measures would be employed to mitigate the fracture-related effects.” (FEIS, 5-37).	WAT	NS	X	1	
Paula Maccabee	The FEIS identifies several likely failures of the proposed tailings seepage collection system: new surface seepage locations may emerge as the tailings basin is developed; tailings pond water quality may be worse than expected; and groundwater or surface water downgradient of the tailings basin may fail to comply with water quality standards. (FEIS, 5-239 to 5-240). Such failures may or may not be revealed by monitoring, may be revealed only after irreparable harm has been caused to fish, wild rice or human beings or may only come to light after mining has ceased and the mining company has declared bankruptcy to minimize liabilities.	WAT	S	O	8	FEIS pg. 5-253
Paula Maccabee	Both NEPA and MEPA were enacted precisely to prevent this scenario. State and federal environmental review laws require analysis of significant environmental consequences before the fact, not after contaminated seepage permeates surface and groundwater. An EIS that models a realistic range of seepage capture efficiencies and discloses their impacts on water quality, supports the consideration of alternatives to protect aquatic life and human health. An EIS, like the PolyMet NorthMet FEIS, that relies on unsubstantiated assumptions by the project proponent and allows models to be used to produce a desired outcome threatens to create a new Superfund site, with only indeterminate hope of mitigation.	NEPA	NS	X	1	
Paula Maccabee	WaterLegacy’s comments on the SDEIS reflected our concern that the hydrometallurgical residue facility (HRF) would contain some of the most concentrated and toxic wastes produced by the PolyMet NorthMet project. Yet, the SDEIS failed to disclose the chemical composition of the HRF wastes and failed to disclose the seepage rate under various reasonable assumptions of liner leakage. Instead, without providing any information from which it could be verified that this conclusion was reasonable, the SDEIS determined that any leakage from the HRF could be ignored and need not be modeled to evaluate environmental impacts. The FEIS does not address WaterLegacy’s prior concerns. The FEIS provides no information regarding the chemical composition of the 313,000 tons per year of HRF waste expected to be produced by autoclave processing of metals at the Hydrometallurgical Plant. Since the SDEIS was prepared, the FEIS has proposed two additional sources of contamination to the HRF waste facility. Water treatment plans solids, primarily gypsum, and coal ash wastes from the existing LTVSMC site Coal Ash Landfill are proposed to be located with the HRF wastes. (FEIS, 5-178, PolyMet 2014c). These additional and potentially toxic and reactive wastes may represent up to 10 percent of the HRF facility solids volume. (FEIS, 4-445). As with the residue from the Hydrometallurgical Plant, the FEIS provides no characterization of the mass or concentration of chemicals resulting from disposal of gypsum and coal ash wastes.	WAT	S	O	8	SDEIS Theme WR 126. PolyMet 2014c of FEIS App A. SDEIS COOP Response #3020
Paula Maccabee	The FEIS’ conclusion in that HRF waste will not exceed federal RCRA hazardous waste thresholds is based on 2005 pilot test residues from a different process and on incomplete testing in 2009. Rather than assessing the contaminant levels actually proposed for the HRF under the current project plan, the FEIS states that, if the project is approved, the residue should be tested to verify that it is not hazardous. (FEIS, 5-609).	WAT	S	O	8	PolyMet 2014a of FEIS App A; RS33/RS65

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Paula Maccabee	Once the HRF pond becomes full and during reclamation, water from the HRF pond and drainage from the residue would be removed and treated at the plant site WWTP. (FEIS, 3-134). However, the modeled WWTP influent water quality during project reclamation does not reflect any of the expected concentrations from HRF contaminated wastewater. (FEIS ref. PolyMet 2015j, pp. 274-275). The FEIS continues to assume that leakage from the HRF into underlying groundwater or adjacent surface water “would be negligible” due to the double liner proposed and does not evaluate any potential environmental impacts from HRF waste facility seepage. (FEIS, 5-179). The PolyMet plant site Water Modeling Data Package explains, “The double liner system designed for the HRF is impermeable enough so that its effect on the environment can be ignored.” (PolyMet 2015j, p. 117).	WAT	NS	X	1	
Paula Maccabee	The Data Package assumes a leakage rate of 2 defects per acre in the upper layer and that defects are circular with a diameter of 1 centimeter and that no defects will occur in the lower liner. (Id.) However data in PolyMet’s own Residue Management Plan suggests that 40% of installed liners have a defect density from 4 to 10 per acre and 10% a defect density from 10 to 20 per acre. (FEIS ref. PolyMet 2014r, p. 11). Although the hydraulic head between the upper and lower liner may be low, leakage could still occur.	WAT	S	O	8	PolyMet 2014r Table 2-3, Section 2.2.4 and Attachment H; "Good" quality installation represents 1-4 defects/acre. This range is what PolyMet used due to installation methods
Paula Maccabee	Neither the FEIS nor the Residue Management Plan address the difference between the HRF proposal and modern landfill siting and performance. Modern landfills, on which the optimistic expectations of HRF leakage performance are based, cannot be sited on locations like the one proposed in the PolyMet NorthMet FEIS. As summarized on the EPA’s website, municipal solid waste landfills must comply with the federal regulations in 40 C.F.R. § 258 (Subtitle D of RCRA), or equivalent state regulations. Federal standards for solid waste landfills include: “Location restrictions—ensure that landfills are built in suitable geological areas away from faults, wetlands, flood plains, or other restricted areas.” ²⁷ Minnesota law similarly precludes the siting of either a hazardous or a solid waste facility in a wetland or in a location where the topography, geology, hydrology or soil is unsuitable for the protection of the ground water and the surface water. Minn. R. 7045.0460, Subp. 2, Minn. R. 7035.1600. The FEIS and supporting documents demonstrate that the proposed HRF is an unsuitable location for either a hazardous or an industrial waste landfill. The HRF would be located on approximately 36.1 acres of wetlands, 7.5 acres of which would be newly impacted by fill and are subject to both state and federal regulations. (FEIS, 5-321). In addition to the wetlands, the HRF would be located on top of as much as 50 feet of fine tailings and slimes in the existing LTVSMC Emergency Basin. (FEIS, 5-664, Fig. 5.2.14-9). Although the FEIS proposes that a preload could be placed on these materials to compress them in order to reduce stress deformation and strain on the liner system, it is expected that the material would rebound a small amount after the preload is removed. (FEIS, 5-667). Differential settlement of foundation materials is known to create longitudinal strain for liner materials. (FEIS, 5-661).	PER	S	O	8	SDEIS Theme GT 11
Paula Maccabee	The FEIS now recognizes that Minnesota Geological Survey maps show the existence of a fault directly beneath the proposed HRF location. (FEIS, 4-435, Barr 2014b Large Figures 1 and 2, Exhibit 3). The FEIS has identified yet another risk to liner deformation and integrity. Seeps along the southern edge of the existing LTVSMC tailings basin Cell 2W have been observed with the potential to create phreatic build-up below the HRF liners. The HRF would require a collection drain beneath the proposed embankment and liner systems to transmit the collected seep to the exterior of the HRF facility and reduce this risk. (FEIS, 5-662 to 5-663).	WAT	NS	X	1	

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Paula Maccabee	Concerns about potential failure of containment related to the hydrometallurgical residue facility are discussed in Section IX, infra, along with other risks of failure not assessed by the FEIS. The FEIS remains inadequate both due to its inappropriate secrecy regarding the nature and concentration of hydrometallurgical residue facility contaminants and because it has assumed a level of liner integrity that is inconsistent with the unsuitable location selected for disposal of PolyMet's hydrometallurgical wastes.	WAT	NS	X	1	
Paula Maccabee	WaterLegacy's comments on the SDEIS discussed both the unacceptable adverse impacts of the PolyMet NorthMet project on wetlands and the inadequate mitigation proposed by PolyMet for adverse wetland impacts. WaterLegacy's substantive arguments that the project's wetlands impacts and improper mitigation do not allow issuance of a Clean Water Act Section 404 permit are presented in separate comments on the permit.	WET	NS	X	1	
Paula Maccabee	Comments below reflect our concern that the FEIS does not analyze the adverse environmental effects of the proponent's mitigation plan, but instead argues on behalf of this plan. This advocacy is contrary to the requirements of environmental review.	NEPA	NS	X	1	
Paula Maccabee	We then focus on the inadequacy of the FEIS' assessment of the NorthMet project's indirect effects on wetlands. At the end of Section II, supra, discussing project mine site impacts, WaterLegacy requested independent water modeling. Such independent water modeling could be used to quantify indirect impacts on wetlands. In the alternative, since it is the only quantification of wetlands drawdown impacts in this record, the Co-Lead Agencies should accept GLIFWC's analysis of mine site impacts to wetlands for purposes of alternatives analysis, wetlands mitigation and permitting.	PER	NS	X	1	
Paula Maccabee	Rather than assessing the adverse impacts on wetlands acreage and function in the St. Louis River watershed and the Lake Superior Basin resulting from the proponent's failure to provide in-watershed and in-kind compensatory mitigation, the FEIS attempts to justify the mitigation proposal by claiming that PolyMet selected most of its mitigation before the Federal Mitigation Rule was finalized. (FEIS, 5-363). This argument is substantively invalid, as explained in the expert opinion of Morgan Robertson (Robertson, 2015, pp. 11-13) and in WaterLegacy's comments regarding the Section 404 permit application. In addition, by advocating for some type of exemption from federal mitigation rules, rather than explaining the adverse effects of operating outside the rules, the FEIS adopts a role of justifying, rather than analyzing the proposed mitigation. This advocacy is inconsistent with NEPA regulations. 40 C.F.R. §1502.2(g).	WET	S	N	8	The USACE will determine the suitability of proposed compensatory mitigation for project-related direct and indirect wetland impacts. For the State, project-related physical alteration of wetlands requires compensatory mitigation to be sufficient to ensure replacement of the diminished or lost designated uses (of the impacted wetlands) under Minnesota Rules, part 7050.0186. The Final EIS identifies to the extent prudent and feasible, the same types of wetlands are to be replaced in the same watershed, before or concurrent with the actual alteration of the wetland. In addition, the state Wetlands Conservation Act states that for wetlands in counties where 80 percent or more of pre-settlement wetlands exist, including St. Louis County where the project is proposed, minimum replacement ratio requirements are determined by mitigation location and type. Section 3.3.3 of the Final SDD requires the EIS to "describe and discuss the suitability and feasibility of various wetland mitigation strategies. This aspect of the EIS scope is accomplished in Final

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						EIS Section 5.2.3.3.2. Final determinations on the proposed mitigation satisfying in-watershed and in-kind compensation will occur in permitting.
Paula Maccabee	<p>Under both state and federal law, an EIS must analyze the significant environmental impacts of a proposed action. Minn. Stat. §116D.04, Subd. 2a; 40 C.F.R. §1502.1. Under both regulatory regimes, an EIS must provide a thorough analysis of both direct and indirect potential adverse effects. Minn. R. 4410.2300(H); 40 C.F.R. §1502.16(a)(b). In most cases, the Clean Water Act Section 404 process relies on final EIS for the evaluation of the least environmentally damaging practicable alternative (LEDPA) and related factual findings of compliance or noncompliance with restrictions on discharge. 40 C.F.R. §§ 230.10(a)(4), 230.12. Secondary effects on aquatic systems and on wetlands must be determined in order to assess whether a project may be permitted. 40 C.F.R. §§ 230.11, 230.41(b). There is no dispute that indirect effects of the NorthMet project are significant, no matter what scale of comparison is provided. The FEIS acknowledges that the proposed sulfide mine project could indirectly affect up to 7,694.2 acres of wetlands located within and around project sites. (FEIS, 5-251). This potential indirect wetland impact is more than eight times the 913.8-acre (FEIS, ES-36) direct impact of the project on wetlands. Taken together, potential impacts of the NorthMet project on wetlands in the Partridge and Embarrass River watersheds affect up to 8,608 acres, equivalent to 13 percent of the 65,567 remaining acres of wetlands in the two watersheds combined. (FEIS, 6-57, Table 6.2.3-3).28 The FEIS acknowledges that indirect effects on wetlands would result from wetland fragmentation; alteration of wetland hydrology resulting from changes in watershed area, groundwater drawdown, seepage containment at the tailings facility and changes in stream flow at the mine and plant site; and water quality changes related to deposition of dust, ore spillage and leakage and seepage and leakage from mine pits, waste rock storage and other mine features. (FEIS, 5-319, 5-347) The PolyMet NorthMet mine site and potentially impacted proximate wetlands are within the 100 Mile Swamp and the Upper Partridge River site. (FEIS, 4-481, A-509; WaterLegacy SDEIS comments, Exhibit 30). Approximately 92 percent of the wetlands within the mine site are high quality. (FEIS, 4-196) Wetlands that would be directly and indirectly impacted by the NorthMet mine site are sites of high biological diversity, based on high quality peatlands in the 100 Mile Swamp and Partridge River Peatlands sites and on the numerous rare species in the Upper Partridge River site. (WaterLegacy SDEIS comments, Exhibit 30). The EPA's comments on the PolyMet NorthMet SDEIS emphasized the need to quantitatively assess indirect wetlands of the tailings basin and mine site project: Comment# 17. The SDEIS describes current site conditions, including the acreage, type, and quality of the wetland resources at the tailings basin and mine sites. The SDEIS also describes the proposed direct impacts remaining after measures to avoid or minimize direct impacts. However, the SDEIS does not quantitatively assess indirect impacts or</p>	WET	NS	X	1	

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	measures to minimize and mitigate these impacts, except with respect to wetland losses due to fragmentation. The SDEIS also omits all indirect impacts from the cumulative impacts analysis for wetlands (Section 6.2.3.4).					
Paula Maccabee	<p>Recommendation: The FEIS should quantitatively assess all indirect impacts. The FEIS should more clearly describe the proposed mitigation plan, including mitigation for indirect impacts. (U.S.EPA, Comments on PolyMet NorthMet SDEIS, Exhibit 1) The FEIS does not follow this recommendation and does not quantify indirect wetlands impacts. The FEIS states, "The indirect effects analyses performed for the EIS were not performed to characterize impacts but were done to inform where monitoring should take place for those areas that were identified as having a potential for indirect wetland effects." (FEIS, 5- 259). This phrase is not an oversight, since it was repeated in the FEIS and in responses to comments at least 14 times (FEIS, 5-342, 5-348, A-25, A-37, A-39, A-116, A-225, A-294, A- 342, A-481, A-482, A-496, A-504, A-623), along with the admonishment that "the identification of specific mitigation for indirect effects . . is not a requirement for an EIS. (FEIS, A-116, A- 295, A-343, A-481, A-482). By its own language, the FEIS has failed to comply with the basic requirements of NEPA and MEPA, has failed to provide the foundation for a Clean Water Act Section 404 permit and has rejected the recommendation of the EPA to quantify indirect impacts on wetlands and describe a clearer plan for their mitigation.</p>	WET	S	O	8	Response to EPA Comment #2997. FEIS App A. FEIS Section 5.2.3.2.2, 5.2.3.2.4, 5.2.3.3.5, Table 5.2.3-15
Paula Maccabee	<p>The FEIS asserts that the information needed to evaluate indirect wetland effects is unavailable, paraphrasing applicable state and federal law. (FEIS, 5-260). However, at no point in this record do the Co-Lead Agencies allege any factual basis to support this assertion. Both Minnesota law and federal law limit the situations in which a responsible agency can claim information needed for environmental assessment is "unavailable." Under Minnesota rules, if information about potentially significant environmental effects is essential to a reasoned choice among alternatives, information is unavailable only if the "cost of obtaining it is excessive" or "the means to obtain the information are beyond the state of the art." Minn. R. 4410.2500; Mid States Coalition for Progress v. Surface Transp. Bd., 345 F.3d 520, 549-550 (8th Cir. 2003) Under federal regulations, if information is relevant to reasonably foreseeable significant adverse impacts, it is only considered to be unavailable if "overall costs of obtaining it are exorbitant or the means to obtain it are not known." 40 C.F.R.§1502.22(b). Absent these findings, detailed quantitative assessments of possible mitigation measures are necessary when a federal agency prepares an EIS to assess the impacts of a relatively contained, site-specific proposal. See Neighbors of Cuddy Mountain v. U.S. Forest Service, 137 F. 3d 1372, 1380-81 (9th Cir. 1988); The Wilderness Soc'y v. Bosworth, 118 F. Supp. 2d 1082, 1106-07 (D. Mont. 2000). The FEIS makes no claim that modeling to predict wetlands drawdown would be exorbitant, excessively costly, beyond the state of the art or that the means to obtain this information are not known. The FEIS merely states a preference for using the analog method to evaluate wetlands drawdown: The Co-lead Agencies have thoroughly considered throughout the development of the EIS and through the Wetland IAP Working Group how to assess potential indirect wetland effects. As a result, strengths and weaknesses of the approach used, as well as other suggested approaches, have been carefully considered. The Co-lead Agencies ultimately decided that the use of the analog method and the 20 percent change in watershed area metric described in this section as factors considered in identifying potential indirect effects to wetlands is a credible and reasonable approach consistent with the requirements of NEPA. (FEIS, 5-260) The FEIS</p>	WET	S	N	8	Section 3.3.3 of the Final SDD did not require modeling for the assessment of wetland impacts. The scope only identified that wetland impacts associated with the entire project would be identified and discussed in the EIS. The DNR considered the possibility of using the EIS's groundwater flow model, which was required under Final SDD Section 6.2 to predict groundwater inflows to the mine pits, for assessing potential indirect wetland impacts that might occur due to drawdown effects from pit dewatering. Ultimately, it was determined that the MODFLOW model could not reliably model the complex mix of fractured bedrock, glacial till, and wetland soils in the project area. Minnesota Rules, part 4410.2300, subpart H, states that data and analyses (in the EIS) must be commensurate with the importance of the impact and the relevance of the information to a reasoned choice among alternatives and to the need for mitigation measures. DNR asserts that the analog method used to assess potential indirect wetland impacts is consistent with the rule and requirements of the Final SDD.

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	<p>also stated, citing the PolyMet Wetland Data Package, that analog data were used instead of a model such as MODFLOW because MODFLOW “could not practicably be used to estimate potential indirect wetland effects, due to complex mixes of bedrock, surficial deposits, and wetland soils at the Mine Site” and since “It is challenging to accurately represent this complex hydrology through modeling.” (FEIS, 5-257, 5-263, citing PolyMet 2015b). Acknowledging the availability of other modeling tools in responses to comments, the Co-Lead Agencies explained, “A hydrological study, pump test, and/or laser test was not performed as the Co-lead Agencies utilized the analog approach for assessing potential groundwater drawdown.” (FEIS, A-489 to A-499). The preference for the analog approach, even if it is reasonable, does not meet the requirements for “unavailable” information under either NEPA or Minnesota’s comparable MEPA rules. In his comment on the PolyMet NorthMet SDEIS, wetlands expert Brian Branfireun opined that reliance on an analog case to evaluate the potential extent and magnitude of the cone of depression and dewatering impact of surface wetlands and streams is unsatisfactory, “given the availability of robust hydrogeological models that could reasonably evaluate potential impact scenarios.” (Branfireun, 2014, p. 14). Hydrologist Donald Lee stated both that an analog approach would need to be validated, which hadn’t been done in the SDEIS and that “MODFLOW has the capability to calculate the effects of pit dewatering providing the appropriate input is incorporated into the model.” Dr. Lee also pointed out that selectively rejecting MODFLOW for the purpose of wetlands assessment called into question the legitimacy of all other EIS analysis of hydrology and water quality. (Lee, 2014, p. 12) Since the SDEIS, MODFLOW has been used to update the precise predictions most relevant to the assessment of the nature and cone of depression. As described in more detail in Section II, supra, discussing mine site modeling, PolyMet recently updated its assessment of the hydraulic conductivity of wetland deposits and of Virginia Formation bedrock (FEIS, 5-19, 5-29, Table 5.2.2-7) and revised its estimates of groundwater inflow to the west and east mine pits. (FEIS, 5-111, Table 5.2.2-19)</p>					
Paula Maccabee	<p>The Co-lead Agencies also recently used MODFLOW to predict the number of inches of downward leakage through wetlands necessary to prevent northward flow as a result of the downhill hydraulic gradient of the Northshore Mine Peter Mitchell Pit. (FEIS, 6-41, MDNR et al 2015c).</p>	WET	S	N	8	<p>For the State, project-related physical alteration of wetlands requires compensatory mitigation sufficient to ensure replacement of the diminished or lost designated uses (of the impacted wetlands) under Minnesota Rules, part 7050.0186. The Final EIS identifies the presence of wetland, with sufficient detail, and explains that the same types of wetlands are to be replaced in the same watershed, before or concurrent with the actual alteration of the wetland. In addition, the state Wetlands Conservation Act states that for wetlands in counties where 80 percent or more of pre-settlement wetlands exist, including St. Louis County where the project is proposed, minimum replacement ratio requirements are determined by mitigation location and type.</p>
Paula Maccabee	<p>There is every indication that MODFLOW is a robust, practicable and readily available model for analysis of conductivity, hydrology and flow through mine pits, bedrock, and surficial materials at the NorthMet mine site, except in the case where a request is made to evaluate indirect impacts on wetlands from mine dewatering.</p>	NEPA	NS	X	1	

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Paula Maccabee	Even if one were to assume that an analog method is preferable to using MODFLOW or another hydrological model to provide a quantitative assessment of indirect wetlands drawdown impacts, there is no logical reason why this would make an evaluation of wetlands drawdown impacts “unavailable.” Nothing would have prevented the project proponent and Co-Leads from providing a quantitative evaluation of mine drawdown impacts, sufficient to assess mitigation, using their preferred analog method. They chose not to do so.	WET	S	N	8	Section 3.3.3 of the Final SDD did not require modeling for the assessment of wetland impacts. The scope only stated that wetland impacts associated with the entire project would be identified and discussed in the EIS. The DNR considered the possibility of using the EIS’s groundwater flow model, which was required under Final SDD Section 6.2 to predict groundwater inflows to the mine pits, for assessing potential indirect wetland impacts that might occur due to drawdown effects from pit dewatering. Ultimately, it was determined that the MODFLOW model could not reliably model the complex mix of fractured bedrock, glacial till, and wetland soils in the project area. Minnesota Rules, part 4410.2300, subpart H, states that data and analyses (in the EIS) must be commensurate with the importance of the impact and the relevance of the information to a reasoned choice among alternatives and to the need for mitigation measures. DNR asserts that the analog method used to assess potential indirect wetland impacts is consistent with the rule and requirements of the Final SDD.
Paula Maccabee	However, this record does contain a quantitative assessment of wetlands drawdown impacts using the Co-Leads’ preferred analog approach. An Analysis of Indirect Wetland Impacts from Groundwater Drawdown using a calibrated analog approach was provided by GLIFWC prior to the preparation of the SDEIS in November 2013 and is included in Appendix C of the FEIS. (FEIS, App. C, autop. 2985-3025). Neither the SDEIS nor the FEIS challenged the methodology or conclusions of this analysis, even in responding to Major Difference of Opinion with Tribal Cooperating Agencies. (see e.g. FEIS, 8-13 to 8-14). Calibrating the analog method to other pits on the Iron Range, using the three zones of proximity to mine pits, and specifying the level of drawdown, acreage and types of wetlands that would be affected, GLIFWC concluded that wetlands likely to be severely impacted by dewatering totaled 3,188.62 acres in Zone 1 (0 to 1,000 feet), 2,458.12 acres in Zone 2 (1,000 – 2,000 feet) and 273.01 acres in Zone 3 (2,000 – 5,000 feet). Severe indirect impacts to wetlands from mine pit drawdown would total 5,719.75 acres. (FEIS, App. C, autop. 2994). This calibrated analog model provides available and uncontroverted quantification of indirect impacts on wetlands from mine dewatering.	WET	S	O	8	FEIS pg. 8-13
Paula Maccabee	As with other changes in language since the SDEIS discussed in preceding Sections of our comments, there are several places where the FEIS appears to recognize the potential indirect impacts on wetlands, only to mischaracterize references and reject findings that those impacts are likely to occur. The FEIS states it “has been updated to make a more conservative assumption of the potential indirect effects for all bog communities within the zero to 1,000-ft analog zone.” (FEIS, 5-253) The FEIS admits that “although the hydrology of ombrotrophic bogs is solely precipitation-driven, these wetlands can have flowpath connections to groundwater.” (FEIS, 4- 168, citing Eggers 2015). However, the way in which the FEIS makes this update is to classify both ombrotrophic and minerotrophic bogs as having a “low likelihood” of being affected by	WET	S	N	8	Section 3.3.3 of the Final SDD requires the EIS to “describe and discuss the suitability and feasibility of various wetland mitigation strategies. This aspect of the EIS scope is accomplished in Final EIS Section 5.2.3.3.2. Final determinations on the proposed mitigation satisfying in-watershed and in-kind compensation will occur in permitting.

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	<p>groundwater drawdowns associated with proposed mining operations, (FEIS, 5-273) and to state that ombrotrophic bogs have a low susceptibility to effects from groundwater drawdown (FEIS, 4- 169) and a low degree of effect from groundwater drawdown associated with mining. (FEIS, 4- 169). For each of these conclusions on each of these pages the FEIS references a January 15, 2015 memorandum of U.S. Army Corps of Engineers (Corps) staff member Steve Eggers. (Eggers 2015). As Dr. Branfireun explains in his recent opinion on the PolyMet NorthMet FEIS, these statements mischaracterize the professional conclusions reached by Eggers (2015). (Branfireun, 2015, pp. 15-16). Eggers’ memorandum doesn’t minimize the likelihood of hydrology impacts on either ombrotrophic bogs or minerotrophic bogs. Eggers states, that although some reviewers would focus on whether the designation of “low likelihood” is accurate or “moderate likelihood” or “high likelihood” is a better designation, “The bottom line is that the potential for indirect impacts to all bog communities within the 0-1,000 foot analog zone is acknowledged.” (Eggers 2015, p. 4). Eggers’ reason for this recognition is simple, “Ombrotrophic bogs, although precipitation-driven, can have flowpath connections with groundwater; therefore, these wetlands could be impacted by groundwater drawdown.” (Id., p. 5). Thus, Eggers recommends, as a conservative approach responsive to public comments, that all bogs within the 0-1,000 foot analog zone be assigned to the same category for likelihood of hydrology effects “to acknowledge a potential for adverse impacts.” (Id., p. 5).</p>					
Paula Maccabee	<p>Since the FEIS does not quantify any impacts of mine drawdown on any wetlands, the primary result of any new classification of ombrotrophic bogs would be related to the monitoring proposed in the FEIS. The formulation of how monitoring and mitigation might take place is unclear. In some places it is suggested that if monitoring showed indirect wetland effects had occurred “adaptive management practices to reduce wetland effects would be considered” and additional compensation “may be required.” (FEIS, 5-361). Other sections of the FEIS suggest that the agencies would be relying on potential analog impact zones to determine monitoring, but in the event that wetland monitoring identified “additional” indirect effects (additional to what is not specified) “permit conditions would likely include a plan for adaptive management practices to be implemented.” (FEIS, 5-254). Plans for monitoring, mitigation or adaptive management seem vague, but the degree to which this loose formulation fails to protect dewatered mine site wetlands becomes more clear once other indirect wetlands impacts are reviewed.</p>	WET	S	O	8	FEIS pg. 5-262
Paula Maccabee	<p>As noted above, the FEIS text seems to recognize that there are potential impacts on wetland hydrology as a result of groundwater seepage containment at the tailings site. (FEIS, 5- 347). Given the high volume of tailings seepage proposed to be collected (Section III, supra) and the fact that there are 2,754.8 acres of wetlands abutting Mud Lake, Trimble and Unnamed Creek at the tailings facility (FEIS, 5-335, Table 5.2.3-11), one might think there would be a rigorous analysis of indirect impacts of changes on wetlands from capturing seepage. The FEIS first states that, despite augmentation, the response of complex natural systems can only be estimated. (FEIS, 5-334) Then, citing PolyMet 2015b, the FEIS concludes that due to stream augmentation within 20 percent of existing flows, no potential indirect wetland effects would be identified or anticipated for any of the wetlands abutting Second Creek, Mud Lake Creek, Trimble Creek or Unnamed Creek. (FEIS, 5-334, 5-335).</p>	WET	S	O	8	FEIS Section 5.2.3.2.4

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Paula Maccabee	<p>Mine site water quality impacts on wetlands are also discussed in the FEIS only to be summarily dismissed. The FEIS discloses that there are 515.9 acres of wetlands within mine site groundwater flowpaths, 351.2 acres of which are designated minerotrophic (FEIS, 5-320, Table 5.2.3-7). The FEIS states that it was assumed that all downgradient minerotrophic wetlands located within the five mine site surficial aquifer flowpaths “may have potential indirect wetland effects related to water quality changes as a result of leakage/seepage from mine features.” (FEIS, 5-313, 5-319). However, by now unsurprisingly, the impact of reasonably foreseeable mine site leakage/seepage on wetlands is not modeled or assessed in the FEIS. The FEIS explains that PolyMet’s water quality model “assumed that the leakage/seepage from mine features releases directly to the Partridge River; therefore, it is assumed that groundwater would not emerge in surface water or wetlands along intermediate portions of the flowpaths (PolyMet 2015m).” (FEIS, 5-320, emphasis added). The FEIS does not propose a new or better model. It advises, “The water quality model cannot be used to quantify the amount of leakage/seepage from mine features that discharge directly to individual wetlands” (Id.), and more generally, “The leakage/seepage analysis could not indicate or suggest that an effect or adverse effect would occur on wetlands.” (Id.) In the same text emphasizing that no water modeling would assess or mitigate an actual adverse effect, the FEIS insists that this approach was “conservative” because it had identified a potential effect. (Id.) The only consequence of this elaborate discussion: wetlands with potential effects would be “identified for consideration in the proposed wetland monitoring plan.” (FEIS, 5-319). The potential that tailings seepage/leakage would have an indirect water quality impact on wetlands is similarly mentioned only to be dismissed. The FEIS identifies 4,638.4 acres of wetlands potentially indirectly affected by changes in water quality (FEIS, 5-345, Table 5.2.3- 12) only to say that the potential for indirect effects as a result of changes in groundwater quality is “identified to be small.” (FEIS, 5-346). Since the hydrology downstream of the tailings basin is “too complex” to be incorporated into PolyMet’s model for the plant site, again no adverse effects are identified and monitoring is proposed. (FEIS, 5-346). It should be clear from the preceding discussion that the FEIS has not only asserted without grounds that information on wetlands drawdown impacts is “unavailable,” it has systematically provided “conservative” assumptions about potential adverse impacts, only to completely avoid modeling or evaluating any actual adverse indirect impacts on wetlands from the NorthMet project. The replacement offered by the FEIS for assessment and mitigation of adverse indirect impacts on wetlands is monitoring. However, even this monitoring proposal comes with a catch. Potential risks to wetlands are rated based on a system devised by PolyMet, where each different impact factor (several of which are categorically excluded in the above discussion) is given a point from 1 up to a maximum of 6 (FEIS, 5-361, PolyMet 2015b). Monitoring is generously proposed, “within all wetlands containing a potential indirect wetland impact factor rating of 3 to 5 and a sampling of those wetlands with factor ratings of 1 or 2.” (FEIS, 5-390). A quick look at the data reveals that this rating system would place only 3% of the 7,694.2 (or 6,568.8) acres of wetlands in the zone where they would be thoroughly monitored. (FEIS, 5-361, Table 5.2.3-15). Other wetlands would be sampled “based on those wetlands that would have a high likelihood of indirect effects as a result of groundwater drawdown,” (FEIS, 5-397) a definition, as discussed above, that excludes both ombrotrophic and minerotrophic bogs.</p>	WAT	S	O	8	NorthMet FTB East Dam Conceptual Model June 20, 2014; Groundwater Containment System Modeling in GoldSim v3 January 2015; Barr 2015b; SDEIS Theme WR 018; PolyMet 2015i

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Paula Maccabee	WaterLegacy's prior land exchange comments focused on substantive grounds for rejecting the exchange of Superior National Forest lands in order to facilitate development of the PolyMet NorthMet open-pit copper mine. Our concerns in these comments are with the adequacy of the FEIS to analyze the issues that must be determined under laws applicable to a land exchange. As explained in the other Sections of this comment, the FEIS inadequately considered the impacts of the PolyMet NorthMet sulfide mine project – the proposed future use of federal lands. The FEIS' discussion of the land exchange appears to separate the comparison of federal and private lands from the analysis of adverse environmental impacts of the NorthMet project. This distinction cannot be sustained under applicable law. An authorized officer of the U.S. Forest Service may complete a land exchange pursuant to 43 C.F.R. §2200.0-6(b)(2) only on a finding that: The intended use of the conveyed Federal lands will not, in the determination of the authorized officer, significantly conflict with established management objectives on adjacent Federal lands and Indian trust lands. Such finding and the supporting rationale shall be made part of the administrative record. (emphasis added) Among other considerations for this public interest determination, the U.S. Forest Service must consider the result of the intended use of the conveyed federal lands on protection of fish, wildlife habitats, cultural resources, watersheds, and its fiduciary responsibilities to Indian tribes and the protection of tribal resources, including fish, wild rice and human health. 43 C.F.R. §2200.0-6(b). Failure to consider the environmental impacts of the future use of the federal land proposed to be exchanged fatally undermines a land exchange FEIS, establishing that the agency failed to take a "hard look" at the environmental consequences of the action, in violation of NEPA. <i>Ctr. for Biological Diversity v. United States Dep't of the Interior</i> , 623 F. 3d 633, 636 (9th Cir. 2010); see also <i>Nat'l Parks & Conservation Ass'n v. BLM</i> , 606 F. 3d 1058, 1063 (9th Cir. 2010).	LAN	NS	X	1	
Paula Maccabee	These comments, WaterLegacy's comments on the SDEIS, and the expert opinions and references they cite, demonstrate that the FEIS is inadequate to support the determinations the U.S. Forest Service is required to make. The FEIS has based its conclusions regarding water quality on unsubstantiated assumptions regarding the collection of polluted seepage and leakage, failure to investigate geochemistry, inappropriate selection of compliance points, failure to analyze relevant pollutants, and improper comparisons of pollution with "evaluation criteria" instead of water quality standards and conditions that don't accurately reflect a no action scenario. The FEIS has used scientifically indefensible methods to minimize mercury impacts and avoid analysis of methylmercury impacts and has, thus, failed entirely to assess a highly significant risk to aquatic life, human health, tribal resources and impacts to Indian trust lands. The FEIS has provided no evaluation of the risks of northward flow of pollutants through the 100 Mile Swamp and to the Rainy River watershed and no evaluation of the indirect impacts of mine site and tailings site dewatering and pollution on wetlands, thousands of acres of which are in the 100 Mile Swamp and the Upper Partridge River, federal lands of high biological diversity. The FEIS has failed to analyze impacts of dam failure or failure of seepage collection and has used unsupported assumptions to avoid consideration of the transport of sulfate, mercury and methylmercury downstream to the St. Louis River and to reservation waters.	GEN	NS	X	1	
Paula Maccabee	Perhaps most troubling in terms of the substantive requirements for a land exchange, the FEIS has failed to analyze cumulative impacts on Indian trust lands and rights retained by Indian tribes in ceded territories.	NEPA	S	N	6	SDEIS Theme LAN 02. FEIS pg. 6-171
Paula Maccabee	Failure to resolve the many deficiencies in these comments on the FEIS precludes the Forest Service from proceeding with the proposed land exchange. WaterLegacy's separate comments on the Draft Record of Decision for the land exchange will	ROD	NS	X	1	

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	summarize pertinent deficiencies as well as substantive impacts of the NorthMet project that preclude proceeding with the federal land exchange.					
Paula Maccabee	The FEIS has not rectified the deficiencies previously raised by WaterLegacy regarding impacts on aquatic life resulting from polluted seepage and discharge. As discussed in previous Sections I, II and III of these comments on the FEIS, deficiencies in sampling and modeling contaminant sources, unsubstantiated assumptions regarding collection of polluted seepage, assessment of water quality using misleading “evaluation criteria” and discharge evaluation locations, and failure to scientifically assess mercury releases and increased production and transport of methylmercury result in the inadequacy of the FEIS to assess impacts on aquatic life.	AQ	NS	X	1	
Paula Maccabee	The PolyMet NorthMet FEIS completely failed to assess a pollutant that is characteristic of mining and is of particular concern for benthic macroinvertebrates and fish, the combination of ions and salts that is tested as specific conductivity.	AQ	S	O	8	SDEIS Theme AQ 14
Paula Maccabee	WaterLegacy’s comments on the SDEIS referenced EPA’s research, A Field-Based Aquatic Life Benchmark for Conductivity in Central Appalachian Streams,30 which set a benchmark conductivity level for Appalachian streams at 300 microSiemens per centimeter (µS/cm). Since the SDEIS, chemist Bruce Johnson and biologist Maureen Johnson, both former regulators for Minnesota and federal government agencies, have produced a report, An Evaluation of a Field-Based Aquatic Life Benchmark for Specific Conductance (hereinafter “Conductivity Evaluation”), attached as Exhibit 16. Specific conductivity is regulated in Minnesota’s numeric water quality standards to permit use for irrigation with a limit of 1000 micromhos per centimeter (“µmhos/cm” and “µS/cm” are equivalent) applicable to waters and wetlands. Minn. R. 7050.0224, subp. 2, subp. 4. Aquatic life are also protected from pollutants, including specific conductivity, by Minnesota narrative standards that prevent degradation of Class 2 waters and require that “lower aquatic biota” upon which fish depend not be seriously impaired or altered materially. Minn. R. 7050.0150, subp. 3. Minnesota rules apply to aquatic life a test of toxic pollution similar to the XC95% benchmark used in the EPA Benchmark Conductivity Study, which used the 5th centile of a species sensitivity distribution (SSD) as the benchmark value to determine what conductivity level is considered to be “associated with significant biological degradation.”31 Minnesota rules protect the aquatic community from toxic effects, defined to mean “the protection of no less than 95% of all the species in any aquatic community.” Minn. R. 7050.0217, subp. 1, 2. The Conductivity Evaluation applied the methods used by the EPA to develop a specific conductance aquatic life benchmark for Appalachian ecoregions to recommend specific conductance aquatic life protections for three ecoregions in Northeast Minnesota, including the areas that would be affected by the NorthMet project. The Conductivity Evaluation analyzed baseline water chemistry and benthic invertebrate data from the Minnesota Regional Copper- Nickel Study32 and concluded that regional similarities in streams order, unimpacted water chemistry, and populations of benthic invertebrates allowed application to Northeast Minnesota ecoregions the methods used by the EPA to determine a 300 µS/cm specific conductivity benchmark for Appalachian ecoregions. (Conductivity Evaluation, Exhibit 16, pp. 8-14,Table 1). The Conductivity Evaluation used data from taconite mining facilities, including the Dunka Mine, where Duluth Complex rock was removed in order to mine the underlying deposit, to demonstrate that both mine-related seepage and passive wetland treatment have resulted in elevated levels of specific conductivity, often exceeding even Minnesota’s numeric irrigation standard of 1,000 µS/cm. (Id., pp. 14-19). After reviewing testing methods and pollution tolerances of Minnesota benthic invertebrates (Id., pp. 20-24), the Conductivity Evaluation analyzed of the impacts of mining-related specific conductivity on impairments of	PER	S	N	11	SDEIS Theme AQ 14

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	benthic invertebrates in receiving and downstream waters, include the St. Louis River. (Id., pp. 24-41). Based on the EPA Conductivity Benchmark Study and Minnesota data on baseline and impacted conditions, the Conductivity Evaluation concluded: 1) EPA protocols to set a limit for specific conductivity to protect aquatic life are applicable to Northeast Minnesota surface waters; 2) The median specific conductivity level in all Minnesota Copper-Nickel Study samples (including impacted streams) was 68 µS/cm, so background unimpacted conductivity in this region would be less than 68 µS/cm; 3) Existing data from identified Minnesota ecoregions demonstrate impacts on invertebrate genera from elevated specific conductance in mining impacted waters; and 4) In the Minnesota ecoregions discussed in the Evaluation “discharge of specific conductance above the level of 300 µS/cm, established as guidance for Appalachian streams is highly likely to result in extirpation of 5% or more of invertebrate genera.” Thus, “Such discharge should be prohibited under Minnesota narrative standards preventing degradation and toxic pollution.” (Id., p. 42). In order to protect aquatic life, the Conductivity Evaluation recommended applying the 300 µS/cm aquatic life benchmark for Minnesota discharges in the ecoregions reviewed, pending further analysis to determine if a more stringent limit is needed. (Id.)					
Paula Maccabee	The Evaluation also recommended data collection and analysis for environmental review, including assessment of background site-specific conductivity and invertebrate community data to the genera if not species level; modeling specific conductance from mine facilities based on representative sampling of waste rock; and estimates of mass loading from all facilities and quality assured data sufficient to evaluate compliance with both Minnesota’s numeric standard and with Minnesota’s narrative degradation and toxicity standards. (Id., pp. 44-45).	NEPA	NS	X	1	
Paula Maccabee	In addition to the Conductivity Evaluation, the Minnesota Pollution Control Agency’s (MPCA) Draft St. Louis Stressor Identification Report explicitly attributed impairments in the vicinity of the PolyMet NorthMet project to specific conductance discharge from mining facilities: Fish results from the upper Embarrass River (the portion upstream of the town of Embarrass) show extremely low fish counts and limited taxa richness. . . Two of the impaired streams in this watershed zone, Spring Mine Creek and the Embarrass River, receive water originating from mine pits. Sampling results from these streams show elevated specific conductance and sulfate concentrations. (MPCA, Draft St. Louis River Stressor Identification Report, October 2013, p. 16, provided as Attachment B to the Conductivity Evaluation, Exhibit 16).33	WAT	S	O	8	SDEIS Theme AQ 14
Paula Maccabee	The Tribal Cooperating Agencies Cumulative Effects Analysis concluded that elevated specific conductance is a water chemistry “signature” for mining discharges that should be analyzed in the PolyMet NorthMet EIS. (FEIS, App. C. Tribal CEA, autop. 3001-3003).	WAT	S	O	8	SDEIS Theme AQ 14
Paula Maccabee	The FEIS provides no data on existing concentrations of specific conductivity in any receiving waters for the proposed NorthMet tailings site or for the mine site tributary creeks, although the FEIS provides average existing conductivity concentrations at several Partridge River sites. (FEIS, 4-258, Table 4.2.6-3).	WAT	S	O	8	PolyMet 2015j, PolyMet 2015m
Paula Maccabee	Moreover, none of the narrative, tables, or figures in Chapter 5 model or predict specific conductivity levels that would result from NorthMet mine or plant site facilities.	WAT	S	O	8	SDEIS Theme AQ 14

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Paula Maccabee	The FEIS notes that "portions of the Embarrass River, from the headwaters to Embarrass Lake, are listed on the 303(d) list as impaired for 'Fishes Bioassessment'" (FEIS, 4- 285), but fails to disclose that the MPCA has identified mine discharge with elevated specific conductance as a stressor for this impairment.	AQ	S	N	8	The comment correctly identifies that the upper portion of the Embarrass River is listed on the 303(d) list as impaired for 'Fishes Bioassessment. However, according to the May 2015 draft "St Louis River Stressor ID Report," the primary identified (confirmed) stressor to this water is "low dissolved oxygen." "Elevated specific conductance" is not identified in the draft report as a confirmed or potential stressor for this impairment. It is also noteworthy that the St Louis River Stressor ID Report, as of January 2016, has not yet been finalized. The Final EIS accurately characterizes the 303(d) listing for the Embarrass River for impact assessment purposes.
Paula Maccabee	conductance as a stressor for this impairment. The FEIS provides limited and inadequate baseline information on macroinvertebrate populations. No aquatic biota studies have been conducted in Longnose Creek, Wetlegs Creek, or Second Creek, and no fish or macroinvertebrate community or habitat characteristics were evaluated for these creeks although they all are first-order streams proximate to the NorthMet mine site. (FEIS, 4-260).	AQ	S	N	8	FEIS pg. 5-164
Paula Maccabee	For the Partridge River, data is either provided for a single year or with a single sample; and no data is provided at the genera level, so no assessment can be made whether invertebrates sensitive to conductivity are present. (FEIS, 4-267, Table 4.2.6-6).	AQ	S	N	8	FEIS Section 4.2.6
Paula Maccabee	FEIS notes that aerial photography review and habitat descriptions suggest that the Partridge River reference site (PR-B1) and the Colvin Creek and South Branch Partridge River sites should have quality habitat for macroinvertebrate assemblages. (FEIS, 4-258).	AQ	NS	X	1	
Paula Maccabee	For the Embarrass River, sampling numbers are not provided; data is not provided at any consistent locations over time; and, again, no data is provided at the genera level, so prevalence of pollution-tolerant and intolerant invertebrates cannot be determined. (FEIS, 4-284, Table 4.2.6-14). The FEIS states that total taxa and distribution of macroinvertebrate families (Ephemeroptera - mayflies, Plecoptera -stoneflies, Trichoptera - caddisflies) were variable, although some desirable, non-degraded stream characteristics are likely to be present. (FEIS, 4- 275) Since there is no water chemistry data for the Embarrass River, none for tailings or mine site creeks, and little benthic invertebrate data in the FEIS, with no sampling for genera, no uniform protocols over time and no data in mine site tributaries, even if monitoring were proposed to evaluate effects of the PolyMet NorthMet project on conductivity, that monitoring would be meaningless. It would neither be possible to determine if project seepage had increased conductivity levels or if those levels had begun to extirpate sensitive macroinvertebrate genera and impair aquatic life. The FEIS is completely inadequate to assess or protect aquatic life from specific conductivity pollution.	AQ	S	O	8	SDEIS Theme AQ 14; FEIS Sections 4.2.6, 5.2.6

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Paula Maccabee	WaterLegacy's comments on the SDEIS identified the following unexamined risks to health: the EIS failed to analyze health risks for on-site workers; the EIS failed to analyze the health risks from mineral fibers; the EIS failed to assess impacts of tailings seepage to residential wells; the EIS failed to analyze cumulative inhalation risks including off-site fossil fuel combustion to meet PolyMet NorthMet energy demands; and the SDEIS inadequately evaluated certain health risks, including risks of arsenic and manganese in drinking water. We highlighted our most serious health concern - the failure of the EIS to evaluate project and cumulative adverse health effects from methylmercury and requested a rigorous and independent assessment of health risks and adverse health impacts. The FEIS does not resolve any of these deficits.	HU	NS	X	1	
Paula Maccabee	The FEIS addressed none of our concerns about the adequacy of the SDEIS.	HU	NS	X	1	
Paula Maccabee	The FEIS fails to analyze health risks for on-site workers at either the NorthMet mine or tailings site, although it has now been acknowledged that the land exchange boundary was set to allow PolyMet to meet air quality requirements at the mine site boundary. ³⁴ The FEIS provides no summary of Minnesota Department of Health testing results and, in comparison with the SDEIS, further minimizes the health risks associated with mineral fibers. (compare FEIS, 5-513 to 5-19 with SDEIS, 5-435 to 5-443). As explained in more detail in the expert opinion of John Ipsen, M.D., PhD, "the FEIS incompletely addresses particulate air pollution. The analysis provided in the FEIS is inadequate to reasonably address the health risks of the proposed mine – risks to the mineworkers and to people living in the surrounding communities." (Ipsen, 2015, p. 2)	HU	S	O	8	SDEIS Theme HU 08. SDEIS COOP Responses #19719, #19753
Paula Maccabee	Preparation of the FEIS has resulted in no additional sampling of residential wells potentially impacted by contaminated seepage, and 23 out of 38 wells downgradient from the tailings waste site remain unsampled. (FEIS, 4-120).	WAT	S	N	3	PolyMet 2015j Section 3.1.1
Paula Maccabee	The FEIS continues to compare project seepage to an artificial "continuation of existing conditions" rather than a prediction based on the no action alternative, as is required by law (See Section XI Alternatives, infra).	ALT	S	O	4	SDEIS COOP Response #2952
Paula Maccabee	Despite a contrary recommendation by the Commissioner of the Minnesota Department of Health, the FEIS continues to use "evaluation criteria" based on the projection of current pollution into the indefinite future, rather than applying Minnesota Health Risk Limits (HRL) or Risk Assessment Advice (RAA) to evaluate releases of manganese, beryllium and thallium to groundwater. (Ehlinger SDEIS Comment, Mar. 13, 2014, p. 3, Exhibit 17).	WAT	S	O	8	Final IC IAP Section 4.1.2.2. FEIS pgs. A-694, A-695
Paula Maccabee	The FEIS also fails to discuss hydrogeology at the tailings site that may reduce seepage capture efficiency and impact residential supply wells, despite Dr. Ehlinger's recommendation. (Id., pp. 1-2)	WAT	S	O	8	FEIS pg. 5-239
Paula Maccabee	The method by which the FEIS addressed concerns about Hoyt Lake drinking water remains opaque to WaterLegacy, despite our review of all the data in the FEIS. Where the SDEIS had concluded that PolyMet NorthMet project Colby Lake arsenic would increase by 38.5% as compared to continuation of existing conditions (SDEIS, Table 5.2.2-34), the FEIS reassures the reader that the increase resulting from the project would be less than 1 percent (FEIS, Table 5.2.2-34). Differences in SDEIS arsenic concentrations predicted for the proposed action and continuation of existing conditions along the Partridge River are no longer evident in the FEIS. (compare SDEIS Table 5.2.2-31 with FEIS Table 5.2.2-31). The FEIS	WAT	S	N	8	SDEIS COOP Response #17745. CDF 201

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	provides no explanation for this discrepancy, and none is evident from review of sampling data.					
Paula Maccabee	Commissioner Ehlinger also raised concerns about Hoyt Lakes drinking water, stating that modeling of seepage of contaminants from the mine site appears to be inconsistent with field leaching tests and hydrogeological conditions. (Ehlinger SDEIS Comment, Exhibit 17, pp. 2, 4). These concerns have not been addressed in the FEIS.	WAT	S	O	8	SDEIS Themes WR 002, WR 023, WR 025, WR 173
Paula Maccabee	As detailed in Section I, supra, the FEIS has not addressed WaterLegacy's comments regarding mercury or the scientific opinions expressed by Dr. Branfireun. Dr. Branfireun's recent opinion concluded that the NorthMet project could present a substantial and ecologically significant risk of increased production and transport of mercury and methylmercury to downstream waters, including the Partridge, Embarrass and St. Louis River. It is beyond dispute in the medical profession that increasing fish methylmercury in these waters would create human health risks. As Margaret Saracino, M.D., a Duluth child adolescent psychiatrist, summarized in her opinion attached with these comments: In terms of methylmercury, exposure is largely due to ingestion of fish with high mercury content. Methylmercury builds in the food chain. When pregnant women eat fish high in methylmercury, the fetus is then exposed to this lipophilic heavy metal. The placenta is not protective and the blood brain barrier is not well formed until after age two years, which makes fetuses, infants and young children most vulnerable to methylmercury's neurotoxic effects. Neurons in the developing brain multiply at a rapid rate and are particularly vulnerable to toxic effects of heavy metals, hence brain damage is more likely to occur during this vulnerable time. Neurotoxicity is also transferred to the infant through breast milk. The adverse effects of methylmercury depend on timing and amount of exposure. Methylmercury is a strong toxin that influences enzymes, cell membrane function, causes oxidative stress, lipid peroxidation and mitochondria dysfunction, affects amino acid transport and cellular migration in the developing brain. Exposure in utero can cause motor disturbances, impaired vision, dysesthesia, and tremors. Even lower level exposure can result in lower intelligence, poor concentration, poor memory, speech and language disorders, and decrease in visual spatial skills in children exposed to methylmercury in utero. Fetuses, infants, and young children are four to five times more sensitive to the adverse effects of methylmercury exposure than adults. (Saracino, 2015, p. 2). Dr. Saracino explained that neurodevelopmental disorders can be managed, but not cured. (Id., p. 1). In addition to the suffering of exposed individuals and their families, neurodevelopmental disorders resulting from increased methylmercury and lead exposure can result in significant costs to families and communities as a result of needs for occupational therapy, physical therapy, speech and language therapy, special education service, outpatient and in-patient treatment and as a result of reduction in earning capacity. (Id., pp. 2-3). The FEIS neither recognized nor assessed any of these costs.	MERC	S	N	6	Section 3.3.6 of the Final SDD required the EIS to evaluate the potential impacts from methylation of mercury due to increased sulfate concentrations in receiving waters. This scoping requirement is addressed in Final EIS Section 5.2.2.3.4. DNR also notes methylmercury-related health considerations are addressed in FEIS Section 7.3.4.4.2.
Paula Maccabee	Dr. Ehlinger's comments on the SDEIS suggested that a health impact assessment be performed "to mitigate or prevent possible negative health outcomes to improve the public's health." (Ehlinger SDEIS Comment, Exhibit 17, p.7). As a result of the EIS deficiencies and the human health risks posed by the PolyMet NorthMet sulfide mine project, medical and health organizations and individuals throughout Minnesota have requested a comprehensive and independent health risk and impact assessment be prepared for the project. Excerpts of their letters, which are attached as Exhibit 18, are provided below: Minnesota Nurses Association (March 10, 2014) "The PolyMet NorthMet Supplemental Draft Environmental Impact	HU	S	O	8	SDEIS Theme HU 01

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	<p>Statement (SDEIS) contains inadequate analysis of the impacts on public health from the proposal. The colead agencies should conduct and include a health impact assessment (HIA) in the Environmental Impact Statement to fully analyze the public health implications of PolyMet's proposed mine." Concerned Doctors & Nurses (March 11, 2014) "We respectfully request that the PolyMet SDEIS be deemed inadequate due to unresolved concerns and insufficient assessment of health risks of the proposal. We would further request that, in revising the PolyMet SDEIS, a comprehensive Health Risk Assessment be prepared under the guidance of the Minnesota Department of Health." Minnesota Public Health Association (July 2014) "We write to request a comprehensive analysis of the health risks and public health impacts of the PolyMet sulfide mine project before any decisions are made about this controversial project. . . Mercury contamination of fish and impacts on neurotoxicity in the developing fetus as well as in infants, children and adults is a significant public health concern in Minnesota. Minnesota Medical Association (September 25, 2014) "On behalf of the Minnesota Medical Association, I am writing to offer support for the request that a comprehensive analysis of the health risks and public health impacts of the PolyMet NorthMet Sulfide Mine Project be conducted. This assessment will assist the state of Minnesota in making an informed decision as to the proposed project, taking into account any potential adverse effects this type of mining may have on the health of Minnesotans." Concerned Health Professionals and Scientists (October 20, 2014) "We are concerned that the proposed PolyMet copper-nickel mine project could have significant adverse impacts on human health as a result of pollutants released to air, surface water and drinking water. We believe that analysis performed thus far is insufficient to assess important risks to human health and public health impacts of the pollutants that would be released from the PolyMet project." Minnesota Academy of Family Physicians – Lake Superior Chapter (March 9, 2015) "We join our colleagues in the fields of medicine, nursing, and public health as well as our state Health Department to advocate for the health of our region. A health risk assessment and a health impact assessment are the next critical steps in understanding both the short and long term consequences that PolyMet's NorthMet project may have on our health." Minnesota Academy of Family Physicians – Statewide Organization (July 1, 2015) "The Minnesota Academy of Family Physicians (MAFP) is the largest medical specialty organization in Minnesota, representing over 3000 family physicians, family medicine residents, and medical students. . . As physicians, our priorities are the health of our patients and the communities we serve. We must be proactive in asking, "How will PolyMet's NorthMet Project affect the long-term health of our patients and communities?" Health Risk and Health Impact Assessments are needed to answer these questions." The PolyMet NorthMet FEIS' analysis of health risks suffers from the same inadequacies discussed in other sections of these comments. Unsupportable models and unsubstantiated assumptions affect assessment of impacts of surface water and groundwater pollution on human health. The failure to apply Health Risk Limits and Risk Assessment Advice to groundwater further biased FEIS conclusions. The FEIS denial of methylmercury increases and other adverse impacts, results in a failure to evaluate potentially serious threats to human health, particularly to children's health. It is rare for Minnesota's rather conservative medical community to be united in their concern. It is not too late to require an independent and rigorous assessment of the adverse health impacts of the PolyMet NorthMet sulfide mine project.</p>					
Paula Maccabee	<p>As WaterLegacy explained in our comments on the SDEIS, NEPA requires the assessment of "reasonably foreseeable" adverse impacts, which "includes impacts which have catastrophic consequences, even if their probability of occurrence is low, provided that the analysis of the impacts is supported by credible scientific evidence, is not based on pure conjecture, and is within the rule of reason." 40 C.F.R. §1502.22(b)(4). Since our prior comments, new information underscores the need for this disclosure. Yet, the PolyMet NorthMet FEIS provides no assessment of the risk or consequences of any</p>	GT	S	O	8	PolyMet 2015L, Section 8

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	variation from their modeled performance or “expected” conditions. As a result of this omission, the FEIS obstructs consideration of alternatives to mitigate harm, justifies non-disclosure of important information regarding chemical contaminants and provides an insufficient foundation from which to derive financial assurance.					
Paula Maccabee	<p>International headlines, research reports and expert opinions over the past year and a half underscore the fact that catastrophic failure of mine tailings dams is a significant and foreseeable risk. On Monday, August 4, 2014, on a sunny summer day, the tailings dam at the Mount Polley copper-mine in British Columbia, Canada collapsed. The breach released an estimated 24.4 million cubic meters (6.3 billion gallons) of tailings and wastewater into Polley Lake, which rose by 1.5 meters. Hazeltine Creek, which flows out of Lake Polley, was transformed from a 2-meter-wide stream to a 50-metre-across "wasteland" and Cariboo Creek was also affected. By August 8, the spill had reached Quesnel Lake, considered until then one of the cleanest deepwater lakes in the world.³⁵ By one year later, water quality in 70-kilometer once-pristine Quesnel Lake had changed. After the dam collapse, Imperial Metals sent water filters to owners around the spill area of the lake: first 50 micron, then 25 micron, then 0.4 micron filters after scientists said a filter less than one micron was needed. These clogged, so the company supplied drinking water. Imperial Metals acknowledged tailings contain arsenic and lead. The Interior Health Authority has issued a bulletin not to eat the fish in Quesnel Lake due to mercury. Many homes and cabins on the lake are vacant or for sale, and residents say both property values and tourism have declined.³⁶ On November 6, 2015, an iron ore tailings dam collapsed at the Samarco mine in Brazil. The dam collapse started a mudslide that flattened a village of 600 people in the historic mining region of Minas Gerais. The fire chief confirmed that 17 people were killed and 50 injured, while others were still missing. The local miners' union said the sludge was toxic, but the company operating the mine said it was “inert” and contained no harmful chemicals.³⁷ Two weeks later, it was estimated that 60 million cubic meters (nearly 16 billion gallons) of mine waste had been released, requiring 600 people to be evacuated.³⁸ On November 30, 2015, Brazil announced that they would file a \$5.2 billion lawsuit against the BHP mine company, and BHP said they would set aside a \$260 million fund for community members affected by the spill. A large number of fish had already died.³⁹ Laboratory testing in downstream samples of water from the impacted Rio Doce detected mercury, aluminum, iron, lead, boron, barium, copper, arsenic and other chemicals. Arsenic in sampling after the dam breach was 2,639.4 micrograms per liter -- more than 200 times Brazil's 10 micrograms per liter standard.⁴⁰ These may be particularly gripping examples, but they are not uncommon. A July 21, 2015 report by Lindsay Bowker and David Chambers, <i>The Risk, Public Liability & Economics of Tailings Storage Facility Failures</i> (hereinafter “TSF Failures”, attached as Exhibit 19) analyzed recorded tailings storage facility failures from 1940 to 2010 using statistical tools. They found an emerging and pronounced trend since 1960 toward a higher incidence of Serious and Very Serious failures: 49% (33/67) of all recorded Serious and Very Serious failures from 1940-2010 have occurred since 1990. Of all 525 recorded incidents cited, 1990-2010, 17 (33%) were Serious failures, i.e. large enough to cause significant impacts or involved loss of life. Another 16 (31%), were Very Serious failures, i.e. catastrophic dam failures that released more than 1 million cubic meters of tailings and in some instances resulted in multiple loss of life. 63% of all incidents and failures since 1990 were Serious or Very Serious. The total cost for just 7 of these 16 large failures was \$3.8 billion, at an average cost of \$543 million per failure. (Bowker & Chambers, <i>TSF Failures</i>, pp. 1-2, Exhibit 19) The <i>TSF Failures</i> report noted that very large releases can occur even at a small tailings facility. The Mount Polley tailings storage facility was only about 35 meters high with a total capacity of about 74 million cubic meters (<i>Id.</i>, p. 2), much smaller than that proposed for the NorthMet project. The report identified</p>	GT	NS	X	1	

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	<p>factors contributing to the increase in catastrophic dam failures: mining lower grades and falling real prices of metals, pushing older tailings storage facilities to unplanned heights, or stretching the limits of tailings storage facilities that were not built or managed to best practices in the first place. (Id., pp.1, 2,16). These risk factors would all apply to the NorthMet tailings facility. The TSF Failures report projected 11 Very Serious and 12 Serious failures worldwide from 2010-2020 with a likely \$7 billion unfunded cost. (Id., p. 2). Although the TSF Failures analysis did not cover the past few years, the World Information Service on Energy (WISE) has prepared chronology of major dam failures through mid-November 2015, attached as Exhibit 20. Since 2010, WISE has identified 12 major tailings dam failures, including failures in Canada, the United States, and Europe.</p>					
Paula Maccabee	<p>David Chambers' provided expert "Comments on the Geotechnical Stability of the Proposed NorthMet Tailings Basin and Hydrometallurgical Residue Facility in light of the Failure of the Mt Polley Tailings Storage Facility" on April 30, 2015 (Chambers, 2015, Exhibit 21). These comments identified concerns related to the proposed NorthMet tailings waste storage facility. As a general matter, Dr. Chambers noted that tailings dams fail at a rate that is approximately 10 times higher than that of water supply reservoir dams. (Id., p.2) Dr. Chambers also stated that upstream-type dam construction poses the highest risk for both seismic and static failure of tailings dams and that most tailings dam failures have been associated with upstream construction. Referring to the SDEIS, he noted that the NorthMet tailings facility would use upstream dam construction for its expansion, and would also need to depend in part on the safety of the design and construction of the old upstream-type LTVSMC dams. (Id., pp. 2-3). Dr. Chambers highlighted the presence of a clay layer beneath a portion of the Mount Polley dam as a significant cause of its failure, explaining that the LTVSMC tailings slimes on which the NorthMet project's tailings dams will be built have a consistency and behavior similar to clays. (Id., p. 3). The FEIS confirms both that the LTVSMC dam was built with upstream construction and that PolyMet still plans to use upstream construction for its tailings storage on top of these old dams. (FEIS, 4-439, 5-646). The FEIS also notes that there were times during the operation of the underlying LTVSMC tailings facility where "significant amounts of fine tailings and slimes" settled near the perimeter dams and dams were then built with coarse tailings on top of them. (FEIS, 4-427) This inclusion of "relatively large zones" of fine tailings and slimes in the dam's outer shell "reduces the drainage ability of the shell, increasing the phreatic surface, and reduces the localized shear strength" of the dam. (Id.). The FEIS identifies the northern dam in Cell 2E as an area of potential weakness since it is "underlain by a layer of fibrous peat up to approximately 20 ft thick that extends north beyond the toe of the dam into a nearby wetland and due to the presence of interbedded layers of contractive fine tailings and slimes." A deposit of glacial till lies beneath the peat, and the crest of the dam in this area is about 90 feet above the surrounding ground surface and "consists mostly of coarse tailings with some weaker layers of interbedded fine tailings and slimes close to the base of the dam." (FEIS, 4-437). Fully liquefied, this cross-section of the dam (Section F) has a margin of safety at barely the 1.1 minimum required. (FEIS, 5-658, Table 5.2.14-1). PolyMet's Flotation Tailings Management Plan (PolyMet 2015n) states that there are 34 homes that could be affected by a tailings dam break, and that the time to first arrival of flood flows at the nearest residence would be about an hour. (Id., p. 20). The map illustrating the flood path, provided on the last page of PolyMet's Plan, is attached as Exhibit 22. However, the FEIS does not include any Dam Break Analysis. "The potential effects of hypothetical failure scenarios have not been assessed in this FEIS." (FEIS, 5-628). WaterLegacy does not argue that the NorthMet tailings storage facility dam will fail, only that such failure is reasonably foreseeable and may have catastrophic consequences. Assessing these consequences is necessary for decision-</p>	GT	S	O	8	SDEIS Themes GT 02, GT 03. PolyMet 2015L, Section 8

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	makers to understand the risks of PolyMet NorthMet tailings disposal and evaluate alternatives to minimize these risks.					
Paula Maccabee	The PolyMet NorthMet hydrometallurgical residue facility (HRF) would be a relatively small facility, when compared to the combined LTVSMC and PolyMet tailings waste storage facility. Although information in the FEIS regarding the chemical constituents of the hydrometallurgical residue facility is incomplete, there is every indication that this facility would contain highly reactive constituents at very high concentrations. Co-Lead Agency responses to SDEIS comments state that 164 pounds of mercury would be deposited in this facility each year. (FEIS, A-414). Over a 20-year mine life, up to 3,280 pounds of mercury could be deposited in the HRF. The February 2007 PolyMet RS33/RS65 Hydrometallurgical Residue Characterization (available as WaterLegacy SDEIS Comment Exhibit 27, although not included among FEIS references) disclosed that hydrometallurgical leachate residue would have sulfate levels of 7,347 mg/L. Although we have found no document in the EIS record that provides contaminant levels for WWTP sludge, before reject concentrate is dewatered it will contain levels of arsenic and metals as much three orders of magnitude above limits and standards. At the P90 level, reject concentrate would contain: 1,150 µg/L of arsenic (2 µg/L criterion for drinking water); 16,600 µg/L of manganese (100 µg/L HRL for drinking water); 847 of cobalt (5 µg/L surface water limit); 11,600 µg/L of copper (9.3 µg/L limit in water with 100 mg/L hardness); 1,290 µg/L of lead (3.2 µg/L limit in water with 100 mg/L hardness); 8,230 mg/L of sulfate (10 mg/L limit in wild rice waters). (Water Modeling Data Package – Mine Site, PolyMet 2015m, autop. 452). As described previously in Section IV of these comments, the NorthMet hydrometallurgical residue facility would be located adjacent to a source of seepage with the potential to build up flow beneath its liner and on top of an LTVSMC emergency basin containing as much as 50 feet of fine tailings and slimes, which was sited on top of wetlands and a fault line and constructed using an upstream construction method. (FEIS, 4-439) The FEIS contemplates that “liquefaction of the hydrometallurgical residue” may occur, but states that the embankment dam is “sufficiently designed so that containment would not be lost.” (FEIS, 5-664). The probability of containment failure at the hydrometallurgical residue facility may be low. But the consequences of releasing thousands of pounds of mercury as well as sulfates and other toxic metals could be catastrophic.	GT	NS	X	1	
Paula Maccabee	The FEIS improperly failed to disclose what chemicals would be collected in the HRF and at what concentrations and where they would flow if containment were to fail. This information is vital to decision-makers and the public to evaluate alternative methods of storing hydrometallurgical wastes and to plan for contingencies.	WAT	S	O	8	FEIS App. A PolyMet 2014a; PolyMet 2014r Attachment K. SDEIS Theme ALT 09
Paula Maccabee	In discussing the impact of the project on aquatic life, the FEIS provides one mention of spills: a reassurance that “spill prevention plans” would be implemented. (FEIS, 5-467). The FEIS states that an emergency overflow channel would be constructed to discharge untreated tailings pond water as a back up means of controlling pond levels in the event of “a probable maximum precipitation rainfall event or some fraction thereof.” (FEIS, 3-120). The FEIS does not specify what “fraction” of a maximum rainfall event would require emergency discharge or analyze the frequency of extreme weather events given climate change; the FEIS only discusses average increases in precipitation as a result of climate change. (FEIS, 5-223, 5-254, 5-506). Yet, the FEIS asserts that discharge from the emergency overflow “would not be expected.” (FEIS, 3-120, 5-120). The FEIS does not estimate any adverse impacts of spills or discharge of untreated wastewater from the tailings pond during heavy rains. As discussed previously, despite work plans explaining the uncertainty in performance of engineered systems, the FEIS assumes certainty or nearly perfect seepage collection and provides no assessment of	AQ	S	N	11	

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	impacts on water quality should routine operations fail to perform as “expected.”					
Paula Maccabee	In Minnesota, there is a tendency to assume we are all above average without requiring any proof of performance. It is, thus, worth noting that mining facilities in Minnesota, as well as elsewhere have failed, spilled and leaked. In 1993, an LTV Steel Mining Company coal ash heap at Taconite Harbor liquefied and collapsed after an above-normal rainfall. The system that LTV used to collect surface runoff and leachate and pump it back to the top tier of the ash heap had been approved by the MPCA. Arrowhead Electric Coop. v. LTV Steel Mining Company, 568 N.W. 2d 875 (Minn. App. 1997). In 1990, Northshore Mining Company was penalized more than a half million dollars for violations associated with a tailings pipeline break, including late completion of reports and corrective actions. ⁴¹ In 2012, Hibbing Taconite discovered a longitudinal crack of approximately 300 feet that had developed suddenly on the crest of its taconite tailings facility dam. HibTac installed a buttress and relief trench as an emergency measure to maintain stability. ⁴² On three occasions between May 2013 and April 2014, failures in an Arcelor-Mittal mine tailings pipeline and a breach in the tailings basin perimeter dike caused the release of about 8,500 cubic yards (1,716,779 gallons) of tailings slurry and aggregate from a washed-out dike road into a pipeline ditch and 15.3 acres of adjacent wetlands. ⁴³	GT	NS	X	1	
Paula Maccabee	The FEIS, by omitting any assessment of the adverse impacts of catastrophic or routine failures of containment at the proposed PolyMet NorthMet mine, has created a closed circle in its reasoning. Once certainty of results has been assumed, first by PolyMet and then by the Co- Lead Agencies, neither environmental impacts assessment nor evaluation of alternatives can be done in conformity with law.	GT	NS	X	1	

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Paula Maccabee	<p>X. FINANCIAL ASSURANCE The PolyMet NorthMet FEIS not only fails to specify the level of financial assurance that will be required for the NorthMet sulfide mine project, as previously requested by WaterLegacy. The FEIS fails to provide either the conceptual or factual basis from which an appropriate calculation might be made either by the MDNR for a permit to mine or by the Army Corps for a Section 404 permit. Even to the limited extent that the FEIS addresses financial assurance, it does so poorly, placing much of the risk of externalities on the public rather than on the PolyMet Company, or its parent company and joint venturer - the entities that would profit from the mine. On a conceptual level, the FEIS does not recognize that the only time in the life cycle of a mine when government agencies have any leverage to secure adequate financial assurance is before permits are issued. When a mine is operating, leverage shifts to the mining company, which can threaten closure when asked to pay costs of mitigation or assurance, irrespective of its actual profits. After a mine closes, bankruptcy is likely, particularly when the mine is a limited liability company's only asset. Unless post-closure contingencies are specifically required to be assured up front, the FEIS' repeated insistence that PolyMet "would be held accountable for maintenance and monitoring required under the permit and would not be released from financial assurance until all permit conditions have been met," (e.g. FEIS, 3-5, 3-59, 3-72, 3-127, 3-140) carries no weight. Once an insufficient instrument is exhausted and the mine has closed, taxpayers and the public will be unprotected. The FEIS contains specific statements as well as gaps in analysis that virtually guarantee that financial assurance will be inadequate. 1. The FEIS improperly deferred to the project proponent to set financial assurance. The FEIS implies that PolyMet would play a central role in determining the amount of financial assurance needed. The text states that "PolyMet would ensure that the financial assurance amount is established as a function of (but not limited to) the following three main variables Extent of surface disturbance and potential releases from waste storage facilities Reclamation and long-term care standards (including mechanical water treatment) and Reasonable assessment of the costs to execute the Contingency Reclamation Plan." (FEIS, 3- 142). That this unfortunate language relates to PolyMet's role in setting financial assurance levels, rather than the company's role in financing the level required in the public interest is supported by the next sentence, "PolyMet has developed preliminary cost estimate ranges that address the above items for hypothetical closure at years 1, 11, and 20." PolyMet's estimate, the only one mentioned in the FEIS, is then summarized. PolyMet's cost estimate for closure is \$50- 90 million in Year 1, \$160-200 million in Year 11, and \$120-170 million in Year 20. (Id.). As discussed below, PolyMet's estimates minimize legacy costs and wastewater treatment costs, exclude risks of poor quality modeling and "unexpected" outcomes, deny and minimize assurance to compensate for wetlands impacts and provide no resources for corrective actions resulting from either routine or catastrophic failures. 2. The FEIS financial assurance estimate discounted existing legacy pollution costs. The only estimate of financial assurance in the FEIS - PolyMet's estimate - is inconsistent with PolyMet's disclosure to shareholders of the liabilities associated with legacy pollution. In PolyMet's Form 20-F, filed with the U.S. Securities and Exchange Commission (SEC) in April 2015, PolyMet estimated total costs to indemnify Cliffs for reclamation and remediation obligations assumed in PolyMet's Purchase Agreement as "approximately \$72.6 million in present day costs." PolyMet summarized the litigation against Cliffs and the 2010 Consent Decree applicable to the acquired property and disclosed for investors, "based on the expected timing of such payments, our cost of capital, and anticipated inflation rates, we made a provision of \$72.3 million in our financial statements at that date." (PolyMet Form 20-F, filed Apr. 21, 2015, pp. 18-19, Exhibit 23). PolyMet noted in its disclosure to the SEC, "there is substantial uncertainty related to the long-term mitigation plan implementation cost" and that outcomes "that are unfavorable to us could result in material additional liability." (Id., p. 19). Before a shovel reaches the site, PolyMet has already estimated that \$72.3 million is needed to provide for legacy liabilities. Any financial assurance</p>	FIN	S	O	8	SDEIS Themes FIN 01, FIN 03, FIN 05. Email to Colvin from Westlake March 22, 2013 12:02PM

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
	<p>for the NorthMet mine project must be over and above that amount. Simple arithmetic discloses the discount of legacy pollution costs in the FEIS' estimate of financial assurance. 3. The FEIS provides no foundation to assure long-term water quality treatment. The FEIS provides no factual foundation from which financial assurance for long-term water quality treatment could be reasonably calculated. The PolyMet NorthMet draft EIS predicted that waste rock stockpile leachate collection would exceed water quality standards for up to 2,000 years. (DEIS, Table 4.1-45, p. 4.1-80, FEIS reference MDNR et al. 2009). Responding to comments of Tribal Cooperating Agencies suggesting that water treatment would need to be perpetual, the Co-Lead Agencies stated numerous times, "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." (Tribal Comments and Co-Lead Agencies' Dispositions, Aug. 19, 2013, attached as Exhibit 24). An EIS with similar language would provide a basis to calculate financial assurance for water quality treatment. The FEIS provides no such foundation. It states that PolyMet would include funds in its contingency reclamation estimate and financial assurance package to operate mechanical water treatment "for as long as necessary." (FEIS, 3-81). Although the FEIS admits that the potential effects of the PolyMet NorthMet project are "based on mechanical treatment that would operate indefinitely" (FEIS, 5-8), the FEIS itemization for the financial assurance package in long-term post closure only provides for testing and implementation of non-mechanical water treatment. (FEIS, 3-81). While admitting that the effectiveness of non-mechanical water treatment has not been demonstrated, in listing the long-term post-closure monitoring and maintenance activities that must be assured, the FEIS does not include any provision for WWTP treatment of polluted tailings seepage. The FEIS only provides for "Developing and implementing non-mechanical water treatment systems." (FEIS, 3-141). Minnesota has experience with post-closure use of non-mechanical water treatment to treat mine discharge when a taconite mine encountered Duluth Complex rock. It is not positive. At Minnesota's Dunka Mine, non-mechanical water treatment, implemented when the mine went bankrupt and closed its treatment plant, has resulted in consistent violations of Minnesota numeric as well as narrative water quality standards.⁴⁴ Replicating this cheap and ineffectual plan for the PolyMet NorthMet mine project would be the opposite of financial assurance. 4. The FEIS improperly excluded contingency mitigation from financial assurance. Presumably in response to concerns about assumptions in PolyMet's modeling of seepage concentrations, seepage capture, and the absence of northward flow, the FEIS has a long list of contingency mitigation and conceptual mitigation options to address the potential that the project will not operate as "expected" and that polluted seepage would flow north to the Boundary Waters watershed. (FEIS, 5-239 to 5-244). It would be reasonable for regulators to require that PolyMet assume the risks of the errors in its modeling or overreaching in its promises. This could be done by financially assuring contingency mitigation and retaining funds pending verification that the PolyMet NorthMet mine site, tailings and hydrometallurgical residue facilities operate as modeled and claimed. The FEIS improperly excludes contingency mitigation from the financial assurance package until some unspecified future time if "appropriate and approved" by the MDNR and MPCA. (FEIS, 5-239). Given the potential that pollution would be discovered after mine closure due to seepage times and the relationship between northward flow and Northshore Peter Mitchell Pit closure, plus the difficulty in securing remediation in Minnesota from an operating mine, let alone a bankrupt mine, it is highly unlikely that funds for contingency mitigation would be secured at a future time if they were needed. By excluding contingency mitigation from financial assurance rather the providing a basis for quantifying these costs, the FEIS has effectively externalized to the public PolyMet's risk of modeling and performance failures. 5. The FEIS excluded and undermined assurances for wetlands mitigation. The FEIS provides no basis to financially assure compensation for the</p>					

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	<p>indirect effects of the NorthMet project on wetlands. By providing no assessment of reasonably foreseeable impacts from hydrologic changes and pollution (see discussion in Section V, supra), the FEIS precludes assurance that compensation will be available when wetlands near the NorthMet mine or tailings site are indirectly destroyed or impaired. Even for direct wetlands mitigation, while citing laws that require assurance until the success of mitigation is well-established, the FEIS implies support for waiver of financial assurance. (see e.g. FEIS, 3-140, 5-256, 5-367, 5-368, 5-369, 5-370). As explained in the expert opinion of Morgan Robertson attached with these comments, the direct mitigation proposed is already substantially out-of-kind, in addition to other violations of federal rules applicable to wetlands compensation, and would fail to fully compensate for direct destruction of coniferous bog wetlands. (Robertson, 2015, pp. 16-22). Bogs are difficult to replace resources and there is a substantial risk that the “experimental” replacement proposed by PolyMet will fail. (Id., p. 21, citing PolyMet 2014j). The FEIS’ equivocation on requiring assurance to mitigate direct wetlands impacts undermines the potential that effective in-kind replacement would be provided for bog wetlands. 6. The FEIS provides no foundation to assure corrective actions. Although the FEIS states that financial assurance must cover reclamation and postreclamation activities including implementation of “corrective actions that may become necessary to address any permit non-compliance” and remediation of sites where “potential pollutants may have been released” (FEIS, 3-140), the FEIS provides no analysis that would allow calculation of an appropriate level for this assurance. As detailed in previous Sections of these comments, the FEIS provides no probabilistic estimate of pollutant releases resulting from a range of seepage collection performances and assesses no reasonably foreseeable adverse effects of the failure of engineered systems, whether routine or catastrophic. Recent major dam failures have resulted in an average cost of \$543 million per failure. (Bowker and Chambers, TSF Failures, pp. 1-2, Exhibit 19) Even relatively minor spills can result in costly remediation. The FEIS’ failure to consider any risk of pollution not modeled by PolyMet establishes no foundation for assurance of the risk of corrective action. The risk of failures, large or small, could thus be externalized to the public.</p>					

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Paula Maccabee	<p>The PolyMet NorthMet FEIS should have compared the impacts of the proposed action on water quality with an appropriate no action baseline. Despite its assertion quoted above, the FEIS has not evaluated the No Action Alternative, let alone done so in detail. After a 250-page chapter analyzing project impacts on water quality, the discussion of the no action alternative is cursory: “Under the NorthMet Project No Action Alternative, the NorthMet Project Proposed Action would not occur and, therefore, the environmental effects associated with the NorthMet Project Proposed Action, as described in Section 5.2.2, would not occur.” (FEIS, 5-253). Under NEPA, a no action alternative must "provide a baseline against which the action alternative" is evaluated. <i>Ctr. for Biological Diversity v. U. S. Dept. of Interior</i>, 623 F.3d 633, 642 (9th Cir. 2010). (Finding BLM’s approval of an EIS arbitrary and capricious due to flawed assumption regarding result of no action alternative). See also <i>Ctr. for Biological Diversity v. BLM</i>, 746 F. Supp. 2d 1055, 1090 (N.D. Cal. 2009) (The “no action” alternative is “the standard by which the reader may compare the other alternatives’ beneficial and adverse impacts related to the applicant doing nothing.”) Courts “not infrequently find NEPA violations when an agency miscalculates the ‘no build’ baseline or when the baseline assumes the existence of a proposed project.” <i>N. C. Wildlife Fed’n v. N.C. DOT</i>, 677 F.3d 596, 603 (4th Cir. 2012) (Finding EIS inadequate due to assumptions made in the “no build” data); <i>Friends of Yosemite Valley v. Kempthorne</i>, 520 F.3d 1024, 1037-38 (9th Cir. 2008). In evaluating the critical impacts of the NorthMet project on water quality, the FEIS explicitly compares the effects of the proposed action with a “Continuation of Existing Conditions” (CEC) scenario, rather than a no build baseline. Every table predicting water quality under the proposed action contrasts it with modeling of this CEC. The FEIS concludes that the proposed action would not cause any significant water quality impacts because “the NorthMet Proposed Action concentrations were no higher than concentrations predicted for the Continuation of Existing Conditions scenario.” (FEIS, 5-9). The CEC is not a no action alternative, but a biased construct. It is a scenario that disregards science, regulation and the proponent’s own obligations in order to compare the NorthMet project’s effects on water quality to an artificially elevated prediction of future pollution. The FEIS, in effect, admits as much. “The CEC scenario,” the FEIS explains, “is not synonymous with the No Action Alternative because it does not account for other foreseeable changes within the NorthMet Project area.” (FEIS, 5-254). The FEIS mentions that actions are currently underway to reduce the sulfate load to the Embarrass River from the Cliffs Erie Area 5NW mine pit. (FEIS, 5-253). But the most significant differences between the CEC scenario and a true no build alternative may involve the LTVSMC brownfield site and tailings waste facility where the NorthMet project is proposed. Under a no action alternative, the existing LTVSMC brownfield site “would be reclaimed in accordance with the Cliffs Erie reclamation/closure plan.” (FEIS, ES-49). In addition, under a no action scenario, if the PolyMet NorthMet project were not built, “the water quality of seepage from the existing LTVSMC Tailings Basin would improve over time as a result of natural attenuation and/or possible additional mitigation measures pursuant to the Consent Decree between the MPCA and Cliffs Erie.” (FEIS, 5-470). A baseline for comparing the adverse effects of a project cannot rely on a false assumption that old pollution would remain unabated if a project were not approved. <i>Preserve Our Island v. United States Army Corps of Eng’rs</i>, 70 ERC (BNA) 1622, slip op. 46-47 (D.C.W. D. Wash. 2009). The no action baseline comparison in an EIS also cannot properly include elements that would not comply with law. <i>Friends of Yosemite Valley v. Kempthorne</i>, 520 F.3d 1024, 1038 (9th Cir. 2008); <i>Ctr. for Biological Diversity v. U. S. Dept. of Interior</i>, 623 F.3d 633, 642 (9th Cir. 2010); <i>Conservation Northwest v. Rey</i>, 674 F. Supp. 2d 1232, 1245-1246 (D.C. W.D. Wash., 2009). Where an agency has ignored its duty, the result cannot be presented as a <i>fait accompli</i> in the baseline for an EIS. <i>Friends of Yosemite Valley v. Kempthorne</i>, supra, 520 F.3d at 1037-38. The LTVSMC taconite tailings plant has been closed since 2000 when the LTV Steel Mining Company declared bankruptcy. Seepage concentrations are naturally attenuating as a result of</p>	ALT	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
	<p>precipitation and dilution. Cliffs Erie, L.L.C., which became legally responsible for permit compliance in 2001 when it acquired the LTVSMC property, is under the legal obligation of a 2010 consent decree (attached to WaterLegacy’s SDEIS comments as Exhibit 8) to remediate tailings waste facility pollution. The failure of the LTVSMC tailings facility to control seepage and remediate pollution may, to some degree, be a regulatory lapse⁴⁵ that cannot be considered as a fait accompli in the baseline for an EIS. In addition, under the terms of its purchase agreement with Cliffs Erie, since 2006 the PolyMet Company has indemnified Cliffs Erie for remediation obligations at the tailings site and is “working closely” with Cliffs to fulfill Cliffs’ legal obligations. (PolyMet 2015 SEC Form 20-F, Exhibit 23, pp. 18-19). It would be an improper use of the concept of “no action” to allow Cliffs’ and PolyMet’s delay in taking action to remediate tailings basin seepage to distort the baseline for determining the effects of future sulfide mine pollution. This is not an academic question. As discussed in Section I on mercury, the FEIS claims the PolyMet NorthMet project would reduce CEC modeled sulfate loads to the Embarrass River, at least under the FEIS’ assumption of nearly perfect seepage collection. But, if the NorthMet project’s sulfide tailings seepage were compared with a “no action” baseline, including attenuation and remediation under the consent decree, this evaluation could show the NorthMet action increases rather than decreases sulfate and other pollutants. The FEIS doesn’t even allow an answer to the most basic question – Would sulfate pollution be better or worse if the PolyMet NorthMet project were built? On water quality issues, the FEIS does not allow a fair comparison of environmental outcomes between the proposed action and the no build alternative.</p>					
Paula Maccabee	<p>The PolyMet NorthMet FEIS should have compared the impacts of the proposed action on water quality with an appropriate no action baseline. Despite its assertion quoted above, the FEIS has not evaluated the No Action Alternative, let alone done so in detail. After a 250-page chapter analyzing project impacts on water quality, the discussion of the no action alternative is cursory: “Under the NorthMet Project No Action Alternative, the NorthMet Project Proposed Action would not occur and, therefore, the environmental effects associated with the NorthMet Project Proposed Action, as described in Section 5.2.2, would not occur.” (FEIS, 5-253). Under NEPA, a no action alternative must “provide a baseline against which the action alternative” is evaluated. <i>Ctr. for Biological Diversity v. U. S. Dept. of Interior</i>, 623 F.3d 633, 642 (9th Cir. 2010). (Finding BLM’s approval of an EIS arbitrary and capricious due to flawed assumption regarding result of no action alternative). See also <i>Ctr. for Biological Diversity v. BLM</i>, 746 F. Supp. 2d 1055, 1090 (N.D. Cal. 2009) (The “no action” alternative is “the standard by which the reader may compare the other alternatives’ beneficial and adverse impacts related to the applicant doing nothing.”) Courts “not infrequently find NEPA violations when an agency miscalculates the ‘no build’ baseline or when the baseline assumes the existence of a proposed project.” <i>N. C. Wildlife Fed’n v. N.C. DOT</i>, 677 F.3d 596, 603 (4th Cir. 2012) (Finding EIS inadequate due to assumptions made in the “no build” data); <i>Friends of Yosemite Valley v. Kempthorne</i>, 520 F.3d 1024, 1037-38 (9th Cir. 2008). In evaluating the critical impacts of the NorthMet project on water quality, the FEIS explicitly compares the effects of the proposed action with a “Continuation of Existing Conditions” (CEC) scenario, rather than a no build baseline. Every table predicting water quality under the proposed action contrasts it with modeling of this CEC. The FEIS concludes that the proposed action would not cause any significant water quality impacts because “the NorthMet Proposed Action concentrations were no higher than concentrations predicted for the Continuation of Existing Conditions scenario.” (FEIS, 5-9). The CEC is not a no action alternative, but a biased construct. It is a scenario that disregards science, regulation and the proponent’s own obligations in order to compare the NorthMet</p>	ALT	S	N	8	<p>The CEC provides a reasonable means of determining the relative efficacy of impact avoidance and/or minimization measures incorporated into the project if they were not present. Final EIS Section 5.2.2.4 provides a qualitative description of water-related resources under the No Action Alternative.</p>

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	<p>project’s effects on water quality to an artificially elevated prediction of future pollution. The FEIS, in effect, admits as much. “The CEC scenario,” the FEIS explains, “is not synonymous with the No Action Alternative because it does not account for other foreseeable changes within the NorthMet Project area.” (FEIS, 5-254). The FEIS mentions that actions are currently underway to reduce the sulfate load to the Embarrass River from the Cliffs Erie Area 5NW mine pit. (FEIS, 5-253). But the most significant differences between the CEC scenario and a true no build alternative may involve the LTVSMC brownfield site and tailings waste facility where the NorthMet project is proposed. Under a no action alternative, the existing LTVSMC brownfield site “would be reclaimed in accordance with the Cliffs Erie reclamation/closure plan.” (FEIS, ES-49). In addition, under a no action scenario, if the PolyMet NorthMet project were not built, “the water quality of seepage from the existing LTVSMC Tailings Basin would improve over time as a result of natural attenuation and/or possible additional mitigation measures pursuant to the Consent Decree between the MPCA and Cliffs Erie.” (FEIS, 5-470). A baseline for comparing the adverse effects of a project cannot rely on a false assumption that old pollution would remain unabated if a project were not approved. <i>Preserve Our Island v. United States Army Corps of Eng'rs</i>, 70 ERC (BNA) 1622, slip op. 46-47 (D.C.W. D. Wash. 2009). The no action baseline comparison in an EIS also cannot properly include elements that would not comply with law. <i>Friends of Yosemite Valley v. Kempthorne</i>, 520 F.3d 1024, 1038 (9th Cir. 2008); <i>Ctr. for Biological Diversity v. U. S. Dept. of Interior</i>, 623 F.3d 633, 642 (9th Cir. 2010); <i>Conservation Northwest v. Rey</i>, 674 F. Supp. 2d 1232, 1245-1246 (D.C. W.D. Wash., 2009). Where an agency has ignored its duty, the result cannot be presented as a fait accompli in the baseline for an EIS. <i>Friends of Yosemite Valley v. Kempthorne</i>, supra, 520 F.3d at 1037-38. The LTVSMC taconite tailings plant has been closed since 2000 when the LTV Steel Mining Company declared bankruptcy. Seepage concentrations are naturally attenuating as a result of precipitation and dilution. Cliffs Erie, L.L.C., which became legally responsible for permit compliance in 2001 when it acquired the LTVSMC property, is under the legal obligation of a 2010 consent decree (attached to WaterLegacy’s SDEIS comments as Exhibit 8) to remediate tailings waste facility pollution. The failure of the LTVSMC tailings facility to control seepage and remediate pollution may, to some degree, be a regulatory lapse⁴⁵ that cannot be considered as a fait accompli in the baseline for an EIS. In addition, under the terms of its purchase agreement with Cliffs Erie, since 2006 the PolyMet Company has indemnified Cliffs Erie for remediation obligations at the tailings site and is “working closely” with Cliffs to fulfill Cliffs’ legal obligations. (PolyMet 2015 SEC Form 20-F, Exhibit 23, pp. 18-19). It would be an improper use of the concept of “no action” to allow Cliffs’ and PolyMet’s delay in taking action to remediate tailings basin seepage to distort the baseline for determining the effects of future sulfide mine pollution. This is not an academic question. As discussed in Section I on mercury, the FEIS claims the PolyMet NorthMet project would reduce CEC modeled sulfate loads to the Embarrass River, at least under the FEIS’ assumption of nearly perfect seepage collection. But, if the NorthMet project’s sulfide tailings seepage were compared with a “no action” baseline, including attenuation and remediation under the consent decree, this evaluation could show the NorthMet action increases rather than decreases sulfate and other pollutants. The FEIS doesn’t even allow an answer to the most basic question – Would sulfate pollution be better or worse if the PolyMet NorthMet project were built? On water quality issues, the FEIS does not allow a fair comparison of environmental outcomes between the proposed action and the no build alternative.</p>					

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Paula Maccabee	<p>Since the SDEIS was prepared, the Mount Polley copper mine tailings basin suffered a catastrophic failure. (See Section IX, supra). On January 30, 2015, an independent panel of experts released their report, the Independent Expert Engineering Investigation and Review Panel Report on Mount Polley Tailings Storage Facility Breach (hereinafter "Independent Report") attached as Exhibit 25. The Independent Report analyzed the cause of the Mount Polley tailings impoundment failure and stated, "the dominant contribution to the failure resides in the design." The Report made the following key recommendation: [T]he future requires not only an improved adoption of best applicable practices (BAP), but also a migration to best available technology (BAT). Examples of BAT are filtered, unsaturated, compacted tailings and reduction in the use of water covers in a closure setting. (Id., at iv) The Independent Report explained, "There are no overriding technical impediments to more widespread adoption of filtered tailings technology." (Id., at 122) Its Expert Panel challenged the practice of maintaining a water cover over tailings to reduce reactivity, stating that so-called water cover runs counter to best available technology principles and that "No method for achieving chemical stability can succeed without first ensuring physical stability." (Id., at 124). The Independent Report explained the "intrinsic hazards associated with dualpurpose impoundments storing both water and tailings" and identified as the goal of best available technology for tailings management "to assure physical stability of the tailings deposit. This is achieved by preventing release of impoundment contents, independent of the integrity of any containment structures." (Id., at 121) To accomplish this objective, the Report continued, "BAT has three components that derive from first principles of soil mechanics: 1. Eliminate surface water from the impoundment. 2. Promote unsaturated conditions in the tailings with drainage provisions. 3. Achieve dilatant conditions throughout the tailings deposit by compaction." (Id.). The Expert Panel recognized that the chief reason why there isn't wider industry adoption of filtered tailings is that comparisons of capital and operating costs alone favor conventional tailings dam. The Independent Report recommended that cost estimates include "risk costs, either direct or indirect, associated with failure potential," emphasizing, "Full consideration of life cycle costs including closure, environmental liabilities, and other externalities will provide a more complete economic picture. While economic factors cannot be neglected, neither can they continue to pre-empt best technology. (Id., at 123). The Report concluded that "BAT should be actively encouraged for new tailings facilities at existing and proposed mines" and "cost should not be the determining factor." (Id., at 125)</p>	GT	NS	X	1	
Paula Maccabee	<p>On March 18, 2015, WaterLegacy sent a letter to the Co-Lead Agencies summarizing the findings of the Independent Report (attached as Exhibit 26) and requesting that the Co-Lead Agencies analyze the best available technology of dry stack tailings disposal and the use of alternative sites in order to comply with NEPA and in order to identify the least damaging practicable alternative for the project under Clean Water Act Section 404. WaterLegacy specifically requested that analysis of dry stack tailings include a rigorous analysis focused on long-term costs for water quality treatment and maintenance during operations, reclamation and closure as well and on benefits of reduced adverse impacts to wetlands and water quality as a result of seepage, as well as the risk of catastrophic impoundment failure.</p>	GT	S	O	8	SDEIS Theme ALT 10
Paula Maccabee	<p>As discussed in Section IX, in the comments of Dr. Chambers, there are specific similarities between the proposed PolyMet NorthMet tailings storage facility and the Mount Polley tailings impoundment that underscore the relevance of the Independent Report recommendation.</p>	GT	NS	X	1	

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Paula Maccabee	In addition to the risk of catastrophic and costly impoundment failure (Section IX, supra), hydrologic changes and routine lapses in seepage collection at the proposed NorthMet wet tailings storage facility would increase the risk of mercury methylation (Section I, supra; Branfireun, 2015) and impairment of wetlands (Section V, supra). Modeled rates of tailings seepage collection are unsubstantiated, and seepage may violate water quality standards, requiring expensive and uncertain mitigation. (Section III, supra; FEIS, 5-240). Even without catastrophic or routine performance failure, the proposed NorthMet unlined wet tailings disposal facility would require indefinite mechanical water quality treatment for pollutants modeled to exceed water quality standards for at least 500 years. (Section X, supra).	WAT	NS	X	1	
Paula Maccabee	However, the argument that a separate dry stack tailings basin would increase the “footprint” of the project does not mean it would increase environmental impacts. The Co-Lead Agencies may no longer remember this, but there are many brownfield sites in close proximity to the LTVSMC processing plant. In fact, several of these sites were identified as alternative tailings locations in the 2005 Final Scoping Decision for the NorthMet project, as reflected in the Exhibit 27 map attached. It was incumbent upon the Co-Lead Agencies, based on comments, the Independent Report and their own evaluation that dry stacking would improve tailings basin stability, to review these and other nearby brownfield sites, environmental risks and life-cycle costs and rigorously evaluate best available tailings disposal technology for the NorthMet project.	NEPA	S	O	8	SDEIS Theme ALT 10. FEIS Table 5.2.2-37; Tailings Basin Alternatives Chart MDNR and ERM May 2009; Co-lead Agencies considered a range of potential Tailings Basin alternatives as required by NEPA including removing water from tailings prior to deposition and off-site disposal.
Paula Maccabee	However, the argument that a separate dry stack tailings basin would increase the “footprint” of the project does not mean it would increase environmental impacts. The Co-Lead Agencies may no longer remember this, but there are many brownfield sites in close proximity to the LTVSMC processing plant. In fact, several of these sites were identified as alternative tailings locations in the 2005 Final Scoping Decision for the NorthMet project, as reflected in the Exhibit 27 map attached. It was incumbent upon the Co-Lead Agencies, based on comments, the Independent Report and their own evaluation that dry stacking would improve tailings basin stability, to review these and other nearby brownfield sites, environmental risks and life-cycle costs and rigorously evaluate best available tailings disposal technology for the NorthMet project.	ALT	S	N	12	SDEIS Theme ALT 10. Review of the NorthMet Project DEIS Alternatives for the SDEIS, Specifically E5, E20; ERM Memo August 25, 2006, NorthMet EIS Alternatives; FEIS Table 5.2.2-37, Table 3.2-17, Table 3.2-18, and Section 3.2.3.3.1 Summary of Alternatives Analysis from the FSDD discussed site alternatives
Paula Maccabee	Both WaterLegacy and Tribal Agencies requested consideration of an alternative to mitigate impacts on wetlands and water quality from mine dewatering and seepage by treating groundwater pumped from mine pits during operations with reverse osmosis to levels that comply with water quality standards and returning that treated water to support wetlands and dilute any seepage released to the Partridge River watershed. The FEIS doesn’t mention this alternative. Although the request for consideration of this alternative is documented twice - once for the Tribal Cooperating Agencies’ request and once for that of WaterLegacy (FEIS, A-134 to A-135), neither response provides any justification of the failure to evaluate the Mine Site Reverse Osmosis in Year 1 alternative. The Tribes’ request, “provide reverse osmosis treatment at the mine site immediately rather than waiting until year 40 (augment water loss in adjacent high quality wetlands in the Partridge River watershed),” was reprinted in Appendix A, but no response was provided. (FEIS, A-134 to A-135). WaterLegacy’s detailed proposal was deprived of content by phrasing it as “earlier use of the reverse osmosis (RO) system in year one.” The response was meaningless; “WWTF would be upgraded to include a RO unit or equivalent technology during closure.” (FEIS, A-313).	ALT	S	O	8	FEIS pg. 5-406; SDEIS Theme ALT 13

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Paula Maccabee	The NorthMet proposed action currently calls for construction of reverse osmosis (RO) water quality treatment at approximately year 52. (FEIS, 5-142). That RO facility would be scaled to treat overflow discharge from the West Pit. Prior to the predicted filling of the West Pit, at least 52 years away (more if mining is continued beyond 20 years), all water from the Upper Partridge River would be sent to the processing plant nine miles away and removed from the watershed.	WAT	NS	X	1	
Paula Maccabee	The FEIS proposes that stream augmentation at the tailings site would mitigate effects on Embarrass watershed wetlands due to the maintenance of surface flows within 20 percent of existing conditions. (FEIS, 5-183). Yet, although wetlands at the plant site are degraded by the existing impoundment (FEIS, 4-186) and wetlands at the mine site are high quality (FEIS, 5-266), the proposed action makes no plan to treat and return water to the mine site watershed.	WAT	S	O	8	FEIS pg. 5-406; SDEIS Theme ALT 13; During operations, extensive monitoring would be required, and adaptive management would be used to ensure minimization of effects and compliance into the future.
Paula Maccabee	Earlier sections of these comments have raised concerns about adverse environmental impacts due to hydraulic conductivity of Virginia Formation rock and fractures in the East Pit and under the Category 1 waste rock pile (Section II, supra), the potential for northward flow (Section II, supra), the substantial wetlands drawdown effects modeled by GLIFWC, and the serious consequences of drying and rewetting cycles to mercury methylation in peatlands explained by Dr. Branfireun (Section I, supra). It is irresponsible not to evaluate whether implementing Mine Site Reverse Osmosis in Year 1 and returning clean water to mine site tributaries or wetlands would reduce environmental damage and mitigate these risks.	PER	S	O	8	FEIS pg. 5-406; MDNR et al. 2015c
Paula Maccabee	The liquefaction and failure of containment at the hydrometallurgical residue facility (HRF) may or may not be a likely occurrence. But it would be a catastrophic occurrence that can be readily avoided. Nowhere in the FEIS, prior EIS drafts or supporting documents are the actual mass and concentrations of chemicals in the hydrometallurgical residue facility disclosed to the public or to decisionmakers. But, as explained in Section V and Section IX, supra, the mercury, sulfates, copper-nickel mining metals, processing chemicals from the hydrometallurgical plant, coal ash, and reject concentrate sludge proposed to be contained at the HRF would present enormous risks to downstream water quality, aquatic life, wild rice and human health should containment fail.	WAT	S	O	8	PolyMet 2014a from FEIS App. A
Paula Maccabee	The FEIS has provided no justification for locating these chemicals on a site where no solid waste facility would be permitted and no rationale for attempting to compact slimes and peat rather than excavating to solid ground so that a stable base can be engineered. In the entire history of the PolyMet NorthMet project, no EIS documents have evaluated alternative sites or methods of disposal. If such consideration has taken place, it has been done outside the light of day required under both state and federal law.	ALT	S	O	8	PolyMet, NorthMet Project -Hydrometallurgical Residue Facility Location, February 1, 2010

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Paula Maccabee	<p>The PolyMet NorthMet FEIS provides an explanation of why the Co-Lead Agencies rejected the alternative of backfilling the West Pit with Category 1 rock generated by mining. This explanation is inadequate. First, the FEIS errs in minimizing the significance of reclamation of its 526-acre surface and the restoration of wetland areas and functions: Removal of the Category 1 Stockpile would allow for reclamation of the affected surface footprint, including potential to recreate wetland areas and restore function, and, as noted above, the prior effect would have been offset through mitigation required for the initial effect. . . However, because of the temporal effect that the stockpile would have, those effects would be required to be mitigated regardless of future backfilling or not. (FEIS, 3- 161 to 3-162) Although the project proponent may see no value in future wetlands restoration if no mitigation credit is received, this perspective is untenable. Reclamation of 526 acres with wetlands within decades instead of never is a clear environmental benefit, The FEIS fails to consider a significant additional environmental benefit of the West Pit Backfill alternative. It would reduce contaminated seepage that would otherwise result from leaving the 526-acre Category 1 copper-nickel waste rock pile permanently in a 280-foot-tall unlined pile at the mine site where seepage could impact the 100 Mile Swamp and the Upper Partridge River. (FEIS, 5-119, Table 5.2.2-21). As detailed in Section II, supra, hydrogeologic conditions beneath the unlined Category 1 waste rock piles are not discussed in the FEIS. But the majority of the Category 1 waste rock pile would be located on semi-permeable Virginia Formation rock, and there are several fractures transecting the site. (FEIS, Figure 4.2.14-1, FEIS ref. Barr 2014b).</p>	ALT	S	O	8	MDNR et al. 2013b
Paula Maccabee	<p>As with the dry stack tailings alternative, reliance on PolyMet’s unsubstantiated assumptions of nearly perfect seepage collection allowed the Co-Lead Agencies to dismiss the West Pit Backfill alternative without analyzing its potential environmental benefits. Based on PolyMet’s modeling and assumptions (PolyMet 2015h), the FEIS stated that more than 98 WaterLegacy Comment on PolyMet NorthMet FEIS percent of affected groundwater seepage from the Category 1 stockpile would be captured by the containment system or would migrate as groundwater into the West Pit and East Pit (FEIS, 5-7) and that only negligible volumes of uncaptured seepage would flow north. (FEIS, 5-65). These claims are unsupported. The actual design for Category 1 seepage containment provides for the use of compacted soil as a barrier around the waste rock pile with conductivity specifications generally classified as semi-permeable. (FEIS ref. PolyMet 2015h, pp. 10,13). The drainage system would consist of pipes and ditches and rely only on gravity for collection. (Id., p. 14). PolyMet admits that along the west, north, and east sides of the stockpile, there may be areas where the drain pipe cannot be installed at an elevation low enough to ensure that groundwater will not flow beneath the cutoff wall. It is improbable that this system will work as anticipated. (Lee, Category 1 opinion, 2015). The FEIS’ predictions of minimal Category 1 seepage flow were also based on assumption that the cover placed on the rock pile would reduce infiltration by more than 99 percent (from 360 gpm to 2.8 gpm). (FEIS, 5-145). Geomembranes have not been used for many waste rock stockpile covers or projects approaching the size of the Category 1 waste rock stockpile. (PolyMet 2015d, p. 45). Seepage results from Minnesota’s Dunka Mine, one of the three examples cited by PolyMet (2015d) of similar liner application, have resulted in significant infiltration and contaminated seepage violating Minnesota water quality. (Dunka Mine DMR summaries, Exhibit 34)</p>	WAT	S	O	8	SDEIS Theme WR 017. Barr 2015e

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Paula Maccabee	Placing Category 1 waste rock in the West Pit, after grouting any fractures revealed by mining, may reduce adverse effects from uncaptured release of contaminated seepage to surface and groundwater. Maintaining saturated conditions to reduce oxidation may also be more effective within the West Pit than trying to do so with a cover on a tiered pile. These potential benefits from the West Pit Backfill alternative should have been analyzed in the FEIS.	PER	S	N	12	In considering this comment, the DNR reasserts that the response provided for SDEIS Theme ALT 03 demonstrates adequate consideration of the potential environmental benefits of a West Pit Backfill alternative. DNR's screening of the alternative weighed the environmental, social, and economic trade-offs (i.e., benefits) consistent with Minnesota Rules, part 4410.2300, subpart G. Importantly, some degree of vegetation and wetland impact is unavoidable regardless of future backfilling or not, and the proposed closure condition is consistent with the Mineland Reclamation Rules for these types of facility. Implementing the commenter's proposal would not result in significant environmental benefits beyond those already captured in the impact avoidance and minimization measures identified for the proposed action. Section 2.5.2 of the Final SDD proposed that the EIS include an alternative that would evaluate the feasibility and environmental impacts of mining the NorthMet deposit as two mine pits. The Final SDD states: "...with one pit being completely mined out before beginning the second pit [where] waste rock from the second pit would be placed into the first pit so that the final mine pit lake and waste rock stockpiles would be considerable smaller." The Final SDD did not identify which mine pit should receive the materials, but noted that "the issue of encumbering resources and feasibility of backfilling both reactive and non-reactive waste rock" should be evaluated. Consistent with these objectives, which were identified in scoping, the project design includes two primary pits with sequential backfilling of waste rock into one of them, with minimal encumbrance of mineral resources. Minnesota Rules, part 4410.2300, subpart G, notes alternatives considered but eliminated based on information developed through the EIS analysis must be discussed briefly and the reason for their elimination must be stated. DNR has satisfied this requirement by considering a potential West Pit Backfill alternative. The agency has also responded to comments submitted on the Draft EIS and Supplemental Draft EIS consistent with Minnesota Rules, part 4410.2800 for public

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						comments raised on the issue.
Paula Maccabee	<p>The FEIS suggests that the environmental benefits from the West Pit Backfill alternative do not require its consideration, let alone implementation of this alternative: T]he 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, additional water treatment (rates), and encumbrance compensation determined in revised lease agreements may affect the ability of PolyMet to secure financing (MDNR et al. 2013b). As such, the option to backfill the West Pit was eliminated from further consideration in the SDEIS and remains so in this FEIS. (FEIS, 3-162) The referenced 2013 MDNR memorandum cited the conclusion of PolyMet’s consultants that the West Pit Backfill alternative “would significantly decrease net return on the project.” (FEIS ref. MDNR et al., 2013b, p. 3). PolyMet’s consultants emphasized, “There are known extensions of mineralization outside the mine plan both to the south (down dip) and to the west (along strike). A key consideration in the development of an overall mine plan for the Project, including the ability to backfill open pits, is preserving potential future development of these extensions of mineralization.”46 Minnesota’s Environmental Policy Act does not allow rejection of an environmentally preferable alternative on the basis of economic considerations, Minn. Stat. §116D.04, Subd. 6. Under federal law,</p>	MEPA	S	N	8	<p>FEIS Section 1.3.2.1, third bullet. DNR disagrees with the assertion that economic factors alone led to the elimination of the proposed West Pit Backfill alternative from detailed analysis in the EIS. Consistent with Minnesota Rules, part 4410.2300, subpart H, the DNR considered the potential alternative against the following criteria: purpose and need; technical feasibility; economic feasibility; availability; and environmental or sociological benefits. Potential environmental benefits were identified. However these potential benefits were outweighed by the economic ramifications associated with the mineral encumbrance. Refer to West Pit Backfill Alternative in Section 3.2.3.4.2. Table 3.2-17, Table 3.2-18, and Section 3.2.3.3.1 Summary of Alternatives Analysis from the FSDD discussed site alternatives.</p>

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Paula Maccabee	<p>“An agency may not define the objectives of its action in terms so unreasonably narrow that only one alternative from among the environmentally benign ones in the agency's power would accomplish the goals of the agency's action, and the EIS would become a foreordained formality.” Nat'l Parks & Conservation Ass'n v. BLM, 606 F. 3d 1058, 1070 (9th Cir. 2010). The court found against the BLM on the grounds that the agency had adopted the proponent's “interests as its own” and “As a result of this unreasonably narrow purpose and need statement, the BLM necessarily considered an unreasonably narrow range of alternatives.” (Id. at 1072). See also Simmons v. United States Army Corps of Eng'rs, 120 F.3d 664, 666 (7th Cir. 1997)(“If the agency constricts the definition of the project's purpose and thereby excludes what truly are reasonable alternatives, the EIS cannot fulfill its role.”). Ironically, while the EIS has rejected an evaluation that could anticipate and develop an environmentally protective plan for backfilling Category 1 rock, the FEIS also keeps the door open for ad hoc disposal “of some excess waste rock or saturated overburden in the West Pit in areas where mining has ceased, if necessary as an adaptive measure.” (FEIS, 5-630, F-640).</p>	NEPA	S	N	12	<p>The Purpose and Need of the FEIS is broad enough to evaluate numerous alternatives as the record shows. Minnesota Rules, part 4410.2300, item E, indicates the proposed project must be described with no more detail than is absolutely necessary to allow the public to identify the purpose of the project. Section 1.3.2.4 of the Final EIS addresses this requirement of the rules. Minnesota Rules, part 4410.2300, item G, details the types of alternatives that an EIS should address unless reasonably excluded under three specific criteria, including whether the alternative would not meet the underlying need for or purpose of the project. DNR asserts that the project purpose was appropriately defined and did not keep the agency from considering a full range of alternatives, many of which exhibited elements that were adopted and incorporated into the NorthMet Mining Project proposed action. Consideration of alternatives occurred over the entire course of the EIS; see Final EIS Section 3.2.3.3.</p> <p>The potential disposal of Category 1 waste rock into the West Pit was considered as part of various alternatives. The analyses of these alternatives differed due to the different scales of each alternative. Therefore, the consideration of these alternatives was not inconsistent.</p>
Paula Maccabee	<p>Rather than analyze alternatives and their environmental consequences to allow a choice of the least damaging alternative, the Co-Leads allow PolyMet to have it both ways. Mineralization outside the mine plan was disregarded in analyzing the Underground Mine Alternative, but yet it still can be used as the basis to deny West Pit Backfill mitigation. Backfilling waste rock can be suggest as indefinite adaptive mitigation, but cannot be considered as a project alternative to reclaim wetlands and reduce seepage.</p>	ALT	S	O	8	MDNR et al. 2013b

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Paula Maccabee	The PolyMet NorthMet FEIS does not rectify the inadequacies of the SDEIS. As detailed in the preceding Sections I through XI, the FEIS fails to evaluate and, in some cases, affirmatively misrepresents the significant potential adverse environmental effects from the proposed PolyMet NorthMet open-pit copper-nickel mine, processing facilities and waste storage facilities. These failures are compounded by the deficiencies of the FEIS' analysis of the cumulative impacts of the project on mercury and mercury methylation, downstream water quality, wetlands destruction and impacts on tribal waters, rights and resources.	CUM	S	N	12	The Purpose and Need of the FEIS is broad enough to evaluate numerous alternatives as the record shows. Minnesota Rules, part 4410.2300, subpart E, indicates the proposed project shall be described with no more detail than is absolutely necessary to allow the public to identify the purpose of the project. Section 1.3.2.4 of the Final EIS addresses this requirement of the rules. Minnesota Rules, part 4410.2300, subpart G, details the types of alternatives that an EIS should address unless reasonably excluded under three specific criteria, including whether the alternative would not meet the underlying need for or purpose of the project. DNR asserts the project purpose was appropriately defined and did not keep the agency from considering a full range of alternatives, many of which exhibited elements that were adopted and incorporated into the NorthMet Mining Project proposed action. Consideration of alternatives occurred over the entire course of the EIS; see Final EIS Section 3.2.3.3. Regarding how potential disposal of Category 1 waste rock into the West Pit was considered across various proposed alternatives, the differences noted are principally due to the scale of the activity, and as such are not inconsistent in the given context.
Paula Maccabee	Under MEPA and NEPA, an EIS must consider cumulative potential the effect on the environment that results from the incremental effects of a project in addition to other projects past, present or reasonably foreseeable future in the environmentally relevant area that might reasonably be expected to affect the same environmental resources. Minn. R. 4410.2300, Subp. H; Citizens Advocating Resp. Develop. V. Kandiyohi Cty Bd. Of Comm'rs, 713 N.W. 2d 817 (Minn. 2006); 40 C.F.R. §1508.7. Ctr. For Biol. Diversity v. Nat'l Highway Traffic Safety Admin., 538 F. 3d 1172, 1215 (9th Cir. 2008); Ohio Valley Env't'l Coal. V. Hurst, 604 F. Supp. 2d 860, 883-884 (S. D. W. Va. 2009). The FEIS provides an inadequate assessment of the cumulative impacts of the PolyMet NorthMet project. The cumulative effects of mining and other development on mercury contamination of fish, water pollution, wetlands destruction and impairment of tribal resources are significant.	NEPA	NS	X	1	
Paula Maccabee	For federal agencies to rely on an FEIS that fails to analyze these cumulative impacts would also conflict with Executive Order 13045 (Protection of Children from Environmental Health Risks and Safety Risks, 1997), which requires each federal agency give high priority to the identification and assessment of environmental health and safety risks to children and Executive Order 12898, which directs each agency to "make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities" on minority populations, low-income populations and federally recognized Indian	CUM	S	N	8	FEIS Chapter 6, Section 5.2.10.2.6; 5.3.10.2.1

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	tribes.47					
Paula Maccabee	WaterLegacy's prior comments on the SDEIS discussed additional concerns that the EIS failed to consider additionally reasonably foreseeable cumulative mining actions, including the planned expansion of the PolyMet NorthMet copper-nickel mine itself.	CUM	S	O	8	FEIS Section 6.1.1.1
Paula Maccabee	The preceding discussion of the FEIS' rejection of the West Pit Backfill alternative underscores that expansion of mining at the West Pit is foreseeable and anticipated in legal agreements. A proponent of mineral development may not choose an arbitrary limit on what is economically recoverable, but must base an EIS on the full range of likely production. Native Vill. of Point Hope v. Jewell, 740 F.3d 489, 501, 504 (9th Cir, 2014). NEPA requires that agencies engage in reasonable forecasting of cumulative mining impacts. N. Plains Res. Council, Inc. v. Surface Transp. Bd., 668 F.3d 1067, 1078-1079 (9th Cir. 2005). While the FEIS considers the environmental impacts of mining 225 million tons of ore (FEIS, ES-17), PolyMet's official Technical Feasibility Report ⁴⁸ defines the deposit as 694 million short tons of indicated and measured resources and 230 million tons of inferred resources, or a total of 924 million tons of ore that meets PolyMet's accepted grade within their current lease holdings at NorthMet. (PolyMet 43-101 Report, p. 14-38). The Edison Report commissioned by PolyMet to provide information for investors (Edison Investment Report, Nov. 2013, WaterLegacy SDEIS Comments, Exhibit 54) explicitly contemplated mining expansion, "A sustained higher metal price regime has the potential to allow expansion of the existing pit phases both laterally and to depth." (Id., p. 15-3). The Report advised, "We believe the size and scope of the ore body could support a much larger project, which would create meaningful additional value." (Id., p. 5) The Report continues, "We believe there is a good chance PolyMet will be able to expand the size of its resource by 50-100% based on what we learned on a site visit." (Id.) The Edison Report explained that the proposed PolyMet NorthMet processing plant had historically operated at 100,00 tons per day (t/d), and that an operating rate of at least 90,000 t/d should be attainable. (Id., p. 3). The Edison Report stated, "We believe the most likely follow-on project PolyMet will pursue is the expansion of mining and milling to 90,000 t/d, with the second most likely third-party ore processing of 50,000 t/d or 100,000 t/d." (Id., p. 10) The Report noted that there are 11 mineral properties near PolyMet's mill and that "government permitting agencies may encourage the developers of other mining properties in the area to work out an arrangement with PolyMet to use its pre-existing mill and tailings pond" in order to "limit the footprint of mining and processing in the area." (Id., p. 10) The Edison Report valued PolyMet stock based on the potential expansion of processing to 90,000 tons per day (Id., p. 1), stating "We assume PolyMet would begin working on permitting the expansion to 90,000 t/d within six months of receiving its permits for Phase I, permitting would take two years and construction would take one year. On this basis, it could complete its expansion by May 2018." (Id., p. 12)	PD	NS	X	1	
Paula Maccabee	Although Edison Investment Research terminated coverage of PolyMet Mining in June 2015, ⁴⁹ none of the factors contributing to a reasonable forecast of PolyMet's planned expansion at the NorthMet mine, processing plant and tailings facility have changed. This planned expansion should have been considered to evaluate the cumulative impacts of the proposed action on mercury methylation, water quality, wetlands destruction and impairment of tribal resources.	PD	S	O	5	SDEIS Theme PD 30

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Paula Maccabee	The FEIS denies that the PolyMet NorthMet sulfide mine project would have any adverse impact on “mercury loadings” to the downstream St. Louis River, into which both the Partridge River and Embarrass River drain. (FEIS, 5-10). The FEIS, relying exclusively on Barr data, claims that increases in mercury loading in the Embarrass River from 22.3 to 22.5 grams per year loadings would be more than offset by the decrease in mercury loading from 24.2 to 23.0 grams per year in the Partridge River. (FEIS, 5-572, 6-32). As the result of this alleged “net decrease” in mercury loading, the NorthMet project “is not considered to have the potential for cumulative effects on hydrology and water quality in the St. Louis River.” (FEIS, 6-32) As summarized in Section I, supra, mercury expert Dr. Branfireun has carefully analyzed the Barr mercury data used to support the FEIS, and concluded that it does not meet basic scientific standards for analysis, reporting or addressing the margin of error in data collected. (Branfireun, 2105, pp. 2-9). Dr. Branfireun specifically reviewed the “mass balance” model used by Barr and incorporated into the FEIS and concluded that if an analysis of the margin of error in projections of mercury releases had been performed, the FEIS statements of certainty based on grams of mercury “could not be supported.” Thus, Dr. Branfireun explained, “conclusions from this asserted mass balance that the proposed development will not have appreciable impacts on water quality would be similarly unsupported.” (Branfireun, 2015, p. 14).	WAT	NS	X	1	
Paula Maccabee	Section I of these comments also details the many errors and omissions in the asserted mercury mass balance. These include the failure to consider mercury seepage in any modeling, misrepresentation of leachate testing results, and the disregard of mercury air deposition to the watershed in an amount (453.6 grams per year) potentially three orders of magnitude greater than the differences in mercury loading described to exclude the St. Louis River from Cumulative Effects Assessment Area (CEAA) for the NorthMet project. The FEIS’ false precision regarding mercury loading must be rejected as inadequate due to its concealment of relevant contaminant source information, as well as due to its unsupportable handling of mercury data.	CUM	NS	X	1	
Paula Maccabee	The FEIS briefly discusses the impacts of air deposition on lakes in the Embarrass River watershed on mercury, concluding that the maximum incremental cumulative increase in the Hazard Quotient over existing fish mercury tissue concentrations is no more than a 1.8 percent increase over existing markedly unsafe levels. (FEIS, 6-86, 6-87) Inexplicably, the FEIS states in the same paragraph that as a result of the tiny scope of emissions risk assessment (AERA) done there is “no subsequent change in human health risks related to fish consumption.” (FEIS, 6-131).	MERC	S	O	8	PolyMet 2015e Attachment V Revised Table 4
Paula Maccabee	However, the FEIS provides no analysis of impacts on mercury in fish tissue in the Partridge and Embarrass Rivers, immediately proximate to the NorthMet project site, and no analysis of project impacts on mercury bioaccumulation resulting from the factors other than mercury air deposition.	MERC	S	N	8	FEIS pg. 6-49; Barr 2012b Section 6

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Paula Maccabee	<p>As Dr. Branfireun detailed in his report, the concentration of mercury in fish tissue is not proportional to air deposition. (Branfireun, 2015, pp. 14-15). Sulfate discharge, sulfate air deposition and hydrological changes resulting in the drying and rewetting of wetlands and sediments all contribute to mercury methylation, mobilizing the form of mercury that bioaccumulates in the food chain. (Id., pp. 9-16, 19-27). The wetlands adjacent to the NorthMet project mine site and tailings site are highly methylating environments, and “Even relatively small changes in water table position and wetting and drying frequency in the ombrotrophic wetlands at the NorthMet mine site have the potential to impact sulfate and methylmercury concentrations of receiving waters.” (Id., p. 19). Based on experimental data in similar wetlands, sulfate deposition at the mine site alone could nearly double methylmercury production (1.88 times) in sensitive peatlands. (Id., p. 23). Dr. Branfireun explained the many mechanisms of mercury export from project site wetlands and their transport downstream. (Id., p. 26). He concluded, after the only comprehensive analysis of methylmercury in the entire FEIS record, I reject as unsupported and without scientific justification, any statement or implication in the FEIS that the proposed NorthMet development would not increase risks of methylmercury production and transport in the Partridge and Embarrass River watersheds, particularly in ombrotrophic wetlands near the mine site and wetlands affected by tailings site seepage collection, changes to hydrology or atmospheric deposition. . . It is my opinion that the NorthMet development could create a substantial risk of ecologically significant increases in water column and fish methylmercury concentrations in downstream waters, including the St. Louis River. (Id., p. 27)</p>	MERC	S	O	8	USGS 2010. SDEIS COOP Response #19674
Paula Maccabee	<p>Mercury bioaccumulation in fish can harm the fish themselves, inhibiting fish reproduction. (FEIS, 5-467). As summarized in the opinion of Dr. Saracino quoted in Section VIII, supra, consumption of fish containing high levels of methylmercury (the form of mercury that bioaccumulates in the food chain) can also be harmful to human beings, particularly to the developing fetus, when methylmercury crosses the placental barrier. (Saracino, 2015). In Minnesota’s Lake Superior Region, the cumulative risk of mercury contamination of downstream fish is highly significant and should have been evaluated. A recent Minnesota Department of Health study found that 1 out of 10 infants in Minnesota’s Lake Superior region were born with unsafe levels of mercury in their blood. At a statistically significant level, a greater proportion of Minnesota babies had unsafe mercury in their blood as compared with babies in the Lake Superior region of Wisconsin or Michigan. Mercury levels were also higher in Minnesota in the summer months, suggesting that increased consumption of locally caught fish during the warm months is an important source of pregnant women’s mercury exposure.⁵⁰ In addition to a 1.3 ng/L standard for mercury in the water column discussed previously, Minnesota has a standard limiting mercury in edible fish tissue to protect human health, which is applicable across the range of waters used for fishing and drinking water, of 0.2 micrograms per kilogram (µg/kg). Minn. R. 7050.0220, subp. 3a, 4a, 5a. This standard is lower than the EPA’s methylmercury criterion for fish tissue (0.3 mg/kg) because of the high rate of fish consumption in Minnesota.⁵¹ The Embarrass River chain of lakes downstream of the proposed NorthMet tailings site - Sabin, Wynne, and Embarrass Lakes -- are impaired due to excessive mercury in fish tissue. Colby Lake, into which the Partridge River flows downstream of the proposed mine site, is also impaired due to excessive mercury in fish tissue. (FEIS, 4-29, Table 4.2.2-2). Based on the sampling done for the NorthMet project, the Partridge River and Embarrass River may also be impaired for aquatic consumption due to excessive mercury. Mean concentrations of mercury at surface water sites in the Partridge River (2.3 to 5.4 ng/L) and mean concentrations in the Embarrass River (4.3 to 5.1 ng/L) are two to four times higher than Minnesota’s water column standard of 1.3 ng/L. (FEIS, 4-41, Table 4.2.2-4). Most of the St. Louis River downstream of the proposed NorthMet sulfide mine project is impaired for the designated use for aquatic consumption as a result of excessive mercury</p>	MERC	NS	X	1	

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	in fish tissue. (FEIS, 4-285). Exhibit 28 to WaterLegacy's comments identifies segments of the St. Louis River that are on Minnesota's Section 303(d) impaired waters list due to excessive mercury in the water column or mercury in fish tissue.					
Paula Maccabee	The FEIS should have assessed cumulative effects of the NorthMet project on mercury methylation and bioaccumulation in fish tissue in the Partridge and Embarrass River watershed and in downstream waters, including the St. Louis River. The false precision of mercury loading and FEIS "offset" calculations seem designed to obfuscate the cumulative risk to human health resulting from ecologically significant increases in mercury in fish from the PolyMet NorthMet project and the past and present mercury impairments in downstream waters.	MERC	S	O	8	SDEIS Theme MERC 02. Barr 2006g; Barr 2007j; Barr 2012b; Barr 2015g
Paula Maccabee	The FEIS' analysis of cumulative effects of the PolyMet NorthMet project on sulfate and other pollutants is either misleading or just missing. With respect to sulfate, the FEIS' analysis contains two critical distortions. First, as explained in Section XI, supra, the FEIS uses an improper baseline to calculate the effects of NorthMet tailings seepage on sulfate concentrations. Rather than comparing NorthMet project impacts to LTVSMC tailings seepage diluted by precipitation over time and reduced by Cliffs Eric compliance with its consent decree, the FEIS creates a biased construct comparing NorthMet pollution with "continuation of existing conditions" contradicting science as well a law. Thus, the FEIS concludes that the NorthMet sulfide mine project would have a "positive effect" on sulfate concentrations. (FEIS, 6-48).	CUM	NS	X	1	
Paula Maccabee	sulfide mine project would have a "positive effect" on sulfate concentrations. (FEIS, 6-48). Next, in calculating the cumulative effects of the PolyMet NorthMet project on sulfate in either the Partridge or Embarrass River, the FEIS assigns to the NorthMet project an average sulfate rate of 10 mg/L. (FEIS, 6-45, Table 6.2.2-3; 6-48, Table 6.2.2-5). Like other FEIS denials of water quality impacts based on unsubstantiated assumptions (see Sections II, III, and XI.5, supra) this cumulative effects assessment is a tautology. Once the FEIS assumes that the only watershed inputs are from water treated to comply with standards its conclusion has written itself.	CUM	S	O	8	Barr 2013f
Paula Maccabee	Since the FEIS hasn't assessed the effects of specific conductance, there is also no assessment of the cumulative effects of mining discharge on specific conductance levels in the St. Louis River. As explained in Section VII, supra, elevated specific conductance is a water chemistry "signature" for mining discharges. Regression analysis performed as part of the Tribal Cooperating Agencies Cumulative Effects Analysis suggested that concentrations were highest nearest to mine discharge sites, and tended to gradually decrease downstream, remaining above 150 µS/cm at 203 kilometers (126 miles) downstream of the nearest upstream mine discharge site. (FEIS, App. C. Tribal CEA, p. 16, FEIS autop. 3041). Elevated concentrations of specific conductance could persist far downstream in the St. Louis River, as illustrated in Exhibit 29, a map of cumulative mining discharge impacts on specific conductance included as part of the Tribal CEA.	WAT	S	O	8	SDEIS Theme AQ 14
Paula Maccabee	The FEIS adheres to the most optimistic predictions of PolyMet's modeling and assumes that the project's impact on any water quality exceedance will be insignificant. (FEIS, 6-45).	WAT	NS	X	1	
Paula	The FEIS doesn't consider potential failures of engineering or modeling (FEIS, 5-236 to 5-244) in its assessment of	WAT	S	O	8	PolyMet 2015i Section 4.4

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Maccabee	cumulative effects.					
Paula Maccabee	EPA comments on the PolyMet NorthMet SDEIS recommended, "The FEIS should include indirect impacts in the analysis of cumulative impacts to wetlands." (EPA Comment on the SDEIS, Exhibit 1). The FEIS provides an inadequate and misleading response to this.	PER	NS	X	1	
Paula Maccabee	EPA comments on the PolyMet NorthMet SDEIS recommended, "The FEIS should include indirect impacts in the analysis of cumulative impacts to wetlands." (EPA Comment on the SDEIS, Exhibit 1). The FEIS provides an inadequate and misleading response to this recommendation. The FEIS' tables only describe the cumulative losses to wetlands resulting from direct destruction of wetlands by the PolyMet NorthMet project. (FEIS, 6-58). For indirect effects, the FEIS says it is difficult to predict indirect wetland effects either for the proposed project or other mining developments. The FEIS then says, "based on the amount of potential indirect wetland effects that could occur from the NorthMet Proposed Action, there could be 0.1 to 12.0 percent cumulatively lost, in addition to the direct wetland impacts assessed, within the Partridge and Embarrass River watersheds." (FEIS, 6-60). Read quickly, the FEIS seems to suggest that the upper bound of cumulative impacts on wetlands would be 12.0 percent. This is not the case. If both the Partridge and Embarrass River watersheds are aggregated and indirect impacts are considered, the upper bound of cumulative impacts on wetlands is 17 percent. This is calculated by dividing 11,693 acres of cumulative losses (3,085 acres under the no action alternative and 8,608 acres of loss from the NorthMet project) by the 68,251 pre-settlement acres of both watersheds combined. (See FEIS, 6-56, Table 6.2.3-2; 6-59, Table 6.2.3-5 for presettlement and no action alternative wetlands acreage). However, since most of the cumulative losses from both PolyMet NorthMet project and non-project impacts are in the Partridge River watershed, this calculation understates the impacts to high quality wetlands in the Partridge watershed. The FEIS has provided the lower bound of Partridge River watershed cumulative impacts on wetlands since pre-settlement days. If there were no indirect impacts of the PolyMet NorthMet project on mine site wetlands whatsoever, that cumulative impact would be 10 percent. (FEIS, 6-58). The FEIS does not segregate indirect impacts on the Partridge River watershed. But the GLIFWC analysis of mine dewatering impacts provides a best estimate of indirect wetlands impacts in the Partridge River watershed. Combining GLIFWC's wetland drawdown estimate (5,720 acres), direct wetlands impacts on the Partridge River watershed (768 acres) ⁵² and losses to the Partridge River watershed under the no action alternative (2,557) and dividing by the presettlement acreage of wetlands in the Partridge River (33,601 acres) provides the likely upper bound of cumulative wetlands loss in the Partridge River watershed based on evidence in this record. ⁵³ Cumulative wetland loss and degradation in the Partridge River watershed since presettlement days resulting from the NorthMet proposed action could reach 26.9 percent.	WET	S	N	8	FEIS Section 6.2.3.4.4 addresses cumulative indirect wetland effects. SDEIS Comment #2997 is an individual response to an EPA comment.
Paula Maccabee	The FEIS not only failed to disclose the cumulative impact of the PolyMet NorthMet project on loss of wetlands acreage in the Partridge River, the FEIS provided no ecological scale analysis to consider the importance of Upper Partridge River wetlands and the 100 Mile Swamp in relationship to the Headwaters Site and the St. Louis River downstream. Tribal Cooperating Agencies requested this type of analysis in their Cumulative Effects Assessment, suggesting that this broader and more relevant spatial reference should also assess the cumulative degradation and destruction of the landscape resulting from extensive mineral exploration. (Tribal CEA, p. 41, FEIS autop. 3066).	CUM	S	O	7	SDEIS Theme WET 18

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Paula Maccabee	The direct and indirect destruction and degradation of wetlands that would result from the cumulative effects of the NorthMet mine would take place in the 100 Mile Swamp and the Upper Partridge River Site, both identified by the Minnesota County Biological Survey (MCBS) as sites of high biodiversity significance. (WaterLegacy SDEIS Comments, Exhibit 30). The 100 Mile Swamp has been rated for the high quality of its peatlands, while the Upper Partridge River Site is designated due to numerous rare plant species recorded in the site. The 100 Mile Swamp and the Upper Partridge River Site are immediately adjacent to the Headwaters Site, and together these important ecological locations form the headwaters of the St. Louis River, the largest United States tributary to Lake Superior. This spatial relationship is shown in Exhibit 35, a map contained in the MDNR's report, An Evaluation of the Ecological Significance of the Headwaters Site. ⁵⁴ This report explains, The Headwaters Site straddles the continental divide, with water from the Site flowing both east through the Great Lakes to the Atlantic Ocean and north to the Arctic Ocean. Paradoxically, the divide runs through a peatland. Although the peatland appears flat, water flows out of it from all sides, forming the ultimate source of rivers that eventually reach two different oceans. The Site is the headwaters of four rivers: Stony River, Dunka River, South Branch Partridge River, and the St. Louis River, which is the second largest tributary to Lake Superior. (Id., p. 1)	CUM	NS	X	1	
Paula Maccabee	Understanding the ecological context of the mine site, the FEIS' cumulative effects assessment should have considered both the implications of other existing and proposed mines in the Partridge River and Dunka River watersheds, and the change that the NorthMet project alone would make in the peatlands and Partridge River headwaters.	CUM	S	O	7	SDEIS Themes WET 18, WET 19
Paula Maccabee	The NorthMet project, in combination with other existing and reasonably foreseeable projects, would shift maintenance of water quality in the Partridge River and "from natural systems (i.e., essentially an ecosystem service) to mechanical systems (e.g., the NorthMet Project Proposed Action WWTF and WWTP)." (FEIS, 6-83).	CUM	NS	X	1	
Paula Maccabee	Wetlands destruction and degradation, combined with replacement of natural hydrologic systems in the 100 Mile Swamp and Upper Partridge Sites that would result from the PolyMet NorthMet project required the FEIS to consider the cumulative project impacts at an ecological scale, rather than merely totting up directly destroyed wetland acres. This was not done.	CUM	NS	X	1	
Paula Maccabee	The FEIS failed to meet the obligations of federal agencies to fairly assess cumulative impacts of the PolyMet NorthMet project on tribal rights and resources. Federal agencies are obligated under NEPA to determine environmental justice impacts, including "the potential for multiple exposures or cumulative exposure to human health or environmental hazards in the affected population, as well as historical patterns of exposure to environmental hazards." ⁵⁵ Army Corps' policy specifically commits the Corps to "meet trust obligations, protect trust resources, and obtain Tribal views of trust and treaty responsibilities." ⁵⁶ The U.S. Forest Service Superior National Forest plan states that the Forest Service has a role in protecting tribal rights "because it is an office of the federal government responsible for natural resource management on land subject to these treaties" and that, "Superior National Forest facilitates the exercise of the right to hunt, fish and gather as retained by Ojibwe whose homelands were subject to treaty in 1854 and 1866." U.S. Forest Serv. Land and Resource Mgt. Plan, Superior National Forest 10-4, 2-37 (2004).	CUM	NS	X	1	
Paula	Rather than meeting these obligations, the FEIS minimized and concealed cumulative impacts of the NorthMet project on tribal rights and resources. Each failure of the FEIS to evaluate impacts on water quality, human health, wetlands and	CUM	NS	X	1	

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Maccabee	habitats has a disproportionate impact on tribes.					
Paula Maccabee	The PolyMet NorthMet project area is located on lands acquired by the United States on September 30, 1854, when the Chippewa of Lake Superior ceded ownership of the land to the United State, retaining usufructuary rights. (FEIS, 3-1) These lands are 1854 Ceded Territory lands, and any impacts on land use, historical sites, vegetation, aquatic life and wildlife in this Ceded Territory affect tribal resources and treaty rights and can disproportionately result in environmental injustice to tribes.	CUM	NS	X	1	
Paula Maccabee	The FEIS rejected the request made by Tribal Cooperating Agencies to consider a larger historic district that would encompass multiple impacts on Ceded Territory. (FEIS, 5-566; FEIS autop. 3032-3033, Tribal CEA, pp. 7-8). The FEIS also denied effects of the project for two of the three historic sites identified by tribes as impacted (Spring Mine Lake Sugarbush, BBLV Trail Segment) and proposed no project modifications to address adverse affects to the third site, the Mesabe Widjiu. (FEIS, 5-535, 5-565).	CUM	S	N	8	FEIS pgs. 5-563 to 5-565. SDEIS Theme CR 04
Paula Maccabee	The FEIS rejected the request made by Tribal Cooperating Agencies to consider a larger historic district that would encompass multiple impacts on Ceded Territory. (FEIS, 5-566; FEIS autop. 3032-3033, Tribal CEA, pp. 7-8). The FEIS also denied effects of the project for two of the three historic sites identified by tribes as impacted (Spring Mine Lake Sugarbush, BBLV Trail Segment) and proposed no project modifications to address adverse affects to the third site, the Mesabe Widjiu. (FEIS, 5-535, 5-565).	CUM	S	N	8	FEIS pgs. 5-563 to 5-565
Paula Maccabee	The FEIS described and then minimized impacts to specific rare and endangered plants and animal species. (FEIS, Ch. 5.2.4, 5.25). The FEIS acknowledged that tribes have usufructuary rights to hunt, fish and gather, but offset any losses on the federal lands as offset by gains in subsistence resources on the more accessible lands proposed for exchange. (FEIS, 5- 779). Tribal Cooperating Agencies requested a more robust and less mechanistic cumulative assessment of mining impacts on their Ceded territories: The Fond du Lac, Bois Forte, and Grand Portage Bands, as well as the 1854 Treaty Authority (1854) and the Great Lakes Indian Fish & Wildlife Commission (GLIFWC), have consistently advocated for a more robust, comprehensive CEA for the PolyMet NorthMet project and other mining projects. We have observed that current, historic, and 'reasonably foreseeable' mining activities have profoundly and, in many cases permanently, degraded vast areas of forests, wetlands, air and water resources, wildlife habitat, cultural sites and other critical treaty-protected resources within the 1854 Ceded Territory. As we have engaged with the lead federal and state agencies for the environmental review process under NEPA and the tribal consultation process under §106 of the National Historic Preservation Act (NHPA), we have clearly expressed our concerns for the incompleteness and inadequacy of their CEA. (Tribal CEA, p. 3, FEIS autop. 3028) This request was denied. The FEIS neither recognized the cumulative impacts of mining nor the scale of tribal rights and interests. In every opportunity presented for analysis, the FEIS provided the narrowest possible approach.	CR	S	O	8	SDEIS Themes CR 01, CR 03
Paula Maccabee	This deficiency is illustrated in the FEIS' of cumulative impacts of mercury and methylmercury on fish consumption by Bands of the Lake Superior Chippewa. The FEIS recognizes that members of the Fond du Lac and Grand Portage Bands "are known to consume substantially more fish than the assumed statewide average" so that "potential increases in mercury bioaccumulation in fish tissue could therefore constitute an EJ impact for Band members and other subsistence consumers	CR	S	O	8	SDEIS Theme MERC 01

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	of fish.” (FEIS, 5-591 to 5-592). However, as explained earlier in this Section and in Section I, supra, the FEIS only evaluated air deposition impacts on fish mercury in selected lakes, rather than the substantial impacts of all NorthMet project impacts on mercury methylation and bioaccumulation.					
Paula Maccabee	The FEIS did not evaluate cumulative increases in mercury contamination of fish in Ceded Territory watersheds affected by the NorthMet project, downstream Fond du Lac reservation waters, or on Lake Superior fish spawned in the St. Louis River or its estuary, on which the Grand Portage Band may rely for subsistence fishing.	MERC	S	O	7	Barr 2013f
Paula Maccabee	Even in its discussion of Fond du Lac enacted and approved water quality standards, the FEIS impermissibly limited consideration of cumulative impacts. The FEIS acknowledged that the Reservation’s reach of the St. Louis River is attaining all of its beneficial uses and meeting all applicable water quality standards with the exception of mercury and that in-stream mercury concentrations in this reach exceed the Band’s human health chronic standard of 0.77 ng/L, so “the Fond du Lac Band is especially concerned about any new or expanded discharges to the St. Louis River upstream of the Reservation that may adversely affect mercury bioaccumulation in fish in the St. Louis River.” (FEIS, 5-20 to 5-21).	CR	NS	X	1	
Paula Maccabee	But the FEIS failed to assess whether the PolyMet NorthMet project would cause or contribute to violation of Fond du Lac’s water column standard for mercury or the Band’s narrative water quality standards, including the prohibition on “further water quality degradation which would interfere with or become injurious to existing or designated uses.” (Fond du Lac Water Quality Standards, Ord. #12/98 as amended, Sect. 301e.1; Appx. 1, Standards Specific to Designated Use; Sect. 105a.1). The FEIS failed to evaluate the cumulative impacts of NorthMet project on St. Louis River Reservation waters that are already impaired due to mercury in fish tissue. By improperly narrowing its analysis, the FEIS also negated the NorthMet project’s environmental justice impacts to tribes due to tribal consumption of mercury-contaminated fish.	MERC	S	O	7	FEIS pg. 5-10
Paula Maccabee	The U.S. Army Corps recognized in its report on Treaty Rights and Subsistence Fishing in the Great Lakes Basin, “subsistence harvesting is a core value for these bands, and the right to fish and hunt for subsistence is cherished by all, even those who are not presently engaged in the practice. It is part of the tribes’ cultural identity and an indication of their status as sovereign entities.” ⁵⁷ The Treaty Rights and Subsistence Fishing report also recognized the need for an integrated view of damage to tribal resources, Tribal traditions generally include a holistic view of the natural world in which natural features and phenomena are often imbued with a life force and in which the various species and features of the natural world are bound together in a web. Damaging one part damages the whole. (Id., p. 2)	CR	NS	X	1	
Paula Maccabee	The Co-Lead Agencies were obligated under law to assess cumulative impacts of the PolyMet NorthMet project on water quality, human health and particularly children’s health, wetlands, tribal rights, tribal resources and environmental justice. The FEIS failed to do so.	CUM	S	O	8	FEIS Sections 6.2.2, 6.2.7, 6.2.9, 6.3.2, 6.3.7, 6.3.9
Paula Maccabee	On the basis of the foregoing analysis and the expert opinions, exhibits and other materials cited herein, it is respectfully requested that the Minnesota Department of Natural Resources determine that the PolyMet NorthMet FEIS is inadequate, that the U.S. Army Corps of Engineers and the U.S. Forest Service find the FEIS insufficient to support either a Section 404 permit or a land exchange for the PolyMet NorthMet Proposed Action, and that other state, federal and tribal agencies rely on the information provided herein to deny and object to any applicable permits and certifications for the PolyMet	MEPA	NS	X	1	

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	NorthMet project.					
Anthony P. Vessicchio	This mine would produce acid mine drainage and other pollution that would require water treatment for at least 500 years. This pollution could drain northward and trash the watershed of the Bounty Waters Canoe Area wilderness or damage the St. Louis River as well as Lake Superior to south. Federal and state agencies don't know where this pollution will go.	WAT	NS	X	1	
Pertti Laine	I find it difficult to believe that in this day and age, with all of the scientific facts regarding the degradation of our environment, that there would even be ANY conversation which would put at jeopardy any more of the environment and the people of this planet to more toxins. Especially so some corporation can turn a profit at the expense of our needs to live in a toxic free environment to just survive. ANYONE even considering this should be ashamed of their self centered, greedy, soulless existence. I doubt anyone of them would be anywhere near this mine and expose themselves. I hope someone with the authority to stop this wakes up and sees how appalling the concept is, never mind the reality of the damage it will inevitably cause to everyone and everything in its path.	GEN	NS	X	1	
Steven Lyons	The fact that there has NEVER been such a mine in the history of the world that HAS NOT FAILED and polluted the surrounding environment catastrophically, is the only fact we need to focus on!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!	PD	NS	X	1	
Steven Lyons	Jobs that will only last 20 years and poisoning of the precious environment for the next 1000 years is NOT a good deal for Minnesota!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!!	SO	NS	X	1	
Robert Essian	I do not believe the FEIS is an acceptable document	GEN	NS	X	1	
Robert Essian	My concerns are that with AMD (Acid Mine Drainage) have NOT been fully studied in the rush to get Polymet permitted, and that Polymet or any mining operator can safely mine the material tonnage that has been proposed.	WAT	NS	X	1	
Robert Essian	I don't believe Polymet is the company to manage this Brownfield site or can manage this over the long haul. God forbid this become one of those environmentally horrific sites.	PER	NS	X	1	
Robert Essian	I am terribly concerned with closure costs and that the funds set aside for this would be adequate and segregated.	FIN	NS	X	1	
Robert Essian	I DO NOT believe the State of Minnesota has the proven track record as she refuses because of costs to run the Water Treatment Plant at the Dunka Pit, her only sulfide project to date and it's just a little one. how will Minnesota manage a much larger Polymet.	PER	NS	X	1	
Robert Essian	I just think Polymet and all co agencies have NOT done enough to satisfy my concerns and if they haven't then would potentially ruin well sites, water systems and food sources. We cannot risk this. Besides, we have so many of these type mines sitting idle all over the word since the implosion of China as marginal buyer of the metals we have buried still, that we	GEN	NS	X	1	

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	surely have the time to study this project for much longer.					
Laverne Wagner	I worked and retired from the Iron Mining Industry and understand the need for jobs. The cost and risks of environmental catastrophe however greatly outweighs the short term job growth.	SO	NS	X	1	
Laverne Wagner	As discussed many times, safe Sulfide mining is a myth and not proven to work. Polymet is based on the unknown with horrendous long term consequences.	PD	NS	X	1	
Laverne Wagner	What happens with the waste water and cleanup if Polymet go out of business? If the owners are international corporations trying to hold them responsible for cleanup is nearly impossible, especially for 200 years as predicted.	FIN	NS	X	1	
Laverne Wagner	Lets look at employment. The Mining Industry is a boom and bust industry. How many times on the Range have we seen the Iron Ore/taconite business go from booming to double digit unemployment . This will be the same with copper/nickel prices and supplies also. Could the Iron Range use the jobs of course they can, but not at the costs of environmental disasters that affect our health, our tourist industry and land owners who have cabins and summer homes on lakes nearby.	SO	NS	X	1	
Bill Latady	Phase I cultural resource investigations for the proposed PolyMet NorthMet action should have included Band members. The co-leads have yet to acknowledge the special expertise of Indian tribes in assessing the National Register eligibility of historic properties that may possess religious and cultural significance to them. A relevant instance of this occurred when Rose Berens and Vicky Raske, at the time THPO's for Bois Forte and Grand Portage Bands respectively, accompanied Brad Johnson, USACE archaeologist, on a field review of "Trygg Trail" locations in 2010. During the field review Ms. Berens and Ms. Raske noted oak trees and east-facing overlooks on the Mesabe Widjiu, areas of cultural significance, which non-native archaeologists would have probably missed. Were Band members included in the cultural resource inventories from the outset, there may well have been numerous other places of historic importance identified.	CR	S	O	3	SDEIS Theme CR 05
Bill Latady	A further example is continuing to describe the Beaver Bay to Lake Vermilion Trail as a "segment." This is troubling especially as the Bands have consistently objected to this characterization. To make matters even more confusing, when the term "segment" is used in trail descriptions the term is applied inconsistently. In various parts of the text the BBLV Trail is referred to as the "Partridge River Segment of the BBLV Trail," the "75 mile BBLV Trail Segment" and the "BBLV Trail Segment." Clearly the entire trail is not within the Cultural Resources APE, but as presented, it appears the Co-leads wish to emphasize the trail is a segment in an attempt to detract from its significance and deride Band concerns. In fact, the logic behind defining the BBLV Trail as segments rather than as a whole is questionable. What reason(s) did the co-leads employ to determine that the trail within the APE is a "segment" and then define the trail three different ways within the FEIS? If it makes sense to identify the trail as segments for the purposes of analysis or based on resource categories, i.e. differences in terrain or established logical end points, shouldn't the agencies validate that assessment by detailing their decision making process within the FEIS? By dividing the trail into segments the co-leads are separating a cultural resource into multiple unrelated features each of which individually may not be significant, but collectively meets criteria as a historic property. One intent of the environmental management process within NEPA is comprehensive so that long term and cumulative effects of small and unrelated decisions can be recognized, evaluated and either avoided, mitigated, or accepted as the price	CR	S	O	3	SDEIS COOP Response #17929

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	for the major federal action under consideration.					
Bill Latady	To date, the BBLVT has not been fully researched or field verified within the project area. Statements in the FEIS that sufficient work has been done to determine National Register eligibility are disingenuous as field investigations to date have occurred in the summer months when undergrowth in places is all but impenetrable and visibility for more than a few feet is very low. Additional reconnaissance is necessary in the spring or fall when vegetation does not obscure ephemeral features such as foot trails. Tribal presence is imperative during these investigations to point out culturally significant places that might otherwise be overlooked.	CR	S	O	3	SDEIS COOP Response #2976
Bill Latady	Tribal cooperating agencies consider a 216,300 acre area bounded by the St Louis River, Lake Superior, Lake Vermilion and the Beaver Bay to Vermilion Trail to be a Tribal Historic District, and the pertinent area for consideration of cumulative effects to cultural resources. Included within the proposed historic district are the headwaters of the St. Louis River, the site of ongoing mineral exploration. The co-lead agencies declined to consider this cultural district as an analysis area in the NEPA process.	CR	S	O	7	SDEIS Theme CR 04
Bill Latady	To summarize, there are gaps in the FEIS that call into question the adequacy of the cultural resources section.	MEPA	NS	X	1	
Ken Gilbertson	I'm writing to present my opposition to the NorthMet mining project. Although the EIS/DNR Commissioner says it is a "reasonably" safe project, this is an inadequate assumption/decision based on the severe consequences should any aspect of this mine fail (especially within a "500 year time span").	GEN	NS	X	1	
Ken Gilbertson	Water quality, loss of wetlands, threats to wildlife, and the introduction of heavy metals and sulfuric acid into the environment are simply not acceptable options. Our state waters and natural resources are far too valuable - beyond any value the mine might bring - to take this risk.	WAT	NS	X	1	
Brooke Staupe	Minnesota Power has closely followed the permitting process for the past ten years and has concluded that the work of the cooperating agencies has been complete, thorough, and has sufficiently identified and evaluated the potential environmental concerns. Minnesota Power commends the cooperating agencies on their science based, data driven evaluation of the environmental issues surrounding the PolyMet Project.	O	NS	X	1	
Brooke Staupe	The positive economic benefits to the region provided by the PolyMet project are well understood. Once operating, the Poly Met Project will provide hundreds of good paying jobs and provide an economic boost to a region of the state sorely in need of it.	SO	NS	X	1	

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Brooke Staupe	The work performed by the agencies has been exhaustive and thorough, and has responded to thousands of comments and concerns from the public. The time has come to move forward. The DNR should affirm the adequacy of the Final EIS so that the State of Minnesota's permitting process can continue. Minnesota Power looks forward to the successful startup of the NorthMet project.	MEPA	NS	X	1	
Justin Roberson	The Kawishiwi River is one of the most beautiful and unspoiled rivers in all of the world. It has a perfect Ph balance that provides a nutrient rich environment for the abundant fish, plants, and wildlife that call it home. It's truly a special place and a one of a kind experience. I am so concerned that any kind of contaminates will destroy this amazing water flow. PLEASE, PLEASE, PLEASE keep the Kawisishiwi the way it is by not letting mining disrupt it's beauty!!!!	WILD	NS	X	1	
Carl Sack	Given the dire threat to the St. Louis River watershed and Lake Superior posed by sulfate and heavy metal runoff from the proposed sulfide mine, I had hoped this day would never come; that Polymet would have closed up shop when the Supplemental Draft Environmental Impact Statement was declared environmentally concerning and insufficient by the EPA and the people downstream of the project would not have to face the prospect of further mercury poisoning.	WAT	NS	X	1	
Carl Sack	have lots of specific objections to the FEIS, which are bulleted below. I have taken what time I can to read through the proposal myself and generate my own objections based on my education in natural history, environmental science, and GIS, rather than submit a form letter provided by a third party. However, I share many of the objections that are contained in such form letters, even if I omit some of them here because they have been so eloquently stated by others. Above all, my objection to the FEIS is that it does not base its recommendations on the precautionary principle: that of, first do no harm. Here in Wisconsin, we have a forward-thinking metallic mining law known as the "Prove It First" sulfide mining moratorium, which says that a company wishing to mine in a sulfide ore body must back up its safety claims with evidence that sulfide ores have been mined elsewhere in North America without major environmental contamination. To date, this reasonable precautionary standard has not been met.	GEN	NS	X	1	
Carl Sack	Yet, regulators of the Minnesota DNR, U.S. Forest Service, and U.S. Army Corps of Engineers-- yourselves--are willing to throw caution to the winds and take on faith the dubious, untested claims that A) containment and mechanical treatment of all but 10 gallons per minute of the mine's runoff is possible, and that B) such containment and treatment can and will be maintained in perpetuity, for at least the next 200 years at the Mine Site and 500 years at the Plant Site. You know and I know that such assumptions--on which Polymet's entire claim of the environmental safety of the mine are based--are laughably unrealistic. Nothing, I repeat, nothing created in the United States of America has yet lasted 500 years, because the United States of America itself is not yet that old. The FEIS flatly states that a reverse osmosis water treatment plant will continue operating for longer than buildings erected by Spanish conquistadors in the days of Cortés have been standing. Such a prediction is absurd.	GEN	NS	X	1	
Carl Sack	Structural lifespans aside, no mining company has ever cared for a closed mining facility in any way for 500 years; few have done so for 100 years, and within that timespan most mining companies have gone bankrupt, been absorbed by larger companies, or otherwise disappeared. The state's ability to maintain treatment facilities after Polymet has ceased to exist is also not guaranteed, as future economic and/or social changes that could interfere cannot be foreseen so far in advance. "Adaptive management" in perpetuity is a comfortable myth that does nothing to prevent the widespread future	FIN	NS	X	1	

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	contamination of area waterways with acid mine drainage.					
Carl Sack	Even in the short term, the models used to predict waste runoff likely overestimate the effectiveness of the wastewater containment systems. The FEIS statement that “engineering controls at the Mine Site and Plant Site would capture the majority [of] affected water for treatment” (page ES-35) is given without any citation of research into the efficacy of similar existing containment systems in climates similar to that of northern Minnesota. What research has been done along these lines contradicts this statement. A 2001 study by researchers in the University of Wisconsin-Madison Department of Civil and Environmental Engineering (Edil et al., 2001, “Compatibility of Containment Systems with Mine Waste Liquids”) included an extensive literature review that found “no case studies regarding the environmental performance of engineered containment facilities for tailings.” The FEIS provides no way to test the hypothesis that wastewater containment and treatment will be effective in the short term, let alone in perpetuity.	WAT	S	O	3	SDEIS Themes WR017, WR018
Carl Sack	The water quality baseline data reported in the FEIS is wholly inadequate. Baseline water quality data is not reported downstream of the Partridge River and Embarrass River watersheds. Although it may be diluted, mine runoff does not stop at the river mouth. Baseline water quality testing should be done for the entire St. Louis River below the mouths of the Partridge and Embarrass Rivers, especially within the boundaries of the Fond du Lac Indian Reservation, in the St. Louis River Estuary, and at any municipal water intake sites.	WAT	S	O	3	SDEIS COOP Response #3161
Carl Sack	The statement is made on page ES-36 that runoff models predict a net reduction in mercury loadings on the St. Louis River downstream of the Embarrass and Partridge rivers due to wastewater treatment; again, there is no way to test this hypothesis given the lack of testing sites on the St. Louis River itself.	MERC	S	O	3	SDEIS Theme MERC 02
Carl Sack	Further, the FEIS leaves the public in the dark in regards to where the mine runoff will ultimately end up. There is no map that shows the entire St. Louis River watershed, including the St. Louis River through the Fond du Lac Reservation, St. Louis River Estuary, and the river mouth in Lake Superior. The regional maps included in the FEIS do not show waterways, and thus lead to a false impression of what areas could be impacted by the mine. Waterways should be shown on figures 1.1-1 and 1.1-2 in particular.	WAT	S	O	7	FEIS Section 6.2.2.1.1
Carl Sack	These impacts may extend beyond the watershed itself to areas chosen as wetland mitigation sites. The fact that there is no way to compensate the 914 acres of wetlands that will be permanently lost on the Mine Site with comparable wetlands elsewhere in the St. Louis River watershed should prohibit the project from moving forward. The FEIS admits that few potential restoration sites of any significant size in that watershed and northern Minnesota in general exist. Those that do could not approach the high quality of the wetlands that will be lost. The Aitkin site that is proposed for mitigation is 100 miles from the mine site and in the Mississippi River watershed, so will not compensate for the loss of wetlands that feed the St. Louis River and Lake Superior. The Hinkley site is even further from the mine site and within a very different ecological context. Any restoration activity conducted by Polymet puts the areas to be "restored" at risk of environmental damage. During the DEIS period, Polymet prematurely attempted to “restore” existing wetlands and biologically rich uplands in the Floodwood area to count toward its compensatory mitigation requirement under an agreement with St. Louis	WET	NS	X	1	

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	County. That agreement was subsequently voided by the Sixth District State Court (Wetlands Action Group vs. St. Louis County, 2007). Polymet should not be trusted to conduct further compensatory mitigation activities. It is also unacceptable that final compensatory mitigation ratios are not included in the FEIS, and thus will be unavailable for public comment when decided upon by USACE.					
Carl Sack	Removal of 6,000 acres of biologically diverse habitat unduly impacts the hunting, fishing, and gathering rights of the Ojibwe bands under the 1854 Treaty, regardless of whether the land in question has easy public access routes. Such a large area of habitat destruction will have impacts on species that regularly move beyond the bounds of the mine area such as bear, moose, elk, and wolves. The runoff from the mine may impact the prevalence of aquatic plants and animals, including game fish and wild rice, and may increase mercury contamination in fish tissues that has a direct impact on the health and well-being of Ojibwe people and other local residents.	CR	NS	X	1	
Carl Sack	Aside from the gravity of the risks from a Polymet mine, the reasons given for permitting the mine in the first place are faulty. The mine is not in the public interest; the only interests served by the Polymet mine are those of Polymet investors. The USACE and MDNR state that the mine would produce "base and precious metal precipitates and flotation concentrates...[that] would help meet domestic and global demand" for these products (page ES-11). However, the ore body that would be mined is a particularly low-grade ore body, and thus mining it is an inefficient way to meet this demand when all economic and environmental costs of the project are accounted for. Of the approximately 11.7 million tons of ore processed per year (32,000 tons per day), about 1% will be yielded as copper, 0.15% as mixed copper/nickel hydroxide, and 0.004% as platinum group element precipitate, according to the figures on page ES-23. This is in addition to the approximately 27 million tons of waste rock that will be produced annually, much of it sulfide bearing and thus environmentally dangerous. A more efficient way to meet domestic and global demand for these metals would be to improve metal and electronics recycling programs, which can reclaim much higher percentages of metals than mining the raw ore of the Northmet deposit. In 2013, metals made up 9% of municipal solid waste, according to the US EPA. Demand could also be reduced by more than the amount of metal the mine would generate by improving domestic source reduction efforts, which involve redesigning products to use less non-recycled raw materials. However, continuing to add metals from raw ores to the world market reduces the economic incentive to bolster recycling or reduce demand; new mining represents a choice to forgo sustainable development. Thus, from a metal supply standpoint, the "No Action" alternative should be preferred.	NEPA	S	O	5	SDEIS Themes NEPA 06, NEPA 09, NEPA 15
Carl Sack	The reasons given for the Forest Service land exchange are also faulty. The threat of a lawsuit is not a good excuse for foregoing the Forest Service's obligations to conserve the natural resources on its lands. Corporations threaten lawsuits to get their way on a regular basis, not fully intending to follow through on their threats. If Polymet is indeed willing to sue USFS over its authority to prevent surface mining on lands with privately-held mineral rights, then the question should be settled by a court of law to set legal precedent for any future cases in which this situation arises. The decision to accept a land exchange leaves this important question ambiguous, but also gives the impression that Polymet's arguments are sound. This is a public disservice and could lead to future scenarios that are disadvantageous to USFS. Unless the law requires USFS to grant surface mining privileges to subsurface mineral rights holders, there is not adequate legal justification for giving the land to Polymet just because they want to mine it, particularly given that the mine would adversely affect the natural	NEPA	S	O	5	SDEIS Theme NEPA 04

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	qualities of adjacent lands that will continue to be owned by the Forest Service.					
Carl Sack	The land exchange sets a precedent for possible future exchanges to facilitate sulfide mining, resulting in cumulative impacts and fragmentation of Forest Service lands. It is no secret that mineral prospecting has been widespread throughout northern Minnesota in recent years, including on Forest Service lands. The possibility that this decision will set precedent for future exchanges was not considered in the Forest Service's Record of Decision. The land exchange directly facilitates the destruction of 914 acres of high-quality wetlands and 1,719 acres of vegetation mapped by the MDNR as Sites of High Biodiversity Significance without creating any such habitats in exchange. The exchange considers only the market value of the surface property rights of the exchanged parcels without economizing and factoring in the value of the ecosystem services that would be lost due to the exchange. If the biological values and ecosystem services lost due to the exchange were factored into the price of the USFS parcel that Polymet wants to mine—as they should be—significantly greater acreages of privately-held lands would be required to make the exchange even.	LAN	S	O	8	SDEIS Theme LAN 01
Carl Sack	For these reasons I request the Minnesota Department of Natural Resources select the "No Action Alternative" and deny any mining permits to Polymet.	PER	NS	X	1	
Carl Sack	I request the U.S. Forest Service reject the proposed land exchange. I request U.S. Environmental Protection Agency initiate a 404(c) process to veto any wetlands fill permits to Polymet. I request the U.S. Army Corps of Engineers publicly recognize that compensatory mitigation sites are inadequate to compensate for wetlands of the size and quality that Polymet would destroy, and deny any Section 404 permit related to the project.	ROD	NS	X	1	
Lynn Bottge	No to the proposed PolyMet Mining Inc. project.	GEN	NS	X	1	
Lynn Bottge	For the third time we have reviewed the results of the Polymet EIS statements. The FEIS fails to address adequately our objections to this project.	GEN	NS	X	1	
Lynn Bottge	Because the site of this project is located in three major water sheds it is inconceivable that a twenty year business that would require 500+ years of water treatment be allowed. This is absolute insanity. There is legitimate scientific concern that toxic pollution will find its way into the BWCAW and Lake Superior.	WAT	NS	X	1	
Lynn Bottge	The major financial backer of the project, Glencore, has a history of mining pollution. Our current State Agencies like the MDNR and the MPCA have a poor record of monitoring pollution from existing mining in our area and an even poorer record of enforcing existing regulations such as the wild rice standard for sulfites in our waters and Mercury emissions standards in our air.	PER	NS	X	1	
Lynn Bottge	The hydrological assumptions of the FEIS have been shown to be false. The claim that stored toxic pollutants will not affect the ground water and wetlands of the area are untrue. For this reason alone, this project should not be allowed.	WAT	S	O	8	SDEIS Theme WR 010

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Lynn Bottge	This project is not right for the geology and the water rich environment of Northeastern Minnesota. It needs to be stopped. Your agency must stop Polymet from mining in Minnesota.	GEN	NS	X	1	
Dennis FitzPatrick	Let's think seven generations out. Don't allow any mercury contamination in our water.	WAT	NS	X	1	
RB Hughes	Mining-No! Ecotourism-Yes!	GEN	NS	X	1	
Leif Larsen	I oppose the proposed PolyMet NorthMet copper-nickel sulfide mine. I feel that the mine creates undue environmental risk in an especially sensitive and valuable area. I also question it's necessity given the current global commodity glut. Are we selling our future for another mine that will whipsaw employees and sit unused?	GEN	NS	X	1	
birchriverwolf@gmail	Based on the information you provided I support your project.	GEN	NS	X	1	
David A. Lien	We respectfully request (for the reasons detailed in the report below: "Hunters & Anglers Question Northern Minnesota Sulfide Mining Proposals") that you reject the PolyMet FEIS as inadequate;	MEPA	NS	X	1	
David A. Lien	the U.S. Forest Service reject the proposed exchange of Superior National Forest lands for the PolyMet project; and the U.S. Environmental Protection Agency veto and the U.S. Army Corps of Engineers deny any Section 404 permit that would allow PolyMet polluted discharge and wetlands destruction.	ROD	NS	X	1	
David A. Lien	The best case scenario for the mine anticipates an estimated 500 years of polluted water that will have to be actively treated. And, not all of the polluted water will be captured and sent for treatment. Every year, 11 million gallons of polluted seepage from the tailings basin will enter groundwater without being treated. Every year, over 5 million gallons of polluted seepage from the mine site will enter groundwater without being treated.	WAT	NS	X	1	
David A. Lien	The plan for an estimated 500 years of active water treatment violates Minnesota Rules (6132.3200) that call for the mine to be left maintenance free at closure. Over 167 million tons of reactive waste rock would be left on the surface after closure. Surrounding this would be a system to collect contaminated seepage that must be monitored and maintained for hundreds of years or longer. A synthetic and soil cover placed over the waste rock pile would require annual maintenance, repairing of erosion, and removal of plants that might perforate the synthetic material. A pit "lake" would be left whose water levels would need to be maintained through pumping to prevent contaminated overflows into the nearby Partridge River. A tailings basin pond would need to have its water levels maintained through pumping to prevent contaminated water from over-topping the dams and entering the nearby Embarrass River. A lengthy network of pipelines conveying polluted and treated water would need to be monitored and maintained for hundreds of years.	WAT	S	O	8	SDEIS Theme WR 037
David A. Lien	And the proposed mine plan does not protect Minnesota taxpayers. The plan commits Minnesota to an estimated 500 years of polluted water treatment without providing critical information about how this will be paid for and who will be responsible for it. Details about financial assurance and a "damage deposit" the company provides are not outlined in the revised mine plan. The public does not know how much 500 years of water treatment will cost, how the company will be	FIN	S	O	8	SDEIS Themes FIN 02, FIN 06

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	held responsible for centuries of costly water treatment, or how the public will be protected from liability.					
David A. Lien	PolyMet makes a lot of rosy predictions, but the FEIS shows that pollution from the mine tailings and waste heaps will last for hundreds of years and pollution seeping from mine pits into the watershed would continue in perpetuity. This short-sighted sulfide mining proposal amounts to gambling with the future of our Great Outdoors, and Minnesota’s nearly 2 million hunters and anglers—and the bait shops, sporting goods stores, resorts, fishing guides, outfitters, gas stations and hotels that depend on their business—won’t stand for it.	WAT	NS	X	1	
David A. Lien	We understand that healthy public wildlife habitat, rivers, and streams are the foundation supporting the American pastimes of hunting and fishing, along with a multi-billion dollar outdoor recreation economy.	SO	NS	X	1	
David A. Lien	In addition to copper, nickel and platinum, the rocks dug up at the PolyMet pits also contain mercury and larger amounts of sulfide minerals—a form of sulfur. When sulfides are exposed to water and air, a natural chemical reaction produces harmful sulfuric acid. Sulfides also interact with mercury, already toxic, to turn it into its most toxic form: methylmercury.	GEN	NS	X	1	
David A. Lien	Copper-mining operations, sometimes called “hard-rock mining” or “sulfide mining,” have left toxic scars across the country, with acids and sulfides leaching into streams, contaminating rivers and lakes, killing fish, and leaving dead zones. And PolyMet says acid-mine drainage (AMD) will be occurring at its proposed Hoyt Lakes mine “for up to 2,000 years.” Less than 1% of the ore would be produced as copper, etc., with waste rock comprising the remaining 99%.	PD	NS	X	1	
David A. Lien	Former state Rep. Frank Moe is a guide and outfitter on the North Shore. Moe says when his old friends in the State Legislature consider whether to grant a permit to PolyMet to operate a hardrock sulfide mine, they should consider the other jobs at stake. Not just a couple hundred mining jobs, but jobs like his: there are 30,000 people working in the Northwoods recreation economy. Moe asks the legislators and commissioners whether tourists will still come north if the rivers and lakes are polluted. Moe says, “Sulfide mining has a perfect record. A perfect record of environmental damage. There are no examples of a hardrock mining operation without serious pollution.” He likes the Wisconsin model. He wants PolyMet to make upfront financial assurances that will pay for any and all cleanup costs. He doesn’t want taxpayers stuck with the bill, but Polymet says the upfront assurance is a deal-breaker, which isn’t a surprise. Why? Because PolyMet also says acid-mine drainage (AMD) will occur at its proposed Hoyt Lakes mine. The company’s draft Environmental Impact Statement stated that: ? “Water leaching from the waste rock piles is expected to be contaminated for up to 2,000 years;” ? “The West Mine Pit will overflow at Mine Year 65 (45 years after expected mine closure), contaminating the adjacent Partridge River with sulfates and heavy metals;” ? “Due to structural instability, the tailings basin has a ‘low margin of safety.’”	FIN	NS	X	1	
David A. Lien	If PolyMet and Duluth Metals officials won’t agree to abide by tough, common-sense legislation that requires them to be held fully accountable for all future remediation and cleanup costs, thereby protecting taxpayers from having to pay to clean up their toxic mess, it’s time to send them packing. PolyMet says new technology will virtually eliminate the threat of acid-mine drainage. If that’s the case, why won’t they provide up-front financial guarantees? Why is this a deal-breaker if there’s	FIN	NS	X	1	

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	no concern about creating a toxic waste site? Answer: They must not believe their own rhetoric.					
David A. Lien	The very lifeblood of northern Minnesota's economy is its healthy watersheds and waterways, but PolyMet's proposed mine waste will be leaching sulfuric acid into those same northern Minnesota waterways "for up to 2,000 years." Is 20 years of a couple hundred sulfide mining jobs worth 2,000 years of poisoned waterways and watersheds that will cost the rest of us millions, and possibly billions, to clean up?	SO	NS	X	1	
Dan Andree	There has been a lot of studies etc. on the idea of having a mining operation allowed near the BWCA in Northeastern Minnesota so much that it not only gets time consuming just looking and reading about it that its almost confusing not to mention exhausting.	NEPA	NS	X	1	
Dan Andree	The history of such mining companies is that once they are done mining they are not that concerned about what is left behind. Also what they leave is such an eye sore not to mention hazardous to nearby watershed areas etc.	PD	NS	X	1	
Dan Andree	The BWCA and NE. MN. in general has riches far greater than anything that can be taken out of the ground like copper etc. NE. MN. has forests, rivers, lakes, streams, marshes, bogs etc. varied terrain wildlife etc. The BWCA and its interconnecting waterways are so much more valuable than anything a mining company could possibly extract from the land, though Mining Companies may not agree as I feel they are after making money first.	SO	NS	X	1	
Dan Andree	I just strongly feel mining is a big mistake and it will be a tragic thing if allowed in such a rare and beautiful forested region of stunning lakes etc. You just cannot put a dollar sign on it. Once lost it is gone forever and not only MN. but the rest of the world will have lost some thing more valuable than anything taken out of its ground. I am strongly against the NorthMet Mining Project. Places like the BWCA and areas near it offer more to visitors and even nonvisitors who may just read about it or view photography and videos of the area than mining in that region ever could	WILD	NS	X	1	
Sherry Phillips and Paul Tine'	We do not agree that the U.S. Forest Service proposal to exchange Superior National Forest land for the PolyMet proposal is a good idea at all. While some have suggested that these lands are already degraded from mining, we disagree. We are familiar with these lands and because they have been left in a forested state, they have actually become valuable resources for the wildlife, rare plants and water resources there.	LAN	S	O	8	SDEIS Theme LAN 01
Beth Lewis	Inadequate hydrologic models of volume and direction of water flow.	WAT	NS	X	1	
Beth Lewis	Increased health risk to humans, plants and animals from mercury and other pollutants in the already contaminated St. Louis River watershed.	HU	NS	X	1	
Beth Lewis	Possible damage to the Rainy Lake watershed and BWCAW from north flowing acid drainage.	WAT	NS	X	1	
Beth Lewis	Insufficient mitigation of wetlands.	WET	NS	X	1	
Beth Lewis	Lack of consideration of alternatives to open pit, surface mining.	ALT	NS	X	1	

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Beth Lewis	As a Lake County property owner and MN tax payer, the NorthMet project does not make economic nor environmental sense. The cost risk to tax payers to protect water and environmental quality for hundreds of years for a commodity industry with boom/bust cycles and foreign corporate owners with poor track records in both treatment of workers and the environment isn't worth it.	SO	NS	X	1	
Natalie Hilscher	Does the inflow of capital really outweigh the global costs we'll all have to pay down the road?!?! Really? And I thought Minnesota was progressive. We have such a beautiful state with so many beautiful, clean lakes and risking fucking that up seems pretty ridiculous to me....	SO	NS	X	1	
David Brown	ALL mining is bad for the environment and pollutes the water. IF you look at all the other mining areas in the U.S. any type of mining has caused pollution in each area.	GEN	NS	X	1	
David Brown	If MN needs more jobs, then create pollution free jobs, not mining.	SO	NS	X	1	
David Brown	Most of the Southern half of the state has water too polluted to swim or fish in. PLEASE don't destroy the water in the Northern half of the state too.	WAT	NS	X	1	
Melanie Peterson-Nafziger	I write to beg you to not allow the PolyMet project to move forward and to urge you that the procedures laid out in the Final EIS will not protect Minnesota's natural resources from permanent degradation and people and other creatures from permanent pollution and devastation.	GEN	NS	X	1	
Melanie Peterson-Nafziger	The PolyMet mining company does not have a history of environmental and corporate responsibility with a mine of this size. Its affiliated corporation Glencore has a devastatingly negative record of corporate responsibility, requiring a presidential pardon for the founder to escape responsibility for his past environmental disasters and negligence. This sulfide-mining industry has a track record of escaping long-term corporate accountability through bankruptcy and other manipulative maneuvers. Promises made in the EIS do not assure Minnesotans of any long-term commitment to the disaster this mine would create.	PER	NS	X	1	
Melanie Peterson-Nafziger	Besides the proven irresponsibility of the corporations pursuing this business in our state, this type of open-pit mining has a proven track record of permanent devastation of land and pollution of waterways. In 2015/2016 it is unforgivably irresponsible to approve new sources of sulfuric acid, which we have worked so hard to reduce since the 1980s. The EPA has designated this type of mining the most toxic-waste producing industry in the country. This industry is not welcome in Minnesota.	AIR	NS	X	1	
Melanie Peterson-Nafziger	More than half of the wetlands in the area would be impacted or permanently impacted; reduction of the impacts on the surrounding environment is unacceptable	WET	NS	X	1	

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Melanie Peterson-Nafziger	This region and watershed connects directly to some of Minnesota's most significant and pristine water resources like the Boundary Waters, St. Louis River and Lake Superior. This is ABSOLUTELY unacceptable! The citizens of Minnesota have already made their opposition to this plan and the steps laid out in the unacceptable EIS plan clear in their unprecedented opposition to the initial Supplemental Draft EIS.	WAT	NS	X	1	
Melanie Peterson-Nafziger	The 20-year profits for an inexperienced US company (not even from Minnesota) and multinational mining company are not worth the permanent degradation of Minnesota's natural resources.	SO	NS	X	1	
Melanie Peterson-Nafziger	If you want to support the increased abundance of platinum metal groups, please pressure the Minnesota Legislature and governor to require increased capture and recycling of platinum metal groups minerals rather than destroying bogs, forests and wetlands. There are many electronics items that could be diverted from the waste stream with clearer, more aggressive state and federal regulations, which would result in the same capture of platinum metal groups without turning Minnesota's 4 billion-year-old granite into 20-story piles of sand and Minnesota's watersheds into toxic cess pools.	ALT	NS	X	1	
Melanie Peterson-Nafziger	The assurances required by the PolyMet EIS do not protect Minnesota's natural resources and communities from this same permanent degradation, despite a promise from PolyMet to provide funding for clean up.	FIN	NS	X	1	
Edward Pendleton	Dear Sir, It is my belief that the water quality will be compromise.	WAT	NS	X	1	
Edward Pendleton	This will affect all form of wildlife from insects, fish up to larger animals.	WI	NS	X	1	
Edward Pendleton	As a result this will destroy the recreational industry effecting many more jobs that will be created.	SO	NS	X	1	
Edward Pendleton	Therefore I am opposed to granting any permit.	GEN	NS	X	1	
Nicholas Eltgroth	I am completely opposed to the sulfide mining that NorthMet is applying for in NE Minnesota. There is no way they have, or will use the technology to do sulfide mining without polluting the soil and land around the mine.	GEN	NS	X	1	
Nicholas Eltgroth	No matter how much money they put up for insurance to do the clean up, they will not be able to clean up the water tables and rivers and lakes in NE Minn.	FIN	NS	X	1	
Nicholas Eltgroth	We do not need or want this kind of toxic pollution, no matter how many jobs it may create.	SO	NS	X	1	
Nicholas	The money they make on mining can never clean up the water and land they pollute in the Lake Superior Basin, and the	WAT	NS	X	1	

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Eltgroth	Boundary Waters.					
Nicholas Eltgroth	Exchanging a few acres of land is not going to stop the toxic pollution.	LAN	NS	X	1	
Jared Yount	I am staunchly against this project.	GEN	NS	X	1	
Jared Yount	We will end up cleaning up after this mine for many years after the mine is closed or the company that operates it goes belly up.	FIN	NS	X	1	
Jared Yount	We need to look at other ways to get jobs to the iron range. The cost of the material they are going after has been sliding as well.	SO	NS	X	1	
Jared Yount	We need to protect our real resource, the BWCA and surround bodies of water.	WAT	NS	X	1	
Jared Yount	They do not have our states best interests at heart. Stop them before they do irreversible damage...	GEN	NS	X	1	
Chris Bangs	I ask that you NOT approve this mine to be developed and opened. The risk is far too great for such a special place in Minnesota and the entire continent.	GEN	NS	X	1	
Chris Bangs	As we've seen from the taconite industry, and I was born and raised in Chisholm in the heart of the Mesabi Iron Range, it is a fickle and short-lived industry. Jobs come and go, the Canoe Country is a truly unique and special place.	SO	NS	X	1	
Brian Wesley	I am sure the company that is proposing mining is sincere in trying not to let there be a spill or breakdown in the mining. However, the possibility is there, and once polluted or destroyed, the area is gone forever.	PD	NS	X	1	
Brian Wesley	I am sure the company that is proposing mining is sincere in trying not to let there be a spill or breakdown in the mining. However, the possibility is there, and once polluted or destroyed, the area is gone forever.	PD	NS	X	1	
Brian Wesley	For 40 years we have enjoyed and treasured using Voyageurs National Park, the Boundary Waters and Minnesota's 67 State Parks. Our state is unique and precious naturewise; please don't allow more mining in a such a delicate area.	GEN	NS	X	1	
Jeff Bryan	The probability is high that there will be contamination of the water on the north shore with heavy metals.	WAT	NS	X	1	
Jeff Bryan	These toxic byproducts of the mining will last many times longer than any economic benefit to the iron range.	SO	NS	X	1	
Jeff Bryan	The expense of the clean up will be borne by the citizens of the state.	FIN	NS	X	1	
Jeff Bryan	The impact to the water quality and surrounding wilderness areas will be great!	GEN	NS	X	1	

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mike hughes	after reviewing the material, i can't help but wonder what would have happened in northeastern minnesota if this review was required 125 years ago when iron mining began. it appears that the impact of mining non-ferrous materials now won't be any different than it was then and things are just fine now. therefore, i fully support the mining of non-ferrous materials slated for n.e. minnesota.	GEN	NS	X	1	
Jack Buck	First off, I was wondering about what the statement means exactly when it says "[The EIS] assumes mechanical treatment would be required indefinitely at both the Mine Site and Plant Site. This is because the water modeling was not designed to predict how long the proposed NorthMet project would require water treatment." Does this truly mean there is no foreseeable end to water treatment efforts in that area? I read an article or two that said PolyMet would have to go through 500 years of cleanup from acid mine drainage... Is that truly the case, given the circumstances and technology?	PD	NS	X	1	
Jack Buck	Secondly, how accountable is PolyMet (in the event that the mine should fail or be abandoned) to continue paying liabilities to the state? The Reclamation and Financial Assurance Fact Sheet states, "PolyMet's preliminary cost estimate for reclamation and post-closure activities for the proposed NorthMet project would be up to approximately \$200 million for reclamation activities, and an additional \$3.5 million to \$6 million a year for post-closure monitoring and maintenance." However, it does not address the possibility of PolyMet's bankruptcy, however improbable, and that issue concerns me. I have heard about the Zortman-Landusky mine failures in Montana, and while I understand it faced different conditions and was a gold mine, not a copper-nickel, the fact that the state of Montana is still working to pay off repercussions from 17 years ago in my opinion speaks loudly to the gravity of something like that occurring here... How would Minnesota taxpayers and the state itself have to deal with a fallout such as that?	FIN	NS	X	1	
Jack Buck	Lastly, am I correct in thinking that the EIS concerns only the best possible outcomes, if everything goes as PolyMet has proposed? How does the statement account for potential spillages or other things that could go wrong? It does state that the project would meet most standards for air quality, water quantity and quality, mercury levels, sulfate levels in wild rice, and directly/permanently affect 913 acres of wetlands. Still, this sounds like it's describing conditions of 100% accuracy.	NEPA	NS	X	1	
Jack Buck	In your honest opinion, how sound are hard rock mining practices? The peer review of a study conducted in 2006 explained, "It is clear that the hardrock mining companies and perhaps the regulatory agencies overseeing them did not adequately emphasize environmental aspects during mine planning and mining operations" (Atkins et al. 4)...	PER	NS	X	1	
Sandy Kershaw	We vote against Polymet's big dig.	GEN	NS	X	1	
Sandy Kershaw	Copper mining in and around our "Golden Goose" could be a monumental disaster both spiritually and economically.	SO	NS	X	1	
Terrie Christian	You have an important decision to make about the Polymet mine. I urge you to say no.	GEN	NS	X	1	
Terrie	Loss of jobs affected my own family including my mom.	SO	NS	X	1	

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Christian						
Terrie Christian	A few hundred jobs for 20 or so years does not warrant the risk to our water. Water is life itself. Without nothing can live.	WAT	NS	X	1	
Terrie Christian	A few hundred jobs for 20 or so years does not warrant the risk to our Again, I urge you to say no!	GEN	NS	X	1	
Mike Maleska	As this process unfolds from conception to the present, an unmentioned, yet ever-increasing truth gains momentum. And that is the anticipated economic draw complicating the reality of the issues. No future (potential) mine employee will want to be the one to step forward and say "this is not the tolerance level for pollution I am comfortable with" and follow up by contacting the authorities. No mayor of a local community will want to step forward and say "this mine has to be shut down due to intolerable levels of pollution, or unfair transgressions of a mining company on the welfare of his/her community. Politically, no incumbent will seek closure of a mine due to pollution. Indeed, it is in the best interest of politicians to maintain the flow of tax revenues and voter pleasure. Spin-off industries and their employees will oppose any slow-downs or closures.	SO	NS	X	1	
Mike Maleska	Potential copper-nickel mining ventures seem to get extra attention any time the economy gets rattled or the iron ore industry staggers. It is at exactly these times in our mining history that people become vulnerable to the temptation to tolerate the weakening of environmental regulations. Add that to the economic enticements of mining exploitation and you have created the opportunity for a disaster like nothing Minnesota has ever before experienced.	PER	NS	X	1	
Mike Maleska	Should the permitting be allowed, and the mine is up and running it is very difficult to see how any entity at all could have the courage and support to seek suspension or stoppage of such an economic dynamo.	SO	NS	X	1	
Michael D. McNally	As regards Chapter 8, the principal concern I saw in the SDEIS remain concerns in the FEIS, a myopic approach to the concerns of the Grand Portage, Bois Forte, and Fond Du Lac Bands of Ojibwe, the GLIFWC, and the 1854 Treaty Authority about the underestimated potential effects of the contemplated Northmet mine and Land exchange on cultural resources and the natural resources in the 1854 ceded lands to which the bands retain usufruct rights.	CR	NS	X	1	
Michael D. McNally	My concern is that the federal agencies are obligated by Executive Order and by the federal trust relationship, and advised by their own agency best practices, to pay particular attention to concerns of federally recognized tribes, and are obligated under the terms of the 1854 Treaty of LaPointe in particular. Although clearly the Tribes, the GLIFWC, and the 1854 Treaty Authority have been engaged in the process, that engagement appears still to be a strategy of containment on the part of the federal agencies, a containment strategy that is, it seems to me, perfunctorily organized under the rubric of Major Differences of Opinion in the FEIS:	CR	NS	X	1	
Michael D. McNally	At least this containment strategy has been taken from the bowels of the appendices, as it was in the SDEIS, and the subject of its own chapter in the FEIS, but to the reasonable reader in the public, it might as well be an appendix for the way the specific concerns of the tribes and tribal agencies were corralled into a cluster of Major Differences of Opinion, the cumulative effect of which it seems to me is "we heard you and because you oppose the project and have retained scientists	CR	NS	X	1	

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	that pose questions of the assumptions on which our scientific modeling are built, we're not changing anything in the FEIS."					
Michael D. McNally	This is not a minor concern. The 1854 Treaty of LaPointe recognizes retained usufruct rights to the Minnesota tribes in ceded territories, and thus a cluster of rights to areas affected by the Northmet Project and the Land transfer that are sufficiently distinct that their concerns should receive evident careful consideration, and this consideration cannot content itself with proclaiming a major difference of opinion without providing the tribes, and the public, the reasons for rejecting the challenges to the assumptions on which the area of potential effect is established or the scientific analysis of the potential effects are based.	CR	NS	X	1	
Michael D. McNally	Ojibwe people have good reason to question assumptions where so much is at stake in the potential effect on their rights to the ceded land. Ojibwe people's health and well-being is tied to their lands. If, for example, whether water quality analysis turns not on the water quality effect but on whether a certain standard is exceeded, or consideration of other projects are to be included in the cumulative effect analysis is obfusatory analysis in the FEIS. Under NEPA, the public, no less the tribes whose treaty rights obtain in the affected watershed, deserves the hard look at these effects the law requires.	NEPA	NS	X	1	
Michael D. McNally	As a careful reader of these portions of the FEIS, my question from the SDEIS remains: is there evidence of serious consideration and consultation with the tribes. In the FEIS, clearly the consultation and consideration were approached as the scheduling of meetings and the documentation of tribal concerns, and not a serious engagement with the concerns of federally recognized tribes whose views are not those of one among many public interest groups but those with whom the federal agencies involved are under legal treaty based and federal trust obligations to seriously engage, not to push paper to a Chapter 8 where the concerns are summarily dismissed.. The FEIS fails to show serious engagement in Chapter 8. Moving the discussion from the Appendix to Chapter 8 at least makes this oversight in the NEPA review process clearer, but it doesn't make it any more substantive. I urge an amended FEIS in better keeping with the federal agencies obligations to the tribes, and elaborating on the reasoning behind the 18 "Major Difference of Opinion" that demonstrates a serious engagement with the tribes and tribal agency concerns..	NEPA	NS	X	1	
Thomas J Sundberg	Neither of us have any environmental concerns about the mine. It appears to me that all of the questions have been answered, and the permitting process should proceed. The Iron Range has a rich tradition of mining, and has always upgraded the facilities when any environmental concerns arise. The area is in need of mining to create good paying jobs and help alleviate the high unemployment in the area. Don't play politics with the future of the Iron Range, approve the permits, and allow the area to prosper.	PER	NS	X	1	
Chatta Small	This project will cause permanent and devastating damage. The answer to this company should be a resounding Absolutely Not. You cannot destroy our habitat, our water. I understand the need for jobs, but this is NOT the way to do it.	GEN	NS	X	1	
Randy Holland	My comment boils down to why is approving these permits such a rush? None of the rare earth elements being targeted are becoming obsolete. So can't we wait a few decades until some testing is done and/or better filtering technology is	NEPA	NS	X	1	

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	available? Corporations are always in a rush due to stock price pressures, yet the public interest is to NOT rush things.					
Randy Holland	The few jobs being created are pathetic compared to the pollution risk that threatens the tourist industry, water supplies, public health, and fisheries. The state's finances are also in good order for the near future so there's no reason to grab the tax revenues now.	SO	NS	X	1	
Randy Holland	Furthermore, the legacy of every name involved will be stained if an accident happens and the pollution endowment isn't enough. Federal funding for private pollution is becoming harder to come by, so Minnesota taxpayers would be stuck with cleanup costs centuries from now. In particular when you comprehend that no nation has existed for five centuries yet, it's mind-boggling what kind of endowment legal issues must be anticipated as the concept of nation-states and corporations evolves.	FIN	NS	X	1	
Randy Holland	If a long-term approach is used, public opinion will trust the decisions. Rushing things looks highly suspicious, if not corrupt, especially considering the lack of comprehensive studies or tests. Please, please, please do the right thing and keep this on the slow track. The minerals aren't going anywhere. Thank you for listening to my concerns.	NEPA	NS	X	1	
Catherine Brown	The state of Minnesota will never recoup the money lost or be able to redeem the state's reputation for clean water and clean politics. Why don't we spend some money creating real sustainable jobs on the Iron Range and training folks to work them? People want jobs – good jobs, real jobs. Let's make some!	SO	NS	X	1	
William K.	In my opinion, the Final Environmental Impact Statement for the Polymet project shows several substantial improvements in the project since the previous draft version. Among these I consider the placement of the double lined hydrometallurgical residue facility at a brown field location and the use of bentonite in the tailings basin significant advances.	PD	NS	X	1	
William K.	Alas, the EIS still fails to address how long term treatment of waste from the project is going to be carried out. The EIS quite honestly admits that "mechanical treatment would be required indefinitely at both the Mine Site and Plant Site." I respect such candor. Unfortunately, however, the EIS completely fails to explain how and by whom this long term treatment will be accomplished.	PD	NS	X	1	
William K.	Nor is there any plan for how financing for this indefinite treatment will be provided.	FIN	NS	X	1	
William K.	While I think the Polymet plan as presented in the present EIS is about as good as can be hoped for for a new mining project, the decision whether to approve the project is a stark choice: Twenty years of intermittent jobs that depend on the vagaries of the metals markets followed by an endless threat of water pollution, or preserving the healthy natural environment albeit with the less than vibrant local economy that we have in northern Minnesota today.	SO	NS	X	1	
Pamela and Alexandra Thompson	The most recent iteration of the EIS STILL maintains that waste water would have to be isolated for over 500 years! (This is longer than the time that has elapsed since Christopher Columbus came to the Americas!!)People gloss over this sticking point, but it is like something from a Saturday Night Live script!! How can water remain sequestered safely ANYWHERE for 500 years, much less in our Arrowhead topography, which is so much wetland, bog, lake and stream? Water table high, water running off in three directions from the Laurentian Divide? It is ludicrous to think anyone could successfully sequester	WAT	NS	X	1	

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	water for any length of time, and potable water is our northern Minnesota's MOST valuable asset, much above the value of a 20 year span of jobs in copper and nickel mining.					
Pamela and Alexandra Thompson	Do we kid ourselves into thinking that the directors of Polymet (with Glencore/BP's Tony Hayward at its head) care about our long-term pollution? They will never live here, never invest positive time and energy in our communities except where that investment begets enormous stockholder money. They won't buy a house here, come to school board meetings, help renovate the church parish hall...	PER	NS	X	1	
Pamela and Alexandra Thompson	PLEASE consider the long-term - our 7th generation - when weighing 20 years (at most) of 400 (at most) mining jobs versus potable water, which is getting more and more scarce on this entire planet.	SO	NS	X	1	
Pamela and Alexandra Thompson	Also please consider the jobs in tourism (diversity of industry in this area) which will disappear with the advent of copper-nickel mining. There are many of us who would like to stay at our jobs we've carved out for ourselves in some facet of the tourism industry, who are NOT pining for jobs in the mining industry.	SO	NS	X	1	
Pamela and Alexandra Thompson	Does anyone think that when iron mining suffers a reversal, copper-nickel mining will come to its aid? It will NOT! Mining for all these minerals will wax and wane together. Every time iron mining suffers a reversal, copper-nickel mining will follow or precede.	SO	NS	X	1	
Bruce Valen	Please be advised that as a citizen of Minnesota I am opposed to the above referenced project. The long term environmental effects are so uncertain that I believe that the risks far outweigh any short term benefits. Even if the mine operators pledge a certain sum for future cleanup, there is no assurance that said funds will be adequate.	GEN	NS	X	1	
Michelle Egan	I just wanted to express my concern about the proposed mine. Since this state has such valuable water assets, I believe that the small amount of temporary jobs that would be created is not worth the risk. Northern Minnesota needs a diverse economy and mining would just be more of the boom and bust job pattern that has always been a problem in that region.	SO	NS	X	1	
pipekeepers	why do we need more mines tearing up our world? where is the leftovers going to go? into our rivers and swamps. Why do we want to give away (trade) more of our awesome woodlands so they can make more money. people come to N MN from all over the world to see our beautiful woods will the come to see a big hole?	GEN	NS	X	1	
Pete Fleming	I have read the Exec Summary and various media articles on the Polymet project and conclude that there are still significant concerns with the water drainage from/through the site making it is unwise to proceed with this project. There is a large risk of water pollution into Lake Superior and the BWCA.and no certainty in the water models . The science and technical analysis performed is not enough. Don't take the chance.	WAT	NS	X	1	
Kobilka Bradley	They are concerned about the longterm cost of clean up after Polymet leaves, the species that live in and around the BWCA including the fish and wild rice, potential for pollution.	GEN	NS	X	1	

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Kobilka Bradley	They support the Prove it First Law adopted by the state of Wisconsin and would like to see that law put into effect before any land is mined.	PER	NS	X	1	
Antoinette Gilchrist	I'm opposed to the NorthMet project.	GEN	NS	X	1	
Brad Heltemes	Though it is understood that it is the DNR's task to consider also the economic and recreational aspects of our nature resources, the first and foremost role of the MNDNR is, and should be, to protect those resources -- they must be preserved for all to enjoy, including future generations. As a physician and scientist, it has become quite clear to me that the proposed PolyMet mine would seriously threaten just that, with a significant risk of causing irreparable damage to our water supply, fish and wildlife, the health of those living in the area, and ultimately the livelihood and enjoyment of the Minnesota people.	SO	NS	X	1	
Brad Heltemes	The water modeling for this extremely inefficient proposed mining project is inadequate and ground water testing has not taken into account the amount of bedrock waste that would be generated.	WAT	NS	X	1	
Brad Heltemes	And though the risk of an extremely catastrophic breach may be fairly low, the clean-up attempt of damage that would result would break the Minnesota state budget and would still fall far short of adequate; consider that no insurance company would ever consider insuring the state against such an event, which should be an alarming thought for all of us.	FIN	NS	X	1	
Brad Heltemes	cancel once and for all any support for this ill-advised project and consider channeling energy and resources instead into sustainable development options for Northeast Minnesota.	ALT	NS	X	1	
David Genson	It has come to my attention there is a pit mine being proposed near Lake Superior spilling into a river that spills into Lake Superior. I am extremely opposed to such a stupid idea. I will call anything stupid that could have a negative impact on the Great Lakes, even the smallest chances of an accident. Find another solution for the sulfide source. Let me say again, do not mess with the Great Lakes, protect them at all costs, their value is limitless.	GEN	NS	X	1	
Jeff Feldmeier	no mines	GEN	NS	X	1	
David Bonello	After reviewing the information from both sides of this issue, I am convinced the risks outweigh the benefits.	GEN	NS	X	1	
Arla Schumack	Clean water is more important than mining!	GEN	NS	X	1	
Graden West	My only comment on mining on this issue is that I'm always concerned about the future. Polymet may be able to control "erosion" or "leakage" from these mines for several decades but what and or who will be around to manage problems in 2 or 3 hundred years or longer? Who will pay for problems? It shouldn't be John Doe. It should be Polymet!	PD	NS	X	1	
Peter	The least restrictive means standard is exceptionally demanding (see City of Boerne, 521 U.S. at 532) and cannot be met by	PER	NS	X	1	

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Bormuth	the proposal for the North Met mine.					
Peter Bormuth	Mesabe Widjiu1 is an acknowledged "cultural resource" and is an irretrievable resources under 42 U.S.C. 4332 Sec. 102 (2)(C)(v).	CR	NS	X	1	
Peter Bormuth	Mesabe Widjiu is within the APE of the NorthMet mine. Mesabe Widjiu is a Traditional Cultural Property (TCPs). Beliefs or practices associated with a TCP are of central importance in defining its significance. Mesabe Widjiu is the path of the Thunderbirds. Mesabe Widjiu is a tangible property as defined in National Register Bulletin 38 as a place "eligible for inclusion in the NRHP because of its association with cultural practices or beliefs of a living community that (a) are rooted in that community's history, and (b) are important in maintaining the continuing cultural identity of the community" (National Register Bulletin 38:1). Since Mesabe Widjiu is adversely affected by the North Met mine, (see 36 CFR 800.5) the USACE and the USFS must avoid the effect by refusing to permit the land exchange, since the effect cannot be mitigated.	CR	NS	X	1	
Peter Bormuth	The destruction of a section of the Mesa be Widjiu destroys the integrity of the landform and the earth energies and spiritual energies associated with the landform.	CR	NS	X	1	
Peter Bormuth	The USACE and the USFS both admit that the best feasible alternative to permitting the mine is to maintain the status quo with continued mitigation of existing problems (See FE IS-Chapter 3). This action must be adopted by the co-lead agencies.	ALT	NS	X	1	
Michael Levings	On reading some of the information concerning PolyMet Mining's E.I.S. it is my unshakeable conclusion that to proceed with this method of mining northeast of Biwabik MN. at the headwaters of Lake Superior would be to defraud your citizens to be "IE our children" of their natural and God given rights to clean water.	GEN	NS	X	1	
Michael Levings	Pound for pound – clean water is worth more than metal	SO	NS	X	1	
Michael Levings	3 feet of clay will filter all pathogens known to man but ionic bonds to water last years even centuries.	WAT	NS	X	1	
Michael Levings	By PolyMet's own admission 10% of chemically polluted water will seep south toward and eventually into the Embarrass River and then too Lake Superior. By their estimates 10% would translate into 10 million three hundred thousand gallons a year. 4. The 90% they say would be contained and treated would therefore be nine hundred twenty seven million gallons yearly. To be treated back to its original condition would take an evaporative method and none of that size exist.	WAT	NS	X	1	
Michael Levings	I think it is safe to say that treatment to their thinking is too a sediment pond of enormous size for reusable tho still polluted water for their sulphide flotation. This pond would be susceptible to containment blowouts caused by rain, winds, earth movement, and human folly.	WAT	NS	X	1	
Michael Levings	Any inspections to pollution control methods under existing law can only be carried out after the fact "IE. The DNR can not shut them down until pollution is found outside their operational jurisdiction" and (they are acquiring vast land holdings).	PER	NS	X	1	

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Michael Levings	Their plan of operation is for 40 years, they admit to an indefinite time of water treatment possibly 500 years can they guarantee this long of a treatment. I think not, as most mining companies in this area change names, ownership, and responsibility as fast and much the same reason they change underwear. Not to mention the Canadian controlled mining company will probably be guided by liberal Trudeau governing body.	FIN	NS	X	1	
Gerard Snyder	Governor Dayton is planning to examine the mining experience and financial wherewithal of PolyMet Mining Corporation to launch, sustain, and provide adequate financial assurance for its proposed mining operations. Permitting an inadequately or marginally financed mining company to undertake such operations would put Minnesota's reputation, its economy, its natural environment and its taxpayers at risk for generations to come.	FIN	NS	X	1	
Gerard Snyder	According to its public filings with the U.S. Securities and Exchange Commission, PolyMet is a Canadian corporation with a 34-year history that includes "no history of producing minerals," "no mining operations of any kind," and "no operating history upon which an evaluation of (its) future success or failure can be made." [Form 20-F at 9.]	PER	NS	X	1	
Gerard Snyder	As of its most recent Pricewaterhouse Cooper LLP audited financial statements dated January 31, 2015, PolyMet disclosed that had accumulated a deficit of \$103.8 million [Id at 9, 16, F4] and that most of its assets consist of capitalized expenditures. Statements such as these, made by PolyMet in SEC filings containing audited financial statements and certified by PolyMet Chief Executive Officer and Chief Financial Officer, should be given greater weight in evaluating PolyMet's financial wherewithal than statements made by PolyMet without such checks and balances, such as those fragmented verbal communications, press releases, and advertisements. And statements such as those contained in the SEC filing, raise considerable doubts as to PolyMet's ability to deliver on its promises to the State of Minnesota.	FIN	NS	X	1	
Gerard Snyder	Since PolyMet is so thinly capitalized, it has little margin of error to avoid bankruptcy.	FIN	NS	X	1	
Gerard Snyder	PolyMet is dependent on, and controlled by its parent company, Xstrada Glencore, to fund or guarantee its financial obligations and to provide mining expertise. Declining commodity prices makes it increasingly questionable whether Glencore has the financial resources to sustain a viable operation for not only PolyMet, but also for itself.	FIN	NS	X	1	
Gerard Snyder	Glencore is incorporated in the island of Jersey, located in the English Channel off the coast of Normandy, France, and headquartered in Switzerland. Substantially all of Glencore's assets and the majority of the assets of its directors and officers are located outside the U.S. As result, it may not be possible to effect service of process on them within the U.S. Without service of process, Glencore might not be accountable through U.S. courts or Minnesota regulators for its conduct with respect to PolyMet.	FIN	S	O	8	SDEIS Theme FIN 02
Gerard Snyder	Moreover, the legal ramifications in an open-ended requirement, "as long as needed" or "required indefinitely" (FINAL EIS) may create a problem with the rule against perpetuities. Furthermore, since the financial assurance anticipates possible future infusion of funds into the assurance program, payments might be treated as a voidable preference period by which a bankruptcy court could redirect recent funding to be paid to outstanding creditors, and not to be used for reclamation.	FIN	NS	X	1	

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Gerard Snyder	the DNR mistakenly takes comfort that money owed to the DNR for environmental corrective actions cannot be discharged through bankruptcy. Since the DNR agreements are with PolyMet, not Glencore, then this provision has no value if PolyMet has little or no tangible assets.	FIN	S	O	8	SDEIS Theme FIN 03
Gerard Snyder	If the mining Minnesota operations were undertaken by financially sound, legally based U.S. company, with quality reputations of its officers and directors, a record of environmental enlightenment, and good employee relations, then Governor Dayton might still have a hard decision, but it should not be hard to render a negative decision on PolyMet's inadequate mining permit application .	FIN	NS	X	1	
Michael McKenna	A more in depth E.I.S. should be done to fully and accurately assess all the negative impacts on this amazing hi-quality watershed.	NEPA	NS	X	1	
Michael McKenna	The "Final" E.I.S. is not adequate and doesn't address northward waterflows into the Boundary Waters Watershed, water quality testing on site, and the degradation to the environment for 100's of years in the future...	WAT	NS	X	1	
Barry Lesar	I firmly believe that this project has been shown to be as safe as humans can make it for the environment I also know that as refinements are made to the process and as conditions change, the requirements for Polymet to meet even more stringent environmental controls will be enacted. One need only look at Taconite mining and how it has evolved and improved it's processes to enhance the environment to see that this is a safe and needed endeavor. Please quit dawdling and get the permits to Polymet so they can start mining and processing the minerals we so desperately need to continue in the lifestyle everyone seems to need.	GEN	NS	X	1	
Egil & Gudrun Hoivik	We are thoroughly convinced that the PolyMet project will cause environmental destruction for centuries to come if it is allowed to happen.	GEN	NS	X	1	
Cele von Rabenau Lieder	On a purely economic scale, the jobs from it would be relatively few and temporary, and cannot offset the the potentially serious loss to the tourist industry, which has been a reliable, safe source of jobs and income for decades.	SO	NS	X	1	
Cele von Rabenau Lieder	The BWCAW is arguably the most priceless guardianship we have. Nothing is worth risking it, especially in the hands of a company -and mine type -with such a questionable environmental record.	WILD	NS	X	1	
Christine Tetzlaff	If all of the people involved in this are going to use the runoff water for their potable water; you know, drink it, wash in it, wash their children every day of their lives, then we can talk. But you see, we will be doing just that. Filtering Pollution.	HU	NS	X	1	
Gretchen Pederson	We are writing to ask that you do everything you can to stop sulfide mining in northern Minnesota. The short term benefit of job creation is far outweighed by the negative risks to the environment.	GEN	NS	X	1	

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Hunter Gilbert	I am writing you because I think even if the risks have a chance of happening, I still think it is totally worth it. I think it is totally worth because the way the steel economy is going and the fact that we already have one mine shut down, I think it is very very important otherwise not only will the iron range suffer, the whole state of Minnesota will suffer.	SO	NS	X	1	
John Burchfiel	Please say no to copper-nickel mining here in Northern Minnesota. We already have too many toxic waste sites in this great state. We are responsible to future generations to protect two jewels in Minnesota, Lake Superior and the BWCA.	GEN	NS	X	1	
Michael Youngquist	I am writing this letter opposing this copper-nickel mine. We cannot sacrifice our state's natural resources and put our citizens' health at risk simply for profit motive of a multi-national business. A few short term jobs is not worth the long term damage to this operation has the real potential to cause.	SO	NS	X	1	
Michael Youngquist	Actions speak louder than words – PolyMet says they can work this mine and protect the environment, but they have been proven wrong where ever they have operated.	PER	NS	X	1	
Michael Youngquist	Once they are gone, we will be left with a very long-term effort to try to keep land and water safe, and I'm sure the taxpayers of Minnesota will end up paying the bill for a very long time.	FIN	NS	X	1	
Brian Smith	I am writing to express my opinion that the mining of precious metals project should not go forward in Northern MN.	GEN	NS	X	1	
Brian Smith	I do not believe that the benefit of 30 to 40 years of mining jobs is worth the expense, natural resource destruction, and hazards to humans of +200 years of anticipated clean-up from this mining project.	SO	NS	X	1	
Brian Smith	Additionally, if Polymet is allowed to go forward with this mining project, then I think that Polymet should be required to pay a \$300 million per year oversight and watchdog tax to help ensure that all goes well for Northern MN regarding this mining. This tax to the owners of the mine should be progressive-meaning that it should be for the entire +200 years of clean-up and should increase with inflation and other possible expenses that might occur over such a large time span.	FIN	NS	X	1	
C Darwin	Because it is impossible to assume long time safety of Lake Superior I urge you to not give PolyMet the right to mine in the Arrowhead.	GEN	NS	X	1	
Deborah Mielke	The report discusses long term monitoring and periodic maintenance for as long as treatment is required. Modeling can't determine the number of years this will take. The decision to go ahead with this project will impact future generations and the safety of water quality for many years after the mining has been completed. The uncertainty of this after mining maintenance concerns me a great deal.	WAT	NS	X	1	
Deborah Mielke	Companies can go bankrupt and individuals agreeing on these terms may be long gone. What contingency plans are being made if PolyMet does not meet its obligations and is no longer an entity?	FIN	NS	X	1	

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Deborah Mielke	The report mentions the stockpile cover system underperforming and how this will be mitigated. It mentions managing acidity of the effluent with lime and making sure that it is not too basic before being released. Leakage of the stockpiles will also require monitoring and mitigation. The statement that the mining operation can be managed safely does not mean that it will be managed safely. Modeling does not address worst case scenarios or human error in these mitigation actions. The report down plays the chance of "Probable Maximum Rainfall Event" for its overflow system, but this is the very kind of event that causes system failures. The creation of effluent and hazardous stockpiles of this magnitude may seriously damage the local environment, down-stream water, and ground water despite the best of intentions on the part of Poly Met.	WAT	NS	X	1	
Deborah Mielke	Wetland mitigation is rarely as effective as leaving natural wetlands in their current environment.	WET	NS	X	1	
Deborah Mielke	Wildlife in the area will be severely disrupted as stated in the report, albeit temporarily. I am concerned that the current bat situation makes this population more vulnerable than when the report was generated and their endangered status may need to be verified. I found the statement about air pollution that "some wild life may avoid the area at this time" indicative of not really understanding the implications on all wildlife in the area.	WI	NS	X	1	
Deborah Mielke	The 500 jobs created will last for only 20 years, then will be greatly reduced. These kind of jobs do not contribute to a sustainable economy in the area.	SO	NS	X	1	
Deborah Mielke	Overall, I would have to say that I prefer the "No Action" option, but if more attention were paid to long term accountability and worst case scenarios, that would improve the proposal. Nothing can improve the impact on local native ecology with this proposal.	GEN	NS	X	1	
Deborah Mielke	I also do not think the NorthMet Project benefits the state of MN other than generate tax revenue. That benefit may be lost if the future costs to the state taxpayers outweigh these revenues.	SO	NS	X	1	
Faye Topliff	Please extend public comment time, as it is too short for such a long lasting problem.	NEPA	NS	X	1	
Faye Topliff	The BWCA must be protected and we cannot risk losing the pristine quality there.	WILD	NS	X	1	
Faye Topliff	There is no amount of money worth the possible contamination occurrence if PolyMet is allowed to move forward .	SO	NS	X	1	
Faye Topliff	What right does PolyMet have to bring toxic ruin to our Lake Superior, plus the other Great Lakes? Consider the other states and Canada among those to be devastated, yet have no vote to protect themselves and their environments.	PER	NS	X	1	
Faye Topliff	Just because PolyMet is financially back supported by endless money does not give them the right to bully our environment. We must preserve these priceless gems of clean air and waters for all people, and all generations to come.	GEN	NS	X	1	
Thomas Andrick	I'm writing too voice my opposition and urge you to reject PolyMet Permit. From everything I've read the environmental consequences are not worth the gain. It would be a terrible legacy to leave future generation	SO	NS	X	1	

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Lois & Everett Jenkins	With the mighty pen in hand I write with a feeling of grave urgency to express our non-support of the copper-nickel proposed project – the injustice to we the people who assess the long term disaster awaiting the citizens of beautiful MN, all of MN citizens. The injustice to our fragile planet, to the young people, and future generations.	GEN	NS	X	1	
Lois & Everett Jenkins	One need only to examine the abysmal record of copper nickel mining throughout the planet. A few jobs can never compensate for the disastrous assault on our entire region forever.	PD	NS	X	1	
Dennis Szymialis	That the cooperating agencies including the Minnesota Department of Natural Resources, United States Army Corp of Engineers, and United States Forest Service, arbitrarily and capriciously composed a Supplemental Environmental Impact Statement, a Final Environmental Impact Statement, that fail in many respects to analyze environmental impacts in reference to the PolyMet mining project to avoid violations of federal United States of America law including the Clean Air Act, Clean Water Act, National Environmental Policy Act, Federal Land Management Policy Act, Hobbs Act, and other law.	MEPA	NS	X	1	
Dennis Szymialis	That the cooperating agencies have acted arbitrarily and capriciously in judging the tailings basin containment and stability in light of the design of the system having been engineered by the same company that engineered the failed Mount Poly system in Canada and in light of the failed taconite tailing containment system at United Taconite and other locations. That the cooperating agencies have acted arbitrarily and capriciously in failing to properly analyze the capacity of the subterranean composition around the tailings basin for its capacity to hold loads associated with tailings to be deposited including the weight of the water that will be held back by the containment system and the weight of the tailings themselves.	GT	NS	X	1	
Dennis Szymialis	That exposing downstream consumers to any additional amounts of arsenic as indicated on p.S-170 is a common law assault on the health of downstream consumers and should be enjoined as a nuisance. The judgement and honesty of the cooperating agencies should be suspect as co-conspirators to a crime in violation of crimes against downstream consumers and humanity, common law torts, and the Hobbs Act.	HU	NS	X	1	
Dennis Szymialis	That the cooperating agencies, or any of them, lack the authority to conduct a land exchange in violation of the WEEKS ACT and the Clarke McNary Act of 1924.	LAN	NS	X	1	
Dennis Szymialis	That the SDEIS and the cooperating agencies have used arbitrarily and capriciously as an example mine, the canasteo mine, that has a dramatically lower over-all water table. That this draw down will dramatically increase PolyMet water treatment requirements, cost, release of toxins, and lead to the extinction in Minnesota and threaten the all around extinction of the Marsh Marigold.	WAT	NS	X	1	
Dennis Szymialis	That the SDEIS and land exchange analysis arbitrarily and capriciously includes positive impacts of the project and excludes negative impacts including the transfer of the Minnesota tax burden to businesses and citizens away from mining by reserving mineral interests to the State of Minnesota, a practice followed in no other state, hoarding of land for mining exploration, including 940,000 acres in St. Louis County alone, and not discussing and giving public notice of the Minnesota Power/ PolyMet power rate agreement likely to cost citizens and businesses in North East Minnesota more than one billion	SO	NS	X	1	

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	dollars over the life of the mine, higher health care costs, decreased recreational opportunities, decreases in tourism related business and income, a destruction of the St. Louis River basin agricultural economy from contamination of irrigation water, and ultimately an economy inconducive to economic redevelopment and conducive to high rates of poverty as has been shown to be the case in most mining communities.					
Dennis Szymialis	Even if the amount of arsenic is as given by the FE IS for release into the Partridge River from the WWTF is acknowledged to be 4 mg/L it is arbitrary and capricious and substantial evidence is lacking to show that here will only be slight increases in Colby Lake arsenic since Northshore discharge to the Partridge River has likely already ceased with their closing. The explanation given on p. 5-170 paragraph 3 is arbitrary and capricious in that it is arbitrary and capricious in terms of vagueness to provide any assurance for protection of life and health for downstream water consumers. Finally the reference to green sand filtering in paragraph 5 p. 5-170 is arbitrary and capricious in that it does not indicate that green sand filtering will be an element of any PolyMet filtering and is methodologically deficient in that the ph and flushing systems for treatment are not specified. Furthermore, that the lack of green sand filtering at the tailings treatment facility will result in larger amounts of arsenic discharge, the health impacts of which the FE IS and SDEIS have failed to consider. Finally, it is arbitrary and capricious for the FEIS to consider the dilution effect without analyzing the counteracting concentration of arsenic and other contaminants through evaporation along with the cumulative effects of combining the contaminants with existing concentrations on consumers downstream.	WAT	S	O	8	SDEIS Themes HU 02, WR 043. Final EIS Page 5-170. SDEIS Themes WR 107, WR 182, WR 197 The WWTF at the Mine Site (and the WWTP at the Plant Site) would use greensand filtration for pretreatment prior to RO. Arsenic is expected to be removed primarily across the greensand filter, rather than the RO unit. It was observed on the pilot scale that the greensand filter removed up to 99.68% of arsenic (Barr 2013f).
Dennis Szymialis	It is arbitrary and capricious and substantial evidence is lacking in relying so heavily on Gold Simm and Modflow modeling as a basis for predicting outputs that are based on data inputs when at the tailings sight no analysis was done on the flow through the pipes entering the Embarass River or their origins. D.S-SDEIS Comments p.13 etc.	WAT	S	O	8	SDEIS Theme WR 093
Dennis Szymialis	It is arbitrary and capricious and substantial evidence is lacking in relying so heavily on gold simm and Modflow modeling as a basis for predicting outputs that are based on data inputs when the best technology including ground water analysis has failed to utilize state of the art subterranean diagnostic technics including ground penetrating radar, seismic reflection, hyper-spectral imaging, and magnetotellurics, that create a more objective view were not utilized.	WAT	S	N	6	GoldSim and MODFLOW allow for reliable estimates of environmental effects. See Section 3.2 of the Mine Site Water Data Package for the selection of the probabilistic model platform (GoldSim). MODFLOW is a recognized groundwater flow model.
Dennis Szymialis	Count Ten The cooperating agencies are arbitrary and capricious in failing to disclose in the FE IS the mercury that will be made air bound by the blasting at the mine sight. Blasting will cause mercury to become monatomic or shattered into single atoms into the atmosphere. This is a hard concept to conceptualize accept one can think of it as breaking thousands of fluorescent light bulbs hundreds of feet in the air daily. The addition of the mercury is dispersed but is nonetheless added to the environment and is a violation of the Great Lakes Compact. This phenomena is the only available explanation for ten percent of Lake Superior north shore having toxic levels of mercury in them. The mercury is being carried from taconite mine blasting with prevailing winds and is breathed directly, consumed in the water or from methylization in fish consumed. This monatomic atomization of is 'likely to occur with other toxic heavy metals like Arsenic and nickel that are prone to ionization.	MERC	S	O	8	SDEIS Themes WR 025-16, MERC 01, MERC 08, MERC 16

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Dennis Szymialis	<p>At p.A-572 in response to theme statement WR 042 the FE IS states, "Given the downstream distance to the cities of Duluth or Superior it is highly unlikely that the water supplies for the cities would be affected." This claim made in the FEIS based on Gold Simm and MODFLOW is not only arbitrary and capricious it is violently dangerous as indicated by the experience in Antofogosta, Chile between 1958 and 1971 as indicated in the following study http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1637404/?page=1 . http://www.ncbi.nlm.nih.gov/pmc/articles/PMC1637404/ The sources of arsenic indicated came from 300 km away, more than twice the distance, and resulted in dermatological to regulate the project after permitting. This must not be allowed.</p>	WAT	S	O	8	SDEIS Theme WR 042
Dennis Szymialis	<p>That the GoldSimm and MODFLOW modeling have no record of reliability in predicting mine contaminant run-off, contradict dramatically the Antofagasta, Chile experience and as indicated in a volume of comments project a lack of public confidence, and as indicated at p. 21 of the Poly Met 2013g AWMP have inputs that are based on PolyMet output goals,"Effluent concentrations used as inputs to the GoldSim water model are based on the PWQT's (preliminary water quality targets). Failure of the cooperating agency to make the PolyMet documents readily available and yet sighting them in their SDEIS and FEIS being arbitrary and capricious and a serious violation of due process notice requirements.</p>	WAT	S	N	8	<p>The specific ranges for GoldSim parameters were selected by the Co-lead Agencies to evenly bracket the uncertainty in model parameters and avoid underestimating projections of chemical loading. Comparison tests of the GoldSim model found that the model may underestimate solute release in some cases. For example, a comparison of GoldSim estimates to measured effluent from the existing Amax piles found that the model tended to overestimate sulfate concentrations. PolyMet 2015q, as cited in the FEIS, Section 8.2.7 Scale-Up Model Verification. The Co-lead Agencies do not believe that there is a systematic bias toward underestimating chemical loading or concentration of sulfate or other constituents. Water monitoring would persist as long treatment is needed. Actual treatment requirements would be assessed on a reoccurring basis throughout operations and closure based on results of ongoing discharge, performance, and water resource monitoring. This would ensure continuous protection of groundwater and surface water quality as well as compliance with applicable water quality standards. This reassessment process would rely on measured monitoring results (evaluated through modeling) rather than the results of the predictive modeling included in the FEIS. Regardless of the precise duration of effects or water treatment at either the Mine Site or Plant Site, there are measures available to address impacts to natural resources. Documents referenced in the FEIS are available upon request. See SDEIS Theme WR 167.</p>

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Dennis Szymialis	That the cooperating agencies are arbitrarily and capriciously and without substantial evidence setting a president for mining in Minnesota that will lead to the premature death tens of thousands. That the cooperating agencies have notice of the causation of death by their actions and that all of the principles are now on notice of the premeditated nature of their conspiracy to cause the premature death of tens of thousands in violation of the criminal law and civil rights laws of the victims. That the victimization by fraud of tens of thousands of water consumers in Minnesota and Wisconsin in its scope is a crime against humanity.	HU	NS	X	1	
Dennis Szymialis	Count Fourteen When in the course of human events, it becomes necessary for one people to dissolve the political bands which have connected them with another, we mutually pledge to each other our Lives, our Fortunes and our sacred Honor.	GEN	NS	X	1	
Dennis Szymialis	That additional time be granted for responding to the FEIS. Additional time would be warranted Pursuant to principles of Due Process and Notice given the complexity of the Poly Met FEIS.	NEPA	S	N	5	The FEIS review period initially identified in the Federal Register and EQB Monitor notices was consistent with NEPA and MEPA regulations. Nonetheless, the review period was extended one week beyond regulatory requirements.
Dennis Szymialis	That commentator, Dennis Szymialis, requests relief in that no permits be granted for the PolyMet mining project and that the no action alternative be adopted.	ROD	NS	X	1	
Dennis Szymialis	That commenter, Dennis Szymialis, in addition to the above comments restates and reiterates his comments in the EIS and SDEIS on the basis that responses were lacking by the cooperating agencies including the US Forest Service, Duluth, MN, were vague, or otherwise deficient, and for other relief.	GEN	NS	X	1	
Dennis Szymialis	Allowing only 90 days for public comment for this project is inadequate to fully vet objections to the project which PolyMet and lead agencies have allegedly spent tens of millions of dollars and more than 9 years. The comments given below should be given deference for judicial review under these circumstances or be determined to violate due process notice and comment requirements. The comments given should be regarded as conservative objections and be given a broad reading.	NEPA	S	O	5	SDEIS Theme NEPA 07
Dennis Szymialis	The lead agencies are being paid to provide an SDEIS that will be permitted. This payment conflicts with their permitting and monitoring responsibilities. For them the permitting of PolyMet is nothing less than employment featherbedding.	NEPA	S	O	5	SDEIS Comment #8977. SDEIS Theme NEPA 18
Dennis Szymialis	They have an pecuniary interest in permitting PolyMet including the promotion of future projects that will go through licensing and which they will have to monitor. The agencies are denying cumulative impacts because they want to hide their own misconduct.	NEPA	S	O	5	SDEIS Comment #8978. SDEIS Theme NEPA 18
Dennis Szymialis	Why should we have to tolerate "evaluation criteria" that they created in the first place. Is every watershed available for contamination of "evaluation criteria."	PER	S	O	8	SDEIS Comment #8979. SDEIS Theme PER 06
Dennis Szymialis	But no one is sure if arsenic levels below the 10-microgram threshold are completely safe." And researchers are still studying whether there could be health effects at those concentrations." at http://www.reuters.com/article/2012/01/24/us-chile-cancer-idUSTRE80N1YJ20120124 . While most sources attribute lower cancer rates from arsenic in Chile there was one at	WAT	S	O	8	SDEIS Themes HU02, WR042

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	least source that I read that indicated it was from a change in water supply.					
Dennis Szymialis	Future monitoring and the filling in of some very substantial gaps of the SDEIS will be left to these lead agencies that have contracted with PolyMet to act on their behalf. These agencies have already in the DE IS written an EIS that was rejected by the EPA. This does not mean that the EPA will continue to save us. It only means that the EPA will be the focus of pressure to capitulate. Because environmental organizations rely on donations they are also subject to the pressure of being financially influenced. Volunteers cannot be relied on to continue to carry the load. There is little hope without drawing a line in the sand to stop PolyMet. Unlike Bangladesh we have a choice http://www.bmj.com/content/342/bmLd2431 .	GEN	NS	X	1	
Dennis Szymialis	The MDNR that told us that the DEIS would protect us is going to be the agency that will be paid to monitor compliance. They will present us with test results that are self serving.	PER	S	O	5	SDEIS Comment #9009. SDEIS Theme PER 06
Dennis Szymialis	The only thing worse than being poisoned is being poisoned and told to drink the water anyway because it won't hurt you. At their most hoped for best these agencies deal in an imperfect world of subjective standards and judicial over-site. The arsenic standard in particular is unreasonably low as it was the standard adopted from that set by the World Health Organization at a time when detection technology was limited and as a result was set at 10 parts per billion. We should not be threatened by claims that PolyMet will meet government standard that are third world at the outset. The primary obligation of the lead agency is to protect public health and any cutting corners or exception to that rule is a violation of their social contract with individual citizens, undermines their constitutional legitimacy and is a betrayal of the American revolution.	WAT	S	O	8	SDEIS Themes HU 02, NEPA 18, WR 123. Comment noted. DNR asserts it is reasonable for the Final EIS to rely on the USEPA-established pMCL (primary Maximum Contaminant Level) of 10 µg/L as the evaluation criteria for arsenic; see Final EIS Table 5.2.2-2. See Thematic Response WR 123. Also noteworthy is that the reverse osmosis pilot plant results using water from NorthMet Project Proposed Action site have demonstrated the ability of the treatment technology to meet water quality standards. Arsenic is expected to be removed primarily across the greensand filter, rather than the RO unit. Removal of arsenic by the greensand filter of up to 99.68% was observed on the pilotscale (Barr 2013f).
Dennis Szymialis	What is the deal with putting the filtrate from the mechanical treatment in "licensed landfills." This simply delays the release of toxins like thousands of tons of arsenic into the environment. What licensed landfill would take the stuff and what kind of vicious monster would be doing the licensing anyway. Maybe the Duluth Chamber of Commerce will volunteer the Gary New Duluth landfill that emits a plume down Sergeant Creek into the St. Louis River.	PD	S	O	8	SDEIS Comment #9013. SDEIS Theme PD 04
Dennis Szymialis	Reliance on sorption or absorption of arsenic by iron compounds currently is not taking place in the tailings basin or at the mine site. Releases of arsenic and other heavy metals should be expected to lead to death and disability downstream. The payment of the co-lead agencies to engage in promoting a project like this that presents a deliberate disregard for human life makes it nothing less than a murder for hire plot. Genocide historically, invariably does not occur without military support. http://public.health.oregon.gov/HealthyEnvironments/DrinkingWater/SourceWater/Documents/gw/arsenicremoval.pdf	WAT	S	O	8	SDEIS Comment #9016. SDEIS Themes WR 049, WR 050, WR 058

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Dennis Szymialis	Murder for hire with the public being forced to pay for it in the form of a secreted power rate agreement. If this is such a good deal and if in fact the PolyMet (the NorthMet mine and plant site will hereafter simply referred to as PolyMet) project is actually in an economically viable deposit, the project should not need subsidy. There have been indications that PolyMet that in late 2004 was a dormant penny stock was resurrected as an insider scheme to enrich government officials and others. Present and past subsidies to PolyMet including public historical public ownership to allow PolyMet to avoid paying past property taxes, the Minnesota policy (which exists in no other state) to server mineral interests which devalues land and passes the tax burden of land ownership and cost of government services off on non-mining supported businesses, drilling subsidies paid for by the state of Minnesota, millions of dollars of public money not fully publicly disclosed by the IRRRB granted directly to PolyMet, the failure to adequately and in advance require financial assurance and the pollution subsidy which will destroy other valuable public resources and cause other businesses and the public to subsidize PolyMet with higher health care costs, the diminution or public recreational and tourism opportunities, etc, all contribute to a violation of the National Land Management Policy Act. St. Louis County alone has 940,000 acres of tax forfeited land, the shattering of the hopes and dreams of thousands of land owners, hundreds of them farm owners and business supporters of agriculture.	PER	S	O	8	SDEIS Comment #9023. SDEIS Theme PER 26
Dennis Szymialis	This SDEIS conspires to violate the Weeks Act, Clean Water Act, Clean Air Act, and a number of other laws.	PER	S	O	8	SDEIS Comment #9027. SDEIS Theme PER 26
Dennis Szymialis	The failure to utilize more costly measures to mitigate environmental degradation to attain cost savings on the basis that the project cannot proceed without these cost savings also calls into question the merit of the project under the National Land Management Policy. These include inadequate liners, the failure to utilize the underground mining alternative and a number of other measures including many failed to be disclosed by the SDEIS which violates due process legal notice requirements. It means nothing that PolyMet has paid themselves 22 million dollars or any amount to allegedly improve the DEIS. http://lawreview.vermontlaw.edu/files/2012/02/flynn.pdf	PER	S	O	8	SDEIS Comment #9030. SDEIS Theme PER 26
Dennis Szymialis	The PolyMet SDEIS does not even meet the old standard of deference to mining companies, see Flynn at p. 834 "The previous definition focused mostly on the needs of the mining company and whether the proposed mine operated in a "usual [and] customary" manner.110 The SDEIS does not require PolyMet to bolt, wire, and shotcrete the pit walls to inhibit the migration of water and pollutants in and out of the pit as was done by Kennicott at its Flambeau Mine. This would have an additional benefit if done simultaneously with mining of inhibiting the collapse of the pit wall of the type that occurred in Utah at a Kennicott Mine in 2012. It is more essential that it be done by PolyMet because of the weaker wet rock. I expressed this concern in my comments to the past PolyMet EIS and those concerns seem to have simply been dismissed and disregarded in the current SDEIS. The collapse of a pit wall would be welcomed by PolyMet as a justification for a mine expansion. The environmental ramifications of which would be extensive. The failure of PolyMet to bolt and shotcrete pit walls does not even follow "usual and customary" mine operating standards in the area. In the DE IS the EPA issued a finding of EU-3 (Environmentally Unsatisfactory- Inadequate Information).	PER	S	O	8	SDEIS Comment #9032. SDEIS Theme PD 15
Dennis Szymialis	The SDEIS simply shifts, as indicated on 5-211 and 212, toxic materials around or fails to specify actual measures to be taken.	WAT	S	O	8	SDEIS Comment #9034. SDEIS Theme WR 128

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Dennis Szymialis	The SDEIS simply shifts, as indicated on 5-211 and 212, toxic materials around or fails to specify actual measures to be taken. The SDEIS should be viewed in the context of the burden set by the EPA-EU-3 rating. The SDEIS is simply a denial and an attempt to evade environmental responsibility. The facts remain that the SDEIS is a recipe for another failure on top of the failures of the permitting of every mining of sulfide bearing rock every occurring in the U.S. This consistency of failure which is so pervasive as to provide public notice meets the standard that beyond a reasonable doubt agency regulation and agency administrators generally are failures and not deserving of any kind of deference. Weak regulation doesn't make metals cheaper and more available it simply shifts the cost and discourages recycling.	GEN	NS	X	1	
Dennis Szymialis	I was disappointed that there was no uniformed member of the corps of engineers, the uniform that my mother wore during world war II, at the Duluth hearing to answer questions.	NEPA	S	O	5	SDEIS Comment #9041. SDEIS Theme NEPA 11
Dennis Szymialis	The "cutoff wall placed into existing surficial deposits" indicated at 3-117 will be inadequate and the modeling indicating that 90%of runoff water will be collected is irrelevant. In order to collect 90% the wall would need to project below the originally placed as loose taillings fill down to bedrock, all fractures in the bedrock would need to be sealed off hold a great deal of water pressure, have the drain tile at the bottom of the wall which is standard foundation engineering, and the wall would have to be extended to the east side of the tailings basin. The collection of this water is necessary for treatment assuming for now that treatment would even be effective which is disputed in other areas of these comments.	PD	S	O	8	SDEIS Comment #9049. SDEIS Theme PD 07
Dennis Szymialis	One challenge that I would make here is that the iron tailings do not sequester mercury any better than any other soil. Elemental mercury is currently not leaching out of the tailings basin because lower levels have had the mercury scoured out through the introduction of sulfates running through them. Mercury is at higher than normal environmental levels in the surface areas of the tailings basin as a result of the absence of sulfates. Once the sulfates are again introduced at the top this mercury will methylate and flow out at higher levels than normal. Water discharge through the lower levels with sulfates will be redirected through the basin increasing the release of methylated mercury currently unexposed in the basin formation at these lower levels. My conclusions are based on studies that I have read on the relationships between sulfates and mercury methylation, DNR studies by Bavin and Berndt and ali other studies, common sense, and not any self serving and deceptive computer modeling. The claim made on p. ES-36 that somehow the mere presence of the PolyMet mine is going to reduce mercury in the Partridge river is simply bizarre and more unexplained hocus pocus.	MERC	S	O	8	SDEIS Comment #9053. SDEIS Theme MERC 96
Dennis Szymialis	The "WWTF is now proposed to be upgraded to a RO process during closure to manage sulfate concentrations in the effluent " described at p. ES-24 is inadequate. It is unacceptable that toxins other than sulfates that will not be captured by RO including carcinogens Nickel Sulfate and Arsenic III shall be allowed to flow unimpeded. It is unacceptable that sulfates will be left untreated at any time. It violated due process and all relevant standards of agency deference to provide standards for treatment which are vague, ambiguous, and speculative. The amount of water going into the WWTF will overwhelm any treatment facility that could be built. The amount of water going into the system is dramatically understated.	PD	S	O	8	SDEIS Comment #9055. SDEIS Theme PD 03

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Dennis Szymialis	The following statement made on page 3-4 of the SDEIS represents the type of misleading information that mining companies provide to deceive the public. "Bentonite would be incorporated into the exposed outer side-slopes of the Tailings Basin as it would be built up to create a barrier that would limit oxidation. This limiting of oxygen transfer would reduce pollutants generated from the Tailings Basin." The pollutants will not be reduced. Their introduction into the environment will merely be delayed. Further more limited limitation of oxygenation is part of the formula for mercury methylation. Eventually exposure and oxygen reaction will occur.	PD	S	O	8	SDEIS Comment #9058. SDEIS Theme PD 08
Dennis Szymialis	ES-40 The Economic Impacts of mining only include allegedly positive impacts and fail to state the negative cumulative economic and social impacts of mining? ES-41 Since the SDEIS puts in issue the economic impact of the PoltMet project it is necessary that the authors specify the basis for and underlying assumptions made in determining the following at ES-40. "Federal, state, and local taxes would total an estimated \$80 million annually. During operations, there would be approximately \$231 million per year in direct value added through wages and rents and \$332 million per year in direct output related to the value of the extracted minerals. As with employment, these direct economic contributions would create indirect and induced contributions, estimated at \$99 million in value added and \$182 million in output."	SO	S	O	8	SDEIS Comment #9065. SDEIS Theme SO 04
Dennis Szymialis	is the portion of \$231 attributable to wages based on the unlikely prospect of a union mine?	SO	S	O	8	SDEIS Comment #9068. SDEIS Theme SO 04
Dennis Szymialis	On the internet I found some MP documents that appear to indicate revenue of \$568,174,000. It is my recollection that it was reported back in April of 2008 that the PolyMet power rate agreement would cause our power rate to increase by more than 10% or roughly 1-5 billion dollars over the 20 year life of the mine.	PD	S	O	8	SDEIS Comment #9071. SDEIS Theme PD 39
Dennis Szymialis	Minnesota power 2012 revenue figures http://www.mnpower.com/Environment/ResourcePlanAppendices (p. 7 of 19/122). "Post-reclamation activities would include monitoring and maintenance of reclamation and water quality until the various facility features were deemed environmentally acceptable, in a self-sustaining and stable condition." p.3-59 - environmentally acceptable to who?	PD	S	O	8	SDEIS Comment #9076. SDEIS Theme PD 24
Dennis Szymialis	at applicable groundwater and surface water compliance points.p.3-59 -compliance limited to selective points is not compliance.	PER	S	O	8	SDEIS Comment #9080. SDEIS Theme PER 09
Dennis Szymialis	The WWTF really is a sham which is revealed when one considers process water: "would be collected and treated at the WWTF. Treated water would be pumped to the Tailings Basin at the Plant Site."p.3-53. and tailings basin water will be pumped to the WWTP(at the plant site). This process fails to allow for the discharge of any water to the environment? It makes no sense to refilter the water already filtered. This is included because there is no intent to do it.	PD	S	O	8	SDEIS Comment #9088. SDEIS Theme PD 04
Dennis Szymialis	The sludge waste would be disposed of off-site in a solid waste landfill until the Hydrometallurgical Plant became operational (see Section 3.2.2.3). When available, sludge waste would be filtered and moved by truck along the Transportation and Utility Corridor and introduced to the autoclave in the Hydrometallurgical Plant to recover metals or placed directly into the Hydrometallurgical Residue Facility (see Section 3.2.2.3.7) P. 3-53. -It is planned that the toxins that are captured will be allowed to merely leach out in an uncontrolled environment. These toxins will leach out as a result of	PD	S	O	8	SDEIS Comment #9094. SDEIS Theme PD 17, PD 19

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	incomplete neutralization.					
Dennis Szymialis	Toxic to fish-collector-potassium amyl xanthate 3-100, 1,171 tons per year(p.3-102)-dumped with tailings -this should not be allowed	AQ	S	O	8	SDEIS Comment #17726. SDEIS Theme AQ 05
Dennis Szymialis	p.3-136 "Compensatory wetland mitigation for the proposed North Met project is expected to be approved and constructed" -Constructed wetlands?	WET	S	O	8	The FEIS text the commenter is referring to is from Section 3.2.2.4 Financial Assurance. The text refers to the construction of wetland mitigation (e.g.; replacement wetlands): "While this wetland mitigation would be expected to be approved and constructed in advance of any authorized wetland impacts, it is unclear whether these sites would be well enough established for financial assurances to be waived." Construction of wetlands for mitigation credit will be addressed in permitting.
Dennis Szymialis	p. 3-139 "The purpose of the alternatives process is to allow for the identification and consideration of other reasonable alternative means to achieve the project Purpose and Need and that could also improve environmental and/or socioeconomic benefits." -Does the alternatives process include releasing PolyMet from environmental regulation and financial assurance to achieve the so called project purpose and need and socioeconomic benefits? Is this the Mesabi Nugget catchall exemption?	ALT	S	O	3	SDEIS Comment #9100. SDEIS Theme ALT 21
Dennis Szymialis	p. 3-140 "Economic feasibility-Each alternative was assessed as to whether it could meet economic and financial requirements to construct and operate the proposed project, including whether the cost of implementing the alternative would be economically feasible to meet the Purpose and Need." -This type of catagorical analysis systematically discredits the whole SDEIS process and violates the Federal Land Management Policy Act.	NEPA	S	O	3	SDEIS Comment #9103. SDEIS Theme NEPA 02
Dennis Szymialis	p. 3-152 "• 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." "• 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. The PolyMet lease agreements could be renegotiated, which might involve monetary compensation for the mineral owners if minerals are encumbered." -the previous two items from p.3-152 violate the Federal Land Management policy act and call into question the merits of the PolyMet project. -does this need to be considered, i.e. as a potential cumulative impact if it is the basis for denying this action it would not be considered speculative? This create a standard by which cumulative impacts should be judged in looking forward/forseability.	LAN	S	O	3	SDEIS Theme LAN 02
Dennis Szymialis	Standards delineated as part of Forest Plan in 157-159 are superseded by Weeks Act Legislation and exchanged are not protected by the Weeks Act and are not in effect an arms length transaction as proposed.	LAN	S	O	3	SDEIS Comment #17728. SDEIS Theme LAN 02

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Dennis Szymialis	Lake County Tract 2 lands are tainted by a MEPA violation in that they violate due process by not be properly identified as a connected action and are misidentified as being legally owned by PolyMet. The Co lead agency come to the SDEIS with unclean hands in facilitating a violation of the law which should bring into question their impartiality.	LAN	S	O	3	SDEIS Comment #9183. SDEIS Theme LAN 09
Dennis Szymialis	no off-site contamination has been documented. p. 4-17. This is misleading. What is the consent decree for.	HAZ	S	O	3	SDEIS Comment #9184. SDEIS Theme HAZ 05
Dennis Szymialis	The use classifications are not intended to imply a priority rank to the uses. p4-23 -this is a false statement! -p.4-23 prior appropriation language. -this is why PolyMet needs to deny ground water contamination!	WAT	NS	X	1	
Dennis Szymialis	p.4-24"(d) Appropriation and use of surface water from lakes of less than 500 acres in surface area must be discouraged." - Colby Lake only has 517 acres. http://www.dnr.state.mn.us/lakefind/showreport.html?downum=69024900	WAT	S	O	3	SDEIS Comment #9189. SDEIS Theme WR 181
Dennis Szymialis	Colby Lake, which is used for domestic consumption by the City of Hoyt Lakes, is designated as Classes IB (treated with simple chlorination for domestic consumption) -contaminating this lake puts an unfair burden on taxpayer in health care costs for the unwary water consumer of Colby Lake.	WAT	S	O	3	SDEIS Comment #9190. SDEIS Theme WR 043
Dennis Szymialis	All NorthMet Project area waters are also designated Outstanding International Resource Waters (Minnesota Rules, parts 7050.0460 and 7052.0300), which prohibits any new or expanded point source discharges of bioaccumulative substances of immediate concern (i.e., mercury) unless a nondegradation demonstration is completed and approved by the MPCA. "Any proposed activity that alters the course, current, or cross section of a mapped Public Water is subject to a variety of state regulations (Minnesota Supplemental Draft Environmental Impact Statement (SDEIS) NorthMet Mining Project and Land Exchange 4.2.2 WATER RESOURCES 4-25 NOVEMBER 2013 Rules, Chapter 6115), depending on the proposed activity." -the SDEIS fails to identify the state regulations that will be violated when the flow of the Partridge River is induced to flow through one or more of the mine pits and the river course is altered. -All relevant waters, p.4-29, are impaired. Table 4.2.2-2.	WAT	S	N	8	See SDEIS Comment #2985. The Partridge River would not flow through mine pits nor would its river course be altered.
Dennis Szymialis	p.4-44 "The specific capacity tests conducted in two wells indicated that the upper portion of the Virginia Formation is more permeable than the lower portion (Barr 2007b). This is attributed to the increased amount of fractures and joints in the bedrock closer to the surface. Overall, groundwater flow within the bedrock units is thought to be primarily through fractures and other secondary porosity features because the rocks have low primary hydraulic conductivity. Near the ground surface, groundwater in the bedrock is thought to be hydraulically connected with the overlying surficial aquifers, resulting in similar flow directions (Barr 2007d). " -The rock that we are concerned about running from the fractures forming and radiating out from the Partridge River are not in the Duluth Complex, See figure p.3-35. -The SDEIS is using the Duluth Complex as the basis for non-permeability in the bedrock.	WAT	S	O	3	SDEIS Comment #9203. SDEIS Theme WR 087
Dennis Szymialis	p.4-45 "One exploration borehole at the Minnamax prospect encountered groundwater at a depth of 1,390 ft in the Duluth Complex that flowed for a period of 6 days, indicating the potential presence of over-pressured groundwater in the bedrock (Barr 1976)." -It won't take very many pressurized flows to drain that Partridge River, divert it's flow, and fill the mine that will need to be pumped. The Minnamax mine was so wet at all times that visitors while hearing the noise of constant	WAT	S	O	3	SDEIS Comment #9206. SDEIS Theme WR 023, WR 087

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	pumping had to where hip boots!					
Dennis Szymialis	p.4-45 "Tests using wells that penetrate through the surficial zone, however, found much higher average hydraulic conductivity, with values similar to the Biwabik Formation aquifer (see Table 4.2.2-5)." -The zone where the surficial deposit meets bedrock is a primary zone of water conductivity generally in hydrology. -this higher conductivity found conflicts with the general SDEIS claim of lack of conductivity upon which MODFLOW and GoldSimm projections were based. -This study also reported that the upper 200 to 300ft of the Duluth Complex formation appeared to be fractured and jointed more extensively than at greater depths, so that the upper portion of the bedrock should have greater hydraulic conductivity and thus better hydraulic connectivity than deeper bedrock. p.4-46 to 4-47. -Blasting will exacerbate and open fractures.	WAT	S	O	3	SDEIS Comments #9208, #9211, #9217, #9220; SDEIS Themes WR 011, WR 012, WR 016
Dennis Szymialis	p.4-53 "The metals exceeding groundwater 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 these constituents. -how about the effect of the drill exploration?"	WAT	S	O	3	SDEIS Comment #9221. SDEIS Theme WR 203
Dennis Szymialis	p.4-60 "exceedances of arsenic and nickel water quality standards were detected.(in background water sampling)." -this is an indication that drill exploration has an environmental impacts contrary to representations made by one or more co-lead agencies or it should be a warning sign of the high levels of arsenic in the mineral deposit.	WAT	S	O	3	SDEIS Comment #9223. SDEIS Theme WR 203
Dennis Szymialis	p.4-60 "Groundwater Use -There are no existing domestic wells between the Mine Site and the Partridge River. However, there are several MDNR water appropriation permits in effect for mine pit dewatering that affect the Mine Site, including the Northshore Mine permit (Permit 1982-2097). The permit authorizes Northshore Mining Company to withdraw up to 36,000 gpm (80 cubic ft per second [cfs]), of which a maximum of 13,000 gpm (29 cfs) can be discharged to the Partridge River, a maximum of 12,000 gpm (27 cfs) can be discharged to Langley Creek, and a maximum of 11,000 gpm (25 cfs) can be discharged to Unnamed Creek." -Is this permit being transferred? Does it have to go to the tailings basin? Are these permits an indication of what is to be expected in terms of discharges from the PolyMet pit?"	WAT	S	O	3	SDEIS Comment #9225. SDEIS Theme WR 051
Dennis Szymialis	p.4-74 "The only consistent exceedance of water quality standards was dissolved oxygen near the headwaters of the Partridge River (SW-002," -this fact will have serious ramifications for the mine plan when this water flows into the pit that the SDEIS plans to flood on the assumption that the flooding will suppress the re-activity through the denial of oxygen of the pit face rock and category 2,3, and 4 waste rock.	WAT	S	O	3	SDEIS Comment #9226. SDEIS Theme WR 029
Dennis Szymialis	p.4-86 "Colby Lake is on the Minnesota 303(d) TMDL list because of mercury concentrations in fish tissue, but is not included in Minnesota's regional mercury TMDL because the mercury concentrations in the fish are considered too high to be returned to Minnesota's mercury water quality standard. P.4-86" -but this water will be used to augment stream flows around the tailings basin and increase mercury levels in the Embarrass River and concentrations of mercury downstream to Lake Superior in violation of the Great Lakes Initiative.	WAT	S	O	3	SDEIS Comment #9229. SDEIS Theme MERC 22

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Dennis Szymialis	p.4-95 "soil borings into the surficial till identified the composition as layers of clay and sand, plus cobbles and boulders that prevented recovery of an intact sample (Pint and Dehler 2009). Near the toe of the Tailings Basin, average depth to bedrock is approximately 25ft, as reported in site boring logs (Barr" -this is the environment in which the co-lead agencies think that a below ground containment wall can capture 90% of tailings basin water-fat chance.	WAT	S	O	3	SDEIS Comment #9232. SDEIS Theme WR 018
Dennis Szymialis	P.4-94 to 4-115 (my comments-not quotation) Constituent readings for the Partridge River, Embarass River, and especially for the tailings basin down gradient are of limited value outside of the context of contemporaneous rainfall effecting dilution. Readings for surficial Rivers and Lakes-Concentrations at low water levels are the real indicator of the health of a well, river, or reservoir lake when concentrations are highest and plant and aquatic life mortality are greatest and sometimes absolute resulting in dead rivers because once everything is killed there is no life to regenerate.	WAT	S	O	3	SDEIS Comment #9249. SDEIS Theme WR 081
Dennis Szymialis	Ground water and surficial water aquifer flows are interconnected and reporting readings for residential well water when contaminants are diluted is immoral and should be considered illegal as it is misleading and prevents users from protecting themselves.	WAT	S	O	3	SDEIS Theme WR 010
Dennis Szymialis	The hydrology on pages 4-149 to 4-151 overstate the homogeneity of the mine site surficial aquifer and are irrelevant to what is going to happen when the homogeneous portion removed from the underlying fractured bedrock along the stream bed is removed. These fractures are the vehicle for surface drainage to the larger river fracture when the mine side fractures are breached by the mine excavation the water table will follow these fractures into the mine and because of the lower hydrolic resistance will drain more area more readily including the surficial water on the opposite side ofthe river. River flow will follow the path of least resistance and associated erosion and be redirected naturally through the pit area.	WAT	S	O	3	SDEIS Comment #9251; SDEIS Themes WR 011, WR 012, WR 061, WR 081, WR 087, WR 090, WR 099, WR 169, WR 179
Dennis Szymialis	Other wise, The swamp at The actual footprint of The Mine sequesters water for flood control, filters water, and conducts other desired wetland functions.	WAT	NS	X	1	
Dennis Szymialis	P4-220 "although a few individual samples within the Partridge River Watershed exceeded surface water quality evaluation criteria, overall in-stream water quality meets state water quality standards" -readings for surficial Rivers and Lakes-Concentrations at low water levels are the real indicator ofthe health of a well, river, or reservoir lake when concentrations are highest and plant and aquatic life mortality are greatest and sometimes absolute resulting in dead rivers because once everything is killed there is no life to regenerate. -this phenomena also ivites manipulation of sampling data. For example, a high baseline could be established for a stream by sampling in low water levels and after impacted by a new project sampling would be conducted at high levels to indicate compliance when results show baseline levels.	WAT	S	O	3	SDEIS Comment #9253; SDEIS Theme WR 109
Dennis Szymialis	P4-221 "Upper Partridge River sampling sites were indicative of a warmwater stream populated by typical warmwater species, including gamefish such as northern pike and yellow perch (see Table 4.2.6-4)." -the presence of warmwater species where trout would be expected is an indication of the warming impact that mining has on stream ecosystems and the PolyMet will exacerbate this situation as indicated for Wyman Creek: "The MPCA collected fish community data during a 2009 sampling event for Wyman Creek, a State of Minnesota-listed trout stream (see Figure 4.2.6-1). MDNR surveys were conducted on Wyman Creek in 1968, 1981, and 2003 (MDNR 1981; MDNR 2003). Based on the latest 2009 survey, a variety	WAT	S	O	3	SDEIS Comment #9254. SDEIS Theme WR 109

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	of taxa were collected; however, no trout species were collected, which likely contributed to an IBI score of only 33, four points below the minimum threshold for this stream classification (see Table 4.2.6-4)."					
Dennis Szymialis	p. 4-255 Compare directions and other indications for distances as given elsewhere in the SDEIS. Some distances and directions within the SDEIS appear to be inaccurate.	N	S	O	3	SDEIS Comment #9256
Dennis Szymialis	the SDEIS fails to assess additional break up of large animal migratory ability broken up by mining and mines going from southwest to northeast?	WI	S	O	3	SDEIS Comment #9257. SDEIS Theme WI 03
Dennis Szymialis	Cooperating agencies have not participated in production or endorsement of any components of the EIS or the NorthMet Project. -it doesn't appear that way especially when PolyMet is paying the agencies, has had access to the agencies to lobby the contents of the EIS for 9 years, the public is left with 90 days to respond, the agencies are allowing a EIS that is vague and ambiguous to proceed, and one EIS prepared by the cooperating agencies has already been determined to be rated by the EPA Environmentally Unsatisfactory-Inadequate Information. This SDEIS continues to be a product of the evasiveness of the last DEIS	NEPA	S	O	3	SDEIS Comment #9258. SDEIS Theme NEPA 18
Dennis Szymialis	The area in which effects on resources are evaluated is the Area of Potential Effect (APE). The APE is defined as, ... the geographic area or areas within which an undertaking may directly or indirectly cause alterations in the character or use of historic properties, if any such properties exist." -the destruction of a once thriving agri-culture in the St. Louis River Valley caused by illegal iron mining pollution. Should we trust a culture of corruption and violation of the law? Minnesota agencies have failed to enforce the environmental laws.	WAT	NS	X	1	
Dennis Szymialis	p.4-314(public access) "There are access points to the North Met Project area, however, via a Forest Service road, the Partridge" -the gating off of the forest service road is a Forest Service NEPA violation. The Forest Service doesn't have any respect for the law either.	LU	S	O	3	SDEIS Comment #9623. SDEIS Theme LU 01
Dennis Szymialis	p.4-315 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). -this is arbitrary because the cultural results of the socioeconomic are not fairly addressed.	LU	S	O	3	SDEIS Comment #9624. SDEIS Theme SO 04
Dennis Szymialis	p.4-319 "represented by the loss of so many iron industry jobs" -This statement is taken out of context and in fact a complete and accurate reading of Powers is that these jobs were consolidated by the industry due to efficiencies. The whole of the report by Powers should be up for consideration in order for it to provide a fair context.	SO	S	O	3	SDEIS Comment #9625. SDEIS Theme SO 04
Dennis Szymialis	p.4-322 The poverty and ignorance of the communities are typical of mining communities in general and should not be encouraged with more mining and empowerment.-Powers-.	SO	NS	X	1	

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Dennis Szymialis	p.4-325-26 -factors not included by Powers include tax policy which promotes mining, the MP PolyMet power utility agreement, the IRRRB which administers most of the funds indicated on p.4-332 and funnels public tax money back into mining arbitrarily, increased health care costs mining areas, displacement of agricultural jobs at the expense of mining, etc. - why is no LQ value analyzed for long term job losses in regional agriculture due to pollution from mining and at the expense of mining pollution?	SO	S	O	3	SDEIS Comment #9626. SDEIS Theme SO 04
Dennis Szymialis	p4-326 -mining has displaced the potential for additional tourism. It is misleading to say they exist harmoniously. -the Iron Range is a community that has blessed by rich mineral deposits and a hundred years of prolific mining. In spite of operating in relatively clean iron oxide deposits they have managed to pollute the environment. Now they are crying to engage in mining that has historically had a poor record of toxic waste discharge. Their is no reason to believe they will do any better this time around. No amount of patronization will change anything. It is unconscionable, in the context of an EIS, for an agency to disregard an industry that is an economic predator and facilitates a culture of environmental degradation.	SO	S	O	3	SDEIS Comment #9627. SDEIS Theme SO 02
Dennis Szymialis	p4-340 "Grand Portage's subsistence fish consumption averages 144 grams/day, five times higher than the MPCA assumed fish consumption rate of 30 grams/day. Fond du Lac's subsistence fish consumption is on average 60 grams/day, two times higher than the MPCA assumed fish consumption rate (ERM 2012). The effects of mercury bioaccumulation on subsistence activity are discussed in Section 5.2.10.2.6." -mining has a disproportionate impact on the poor and minorities. Government ownership of large tracts of land for the benefit of mining contributes to an evasion of property tax payments and contributes to homelessness by restricting access to land for residential building.	SO	S	O	3	SDEIS Comments #9628, #9629. SDEIS Themes SO 02, SO 03
Dennis Szymialis	p4-349 "• Low SIO: The landscape appears moderately altered, and non-natural landscape features may begin to dominate." "The Mine Site and adjoining federal lands are designated by the USFS as areas of Low SIO" -this is an arbitrary characterization of the mine site which has nothing on it	LU	S	O	3	SDEIS Comment #9630. SDEIS Theme LU 05
Dennis Szymialis	Furthermore the existence of an old mine site does not preclude land of park-like character adjacent to it. For example, p.4-359 Lake Vermilion State Park is 16 miles northwest of the NorthMet Project area (see Figure 4.2.12-1), on the eastern shores of Lake Vermilion adjacent to Soudan Underground Mine State Park.	WILD	S	O	3	SDEIS Comment #9631. SDEIS Theme WILD 03
Dennis Szymialis	p.4-361 reading hazardous waste reference on this page, nickel, arsenic, mercury, et.al. currently locked in the mineral formation meet the definition of hazardous waste.	HAZ	S	O	3	SDEIS Comment #9632. SDEIS Theme HAZ 02
Dennis Szymialis	p.4-371 "leaking and failure of LTVSMC discharge pipes." -Are these the pipes exiting at the embarrass river that I have pictures of? Are they going to plug these to catch and treat 90% of the run-off the tailings basin. Plugging these will add such hydrostatic pressure to the tailings basin that it will collapse.	GT	S	O	3	SDEIS Comment #9633. SDEIS Theme GT 03
Dennis Szymialis	p.4-383 "To facilitate the expedited consolidation of the in-place LTVSMC tailings, wick drains would be installed within the Emergency Basin. This would reduce drainage path lengths and increase the drainage ability in the LTVSMC tailings and underlying compressed peat." -it appears that the tailings basin had these wick drains built into it.	PD	S	O	3	SDEIS Comment #9634. SDEIS Theme PD07
Dennis	p.4-384 "she4ar strengths will increase if installed wick drains are unsuccessful." with what consequence?	GT	S	O	3	SDEIS Comment #9635. SDEIS Theme GT 11

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Szymialis						
Dennis Szymialis	p.4-395 Tract 1 is an old dump site.	HAZ	S	O	3	SDEIS Comment #9637. SDEIS Theme HAZ 05
Dennis Szymialis	p.5-7 "In this SDEIS, non-mechanical treatment systems are not described in detail because the NorthMet Project Proposed Action is based on mechanical treatment only." -Why isn't the mechanical treatment described then? -Why aren't modeling parameters and protocol described?	WAT	S	O	3	SDEIS Comment #9638. SDEIS Theme WR 137, WR 143
Dennis Szymialis	p. 5-8 ", but mass balance modeling and analog data from other natural lakes and mine pit lakes in northeastern Minnesota suggest" -not a relevant premise from which to draw a conclusion indicating the lack of foundational reliability in the modeling.	WAT	S	O	3	SDEIS Comment #9640. SDEIS Theme MERC 04
Dennis Szymialis	that the mercury concentration in the West Pit Lake, the source of the only surface water discharge at the Mine Site, would stabilize at approximately 0.9 ng/L. There would also be mercury in the tailings, although about 92 percent of the mercury in the ore is predicted to remain in the ore concentrate and the mercury concentration in seepage from the Tailings Basin is expected to be less than the standard. The WWTF and the WWTP would be designed to meet the 1.3 ng/L mercury standard for its effluent. -you mean the WWTF and WWTP haven't been designed yet?	WAT	S	O	3	SDEIS Comment #9643. SDEIS Theme WR 147
Dennis Szymialis	Overall, the NorthMet Project Proposed Action is predicted to increase mercury loadings in the Embarrass River, but decrease mercury loadings in the Partridge River. The net effect of these changes would be an overall reduction in mercury loadings to the downstream St. Louis River. -you mean mercury would be reduced in the Partridge River merely because it has a mercury and sulfate emitting mine next to it?	WAT	S	O	3	SDEIS Comment #9644. SDEIS Theme MERC 18, MERC 23
Dennis Szymialis	What is the AWMP	EDIT	NS	X	1	
Dennis Szymialis	-list of contaminants on p.5-9 incomplete.	HAZ	NS	X	1	
Dennis Szymialis	"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 (see Table 5.2.2-2)	WAT	S	O	2	SDEIS Comment #9659. SDEIS Themes WR072, WR 090
Dennis Szymialis	These elevated concentrations are consistent with concentrations seen elsewhere in the Iron Range and northeast Minnesota.	WAT	NS	X	1	

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Dennis Szymialis	Minnesota Rules, part 7060.0600, subpart 8, states that "where the background level of natural origin is reasonably definable and is higher than the accepted standard for potable water and the hydrology and extent of the aquifer are known, the natural level may be used as the standard." -Natural/unaffected at the plant site indicate post mining impacts whereas "bedrock unit only" at the mine site indicates a sample taken somewhere in drilled/disturbed rock. This is an attorney's analysis for purpose of deception and not anyone's reasonable interpretation of natural or unaffected. Neither does the fact that these readings were found at other mine sites on the iron range make them background levels. Just because it is found in isolated disturbed areas doesn't mean that it is a natural origin. -thallium is a serious poison and indications of it should be of serious concern for proceeding with mining its use has been banned by presidential order 11643 in 1972. -manganese is associated with intellectual impairment in children (maybe this is why people on the range are less educated)	WAT	S	O	2	SDEIS Comment #9659. SDEIS Themes WR 072, WR 090
Dennis Szymialis	p.5-11 -recent studies on the health effects of arsenic would dictate a stricter than 10 parts per billion standard	WAT	S	O	2	SDEIS Comment #9660. SDEIS Theme PER 29
Dennis Szymialis	p.5-13 "Hydrologic evaluation criteria include a comparison of proposed hydrologic changes with both existing natural conditions and historic hydrologic alterations from permitted mining practices," -is this a comparison with this actual sulfide ore body or some arbitrarily picked iron mine.	PD	S	O	2	SDEIS Comment #9661. SDEIS Theme PD 27
Dennis Szymialis	p.5-14 -minimum flows are probably a state and federal legal requirement and not just a MDNR recommendation (see Flynn Article above)	WAT	NS	X	1	
Dennis Szymialis	p.5-19 "calcium and magnesium ions that contribute to water hardness generally lower metals toxicity" -sounds like another mining proponent fairy tale.	WAT	NS	X	1	
Dennis Szymialis	p.5-25 "PolyMet has indicated a desire to transition to non-mechanical treatment once pilot-testing and modeling indicate water quality standards could be met, which potentially could include application of the wild rice seasonal standard, but these are beyond the scope of this SDEIS." -Why is PolyMet so confident in achieving other water quality standards with modeling and not this one? Is it because their modeling is all bullshit to begin with or is it because modeling is based on iron mines which wouldn't be able to meet the sulfate standard without treatment?	PD	NS	X	1	
Dennis Szymialis	Why haven't modern techniques been utilized in determining the actual and not simply self-serving theory which given the state of the art in geophysical mapping would dictate to determine ground water flows and subsurface conditions including bedrock fracture? You would think that these would be part of the \$65 million dollars that PolyMet claims to have spent. Or is that money being spent to keep us from knowing the truth? Why hasn't the PolyMet mineral exploration and mining company done testing commonly used in the industry to make good sound interpretations beneath the surface such as ground penetrating radar, seismic reflection, hyperspectral imaging, and magnetotellurics.	WAT	NS	X	1	

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Dennis Szymialis	The MinnAmex cite within a few miles of The MorthMet was observed undergoing constant pumping and visitors were nonetheless required to wear hip boots.	GEN	NS	X	1	
Dennis Szymialis	p.5-38-42 -there is no MODFLOW recognition of the pipes that are draining the area around the Plant site. Is the water in these pipes considered ground water or surficial water? There is just no recognition or mention of these drainage pipes.	WAT	S	O	2	SDEIS Comment #9663. SDEIS Themes WR 056, WR 093
Dennis Szymialis	p.5-51 "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 were released; and" - precipitation would not "limit the concentration of soluble contaminants like arsenic, nickel compounds, and concurrently methylated mercury, the mercury and arsenic generally bound with the sulfide in the pyrite which allow them to become reactive quicker. Pyrite was observed to be a prominent feature at the Minnamax mine within a few miles of the NorthMet mine site.	WAT	S	O	2	SDEIS Comment #9681. SDEIS Theme WR 038
Dennis Szymialis	p.5-54 "the rate of oxidation and constituent release was estimated from studies of seepage release measured in Dunka Mine rock, which is a nearby source of waste rock with similar chemical composition" -if Dunka Pit mine rock were similar the adjacent rock would be readily accessible and being mined for sulfide ores.	PD	S	O	2	SDEIS Comment #9685. SDEIS Theme PD 27
Dennis Szymialis	p.5-55 Table 5.2.2-14 is just an attempt to confuse by using some kind of alternative terms for solubility and ground filtration. They are trying to say that the water and solutes will enter the ground only in quantities which will produce what they want people to believe is the optimum ground filtration scenario.	WAT	S	O	2	SDEIS Comment #9690. SDEIS Theme WR 201
Dennis Szymialis	p.5-55 "four solutes are assumed to be attenuated by adsorption in the aquifer: arsenic, antimony, copper, and nickel." -for arsenic this statement fails to differentiate between Arsenic V isotope which is arsenic at a lower PH state and Arsenic III isotope which is the same arsenic at a more neutral state. This EIS projects inconsistent scenarios in assuming a lower PH but not the type of arsenic which is exhibited at that PH level. -the modeling also fails in that it is unable to explain already existing exceedances previously noted as being observed for arsenic at the mine site.	WAT	S	O	2	SDEIS Comment #9691. SDEIS Themes WR 025, WR 058
Dennis Szymialis	Goldsim as manipulated explains nothing relevant, reliable or valid.	WAT	S	O	2	SDEIS Comment #9692. SDEIS Theme WR 189
Dennis Szymialis	Table 3.2.-13 Sulfuric Acid 1,500 tons per year Hydrochloric Acid 3,590 tons per year Liquid Sulfur Dioxide 1,433 tons per year (according to Wikipedia-"Sulfur dioxide is primarily produced for sulfuric acid manufacture")." -regarding tailings geochemistry we need to start with the fact that the SDEIS is telling us that the tailings basin is going to have some potential for acid mine drainage.	WAT	NS	X	1	
Dennis Szymialis	p 5-61 "The NorthMet Project Proposed Action tailings are predicted to have less than 0.12 percent sulfur, which kinetic tests demonstrate is low enough that it would never produce acidic leachate" "Tailings samples subjected to humidity cell tests included a range of sulfideS concentrations (0.06 to 0.14 percentS)" -The range between .12 and .14 percent sulfur according to the EIS indicates that there is some probability that the tailings themselves will produce acid mine drainage. This disregards the effect of the process water which will be added. The SDEIS can hide the treatment process from us but it appears that it is heavily reliant on some sort of ion exchange as there is an indication that large amounts of limestone will	WAT	S	O	2	SDEIS Comment #9734. SDEIS Themes WR 027, WR 143

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	<p>be used. -but lets go pack to the water hydrology for a start. The SDEIS starts by disregarding the hydrostatic effects of the head created by digging the pit. When the pit is dug, the large amount of water surrounding the pit will want to drain into the pit, even with the soil conditions the SDEIS claims exists above bedrock. The SDEIS rely's on a few holes drilled. The entire wall of the pit is the area in issue and not just the surface area of a few holes. When water under surface pressure starts to drain into the bit erosion will further open these holes and create ever increasing drainage into the pit. The holes in surficial and bedrock area around the pit caused by drying and erosion under pressure will form the conduit for migration of contaminants out of the pit post-closure. The pit wall will be close enough to the Partridge River to intersect fractures radiating out from the main fracture creating the Partridge River. The SDEIS tells us that the surficial water flow follows the fractures and that these fractures have associated fractures radiating out from them. This will create drainage into the pit. This drainage into the pit will be more pronounced on the north wall where this water will divert the Partridge River through these fissures and keep the north Virginia formation wall flowing with contaminants that will have to be pumped out to accommodate mining operations. -this leach-aid water will be pumped to the WWTF and run through lime to neutralize it but no system exists where the lime will not get coated will the sulfide metals that are precipitated out and fail to continue to neutralize the acidic water it is intended to neutralize. This process will lead to higher than the .06 to .14 percent Sulfur that the SDEIS indicates will be a base level for the tailings and increase the chances that at least at times the tailings basin will become acidified at a level above the .12 level indicated for acidic conditions. Furthermore, the tailings basin itself contains waste which has become inert. The addition of sulfide and sulfate to the top of the tailings basin will run through the basin and methylize the elemental mercury which is in higher than environmental concentration along with the mercury methylized from the process water, "sulfate release rates increasing roughly in proportion to total sulfur (p.5-61)."The reverse osmosis, even if the filters stay unplugged and a suitable disposal is found for the filtrate, is not designed or expected to filter out ions that are smaller than water molecules and highly soluble in water. Toxic heavy metals like arsenic, nickel, and methyl mercury will flow unimpeded to lake Superior and beyond in the solution created.</p>					
Dennis Szymialis	<p>p 5-62 The fact that the modeling failed to measure predicted, "concentrations of several solutes, including many metals." doesn't necessarily mean that the non empirical measurements were understated by the model or that there were "additional attenuation effects." It probably is more likely that the data fed into the model was invalid or that it is just a bad model. Why should we give credibility to a modeling that has no proven track record of reliability?</p>	WAT	S	O	2	SDEIS Comment #9757. SDEIS Themes WR 049, WR 050
Dennis Szymialis	<p>p.5-63 "NorthMet Project Proposed Action contaminant release parameters are based on a combination of laboratory tests and water quality observations at similar tailings facilities in northern Minnesota." -again, this is not a valid comparison. The SDEIS claims that based "design and performance modeling" that</p>	WAT	S	O	2	SDEIS Comment #9759. SDEIS Theme WR 030

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Dennis Szymialis	p.5-68 "In GoldSim, the containment system is conservatively assumed to be 90 percent efficient,"this system is described as follows, p.3-117 "It would consist of a cutoff wall placed into existing surficial deposits, with a collection trench and drain pipe installed on the upgradient side on the cutoff wall." The cutoff wall would be made of "The cutoff wall would be constructed by excavating a trench down to bedrock and backfilling it with a compacted soil material,p.3-46" and Figure 3.2-28. This would occur in the following environment: "Jennings and Reynolds (2005) mapped the surficial deposits around and beneath the Tailings Basin as Rainy Lobe Till, which functions as the surficial aquifer and is generally a boulder-rich till with high clay content. Data from the 12 monitoring wells installed north and west ofthe Tailings Basin indicate that the primary lithology in this area is sand with varying amounts of silt and gravel. In a separate geotechnical study of the LTVSMC tailings, several soil borings into the surficial till identified the composition as layers of clay and sand, plus cobbles and boulders that prevented recovery of an intact sample (Pint and Dehler 2009). Near the toe of the Tailings Basin, average depth to bedrock is approximately 25ft, as reported in site boring logs (Barr 2009f). The area farther northwest ofthe Tailings Basin is believed to be one of the few areas in the region with significant quantities of outwash (sand and gravel) and thicknesses ranging from 0 ft to greater than 150ft (Olcott and Siegel1979) (see Figure 4.2.2-12). The surficial till is often overlain by wetland/peat deposits. Peat deposits were encountered in some borings, ranging in thickness from less than a foot to several feet."p.4-95 -it seems a fairy tail that it could be conservatively assumed that a wall made of compacted dirt would hold back an average of 25 feet of ground water, that a trench could be dug to be tucked around boulders 25 feet down in the ground, that the ground water would flow uphill as indicated in Figure 3.2-28, or that there is even a remote chance of in any way modeling this result. My god, what will they have us believe? Oh, and they still don't explain the pipes draining away from the tailings basin into the Embarass River or what will be done with those. I know it doesn't take 300 years for water to travel 3.25 miles through a pipe. I would say maybe an hour.	PD	S	O	2	SDEIS Comment #9787. SDEIS Theme PD 04
Dennis Szymialis	p.5-77 "This P90 threshold generally equates to a reasonable worst-case scenario and has been adopted for other mining NEPA documents where probabilistic modeling was used (e.g., Idaho Cobalt Project [USFS 2009b] -use for one solute hardly give the modeling any basis for reliability or validity, this is flimsy.	WAT	S	O	2	SDEIS Comment #9789. SDEIS Themes WR 110, WR 192
Dennis Szymialis	p.5-79 "Filtered sludge from the chemical precipitation process would be sent off site for disposal or stored at the Hydrometallurgical Residue Facility. The reject concentrate stream from the WWTP would be transported to the WWTF via rail tank cars where it would be added to the West Equalization Basin." -this procedure simply delays discharge of contaminants to the environment.	PD	S	O	2	SDEIS Comment #9790. SDEIS Theme PD 03
Dennis Szymialis	p.3-115 "A pond would be maintained within the Hydrometallurgical Residue Facility so that the solids in the surry would settle out, while the majority of the liquid would be recovered by a pump system and returned to the plant for reuse." -with all the mixed materials going into the Hydrometalurgical Residue Facility how is any of it of good enough quality for reuse. Why are so many materials consumed on p.3-312 if they are capable of being recycled. This is another misleading aspect of this SDEIS.	PD	S	O	2	SDEIS Comment #9791. SDEIS Theme PD 18
Dennis Szymialis	p.5-80 "The WWTP would be constructed south of the Tailings Basin near the coarse crusher and would include an RO unit designed to achieve less than 9 mg/L sulfate in effluent, as well as all other applicable water quality standards." -the RO needs to be designed before permitting and if what is the sulfate level in the 10%+ that escapes the tailings basin	WAT	S	O	2	SDEIS Comment #9792. SDEIS Theme WR 143

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	containment. Won't it exceed the 10 parts per million sulfate standard?					
Dennis Szymialis	p. 5-81 Reject concentrate from the Plant Site WWTP RO system would be treated at the Mine Site WWTF and the resulting filtered sludge would be taken off site for disposal. -this is a plan to put contaminants right back into the environment. How about the Hay Lake Tract 1 site. That is already a dump, literally.	PD	NS	X	1	
Dennis Szymialis	p.5-81 What is the West Equalization Basin?	EDIT	NS	X	1	
Dennis Szymialis	p.5-82 "Once the Hydrometallurgical Residue Facility is reclaimed" -This cannot be reclaimed. It will in theory (if all goes as represented by PolyMet) contain the consumables on Table 3.2-13, treatment sludge from the WWTF, ect. How does PolyMet really expect to be able to determine if this is leaking in a timely manner? -again the, WWTF will be inadequate to treat pit runoff to be discharged into the Partridge River. It will contain exceedances for mercury, carcinogenic nickel compounds, arsenic, and other toxins. "Surface runoff would be routed away from the mine pits using a combination of existing and new ditches (see Figure 5.2.2-15)." -This will cause contaminants to run into the Partridge River as 20 years of contaminant mining dust from blasting will have accumulated and be subject to erosion into these ditches and the river. "A more detailed evaluation of this requirement would be conducted prior to mine closure." - another due process notice violation.	PD	S	O	2	SDEIS Comment #9794. SDEIS Theme PD 20
Dennis Szymialis	p.5-83 "The typical discharge rate from the WWTF is predicted to be 285 gpm."-this amount underestimates the amount of flow as it disregards the unintended redirected flow of the Partridge River through the pits. This redirected flow would be exacerbated if the north pit wall were to collapse during mining. The rock composing the pit walls is wet rock which is more brittle than dry rock(as I explained in my DE IS comments) added to this will be a shearing effect between the Virginia, Duluth, and underlying rock formations. Pit wall collapse has been noted recently at the Kennicot mine in Utah.	WAT	S	O	2	SDEIS comment #9802. SDEIS Theme WR 179
Dennis Szymialis	p.5-89 "distillation crystallization unit to eliminate the liquid reject stream. The moist waste solids from this system would be disposed of off site." -googling distillation crystallization does not identify any existing technology by that name. Again, solids should not be disposed of offsite where PolyMet would escape responsibility for their monitoring and release. -the pilot testing has no more foundation for reliability than the modeling.	PD	S	O	2	SDEIS comment #9807. SDEIS Theme PD 03
Dennis Szymialis	p.5-92 "A comparison of the hydrogeologic conditions at the Canisteo Mine Pit, the Kinney area wells, and the Mine Site concluded that the geologic and hydrogeologic settings of the Mine Site are relatively similar to the Canisteo and Minntac sites (Barr 2011h)." -this just isn't true as there is a 45 foot drop to the lake on the other side of coleraine within 1/2 mile from the canisteo pit providing drainage for the surficial till surrounding the canisteo pit. No such geological feature exists at the PolyMet mine site. Furthermore, you cannot just "Despite the difference in pit depths," as indicated in the SDEIS. The difference between the height of the water which is at the surface above the PolyMet mine and the bottom of the mine is the "head." The higher the head the more the pressure pushing it down. The depth of the mine relative to the water is everything. Anyone who has been in a waterfall knows that a higher waterfall hits them harder. This is a function of the	WAT	S	O	8	SDEIS COOP Response #17873

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	water pressure.					
Dennis Szymialis	p.5-93 -discussion disregards environmental effects of surficial compaction from draw down of aquifer. "The proposed Category 1 Stockpile groundwater containment system, which is tied into bedrock, would minimize effects of pit drawdown on these waterbodies." -the addition of the stockpile material after the construction of the containment system is likely to be like putting a rock on a sponge and the containment system will burst like a water balloon, bam!	WAT	S	O	2	SDEIS Comment #9848. SDEIS Theme WR 017
Dennis Szymialis	p.5-98 "1.25 inches of spilled material over a 2,000-m2 area." -the amount and effect of this spillage is underestimated as this is highly reactive rock and inadequate precautions against spillage are indicated.	PD	S	O	2	SDEIS Comment #9851. SDEIS Theme WR 151
Dennis Szymialis	p.5-102 'The GoldSim modeling assumes, however, that a small volume of leachate would seep through tears/flaws in the geomembrane liner, reaches the groundwater table, and follows what is referred to as the Ore Surge Pile Flow path, ultimately discharging to the Partridge River.' -GoldSim modeling is only as good as the data fed into it if it works at all. Goldsim modeling is of questionable reliability as indicated in this SDEIS. -However, it is agreed that tears will form in the liner and reactive water will run off and not be caught. SDEIS projections have failed to recognize pit water which will lead to more saturated ore in this and stockpile 2/3 which will cause more extensive tearing due to the additional weight and lead to more highly reactive waste water flowing untreated into the Partridge River. The solution to this problem is for PolyMet to use a more durable liner. Money saving measures as these that compromise the environment in violation of the FLMPA. - it is unlikely that the waste rock indicated would have limited oxygen transport. Breach of the Partridge River aquifer on the north side of the pit will lead to the inflow of highly oxygenated water from the river that will flow through the reactive waste rock and flow through it leaching contaminants. -the two underestimated above phenomena themselves will lead to exceedences. p.21(polyMet 2013gAWMP) "Effluent concentrations used as inputs to the GoldSim water model are based on the PWQTs and the overall Project water management strategy." -PWQT stands for preliminary water quality targets -some of the assessments will be made based on "information from process equipment vendors related to hydraulic and chemical treatment performance." It is unlikely that accurate information will come from a sales pitch by a vendor which is how this SDEIS seems to be weighted. -It is impossible from the SDEIS to make the modeling predictions given in pages 5-94 to 5-150 plus as the Goldsim results are only based on PolyMet targets which may or may not be achievable. Whether or not these targets are achievable needs to be part of the foundation for this SDEIS. This foundation is failing like that of the DE IS. -The GoldSim model results are simply a product of PolyMets goals and not any objective end result. Arsenic mobility was studied in tailings from Zimapan, a mining zone of Mexico. Primary mineral phases are quartz, calcite, pyrite, pyrrhotite, sphalerite and arsenopyrite. Secondary minerals in oxidised tailings include gypsum, K-jarosite, lepidocrocite, goethite, beudantite and kaolinite. The highest levels of As (up to 3.95 ± 2.29 weight%), Zn (up to 3.26 ± 2.21 weight%) and Pb (up to 0.93 ± 0.83 weight%) were measured in unoxidised tailings located at the edge of the town. Concentrations in water leachates from oxidised tailings were: As (0.41-48.68 mg/L), Zn (1.5-400 mg/L), Pb (<1.0-1.8 mg/L) and Fe (1.9-897.5 mg/L). Mineralogy, pH, and heterogeneity of tailings, explain these concentration ranges. Arsenopyrite oxidation releases arsenic that is then partly incorporated in secondary minerals like beudantite and K-jarosite. Arsenic is also immobilised by sorption onto positively	WAT	S	O	2	SDEIS Comment #9854. SDEIS Theme WR 126

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	charged surfaces of hydrous ferric oxides. Keywords: arsenic mobility, mining, mineralogy, metals, oxidised tailings, Mexico, water leachates, secondary minerals, arsenopyrite oxidation, arsenic concentrations, sorption, chemistry, environmental pollution - http://www.environmental-expert.com/articles/mineralogical-constraints-on-the-mobility-of-arsenic-in-tailings-from-zimapan-hidalgo-mexico-23730 -sorption occurs in very limited conditions and sorption minerals are likely going to have to accommodate overwhelming amounts of arsenic and other metals subject to sorption. I believe the leachates from the above ranged 41 to 4,868 times the ten parts per billion standard. Even a small percentage of leachate escaping the PolyMet site will cause exceedences. and death http://www. bm j.com/content/342/bmj. d2431 Bangladesh Cardiovascular disease/arsenic exposure study. -given already existing background exceedences this is what should be expected. - Furthermore, if the precedent is set for this level in this branch of the St. Louis River the potential exists for totals from each branch to accumulate to exceed exceedence levels in the main river. Inadequate dilution will occur even if branch river exceedences are met due to evaporation and other losses.					
Dennis Szymialis	p.5-152 -pilot testing referred to fails to identify treatment conditions, assumptions made in the testing, types of arsenic oxidized or not, As V or As III, therefor it lacks notice and fails to provide a basis for comment.	PD	NS	X	1	
Dennis Szymialis	p.5-157 -any leakage in the hydrometallurgical facility would be disastrous and irreparable once the process started. More information is needed on the types of liners proposed.	PD	S	O	2	SDEIS Comment #9868. SDEIS Theme PD 17
Dennis Szymialis	p.5-158 -Again, are the pipes draining from the direction of the tailings basin being considered as ground water or surface water. These pipes would be assumed to drain at a different rate. What is the drainage rate attributable to these buried pipes?	WAT	S	O	2	SDEIS Comment #9869. SDEIS Theme WR 093
Dennis Szymialis	p.S-159 -the ground water containment system that it is claimed will collect 100 percent of ground water needs to be further explained. Under the conditions previously described in this SDEIS that is just not remotely physically possible.	WAT	S	O	2	SDEIS Comment #9871. SDEIS Theme WR 093
Dennis Szymialis	p.5-160 already oxidized and precipitated nickel and arsenic would erode and flow out with water regardless of PH because of it's ionized solubility.	WAT	S	O	2	SDEIS Comment #9872. SDEIS Theme WR 001
Dennis Szymialis	p.5-161 -humidity cell testing result are not reflective of actual conditions.	WAT	S	O	3	SDEIS Comment #9875. SDEIS Theme WR 034
Dennis Szymialis	If at closure there is going to be a liner/bentonite layer installed under the pond, the area under the liner will dry out under some conditions unless the pond liner is leaking. Either the pond is saturated or it is leaking oxygenated water. This is a prime condition according to DNR Savin and Berndt studies for methylization of mercury.	WAT	S	O	2	SDEIS Theme WR 57
Dennis Szymialis	The thickness and effective hydraulic conductivity of the bentonite layer would be designed to achieve a pond seepage flux of 6.5 in/yr or less. -sounds precarious given different weather conditions and specificity for performance.	WAT	S	O	2	SDEIS Theme WR 57
Dennis Szymialis	p.5-165 -because of the limited conditions in which sorption occurs the slowing of these solutes is exaggerated. -travel times lack foundation, e.g.Jree flowing water does not take hundreds of years to flow.	WAT	S	O	2	SDEIS Theme WR 58

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Dennis Szymialis	It is impossible from the SDEIS to make the modeling predictions given in pages 5-167 to 5-.... plus, as the Goldsim results are only based on PolyMet targets which may or may not be achievable. Whether or not these targets are achievable needs to be part of the foundation for this SDEIS. This foundation is failing like that of the DEIS. The GoldSim model results are simply a product of PolyMets goals and not any objective end result.	WAT	S	O	2	SDEIS Theme WR 147
Dennis Szymialis	p.5-178 -Colby lake water is higher in sulfates than existing flows from the existing tributary stream water and will result in damage to downstream wild rice beds.	WAT	S	O	2	SDEIS Theme WR 124
Dennis Szymialis	seems to be telling us that The WWTP is expected not to work.	PD	NS	X	1	
Dennis Szymialis	raising the level of arsenic to 10 parts per billion from the tailings basin is unacceptable. This combined with cumulative impacts downstream, existing levels of arsenic in the St. Louis River, and the combined health effects of arsenic with other increases in other solutes is a deadly cocktail for people drinking water out of Lake Superior. Furthermore, the 10 ppb is only a PolyMet target which we cannot expect to be enforced by the agencies under the weight of special interest pressure.	WAT	S	O	2	SDEIS Themes WR 042, WR 109
Dennis Szymialis	Table 5.2.2-47 is misleading because it uses sulfate levels based on Barr and not DNR readings for Colby Lake water which were higher and because it includes Spring Mine Creek water [p.4-122 Spring Mine Creek, which receives drainage from Pit SNW (see Figure 4.2.2-1). Pit SNW is completely flooded and has been overflowing since before 2001 with an annual average flow of about 2 cfs to the Embarrass River via Spring Mine Creek. This discharge has sulfate concentrations that average 1,042 mg/L (PolyMet 2013j).]which won't be augmented. The net effect of the Colby Lake augmentation is a net increase that will be detrimental to downstream rice beds which are already fragile from existing sulfate exposure. The Colby Lake discharges will be less subject to the attenuation of current flows because they will be released on the surface and not subjected to ground effect filtering. Total stream water concentrations of sulfate are more relevant here than concentrations close to the tailings basin. Two thirds of the augmentation water will go to Trimble creek which has according to this SDEIS average sulfate levels of 12.4 at TC1 and 26.8 at PM19 and Mud Lake Creek which will receive about 1/6 th of augmentation has readings at MLC 1 of 9.8 and MLC 2 of 3.2 mg/L, inadequate data is provided for unnamed creek which will receive less than 1/4th augmentation from Colby Lake from years 21-40 (Table 4.2.2-35). Difference between actual from those given in the SDEIS and differences between Barr and MDNR readings are the product of manipulation. For example, a higher reading will result when taken during lower water levels when concentrations are higher and for Colby Lake water different concentrations of sulfates will occur at different depths. Modeling charts 5.2.2-50 and 5.2.2-51 contradict SDEIS actual readings(In Trimble and Mud Creeks) and known sulfates(according to SDEIS figures) in Colby Lake augmentation water.	WAT	S	O	2	SDEIS Theme WR 149
Dennis Szymialis	mercury concentrations in reactive waste rock WILL be much higher. in this rock stratification WILL occur with sulfide eroded mercury methylizing in solution and stratifying. Results shown in lab testing WILL not carry over into natural conditions and are not applicable.	MERC	S	O	2	SDEIS Theme MERC 01

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Dennis Szymialis	p.S-202 "The West Pit, like seepage/head water lakes (e.g., lakes with no significant inflowing streams)," -not true/disputed. There will be Partridge River high oxygen inflow through rock fractures and subsurficial erosion. - furthermore, it is not relevant to compare a sulfide ore body to head water lakes or a select number of pit lakes. p.S-204 "runoff from the Overburden Storage and Laydown Area would be considered process water and would be collected and routed to the Tailings Basin for years 1 to 11, where much of the mercury would be sequestered in the tailings." -this is not true. Not only will mercury not be sequestered in the tailings, mercury that has been sequestered by lack of contact with sulfates will be reactivated with the addition of sulfate laced tailings during the operation of the mine.	WAT	S	O	2	SDEIS Themes WR 088, WR 179
Dennis Szymialis	PolyMet given its methodology in disregarding the methylation of mercury and overestimation of sorption makes its fabricated model appear to be unreliable. Given the mine's footprint relative to the size of the Partridge River watershed, at best assuming the validity of the PolyMet Modeling, any benefit to filtering the small amount of background existing run-off from the footprint of the mine and surfaces to be treated would be negligible and beyond detection. The fact of the "natural runoff (with a total mercury concentration of 3.6 ng/L)" is so high merely reflects the environmental impact that exploration drilling has had on the site, contradicts PolyMet's sequestration theory	WAT	S	O	2	SDEIS Theme WR 158
Dennis Szymialis	again, taconite tailings WILL adsorb elemental mercury just like any other solid solution but once methylated adsorption is no longer effective and The addition of sulfates negates any adsorption. mercury in higher than natural amounts WILL be reactivated by The introduction of sulfates which HAS been shown in studies conducted in Sweden, Canada and The U.S. PolyMet and their co-lead agency employees want to self-servingly disregard The established science.	MERC	S	O	2	SDEIS Theme MERC 06
Dennis Szymialis	the effect of DEIS changes including containment systems won't work as previously indicated. -the results of the Savin and Berndt study is misrepresented. The study actually indicated that higher sulfate levels eventually dilute, travel downstream and methylate mercury. An honest reading of the study indicates that there is a correlation between the amount of sulfate in the stream and the amount of mercury that is methylated as the mercury is projected downstream. The methylmercury and its concentration is real as is indicated by bioaccumulation in fish downstream.	MERC	S	O	2	SDEIS Theme MERC 08
Dennis Szymialis	-because the Embarrass River system is more than double the size of the Partridge River system the 3% increase in the Embarrass and the 5% increase in the Partridge will result in a net increase in mercury.	MERC	S	O	2	SDEIS Theme MERC 23
Dennis Szymialis	SDEIS neglects a discussion of the augmentation water from Colby Lake which MPCA testing from 1976-2007 showed mercury of 190 ng/L (p.4-88) while the Embarrass river only has 4 ng/L (p.4-123). All the tailings basin surficial seeps show less than 4 ng/L (p.4-129). This is an increase of more than 45 times the amount of mercury being put into the Embarrass River tributaries. Even if the more limited and paid for Barr testing results are used mercury doubles during the period of augmentation.	WAT	S	O	2	SDEIS Theme WR 125

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Dennis Szymialis	This 20 year Colby Lake stream augmentation would seriously contaminate fish in the Embarrass River watershed for a generation in the downstream Embarrass River and increase mercury in the Lake 29 Superior Watershed. PolyMet will be taking current cleaner runoff from the LTV tailings basin and replacing it with much higher mercury contaminated water. Even though this water would also flow in the St. Louis River a net increase will occur because the dilution effect of the alleged cleaner tailings basin water will be removed. This is a clear violation of the Great Lakes Initiative Law.	WAT	S	O	2	SDEIS Theme WR 125
Dennis Szymialis	The Colby Lake water is warmed by the nearby Minnesota Power Laska plant (p4-85). The warmer water will increase the solubility of the metals in the river system and form an environment that will serve as a catalyst more conducive to oxidizing metals and methylating mercury.	WAT	S	O	2	SDEIS Themes WR 046, WR 046
Dennis Szymialis	plans for future efforts should not be allowed. these efforts depend on DNR or MPCA enforcement which, based on historical enforcement of environmental protections and laws should be expected not to occur. Furthermore, the agencies paid participation in The EIS process gives them a vested interest in its success, the failure of which they will have an inherent propensity to deny.	PER	S	O	2	SDEIS Theme PER 06
Dennis Szymialis	The Aitkin and Hinkley sites WILL not compensate for wetlands lost in The St. Louis River watershed. wetlands need to be retained and justly deserve to be retained to provide environmental filtering effect, retention of water for flood control, et.	WET	S	O	2	SDEIS Theme WET 03
Dennis Szymialis	The Zim site is already wet and serves The functions of a wetland. Calling The Zim site a wetland or flooding it with more water serves no wetland purposes. I have walked The area composing The Burns sod farm as one of their customers.	WET	S	O	2	SDEIS Theme WET 06
Dennis Szymialis	none of The given sites should be qualified as mitigation.	WET	S	O	2	SDEIS Theme WET 06
Dennis Szymialis	a key component of the adaptive management plan should be to identify additional compensatory wetlands in advance that would actually serve an additional wetland function within the St. Louis River watershed to compensate for wetlands lost in the St. Louis River watershed.	WET	S	O	2	SDEIS Theme WET 02
Dennis Szymialis	as previously indicated in these comments Mine settings chosen are not comparable for The reasons previously given in these comments.	WET	NS	X	1	
Dennis Szymialis	indirect wetland effects need to be assessed for evaporation resulting from loss of vegetation cover these should include ombrotrophic wetlands.	WET	S	O	2	SDEIS Theme WET 08
Dennis Szymialis	Analog mine sites are dissimilar to PolyMet because as previously indicated. The water table at PolyMet maintains a higher elevation and puts the water under more pressure to flow farther. Rather than restrict the area of drainage the Partridge River expands the zone because it is within the zone of bedrock fractures which the surficial water flow follows as indicated elsewhere in this SDEIS. All wetlands to the Northwest, North, and Northeast will run into the PolyMet mine pit. Drawdown will occur following the Partridge River beyond the 10,000 foot boundary until pumping from the pit augments and restores the river flow downstream of the pits.	WET	S	O	2	SDEIS Themes WET 08, WET 10

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Dennis Szymialis	disregarded in this analysis are the cumulative effects of evaporation drawdown from defoliated ground, accelerated defoliation from drying, dusting, the toxic effects of toxic dust or watering, increase runoff from dry defoliated ground, and draw down from the mine pit on vegetation. It is clear that the co-lead agencies have taken a myopic view of cumulative impacts.	WET	S	O	2	SDEIS Theme WET 18
Dennis Szymialis	evidence of erosion that should be expected to continue from PolyMet seepage. this eroded ground should not be expected to support a containment wall or boulders reinforcing The base of The tailings basin.	WET	S	O	2	SDEIS Themes GT01, GT03
Dennis Szymialis	indirect wetland impact WILL occur at The plant site from evaporation caused by The trampling of vegetation.	WET	S	O	2	SDEIS Theme WET08
Dennis Szymialis	water losses in the watersheds of the tributary creeks are underestimated because they do not account for water flowing through drainage pipes running from tailings basin drainage area to Embarrass River(draw down and intensification of contaminants). If containment system catches 90% of water there will be a shortage of more than 20%. This 20% augmentation from Colby Lake will lead to heightened levels of mercury in the first 20 years and after 40 years in addition to the more extensive augmentation occurring in years 20-40 as indicated previously in these comments in violation of the Great Lakes Initiative Law.	WAT	S	O	2	SDEIS Themes WR125, WR184
Dennis Szymialis	disregarded in this analysis are The cumulative effects of evaporation draw down from defoliated ground, dusting, The toxic effects of toxic dust or watering on defoliation of water preserving ground cover, and draw down from The Mine pit on vegetation. Further disregarded is The contribution of traffic to defoliation evaporation.	WET	S	O	2	SDEIS Theme WET 18
Dennis Szymialis	effectiveness of tailings basin containment system overestimated, etc., as indicated in these comments.	PD	NS	X	1	
Dennis Szymialis	Analog method not representative, wetland draw down underestimated from Partridge River hydrology, etc. as previously indicated in these comments.	WET	S	O	2	SDEIS Themes WET 08, WET 10
Dennis Szymialis	state and Federal governments want mitigation on private lands because they plan to continue The degradation of wetland environments on their own lands in violation of state and Federal laws.	WET	NS	X	1	
Dennis Szymialis	it is incorrect to characterize ditched peat lands as adversely effected. These lands could be utilized as productive farmlands. These lands have diminished value because of the pollution of the St. Louis River that has diminished the regional agricultural economy.	WET	S	O	2	SDEIS Theme WET 24
Dennis Szymialis	Further degradation of this area by trading it for more mining degradation only serves to further cripple the ability of a once thriving agricultural community to recover from mining. Further, it lessens the value unjustly and to the detriment, of the community, state, of surrounding lands. These ongoing economic policies corruptly and foolishly promote special interests at the expense of individual landowners.	SO	NS	X	1	

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Dennis Szymialis	mining should replace lost wetlands destroyed by mining. The intent of The law is not to make agricultural perpetually subservient to mining. Furthermore, replacing wetlands lost to mining does not functionally compare when replacing them with agricultural lands.	WET	S	O	2	SDEIS Theme WET 05
Dennis Szymialis	Agricultural production needs to be protected from contamination and a healthy agricultural economy needs to be preserved.	SO	NS	X	1	
Dennis Szymialis	The mere fact that farm land can be turned into wetlands is testimony to the health of the land. Mining land cannot replace wetlands because wetlands cannot be created from mine lands. There is a qualitative difference between protecting wetlands from mining and using farm lands to replace wetlands that are destroyed by mining and to fail to recognize the difference is simply a lie.	WET	NS	X	1	
Dennis Szymialis	turning existing sod farms into wetlands is a sham and a waste. People need sod. these WILL simply be replaced by draining other wetlands and no net gains WILL occur.	WET	NS	X	1	
Dennis Szymialis	discussion of reclamation is a joke. when have any of the co-lead agencies ever reclaimed a Mine in Minnesota. After a century of neglect they come to The table and should not even expect to have a scintilla of credibility in this regard.	PD	S	O	2	SDEIS Themes PD 09, PD 35
Dennis Szymialis	The characterization of The loss of state lands of significant high biodiversity of less. than one percent as not being a large percentage decline is a subjective, biased, reckless, and slippery slope characterization of these losses.	VEG	S	O	2	SDEIS Theme VEG 02
Dennis Szymialis	as with all the cover systems in the project root systems from tree growth will eventually penetrate the cover and subject the underlying soils to oxidization reaction. As with any of the stated mitigation measures effects are only delayed.	VEG	S	O	2	SDEIS Theme VEG 05
Dennis Szymialis	The status of the Floating Marsh Marigold should be upgraded to endangered and this (PolyMet Mine site) habitat protected. again, only God can effectively create this habitat.	VEG	S	O	2	SDEIS Theme VEG 01
Dennis Szymialis	draw down as indicated earlier in these comments will wipe out this 8% population of this species.	VEG	S	O	2	SDEIS Theme VEG 01
Dennis Szymialis	it needs to be determined if this is a genetically isolated variety of Marsh Marigold to avoid extinction of The species.	VEG	S	O	2	SDEIS Theme VEG 01
Dennis Szymialis	The Floating Marsh Marigold is listed as endangered in Wisconsin where there is only one known population.	VEG	S	O	2	SDEIS Theme VEG 01
Dennis Szymialis	again, draw down from Mine activities as indicated in these comments is underestimated for The Mine site.	WAT	NS	X	1	
Dennis Szymialis	mercury effects on The sensitive wildlife listed WILL be intensified by The release of The high mercury Colby Lake augmentation water as indicated earlier in these comments.	WI	S	O	2	SDEIS Theme WI 04

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Dennis Szymialis	The presence of the mine causes the disruption of the migration corridors and ability of a variety of larger species due to the chain of Mesabi Range mining from east to west. Although this has been made a concern of natives in the area little has been done to dispel what they have learned. Moose populations are declining to critical levels. Additional arsenic deposition in the Partridge and Embarrass Rivers will damage the health of aquatic animals, and moose as aquatic grazers as arsenic is known to be absorbed into aquatic plants. Small levels of poisoning have serious effects in an already fragile life of a wild animal.	WI	S	O	2	SDEIS Themes WI 01, WI 03, WI 04
Dennis Szymialis	Mercury levels will exceed current levels in the Partridge River and Embarrass River. Embarrass River mercury increases will be more pronounced because of higher mercury levels in augmentation water from Colby Lake that will need to be used because of low estimates in ground flow as the result of a failure to account for drainage pipes running from the tailings basin drainage area to the Embarrass River, because of planned augmentation in years 20-40, and for other reasons previously given in these comments.	MERC	S	O	2	SDEIS Theme MERC 23
Dennis Szymialis	-Arsenic will exceed 10 parts per million because of overly optimistic effects of sorption, filtering, and containment.	WAT	S	O	2	SDEIS Theme MERC 23
Dennis Szymialis	exceedences of arsenic and mercury have been observed in Colby Lake water and should be expected to increase in frequency in The future and in augmentation. no consumption of any amount of walleyes, as HAS been The history of Colby Lake, WILL be recommended for fish in lakes downstream of The tailings basin in The Embarrass watershed. Warmed augmentation water from Colby Lake WILL kill off colder water fish along with other effects that need to be Further researched.	AQ	S	O	2	SDEIS Themes AQ 05, AQ 11, AQ 15
Dennis Szymialis	draw down WILL exceed what is estimated for reasons previously given in these comments which WILL result in escape from containment and higher concentrations of solutes. -Second Creek augmentation should also be expected to increase in warming, arsenic and mercury.	AQ	S	O	2	SDEIS Themes AQ 05, AQ 11
Dennis Szymialis	Goldsim modeling based on targets unlikely to be met and discharge will exceed those predicted.	WAT	NS	X	1	
Dennis Szymialis	under The no action Alternative Colby Lake augmentation would not occur. Benefits of tourism and cleaner environment would accrue. Race relations with native tribes would be improved.	SO	S	O	2	SDEIS Theme SO 02
Dennis Szymialis	-the PolyMet project will emit more than 10 tons of HAP in amphibole fibers.	AIR	S	O	2	SDEIS Theme AIR 03
Dennis Szymialis	no relevant BACT demonstration is attainable.	AIR	S	O	2	SDEIS Theme AIR 13
Dennis Szymialis	as indicated on page 5-531 there are sources of hydrogen sulfide gas that should be added or considered alone as exceeding the 10 ton HAP or 25 ton HAP cumulative standard. Potassium amyl xanthate will be converted to some extent to hydrogen sulfide gas as indicated with a total potential conversion of 1075 tons per year with the only requirement for conversion	AIR	S	O	2	SDEIS Theme AIR 10

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	being heat and moisture.					
Dennis Szymialis	additionally fugitive lime dust needs to be treated as hazardous waste.	AIR	S	O	2	SDEIS Theme AIR 10
Dennis Szymialis	even though it will not directly emit green house gas it will indirectly generate green house gasses and contribute to hazing in the boundary waters through its usage of power generated from Minnesota Power which will exceed 100,000 tons per year. The lack of attainment in the boundary waters should require PolyMet to be treated as if it were in a non-attainment area and a general conformity determination should be required.	AIR	S	O	2	SDEIS Theme AIR 02
Dennis Szymialis	these sources and other should qualify PolyMet as a major source emitter. relevant, reliable, and valid modeling needs to be conducted for these sources.	AIR	S	O	2	SDEIS Theme AIR 09
Dennis Szymialis	At the Mine Site, emissions were estimated for material handling sources associated with excavation, portable crushing and screening operations, blast hole drilling, use of unpaved roads, and vehicle exhaust. -it appears that modeling was based on PolyMet fabricated and self-serving data.	AIR	S	O	2	SDEIS Theme AIR 10
Dennis Szymialis	Model inputs for these sources were provided by the MPCA -these should be determined to be not credible." -the MPCA has refused to enforce the CAA and other law against mining and power companies supplying power to mining companies	AIR	S	O	2	SDEIS Theme AIR 09
Dennis Szymialis	Per MPCA guidance, the MESOPUFF II algorithm and secondary particulate formation were not used in the PMIO increment consumption evaluation. -this breach of protocol invalidates the modeling.	AIR	S	O	2	SDEIS Theme AIR 09
Dennis Szymialis	Since the two receptor grids represent two separate AOCs, the maximum concentrations are not additive -this is a misapplication of the Clean Air Act.	AIR	S	O	2	SDEIS Theme AIR 09
Dennis Szymialis	The modeling described is meaningless without information forming a basis for The inputs and violate due process notice. are these models based PolyMet target inputs as in The water modeling. -air quality modeling provided herein violates due process and is incomprehensible.	AIR	S	O	2	SDEIS Theme AIR 09
Dennis Szymialis	It has been proven that air pollutants inhibit the ability of pollinators to find food and pollinate plants http://www.latimes.com/science/sciencenow/la-sci-sn-honeybees-cant-sniff-out-flowers-amid-diesel-exhaust-20131004,0,6485580.story . Pollinators have become increasingly endangered as a result of habitat degradation including in Minnesota http://www.dnr.state.mn.us/volunteer/julaug09/pollinators.html . Humans have a symbiotic relationship with bees and other pollinators. Often times individual flowers have a symbiotic relationship with an individual wild bee species. This will have an impact on the ability of the Floating Marsh Marigold to survive as a species.	VEG	S	O	2	SDEIS Theme VEG 07
Dennis Szymialis	NorthMet project as well as a large area dedicated to mining in general are part of the habitat for the Monarch Butterfly which is also in extreme decline.	WI	S	O	2	SDEIS Theme WI 01

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Dennis Szymialis	The impact of the hazing effect for an entire region of mining in Minnesota cannot be disregarded.	AIR	NS	X	1	
Dennis Szymialis	it is improper to use this as a standard for this project as tailings basins in The past have failed by design, this HAS been visible by viewing basins such as United taconite using google earth.	GT	S	O	2	SDEIS Theme GT 02
Dennis Szymialis	design criteria are unconstitutionally vague and based on invalid inputs.	GT	S	O	2	SDEIS Theme GT 13
Dennis Szymialis	as with modeling for water and air quality inputs used for The geotechnical stability of The tailings basin are inadequately explained and based in terms of methodology for selection, reliability or validity of selection.	GT	S	O	2	SDEIS Theme GT 13
Dennis Szymialis	The peat soil forming The base for The rock buttress, when subjected to hydraulic erosion from seepage or lack thereof from The containment wall WILL not support it. The rock buttress is expected to slide through The area of The containment wall.	GT	S	O	2	SDEIS Theme GT 03
Dennis Szymialis	Liquefaction analysis was not applicable and not performed because the material proposed in the constructed dams would be well-compacted and the Hydrometallurgical Residue Facility liner system would limit leakage through the dams. -these assumptions are made in error.	GT	S	O	2	SDEIS Theme GT 11
Dennis Szymialis	If Lake County has approved or entered into an agreement or contract with PolyMet for the sale of lands to PolyMet in furtherance and assistance of PolyMet's NorthMet project through the environmental review process, it is prohibited from doing so by state and federal law restricting government action or approval prior to completion of the environmental review process. For the PolyMet NorthMet project, the agencies are in the middle of the Environmental Impact Statement review process. The law regarding environmental review requires that government agencies not take final action on a project prior to the completion of environmental review. Minn. Stat. § 116D.04, subd. 2b and Minn. R. 4410.3100. Moreover, the law requires that an EIS be prepared early in the process and that the information and analysis developed in the EIS be used by the government to inform permitting or approval decisions related to the project or pieces of the project. Minn. Stat. § 116D.04 subd. 2a. The language regarding consideration of the EIS information is mandatory: The government action shall be preceded by a detailed environmental impact statement. The statute does not distinguish between final and alleged "preliminary" or "minor" actions. Further, government action is broadly defined in the law as activities, including projects solely or partially conducted, permitted, assisted, financed, regulated or approved by a unit of government, and units of governments includes all levels of government. Minn. Stat. § 116B.04, subd. 1. The point of these provisions as read together is to ensure that environmental review occurs before there is an impact on the landscape and that all impacts then be considered and inform any government decisions on the primary action and any related or connected actions as well. By allowing a chipping away at the projects or pieces of projects while environmental review is pending or before it is done, the companies and government agencies in these cases frustrate the purpose and intent of full environmental review.	LAN	S	O	2	SDEIS Theme LAN 09
Dennis Szymialis	St. Louis County entered into a Wetland Restoration Agreement with PolyMet dated February 7, 2006 and was subsequently sued in Minnesota District Court. District Court Judge Heather Sweetland ruled in favor of the plaintiffs, Wetlands Action Group, motion for plaintiffs summary judgment granted. Further, the court held that a contract is the same as a permit and	LAN	S	O	2	SDEIS Theme LAN 09

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	proceeded to void the agreement and associated actions, because it was a violation of MN Rules part 4410.3100. See Wetlands Action Group, et al., Plaintiffs vs. St. Louis County, et al., Defendants April 17th, 2007. Lake County's entering into an land sale agreement with PolyMet is a discretionary contract and, thus, a permit under Minnesota rules.					
Dennis Szymialis	The USFS must address whether the Lake County Lands are part of an illegal action and if so, remove them from consideration in PolyMet's proposed land exchange.	LAN	S	O	2	SDEIS Theme LAN 09
Dennis Szymialis	The zone of impact for PolyMet extends beyond the State of Minnesota to other states and foreign countries. Wisconsin will be impacted through the arsenic and heavy metal poisoning of the drinking water of Superior, WI and other Lake Superior south shore communities that obtain their drinking water from Lake Superior.	CUM	S	O	2	SDEIS Theme CU 06
Dennis Szymialis	Current water quality monitoring is not only compromised by a conflict of interest, it is inadequate in scope and current arsenic levels seem to be unavailable to the public in the water quality reporting that exists for Superior drinking water.	WAT	S	O	2	SDEIS Theme WR 072
Dennis Szymialis	The PolyMet Mine and Plant will emit toxic waters that will harm waterfowl. Of particular harm will be the Hydrometallurgical Residue Facility. Contact with hydrometallurgical pond water will likely cause imminent death to unsuspecting waterfowl protected under international treaty (Migratory Bird Treaty Act) for the benefit of Wisconsin citizens.	WI	S	O	2	SDEIS Themes WI 01, WI 02
Dennis Szymialis	The hazing from power generation to supply PolyMet will have negative effects on other migratory species including the Monarch Butterfly which is also protected under law.	WI	S	O	2	SDEIS Theme WI 01
Dennis Szymialis	PolyMet will violate the Clean Water Act which will diminish the quality of other water uses in the State of Wisconsin along with the quality and quantity of resources such as wild rice and fish which will absorb harmful to human health heavy metals like mercury and arsenic.	MERC	S	O	2	SDEIS Themes MERC 01, MERC 03
Dennis Szymialis	Furthermore, the PolyMet land exchange involves the disposition of a national resource objectionable to Wisconsin citizens.	CUM	S	O	2	SDEIS Theme CU 06
Dennis Szymialis	It is enlightening that the SDEIS allows PolyMet to phrase legal pollution discharge standards and allow them the base modeling on their own targets. Is it just coincidental that the targets coincide with legal requirements? The transparency here of the fraud attempted to be perpetrated by the SDEIS on the public is that the co-lead agency don't intend to require PolyMet to make or keep any promises.	NEPA	S	O	2	SDEIS Theme NEPA 18
Dennis Szymialis	The co-lead agency foresee in have foreseen in advance that they would provide a vague and ambiguous SDEIS to avoid criticism when the pretext of a plan cannot be implemented.	NEPA	S	O	2	SDEIS Theme NEPA 15
Dennis Szymialis	The SDEIS disregards the cumulative impacts of SDEIS and permitting resulting from issuing a permit based on this SDEIS. The largest impact is the dilution of standards created in the SDEIS.	CUM	S	O	2	SDEIS Theme CU 11

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Dennis Szymialis	The Northeastern Minnesota area deserves a chance to build an economy not dominated by the effects of mining. Northeastern Minnesota has been subjected to the burden of one-hundred years of mining, it is someone else's turn.	SO	NS	X	1	
Jason McCall	You seem to think everyone in N.E. MN. Is for copper nickel mining. I assure you, you couldn't be more wrong. I've made my living directly from the mining industry as have my family for 120 years. I am strongly against it.	GEN	NS	X	1	
Jason McCall	We have regulations now that are not enforced. The fines are pennies on the dollar and probably all fines, fees, and penalties are totally tax deductible.	PER	NS	X	1	
Jason McCall	Many jobs in tourism and related businesses will be lost. Other businesses will not come here and some may leave. Property values will decrease, while property tax will go up to make up the difference for those not coming and those leaving.	SO	NS	X	1	
Jason McCall	PolyMet will funnel profits to the parent company and claim bankruptcy the day after they stop mining leaving the taxpayer with the mess.	FIN	NS	X	1	
John Finnegan	I have reviewed the Final EIS executive summary that you sent me. I read it thoroughly and it is simply the same material as the last one. It still doesn't address the issues that I mentioned in the last EIS.	NEPA	NS	X	1	
John Finnegan	You haven't addressed a catastrophic failure of any of the tailings basins. We have such unpredictable weather now. We can get 500 yr. rainstorms which are becoming more common.	GT	NS	X	1	
John Finnegan	And of course all the different species of wildlife mentioned in the statement are going to be affected. Your decreasing their habitat and corridors for them to be able to move or relocate. But you can just push all that aside because a big mining industry is more economically important than the natural environment.	WI	NS	X	1	
John Finnegan	You also haven't addressed the wild rice stands downriver of the site. There should not be any sulfide mining in our water rich state.	VEG	NS	X	1	
John Finnegan	I have no faith in the DNR being the lead agency in this EIS statement. I hope this project is denied the permit to mine.	PER	NS	X	1	
Laura Gauger	Upon completing my review of the PolyMet FEIS, I have concluded that it is inadequate. I also hereby object to the Draft Record of Decision issued by the U.S. Forest Service (Brenda Halter, Forest Supervisor, Superior National Forest) that would convey 6,650 acres of federal lands in the Superior National Forest to PolyMet.	MEPA	NS	X	1	
Laura Gauger	The PolyMet FEIS claims that the project will be in compliance with state law. To the average Minnesotan, this might mean everything will be okay. But the FEIS fails to elaborate upon the fact that state law and MPCA regulations allow PolyMet an exemption to meeting groundwater quality standards within the company's property boundary. It doesn't mean much to be "in compliance" with a law that has provided you with an exemption to meeting its terms. Yet, this important concept is not discussed or elaborated upon in either the Executive Summary or body of the FEIS. Rather, just a few brief references to it can be found buried in Appendix A of the document, where it states that groundwater quality standards will be enforced "at	MEPA	S	N	8	Final EIS pg. 5-14. See SDEIS Theme WR 064. Minn. Rule 7060.0800 states: "In making tests or analyses of the underground waters of the state... to determine compliance with the standards, samples shall be collected in such manner and place and of such type, number, and frequency as may be considered satisfactory by the agency from the

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	<p>the Mine Site and Plant Site property boundaries, not within the NorthMet project footprint." The lack of enforcement of groundwater quality standards within the company's property boundary has not been highlighted for public scrutiny in the FEIS even though, according to PolyMet's own computer modeling provided by Barr Engineering, the levels of pollutants in the water at the mine site and tailings dump will be many times higher than standards set to protect people, plants and wildlife. The exemption provided to the company seems to have been swept under the rug when, rather, it deserves close scrutiny due to the water-rich nature of the lands in question. Discussions with the Minnesota Pollution Control Agency (MPCA) have confirmed that, yes, it's not until the polluted water crosses the company's property boundary that groundwater quality standards will be enforced. The agency stated, "That's the way the law works." The upshot is this: When the FEIS claims that PolyMet will be in compliance with state law, it's not that the water within the company's property boundary will be clean. It's that the pollution has been legalized. The public needs (and deserves) to know this, especially because we are not talking about a small tract of land where PolyMet will be exempt from meeting groundwater quality standards. Rather, the "groundwater sacrifice zone" associated with the project encompasses over 21,000 acres of water-rich lands in the Lake Superior watershed (including 6,650 acres presently in the Superior National Forest). The lack of transparency of the FEIS on this very important issue renders the FEIS inadequate. The public simply must be provided with greater detail regarding the size and scope of the groundwater sacrifice zone and what that means in both the short term and long term for the Lake Superior and Rainy River watersheds. Anything less falls short of providing a true assessment of the environmental impact of the PolyMet project.</p>					<p>viewpoint of adequately reflecting the condition of the underground water and the effects of the pollutants upon the specified water uses." A summary outline for the draft SONAR for proposed (but not completed) 1992 revision of Minnesota Rules, part 7060, describes the factors that MPCA routinely considers when recommending groundwater Points of Compliance and further recommends that the Point of Compliance can not extend beyond the property boundary of a facility. The use of the property boundary as an evaluation location in the FEIS for evaluating potential effects of the proposed project is appropriate.</p>

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Laura Gauger	<p>On August 11, 2015, the Great Lakes Indian Fish and Wildlife Commission (GLIFWC; the "Commission"), in coordination with its member tribes, submitted a report into the public record entitled "Comments on PolyMet mine site contaminant northward flowpath and groundwater model calibration." The Fond du Lac Band of Lake Superior Ojibwe, a formal cooperating agency in the EIS process, is a member tribe of GLIFWC. The cited report was addressed to the co-lead agencies working on the PolyMet EIS. The Commission's report stated the following with regard to groundwater flow at the PolyMet mine site: "Detailed (MODFLOW) and simplistic (MathCad) models predict that a northward contaminant flowpath is probable under likely closure conditions." As the report explains, the northward flow is expected because of a "strong bedrock gradient" toward the existing Northshore Peter-Mitchell taconite mine pits located about a mile north of the PolyMet mine site. According to the FEIS, "Predicted ultimate outflow from the [Peter Mitchell pit] would be from the northeast end of the pit, to the Dunka River in the Rainy River watershed." The Rainy River system flows through the Boundary Waters Canoe Area Wilderness (BWCAW) and into Canada. The Commission's report goes on to state: "In addition to potential for northward flow of contaminants in the bedrock ... there is evidence that flow may be to the north in the surficial aquifer," again related to the proximity of the mine site to the Peter-Mitchell pits. "The drawdown by the over 300 foot deep taconite pits is so great that the surficial aquifer becomes partly dewatered and all baseflow in the upper Partridge [River] ceases." The Commission's report conflicts with conclusions drawn by PolyMet consultant Barr Engineering, who had used the same MODFLOW computer program but predicted exclusive southward flow of contaminated waters from the NorthMet mine site to the Partridge River (a tributary of the St. Louis River in the Lake Superior watershed). As the Commission explains, Barr "incorrectly bounded and calibrated" the mine site MODFLOW model, rendering it "unlikely to generate accurate predictions." In other words: Garbage In = Garbage Out. When Barr's mistakes were corrected by GLIFWC staff, the MODFLOW computer program indicated that, at closure, "contaminants are likely to flow north in addition to the southward direction currently assumed by project reports." As stated in Mazina'igan (a publication of GLIFWC), there is concern that "with such a major flaw in [PolyMet's] evaluation of the groundwater system, accurate predictions to impacts on natural resources are impossible." Still, for some reason the conclusions drawn by Barr Engineering with regard to exclusive southward flow of contaminated waters from the NorthMet mine site have been and continue to be relied upon by state and federal agencies charged with preparing the PolyMet EIS. Indeed, the FEIS shows little change from the PFEIS or earlier drafts in terms of its focus on the southward flowpath at the mine site. Nor is there any acknowledgement in the FEIS of the errors made by Barr in running the computer model (even though GLIFWC's findings were issued months before the November 2015 release of the FEIS). A careful review of the FEIS reveals that, instead of incorporating the Commission's findings into the FEIS and instituting a rigorous review of impacts likely to occur from the probable northward flow of contaminated waters from the mine site, the following new sentence was added to the EIS that, in effect, actually defends Barr's flawed modeling: "The GoldSim model does not consider a northward flowpath north of the Mine Site facilities as there [is] uncertainty that such a flowpath would ever exist" (FEIS, p. 5-63). This makes no sense at all, based on how the co-lead agencies handled the evaluation of environmental impacts earlier in the EIS process. When Barr originally predicted a probable southward flow of contaminated waters from the PolyMet mine site, that indeed is what drove the ensuing impact analysis, an analysis that resulted in hundreds of pages of the PFEIS and earlier drafts being devoted to an examination of likely environmental impacts from the modeled southward flowpath. Now we have credible evidence that Barr's computer modeling was flawed and that a northward flowpath is probable (using the very same computer program utilized by Barr, but this time correctly bounded and calibrated). But instead of including a rigorous assessment of potential impacts along</p>	WAT	S	N	8	<p>MDNR et al. 2015c. DNR disagrees with GLIFWC's application of the EIS Mine Site MODFLOW model because that agency modified the model outside its intended purpose as defined in Final SDD Section 6.2. The Final SDD required the groundwater flow model to predict pit inflows at various stages of pit development (i.e., year 1, year 5, year 10, year 20) and include operation, closure, and post-closure. The model satisfies this condition of the final scoping decision. GLIFWC changed the EIS Mine Site MODFLOW model to include future mining activity at the NorthShore Mine Peter Mitchell Pits, which is outside the scope of the EIS. If the EIS scope were defined to assess of how future activity at the Peter Mitchell Pit might influence the closure conditions at the NorthMet site, then additional data would be required north of the Mine Site on which to refine the EIS Mine Site MODFLOW model for : 1) vertical hydraulic conductivity for wetlands and surficial deposits; 2) horizontal hydraulic conductivities in bedrock (e.g., Virginia Formation; BIF); 3) variability of hydraulic conductivities within the bedrock units, and 4) the hydrologic significance of 100 Mile Swamp in providing a source of water for downward leakage. Each of these refinements is important to quantitatively assess the likelihood and potential magnitude of a northward bedrock flowpath. Modeling would also have to reconcile uncertainty regarding the sequence and timing of future Northshore mining operations, including the depth of pit excavations and development of pit lakes relative to NorthMet-related pit conditions during operations and closure. Absent these changes, the results of GLIFWC's modeling is unreliable for impact assessment. Although not identified as an issue for assessment in the EIS, DNR considered potential future operations at the Northshore Mine against information that is available. DNR acknowledges that it cannot rule out that future operations at the Northshore Mine could induce northward groundwater bedrock flow from the NorthMet Mine Site. See Final EIS Section 6.2.2.3.1. This might happen if there is insufficient natural downward leakage into bedrock from the overlying wetlands</p>

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	<p>the northward flowpath (as the co-lead agencies had required earlier for the then-deemed probable southward flowpath), the FEIS continues to lean on the earlier flawed analysis done by Barr and has devoted a mere 4 pages (FEIS, pp. 5-240 to 5-244) to a bare-bones discussion of what would appear to be a rather complicated and costly system of “contingency mitigation measures” that perhaps could be implemented in response to a northward flowpath. The northward flowpath, now that it has been shown to be probable by the very same computer modeling program relied upon by Barr, must receive the same rigorous evaluation required by the co-lead agencies of the southward flowpath (which we now know to be flawed). That means the same kinds of analyses set forth earlier to evaluate environmental impacts along the southward flowpath must now be applied to the northward flowpath. Anything less would make a mockery of the EIS process and all of those earlier decisions made by the co-lead agencies when trying to insure adequacy in the EIS process. It’s not the State of Minnesota’s fault, the federal government’s fault, the Tribes’ fault or the public’s fault that Barr Engineering got it wrong or that PolyMet has spent the last 10 years or so providing the co-lead agencies with what we now know to be flawed information. Yet, the co-lead agencies, for whatever reason, have not required PolyMet to reconstruct its impact analysis so that the FEIS might be reflective of true site conditions. For this reason alone, the FEIS must be considered inadequate. As stated in the Commission’s report, “Evaluation of contaminant flow to the north must be conducted and impacts predicted.” What’s more, even though the corrected MODFLOW model shows the northward flowpath is probable, the FEIS states that the “contingency mitigation measures” identified for dealing with the flow of contaminated water northward will not be initially included in the financial assurance package (FEIS, p. 5-239). Again, this makes no sense at all in that it undercuts the whole idea behind financial assurance: to provide guaranteed funding for dealing with probable impacts. The State of Minnesota must not be left holding the bag for mitigation measures designed to deal with the probable northward flow of contaminated waters from the PolyMet mine site. The FEIS must be updated to not only provide greater detail regarding what those measures will be, but to require that they be initially included in the financial assurance package. Anything less would deem the FEIS to be not only inadequate, but negligent.</p>					<p>and surficial materials between the proposed NorthMet Mine (in closure) and the Northshore Mine (in future operations and closure). If there is sufficient downward leakage, then there would be groundwater flow divide between the two mines where there is no continuous one-way flow between the facilities. If natural leakage is insufficient to maintain a groundwater flow divide between the two facilities, then it is possible a northward groundwater flowpath would be present. DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected. The possibility of northward flow between the proposed NorthMet Mine and Northshore Mine is speculative and is not reasonably foreseeable with current information. There is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When this might occur is not known, but it is most likely to occur after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. There would be ample opportunity to collect necessary data, and complete applicable environmental review and/or permitting prior to the development of a northward flowpath, including preparation of an EIS supplement if the conditions of Minnesota Rules, part 4410.3000, subpart 3 are met.</p>

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Laura Gauger	In terms of the sludge and residual solids produced by mechanical water treatment processes at the PolyMet mine site and plant site, the FEIS states that off-site disposal facilities will be utilized for some of the waste, but it does not specify the projected volume of said waste. Nor does it identify where or in which watershed the off-site disposal facilities will be located, the transportation corridor, or if any nearby landfill could even accommodate the large volumes of waste generated over time (potentially hundreds of years). The public needs (and deserves) to know the corresponding details for the PolyMet project, including where the off-site dump(s) will be located. The absence of this information in the FEIS renders it inadequate. In addition, no information is provided in either the FEIS or NorthMet Project Waste Characterization Data Package regarding the composition of the “residual solids” produced by mechanical water treatment processes at the PolyMet mine site and plant site, and only limited information regarding the composition of the sludge is included in the FEIS. The public needs (and deserves) to know the composition of these waste products, especially because of the potentially large volumes that will be disposed off-site. The absence of this information in the FEIS renders it inadequate.	MEPA	S	O	8	SDEIS Theme WR 145
Laura Gauger	The PolyMet FEIS states that “annual production post processing would total about 113,000 short tons of copper concentrate, 18,000 short tons of mixed (nickel/cobalt) hydroxide, and 500 short tons of gold and PGE precipitate.” The production values reported in the FEIS are somewhat meaningless because the FEIS does not indicate the concentrations of the individual metals found within the various concentrates and/or precipitates that will be produced. Here’s the analogy: It’s like going to a liquor store and being told the volume of a bottle of vodka instead of being told the volume AND proof. The PolyMet FEIS needs to disclose specific and accurate projections for metal production so that the public and state decision-makers can decide if the environmental risks are “worth it” in terms of potential tax payments to the State of Minnesota. It’s a basic tenet of cost v. benefit analysis that the FEIS fails to address, rendering it inadequate.	NEPA	S	O	8	40 CFR 1502.23
Laura Gauger	The FEIS states that 913 acres of wetlands will be “directly impacted” by the PolyMet project (permanently lost due to fill or excavation) and that most of these wetlands are rated “high quality.” It also states that up to an additional 7,694 acres of wetlands located within and around the PolyMet project area either will or may be “indirectly impacted” by the mine – not permanently lost, but affected by changes in water quality, groundwater drawdown or other factors. The FEIS does not specify wetland quality ratings (high v. moderate v. low) for any of the “indirectly impacted” wetlands, even though indirect impacts may still be significant, and even though ratings were indeed indicated for the 913 acres of wetlands deemed to be “directly impacted” by the project.	WET	S	N	8	The commenter is correct that wetland quality ratings are not provided in Final EIS Section 5.2.3.2.2. This information has been compiled and is available for potential future regulatory decisions. See RS-14, Section 3.3 (PolyMet 2006).
Laura Gauger	Nor does the FEIS offer any baseline water quality data for any of the wetlands that will or could be impacted by the project. To properly assess for wetland impacts and hold the company accountable for potential violations of the Clean Water Act, this type of data is crucial. Its absence from the FEIS demonstrates a major inadequacy in the document that could very well result in the State of Minnesota and the general public being left “holding the bag” regarding potential Clean Water Act violations caused by the PolyMet operation.	WET	S	N	8	Water discharges into wetlands would need to meet effluent limits. SDEIS Comment #2987.
Laura Gauger	The FEIS characterizes the planned subaqueous disposal of waste rock at the PolyMet mine site as “the preferred method of disposal for the more reactive waste rock” (page ES-23). Sulfide-containing waste rock will be back-filled into the unlined east mine pit, lime will be added in an effort to control acid generation, and water will then resaturate the waste. At first glance, you might think there would be nothing to worry about with regard to the backfill plan. After all, the “preferred	WAT	S	N	8	Final SDD Section 2.5.2 required the EIS to evaluate two mine pits. One pit would be completely mined out before beginning the second pit, and waste rock from the second pit would be placed in the first pit. Over the course of the EIS the project design was

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	<p>method” of handling the waste is being implemented. But using the “preferred” method of waste disposal does not necessarily mean it will be effective in minimizing groundwater contamination. Take the example of the Flambeau Mine, where subaqueous disposal with limestone amendment was utilized as the preferred method of waste disposal. Specifically, the Flambeau mine pit was backfilled with roughly 9 million tons of sulfide containing waste rock, over 30,000 tons of limestone was added to the portion of the waste with the highest sulfide content, and groundwater was then allowed to resaturate the backfilled materials. Preferred method of disposal? Yes. Effective at controlling groundwater pollution? No. Groundwater monitoring within the backfilled Flambeau pit has shown and continues to show failure of the subaqueous disposal technique to control metals leaching. For example, computer modeling done by Flambeau consultant Foth Infrastructure and Environment of Green Bay, Wisconsin (also a PolyMet consultant) predicted a maximum manganese level of about 550 mcg/l in the groundwater within the backfilled Flambeau pit. But now that the real data has started to come in, levels as high as 42,000 mcg/l have been reported – 76 times higher than Foth predicted. The public needs (and deserves) to know that PolyMet’s “preferred method” of waste disposal does not necessarily equate with it being effective at controlling groundwater pollution. The absence of this information in the FEIS renders it inadequate.</p>					<p>modified so that the most reactive Category 2, 3, and 4 waste rock would be backfilled into the East Pit followed by subsequent development of the West Pit. The backfilling is considered a component of the progressive reclamation at the Mine Site. Final EIS Section 3.2.2.1.10 indicates that while being filled with waste rock, the East and Central Pits would be flooded with water to minimize the amount of pit wall and backfilled waste rock exposed to the atmosphere. The goal would be to limit the oxidation of the sulfide minerals and thus reducing the amount of metals leaching to the pit water. See Final EIS Tables 5.2.2-22 and 5.2.2-23 for predicted concentrations of solutes at the evaluation locations.</p>
Laura Gauger	<p>The PolyMet FEIS depends heavily on computer modeling for predicting levels of contaminants in the groundwater at the project site, but the FEIS fails to deal with the fact that this type of modeling has limitations in terms of its accuracy. As alluded to above, computer modeling for the Flambeau Mine supplied by Foth Infrastructure & Environment (also a PolyMet consultant) has proven to be very inaccurate in terms of predicting maximum levels of contaminants in the groundwater within the backfilled Flambeau pit. Here are the numbers: Contaminant Foth Prediction Max Reported Level, to date, now that real data has started to come in Manganese 550 mcg/l 42,000 mcg/l (76 times higher than Foth predicted) Iron 320 mcg/l 15,000 mcg/l (47 times higher than Foth predicted) Copper 14 mcg/l 810 mcg/l (58 times higher than Foth predicted) Sulfate 1,100 mg/l 2,400 mg/l (2 times higher than Foth predicted) The above data has also been graphed (see Appendix B of the Flambeau – v – PolyMet report). It’s an error of omission for the PolyMet FEIS not to have included: (1) a discussion of how computer modeling can sometimes prove to be inaccurate; or (2) provisions for dealing with potential inaccuracies in the computer modeling offered in the PolyMet FEIS. The public needs (and deserves) to have this information in order to decide how much confidence to place in PolyMet’s modeling. The absence of this information renders the FEIS inadequate.</p>	WAT	S	O	8	SDEIS Theme WR 173-5
Laura Gauger	<p>Because of the predicted flows of contaminated groundwater from the PolyMet project site toward streams within and beyond the PolyMet property boundary AND because of the potential flow of contaminated surface waters from man-made ponds (non-mechanical water treatment systems) that PolyMet hopes to construct at the project site in the future, mechanisms need to be in place to insure proper enforcement of the federal Clean Water Act. Yet, some of the most basic information needed by state and federal agencies and the public to facilitate the prosecution of potential violations of the Clean Water Act at the PolyMet site is not included in the FEIS. First off, the FEIS fails to designate which waters within or near the PolyMet project site are deemed “navigable” and therefore waters of the United States subject to protections under the federal Clean Water Act. This designation proved crucial in a recent Clean Water Act case waged against the owner of the Flambeau Mine in Wisconsin. I was one of the plaintiffs in that case. If the stream of concern (a tributary of the Flambeau River known as Stream-C on company drawings) had not been designated “navigable” in the Flambeau EIS, the case would have had greater difficulty moving forward in federal court, and it would have been near impossible to try to</p>	PER	S	N	11	<p>Thematic Response Comment #2987. The EIS considers that permitting for the NorthMet Project Proposed Action, if approved, would require monitoring that would likely include water levels and water quality in groundwater and potentially affected waters of the U.S., including wetlands and tributaries. In terms of the ability to regulate project-related discharges, the term “navigable” is not the controlling definition as it relates to applicability of NPDES/SDS permitting. Minnesota Rules part 7050 clearly defines the applicable use classifications, and thus the applicable water quality standards, for each of the potentially impacted</p>

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	hold the company accountable for polluting the tributary (which is now on the EPA's impaired waters list due to copper and zinc toxicity linked to the Flambeau Mine operation). It turns out that even with Stream-C having been designated "navigable" in the Flambeau EIS, the courts failed to award the stream the normal protections guaranteed under the Clean Water Act. But at least we had a shot at it. So how does this factor into the PolyMet discussion? As stated above, the PolyMet FEIS does NOT list which of the streams and creeks or other bodies of water at or near the PolyMet project site are "navigable" and therefore waters of the United States guaranteed protection under the Clean Water Act. This is clearly an error of omission and must be corrected if there is any hope of holding PolyMet accountable for the potential impairment of small but nevertheless navigable waters in the vicinity of the project. In addition, once the navigable waters have been identified, the PolyMet FEIS must provide baseline water quality data for each and every one of them in order for the FEIS to be deemed adequate. In the Flambeau case cited above, baseline water quality data for Stream C was missing from the Flambeau EIS, and, even though the headwaters of the stream were within a few feet of where the high-sulfur waste rock was stockpiled during operations and only a thousand feet or so from where the ore was crushed and loaded onto rail cars, the company would not concede in court that the elevated copper levels in the stream were caused by the mine operation. In turn, this made it more difficult to hold the company accountable for violations of the Clean Water Act. The failure of the PolyMet FEIS to identify any and all navigable waters at or near the project site AND to provide baseline water quality data for them is a set-up for similar enforcement problems in Minnesota.					streams in the project area. These streams and use classifications prescribed by regulation are described in Table 5.2.2-3 of the Final EIS. This list includes streams to which treated discharges may be directed (e.g., Trimbell Creek, West Pit Outlet Creek) as well as those that do not receive discharges but are near the proposed project (e.g., Longnose and Wetlegs Creeks).
Laura Gauger	Case in point: The FEIS does not offer baseline water quality data for Second Creek (a tributary of the Partridge River) even though it states that "groundwater in some portions of the [existing LTV] Tailings Basin flows to the south to form the headwaters of Second Creek" and that the creek "could be notably affected by the NorthMet Project."	WAT	S	N	8	Final EIS Table 4.2.2 - 20. PolyMet 2015j Large Table 5 (SD-026).
Laura Gauger	Nor does the FEIS comment on whether or not Second Creek is considered "navigable." The absence of this information in the FEIS will make it more difficult to hold PolyMet accountable, in a court of law, for potential problems that may arise in Second Creek as a result of the mining operation. The same can be said of other navigable waters at or near the PolyMet project site. The State of Minnesota and general public need to know which waters at or near the PolyMet site are "navigable" and what the baseline water quality is for each and every one of them if there is to be any hope of enforcing the Clean Water Act. The failure of the FEIS to provide this crucial information renders the document inadequate.	PER	S	N	11	Thematic Response Comment #2987. The EIS concluded that permitting for the NorthMet Project Proposed Action, if approved, would require monitoring that would likely include water levels and water quality in groundwater and potentially affected waters of the U.S., including wetlands and tributaries. With respect to the ability to regulate project-related discharges, the term "navigable" is not the controlling definition as it relates to applicability of NPDES/SDS permitting. Minnesota Rules part 7050 clearly defines Second Creek as a "Water of the State" to which applicable use classifications, and thus applicable water quality standards, apply. The regulatory definition and classification of Second Creek is appropriately described in Table 5.2.2-3 of the Final EIS.
Laura Gauger	Questions have been raised regarding PolyMet's goal of eventually transitioning from mechanical to non-mechanical water treatment. As stated in comments from the Minnesota Department of Natural Resources (Section of Fisheries): "The overview of the transitional approach from mechanical to non-mechanical treatment technologies as presented is highly speculative, particularly in terms of success in development of and timing of installation of a successful system." (Extended	WAT	S	O	3	SDEIS Theme WR 137

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	<p>comments on NorthMet PFEIS, Minnesota Department of Natural Resources – Section of Fisheries, Comments 4 and 5, 2015). The Department itself, therefore, has exposed the inadequacy of the FEIS to address all issues of importance. Another consideration is that non-mechanical water treatment methods (biofilter and infiltration basin systems) have proven ineffective at the Flambeau Mine site in treating contaminated stormwater runoff.</p> <p>For example, in 1998 (after the Flambeau pit was backfilled), runoff from the southeast corner of the mine site was directed to a man-made biofilter/detention basin in efforts to “clarify collected runoff” and “improve water quality.” Soil sampling in this particular corner of the mine site, where the ore crusher, high-sulfur waste rock stockpile and rail spur were located during operations, has demonstrated elevated levels of copper that appear to correlate with high levels of copper in runoff. Prior to 2012, the biofilter discharge was directed to a small tributary of the Flambeau River known as Stream C, declared navigable at the time of the mine permit hearing in 1990. Despite non-mechanical treatment of the runoff, however, the discharge consistently contained copper levels exceeding the toxicity standard set to protect fish and other aquatic species (the toxicity standard for copper, adjusted for hardness conditions at Flambeau, is about 3-5 ppb). Environmental monitoring reports show that at times the copper levels in the water exiting the biofilter (e.g., 42 ppb in Sep 2011) were actually higher than the levels measured in the runoff entering the biofilter for treatment (e.g., 17 ppb in Sep 2011), the exact opposite of the desired effect.</p> <p>In 2010 the Wisconsin DNR initiated a study to assess the health of Stream-C and later issued a report in which the Department concluded, “Water quality monitoring done at the site between 2002 and 2011 showed that Stream C and its contributing drainageways contained copper and zinc concentrations that frequently exceeded acute toxicity criteria (ATC). On average, copper exceeded ATC’s in 92% of samples, and zinc exceeded ATC’s in 46% of samples.”</p> <p>Upon recommendation of the Wisconsin DNR, Stream C was added to the EPA’s Section 303(d) Clean Water Act list of “impaired waters,” effective April 2012, for copper and zinc toxicity linked to the Flambeau Mine operation.</p> <p>In early 2012 the owner of the Flambeau Mine converted the biofilter to an infiltration basin (another form of nonmechanical treatment), but this option, too, was a failure. Instead of water percolating downward into the earth with the desired effect of contaminant attenuation, the basin and a second one constructed at the Flambeau site tended to fill to capacity and nearly overtop each year with the Spring melt. As noted by the Wisconsin DNR in an email sent to Foth (the Flambeau consultant responsible for designing the infiltration basins), “we clearly cannot continue responding frantically every spring when the North and East Basins fill up to capacity. This is not a viable management strategy.”</p> <p>The failure of non-mechanical water treatment systems at Flambeau does not bode well for PolyMet’s stated goal of eventually transitioning from mechanical to non-mechanical treatment methods. The PolyMet FEIS is inadequate in that the possibility of outright failure in establishing workable non-mechanical treatment systems has not been fully evaluated.</p>					
Laura Gauger	<p>Even though the hydromet residue basin at the PolyMet plant site will exist in perpetuity and contain some of the nastiest waste products generated by the mine operation, the FEIS states: “It is assumed for purposes of the FEIS that the leakage from this [lined] facility into underlying groundwater or adjacent surface water would be negligible and therefore is not further evaluated.” That’s a big assumption to make, and the FEIS does not provide detailed justification for so doing. Even if the liner beneath the hydromet residue basin remained intact for several hundred years, that doesn’t give PolyMet the right to create a future mess that others may have to deal with several hundred years from now. The public needs (and deserves) to know more about this critical “assumption” made in the FEIS, and modeling needs to be provided for what</p>	WAT	S	O	8	SDEIS Theme WR 138

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	would happen if the assumption of “negligible leakage” turns out to be wrong.					
Laura Gauger	The section of the FEIS entitled “NorthMet Project Detailed Description,” includes no plans for installing a groundwater capture system around the 207-acre unlined east/central pit (unlike plans clearly outlined in the FEIS for installing capture systems around the 526-acre Category 1 waste rock stockpile and a portion of the 1,325-acre tailings dump). Still, the FEIS states: “During reclamation (year 21-40), ‘water from the East Pit would ... be pumped to the WWTF [Waste Water Treatment Facility] and treated ...’ after which treatment of water in East Pit Backfill may continue into closure and long-term maintenance.” Since the NorthMet plan does not include provisions for installing a groundwater capture system around the unlined mine pit, it is unclear from the limited information in the FEIS how the contaminated pore water will be captured so that it can be treated. Nor is there any indication of how efficient the employed system might be in capturing pore water from a mine feature as large as the unlined pit (207 acres in size, extending up to 700 feet beneath the surface and containing roughly 140 million tons of waste rock). Cleaning up the contaminated water within the backfilled PolyMet mine pit would indeed be a mammoth undertaking. Yet the FEIS provides no real detail for how it might be accomplished (or how it will be handled in terms of the financial assurance package). The public needs (and deserves) to have this information in order to truly assess impacts from the PolyMet project.	WAT	S	N	8	A well would be installed to extract water from backfill; see PolyMet 2015a, page 70. SDEIS Theme FIN 03
Laura Gauger	There have been some rather curious word choices and changes in wording in the EIS as it has moved from the DEIS stage to the SDEIS to the PFEIS to the FEIS. These word choices and changes are curious in the sense that they have actually muddied the waters instead of adding clarity to the final draft of the document. If these sorts of word choices are to be made, the public deserves to know WHO made them, and WHY. Without some sort of personal accountability (i.e., naming names), too many things can be slipped under the rug, to the public’s detriment. For example, please see page ES-26 of the PFEIS and compare to page ES-24 of the FEIS. The former states the following as the lead-off sentence to the first new paragraph in column 1: “Water quality modeling performed in support of the FEIS indicates that water treatment systems would be needed at the Mine Site and Plant Site indefinitely.” The paragraph ends with the following: “Both mechanical and non-mechanical treatment would require periodic maintenance and monitoring activities for as long as treatment is required (indefinitely).” Please compare this to the rendition that appears in the FEIS (page ES-24). The above-cited lead-off sentence was deleted from the corresponding paragraph, and the word “indefinitely” was removed from the final sentence. Instead, the information is now buried in the middle of the first paragraph of the second column, where it’s much less prominent. The information that water treatment systems would be needed “indefinitely” at the PolyMet project site is critical to impact analysis, as reflected by the fact that the above-cited sentence (or variations thereof) appears about 20 times throughout the body of the EIS. Yet, this crucial information was relegated to second-class status in the Executive Summary of the FEIS, the part of the document that would get the most traffic. Whose idea was this? The public needs (and deserves) to know who is masking critical information so citizens might better pass judgment on the integrity of the EIS process (and therefore the integrity of the document itself). A second example: Please compare p. 5-173 of the PFEIS to page 5-174 of the FEIS. It looks like someone was trying to “muddy the waters” by changing phraseology. The term “water quality standards” in the PFEIS was changed to “evaluation criterion” in the FEIS. The average citizen certainly would understand the former	O	NS	X	1	

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	<p>phraseology better than the latter. Again, whose idea was this? The public needs (and deserves) to know who is “muddying the waters” in what appears to be an effort to downplay information that justifiably would raise public concern. A third example: Please compare p. 3-2 of the DEIS to p. 3-4 of the FEIS. The DEIS clearly indicates tonnages of the various metals to be produced by the PolyMet operation (and therefore subject to taxation). Yet, the FEIS indicates tonnages of various concentrates and precipitates without disclosing their actual concentrations. As stated earlier, the production values reported in the FEIS are somewhat meaningless. It’s like going to a liquor store and being told the volume of a bottle of vodka instead of being told the volume AND proof. Again, whose idea was this to use funny numbers to describe production values? The public and state decisionmakers need (and deserve) to know real production numbers so they can decide if the environmental risks are “worth it” in terms of potential tax revenues. Curious word choices used in the FEIS: Who decided to call the location of the PolyMet tailings dump and processing plant the “Plant Site” when the vast acreage associated with the site is tied to the dump (3,000 acres) rather than the processing plant (perhaps 200 acres)? o Who decided to use the term “hydrometallurgical residue” instead of the more broadly understood term, “tailings” to describe the waste generated by the hydromet plant? Surely the latter term would have done a better job at alerting the public to the toxic nature of the waste. o Who decided to characterize groundwater drawdown, changes in water quality and other potential changes to wetlands at the PolyMet project site as “indirect” impacts, when those effects indeed would be directly caused by the mine? The use of the term “indirect” in the EIS does not meet the common dictionary definition of the word and, to PolyMet’s unfair advantage, tends to minimize the connection between the mine and what could be some very serious impacts. ? Curious timing of the release of the FEIS: The PolyMet EIS process has been underway for, what, about 10 years now? Yet, someone decided that the 3,500 page FEIS had to be released now, over the busy holiday season (when people need and deserve to have time with their families) and to give the public a mere 30 days to respond. This curious timing has made it more difficult for working-class people in the community to offer comment on this very important decision. Whose idea was it to release the FEIS in mid-November and impose a 30-day deadline over the holiday season? The above are examples of what appear to be questionable decisions made by one or more people involved in the EIS process. It’s time for the co-lead agencies to “name the names” of those who are responsible for what appears to be a thinly-veiled attempt to mask unpalatable elements of the FEIS with “feel good” language and minimize public participation in the review process. The public needs and deserves to know who is really “calling the shots” here so they might better judge the integrity of the EIS process (and therefore the integrity of the FEIS itself). Without this type of full disclosure and transparency, the FEIS must be deemed inadequate.</p>					
Laura Gauger	<p>Moreover, since the Draft Record of Decision (DROD) issued by the USDA Forest Service regarding the land exchange was “based on the Final Environmental Impact Statement (FEIS) for the NorthMet Mining Project and Land Exchange,”¹ a document now shown to be inadequate and flawed with regard to critical information relied upon by the Forest Service in making its decision, I object to the draft decision authorizing the conveyance of 6,650 acres of federal lands in the Superior National Forest to PolyMet. The deciding officer’s stated assumption in the DROD that “the mandatory requirements of relevant policy, regulation and law related to the mining project will be met,”² has been shown to be flawed. With regard to my objection to the land exchange, I know of no way to resolve the objection except to outright deny the exchange.</p>	ROD	NS	X	1	

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Lea Foushee	NorthMet's copper/nickel/platinum mine is a one-time-harvest, a virgin resource extraction in its entirety. The ore body is categorized as low to medium grade and is marginal in terms of economics. This is simply the first attempt in a renewed metal extraction frenzy with 30 more permit applications waiting to go. NAWO provided the documentation for this statement in our previous comments on March 12, 2014. The Final Environmental Impact Statement (FEIS) for the North Met Project does not discuss the entire metals life cycle. Reclamation and recycling of the world's metals waste streams have not been analyzed in the alternatives section. A combination of recycled and virgin materials is not an alternative. There is no information presented by the applicant of what percentage of need could be filled using recycled metals.	NEPA	S	O	3	SDEIS Theme NEPA 06
Lea Foushee	Surface water and surficial groundwater from the NorthMet Project Mine Site flow to the Partridge River and the Plant Site mostly drains to the Embarrass River with the exception of Second Creek (Partridge River Watershed). Both rivers are tributaries to the St. Louis River, which flows to Lake Superior. Tourism is an economic mainstay in the Lake Superior region. Destruction of lands and forests over the acreage of the project and beyond, which is certainly plausible, if not probable in times to come, would detract or eliminate tourism in the area affected by development.	SO	NS	X	1	
Lea Foushee	Portions of the river waterways involved in the NorthMet project are wild rice waters. Three of the five lakes (Wynne, Whitewater, and Sabin) identified in the FEIS (p. 6-87) are identified as wild rice waters in Lake, St Louis, and Itasca Counties on spreadsheets developed by the MPCA for the wild rice rule. http://www.pca.state.mn.us/index.php/view-document.html?gid=23416 http://www.pca.state.mn.us/index.php/water/water-permits-and-rules/waterrulemaking/sulfate-standard-and-wild-rice/draft-proposal-for-protecting-wildrice-from-excess-sulfate.html	WAT	NS	X	1	
Lea Foushee	The 1854 Treaty lands identified in harms way include the Spring Mine Lake Sugar bush, Beaver Bay to Lake Vermillion Trail, and sacred site, Misabe Widjiu.	CR	NS	X	1	
Lea Foushee	Creates a disproportionate risk from eating methyl-mercury contaminated fish by Tribal and subsistence fishers in the region of its proposed project	MERC	NS	X	1	
Lea Foushee	Requires that we allow the poisoning of water be it surface or ground water . The cartel proposes to monitor their mine for 200 years and treat discharge from their plant site for 500 years, when treatment and monitoring will be required for many millennia if not indefinitely. Show Minnesotans a 500 year contract that is in full force and effect	WAT	NS	X	1	
Lea Foushee	Identifies a Trust Fund (\$350 Million) that is short changed for required length of clean up (indefinitely) and Minnesota taxpayers will be forced to pay any shortfall.	FIN	NS	X	1	
Lea Foushee	Poisons more than 21,000 acres, which is not in the best interests of the State of Minnesota, the Minnesota people, all future generation.	GEN	NS	X	1	
Lea Foushee	Enables 30 additional mines to be permitted once policy has been established. http://www.pca.state.mn.us/index.php/viewdocument.html?gid=19402 .	NEPA	NS	X	1	
Lea	LTV Mining's coal ash waste pit, that closed 15 years ago, is still on the NorthMet site. Historically, LTV's tailings dam broke in 1993 contaminating Taconite Harbor clean up cost the company \$11 million dollars. It is critical should NorthMet be	O	NS	X	1	

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Foushee	approved to not place mine wastes on top of the unstable LTV waste pit.					
Lea Foushee	The land swap enables NorthMet to escape the restriction of the Weeks Act of 1911. The land exchange is simply a ploy to resolve a legal conflict over Northmet's proposal to establish an open pit mine on the site, which is currently prohibited in parts of the Superior National Forest due to the Act.	LAN	NS	X	1	
Lea Foushee	Destroying any wild rice waterway is a direct treat to the survival of those who rely on rice. NorthMet opens the doorway to additional mining interests that will put even more wild rice lakes at risk. NAWO requested an illustrative map be created by the Minnesota Pollution Control Agency to provide a visual of the 30 mines waiting and the wild rice lakes surrounding them. We have attached this document. Eliminating the food that sustains the Anishinaabeg must be considered an act of environmental racism. Those that are harmed the most by this proposal are the Anishinaabeg.	PER	NS	X	1	
Robert Topliff	IN MY ESTIMATION POLYMET HAS NOT MET THE STANDARD FOR PROCEEDING ON THEIR EXTRACTION PROJECT.	GEN	NS	X	1	
Robert Topliff	WE have seen a serious design problem for the failed dam in BC, which Polymet is holding up for a model for their dam.	GT	NS	X	1	
Robert Topliff	It is my understanding that Polymet has not accurately sited their dumpsite so they could move it after getting hurried permission to proceed.	PD	NS	X	1	
Robert Topliff	Polymet could possibly ruin three watersheds? We cannot afford to sacrifice one watershed or even the area around the Extraction site, (ground water).	WAT	NS	X	1	
Robert Topliff	Can we as a state afford to treat their wastewater Forever?? That would be an enormous cost.	FIN	NS	X	1	
Robert Topliff	Toxic waste on the land and in the water is different from Iron Ore on the land or in the water.	PD	NS	X	1	
Robert Topliff	There is not enough value in these minerals to justify the ruination of our state.	SO	NS	X	1	
Jessica Diamond	I am writing to urge the MDNR to deny and terminate the pending application for an open pit copper, nickel and platinum element mine with temporary proposed by PolyMet.	GEN	NS	X	1	
Jessica Diamond	As has been exhaustively documented, PolyMet lacks experience operating a mine. Approval of this application would set a terrible precedent, opening the door to other mining companies that similarly want to mine near the Boundary Waters Wilderness area. Individually and collectively, this type of mining in this region is a terrible prospect.	PER	NS	X	1	
Jessica	Polymers proposed open pit mining techniques pose a clear hazard to drinking water for current and future generations of	WAT	NS	X	1	

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Diamond	Minnesota.					
Jessica Diamond	This is an unacceptable trade-off for employment in Minnesota. Jobs that lead to devastating destruction of freshwater and resulting health hazards, jobs that destroy one of the nation's most pristine and precious wilderness areas -these types of jobs are terrible for Minnesota.	SO	NS	X	1	
Jessica Diamond	once PolyMet and the other mining companies extract copper, nickel and platinum from the region -these jobs will disappear forever yet from that point on a key source of potable drinking water and wilderness area will forever be tainted. The net environmental impact is terrible, so much worse than today's chronic underemployment because there is no way to clean up dispersed heavy metal pollution.	SO	NS	X	1	
Michelle Lackey Olsen	I don't believe the FEIS adequately addresses my concerns, particularly relating to the economic, health and environmental effects of the acid mine seepage or drainage and intensive water treatment that will be required.	GEN	NS	X	1	
Michelle Lackey Olsen	puts the short-term financial interests of a few ahead of the long-lasting potentially adverse environmental effects that will dog many generations after us. It fails the seven generation test that urges us to consider the effects of our actions on those that will follow us for at least 7 generations.	SO	NS	X	1	
Michelle Lackey Olsen	Economically, I don't think it is realistic to expect that a company that will operate a mine for 20 years will have the presence or resources to monitor water quality and remediate acid mine drainage for 200 or 500 years. This will eventually become a financial burden for our descendants-not the legacy I want for our future. How could the amount of money needed to protect our waters from this seepage be estimated for this many years? Could you really expect to obtain a bond or some other protection for this far out into the future? I think we have been unpleasantly surprised too many times in the past to believe the Pollyanna version of what will happen after the PolyMet mine closes and the company is potentially closed, sold, or bankrupt.	FIN	NS	X	1	
Michelle Lackey Olsen	Given the location of the proposed mine, there are pollution risks to water in both the Lake Superior watershed and the BWCA. This is not acceptable. We don't have a complete evaluation of how these contaminated waters will affect fish, other aquatic life, waterfowl, wild rice, drinking water, and the people that rely on all of these for their subsistence or tourism. Please don't let us be the guinea pigs for PolyMet.	GEN	NS	X	1	
John G. Raines	On behalf of the 10,500 Minnesota residents who belong to our Carpenters union, I write to commend the Minnesota Department of Natural Resources, the U.S. Army Corps of Engineers, and the U.S. Forest Service for conducting a thorough and independent review of PolyMet's proposed NorthMet mine. The Final Environmental Impact Statement finds that the proposed mine can comply with strict state and federal environmental standards. The EIS takes a careful and comprehensive look at the project, and it should be deemed "adequate".	GEN	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
John G. Raines	This EIS is the culmination of 10 years of study and analysis by the co-lead agencies. It responds in detail to the thousands of public comments and questions submitted during the public comment period for the Draft EIS and the Supplemental Draft EIS. The updated water modeling in the Final EIS shows that PolyMet's treatment and mitigation plans will meet all water quality standards. Further, the Final EIS specifically considered the project's potential effects on air quality and water quality with respect to human health and identified no adverse health risks.	O	NS	X	1	
John G. Raines	In short, the Final EIS meets all of the requirements of the Minnesota Environmental Policy Act and the National Environmental Policy Act. The DNR should affirm the adequacy of the Final EIS so it can serve as the foundation for the State of Minnesota's permitting process.	MEPA	NS	X	1	
Judith Derauf	I am writing to comment on the EIS submitted by Polymet for the sulfide ore mining project they are proposing to locate adjacent to the Superior National Forest and near the Boundary Waters Canoe Area Wilderness in northern Minnesota. To think that Polymet or any other corporation can or will stand by their claim to contain the potential water pollution from this kind of mining operation for centuries into the future is ludicrous. Open pit sulfide ore mining does not belong in an environmentally sensitive, water rich area such as the Superior National Forest and Lake Superior Basin.	GEN	NS	X	1	
Judith Derauf	I am bothered by reading the claims that adequate water treatment will be maintained and run off contained. I frankly do not believe it is possible or plausible, and the burden will eventually land on the shoulders of future Minnesota taxpayers.	FIN	NS	X	1	
Judith Derauf	This bothers me, but what bothers me the most is the fact that wetlands will be destroyed and our most precious resource, fresh water, will be jeopardized for the sake of corporate greed and a small number of fleeting jobs.	WET	NS	X	1	
Bill Erzar	I look at the opportunity to bring the Polymet NorthMet project to our area. I look at the need, the jobs, and benefits it will bring to our communities, the state, and the Nation. I also looked at the challenges that face a project like this in water quality, wetlands, wildlife, etc. I have had the opportunity to tour the site and heard the explanations of tailings basin construction and water control among other concerns.	GEN	NS	X	1	
Caree Gordon	The aftermath of the Mount Polly Mine tailings pond breakage in B.C. is an example of the worst-case scenario of what could happen with the PolyMet/NorthMet project in the Hoyt Lakes area. The Kawishiwi River & surrounding watershed will be affected by the pollution, even if things go well and there is no disaster. The BWCAW is protected, but not protected from the drainage traveling north and east.	WAT	NS	X	1	
Caree Gordon	Thousands of visitors to the Superior National Forest and BWCAW seek solace in the wilderness, as it is one of the last areas in our Nation that is protected from pollution. I want to see ZERO pollution and avoid any possibility of a disaster happening in this area. I have signed numerous petitions to defend our Constitution and the Federal Wilderness Act of 1964. Is it really in Minnesota's best interests to allow a foreign company with no ties, or connections to our pristine wilderness and neighboring communities to jeopardize and possibly destroy what has been protected and maintained for public use?	WILD	NS	X	1	

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Caree Gordon	There are many well-established businesses that stand to lose profits if the wilderness is spoiled. PolyMet/NorthMet will create jobs for people in Northern MN, however, the essence of our beautiful wilderness and clean lakes is at stake - the exact reason why so many people choose to vacation and visit Northern MN. I believe the stakes are too high and definitely not worth the risk. Future generations of family members return year after year to experience the unpolluted lakes, forests and solitude that is exclusively offered in the BWCA and surrounding areas. For long-term commerce, we need to keep MN clean and free of unwanted pollution for the sake of our unique wetlands, water, animals and forests. The Wilderness Act of 1964 was put in place as federal law to protect the boundaries of the BWCAW. Let us HONOR our land and RESPECT the foresight our leaders had to create these protective boundaries.	SO	NS	X	1	
Dale Olson	Please Gov. don't let Polymet destroy what we are known for. There has not ever been a copper mine that hasn't polluted the water. The Land of 10,000 lakes and a five thousand year treatment plant. Sure who will be around in five thousand years	GEN	NS	X	1	
Mary Carlson	we are extremely concerned about the effect of the PolyMet mining of copper in the Superior National Forest and the impact in our area of contamination of our water supply and the St. Louis River and eventually Lake Superior. Please do not allow this to happen. We cannot know what the effect will be to the health and future of our families	WAT	NS	X	1	
Mary Carlson	and can we trust these international companies who care only for the monetary value of the product of the present time?	PER	NS	X	1	
Suzanne Steinhagen	Clean water is intrinsically more important than money, especially with the effects of global warming arriving sooner than we may suppose. Remember water goes everywhere: wherever it can go, it will go – taking with it any load of pollutants. Please choose clean water which is synonymous with life. I ask you for the many, fellow animals, plants, and human beings.	WAT	NS	X	1	
Vince Graziano	Don't let the BWCA be harmed.	WILD	NS	X	1	
T. Darwin	As a 25 year resident of the arrowhead of Minnesota, I urge you not to allow the PolyMet mine so close to Lake Superior	WAT	NS	X	1	
don malley	All the time and money spent already is a great waste. I feel it is time to get this operation going to keep people in Northern Minnesota working. Making a living for families is much more important than listening to the stories of people that live hundreds of miles away trying to tell us how to live.	GEN	NS	X	1	
Adam Heckathorn	It is not worth it. no to copper mining.	GEN	NS	X	1	
Kris Wegerson	The co-lead agencies should have allowed a 90-day comment period as was allowed for the DEIS and SDEIS. I was able to read thru the previous documents, but not thru the FEIS. A one week extension of the 30-day comment period is inadequate. The FEIS must be considered inadequate if the public wasn't given adequate time to read the document and comment on it.	NEPA	NS	X	1	

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Kris Wegerson	The FEIS is inadequate because it didn't adequately address human health risks and human health impacts. Nearly 40,000 Minnesota medical practitioners have asked for studies of the health risk and health impacts (the memberships of the Minnesota Medical Association, the Minnesota Academy of Family Physicians, the Minnesota Nurses Association and the Minnesota Public Health Association and hundreds of individuals). We asked for these studies in our March 11, 2014 comments to the SDEIS (Minnesota Health Professionals Comment-PolyMet). The FEIS was released almost 20 months later. The state of Alaska has established a health impact assessment (HIA) program in 2010 and all large natural resource developments projects have HIAs completed during the EIS process. An HIA is seen as one aspect of a "best practices" approach to responsible development in Alaska. (State of Alaska Epidemiology Bulletin NO. 19 July 25,2011) I have had discussions with Dr. Paul Anderson, MD, MPH, the head of Alaska's HIA Program, and Dr. Gary Krieger, MD, senior vice president of NewFields, who is a consultant on many of Alaska's HIA projects. They have stated that a comprehensive, independently researched and produced HIA could have been completed within one year. It could have been completed after the end of the comment period for the SDEIS and up until the time of the issuance of the FEIS.	HU	S	O	3	SDEIS Theme HU 01
Kris Wegerson	Human health impacts are inadequately addressed under Chapter 7.3.4.3 of the FEIS. The PolyMet mine and plant are located within St. Louis County, which ranks 75 out of 87 Minnesota counties for health measures. (United Health Foundation 2014) An HIA establishes baseline community health status so that this can be compared to projected health risks and impacts of a proposed project. This has not be done.	HU	S	O	3	SDEIS Theme HU 02
Kris Wegerson	The FEIS doesn't adequately address the potential harm to human health from methylmercury.	HU	NS	X	1	
Kris Wegerson	Health risk and health impact assessments are necessary and should have been prepared in compliance with the procedures of the Minnesota Environmental Policy Act (MEPA . Minnesota Statutes Chapter 116D.03 Subd.2. Duties. "All departments and agencies of the state government shall: (8) undertake, contract for or fund such research as is needed in order to determine and clarify effects of known or suspected pollutants which may be detrimental to human health or to the environment, as well as to evaluate the feasibility, safety and environmental effects of various methods of dealing with pollutants." Health risk and health impact assessments have not been completed and therefore the FEIS is in violation of MEPA.	HU	S	O	5	SDEIS Theme HU 01
Kris Wegerson	Asbestos is another chemical listed by the WHO as one of its 10 chemicals or groups of chemicals of major public health concern.	AIR	NS	X	1	
Kris Wegerson	Human health may also be harmed if there is a failure of the LTVSMC Tailings Basin. It is already leaking and that leakage hasn't been corrected. It is not reasonable to expect 99% of the surface water and 90% of the ground water seepage can be captured. This is contrary to real-world comparable conditions. 225 million tons of tailings will be disposed on top of the current tailings. We have seen how a state-of-the-art tailings basin at Mt. Polley in British Columbia failed.	GT	NS	X	1	
Kris Wegerson	Dr. David Chambers, a renowned geologist, has studied the geo-stability of the tailings basin and found that it is likely to fail. A greater load of tailings and bentonite can only further weaken the basin. The plan to use the old LTVSMC Tailings Basin for	GT	NS	X	1	

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	disposal of additional tailings is dangerous and inadequate.					
Kris Wegerson	Water would need to be treated indefinitely from the mine and plant sites. This is in violation of Minnesota mining laws which prohibit mines from being permitted that require perpetual water treatment. Indefinite water treatment is unlawful and inadequate.	PER	NS	X	1	
Kris Wegerson	The FEIS is inadequate because it didn't include detailed information of financial assurance. Financial assurance is part of the proposed action as is the land exchange, but was omitted from the FEIS.	FIN	NS	X	1	
Kris Wegerson	If the "level of engineering design and planning isn't currently available to calculate detailed financial assurance amounts", then the entire FEIS should be considered inadequate. The entire FEIS is engineering design and planning in support of the NorthMet Project Proposed Action.	FIN	NS	X	1	
Kris Wegerson	In summation, the FEIS did not adequately address the significant issues of human health risk, and health impact, likely tailings dam failure, and need for perpetual treatment of water from the mine and plant sites. It is not in compliance with MEPA and Minnesota Rules because it did not adequately address financial assurance as a part of the proposed action. It is not in compliance with the procedures of MEPA which should have required the completion of health risk and health impact assessments. The FEIS must be rejected.	MEPA	NS	X	1	
Ben Kreilkamp	I oppose the current PolyMet proposal. The FEIS isn't adequate; I object to the U.S. Forest Service proposal to exchange Superior National Forest land for the PolyMet proposal; and I oppose any federal permit to destroy wetlands and impair water quality.	GEN	NS	X	1	
Dr. Kyle R. Crocker	the State of Minnesota and its people would assume enormous risks in this operation – at least 100 years of potential toxic poisoned waters and millions of dollars to mitigate this.	FIN	NS	X	1	
Dr. Kyle R. Crocker	And in exchange for what? Jobs for a hundred largely out-sourced workers for twenty years and huge profits for an utterly inexperienced foreign owned and financed company.	SO	NS	X	1	
Dr. Kyle R. Crocker	I find the present EIS to be very deeply flawed in its essential science. Most egregious is its reliance on PolyMet's 'data' on area soils and hydrology. This is reprehensible, equivalent to blindly accepting BP's estimate of crude oil spilled in the Deep Horizon catastrophe.	NEPA	NS	X	1	
Dr. Kyle R. Crocker	There are many other problems in the EIS and proposal, failures to adequately address risks to the public health, to fully comply with both Federal and State law and scientific standards, to examine alternate planning, to supply any mitigation for the loss of thousands of acres of wetlands or means to protect the threatened wildlife within them, to allow a flimsy land exchange as 'compensation.' And there are still others you well know I could cite.	GEN	NS	X	1	
Dr. Kyle R. Crocker	I respectfully urge that you reject the PolyMet EIS. It is scientifically, legally and ethically compromised. I also oppose granting any Federal permit to allow the operation.	GEN	NS	X	1	

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Karen Eckman	I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal.	GEN	NS	X	1	
Karen Eckman	Clean, fresh water is essential for all living things. We cannot live without it. It is a finite resource. We can live without copper and nickel and even jobs and profits but we cannot live without water. The risks to our waters are too great.	WAT	NS	X	1	
Karen Eckman	Jobs today mean nothing if future generations have to leave the area anyway to find clean water.	SO	NS	X	1	
Karen Eckman	Destroying our forests for this purpose makes no sense when we are trying to sequester more carbon.	AIR	NS	X	1	
Douglas Landsverk	I wish to state my opposition the the NorthMet Mining project and land exchange proposal. Northern Minnesota's most precious resources are the unspoiled beauty of it's wild places and the lakes, rivers and wetlands that would be threatened by mining and the waste products produced by this activity. The long-term threat of devastating pollution from toxic waste materials of this proposed mine has not been adequately addressed. Please don't risk the health of this fragile environment over short-term financial gain.	GEN	NS	X	1	
Robert Graves	I oppose the Polymet Northmet sulfide mine proposal because of its inadequate protections of wetlands and water quality as documented in the Polymet FEIS.	WET	NS	X	1	
Robert Graves	I object to the Northmet mining project land exchange in the Superior National Forest because of inadequate protections of wetlands and water quality.	WET	NS	X	1	
Robert Graves	I oppose and federal Clean Water Act permit for Polymet discharge and wetlands destruction because of inadequate protections of wetlands and water quality.	WET	NS	X	1	
Robert Graves	I don't see a risk matrix evaluation in the FEIS. I don't see what's called perturbation analysis, which looks for what the result would be if the data is incorrect by, say, 1%, 5%, or 10%.	NEPA	S	O	8	FEIS Chapters 1 and 2
Robert Graves	I do not see a worst case scenario evaluation. The Monte Carlo likelihoods in the FEIS indicate probabilities of everything working correctly.	PD	NS	X	1	
Robert Graves	Worst case scenario evaluations need to be conducted to indicate what actions are required to mitigate potential failures of proposed safeguards. Will the mining company have billions to pay for these worst case mitigations? If the mining company does not have adequate funds, then the public will have the responsibility to pay for billions and possibly tens of billions of dollars to correct for the mistake of going forward with this project.	FIN	NS	X	1	
Robert Graves	A limited number of years of mining operations are not worth the potential environmental catastrophe that threatens fish habitat, beautiful and pristine waters, and a way of life based on the great outdoors.	SO	NS	X	1	

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Jenny Gamer	Northern Minnesota is so beautiful and pristine, so rare. The waters are clean unlike down here in Southern MN where I live and cannot swim. Any new mining is not worth the risks.	WAT	NS	X	1	
Jenny Gamer	furthermore why would we trust the company Glencore, that has such a terrible record?	PER	NS	X	1	
Jenny Gamer	And if we agree to risk our land and water why would we do so to benefit companies and people who are far away and won't have to live with the consequences?	PER	NS	X	1	
Jenny Gamer	Globally metals markets are tanking, I've read. We know that we need to move into a future where we are recycling materials and healing our water and land bases as well as figuring out how to live in a carbon negative way. These mines do none of that.	ALT	NS	X	1	
John Case	I have been following the arguments pro and con re: PolyMet's proposed sulfide mine. The water pollution issues are too great to allow this mine to be permitted. The risks of water contamination are too great in the BWCAW area and the St Louis River watershed.	WAT	NS	X	1	
Steve Timmer	According to the press release, PolyMet has about \$8,000,000 in the bank, and other than the maturity extension from Glencore, I don't see any new money for PolyMet; it has no practical way to raise any. In a news article by John Myers, PolyMet spokesman Bruce Richardson says the extension shows Glencore's "continuing support" of the PolyMet project. PolyMet won't be actually paying interest, though. It will just accrue. Another way of looking at it is to say that Glencore is merely maximizing its first lien secured position in an impending PolyMet bankruptcy with a sixteen percent interest rate – just to fatten up its claim. If it really supported PolyMet, Glencore would cut the interest rate and give its junior partner a break, and loan it some new money, which it obviously has to have to survive. The financial news for PolyMet grows more dismal by the day. There will probably be a cash bar at the Christmas party. This is not a company that the State of Minnesota should trust to the smallest degree with our environmental resources.	FIN	NS	X	1	
Mark Jenkins	I wish to express my support for this project. I believe the economic future of Northern Minnesota requires diversification away from iron ore mining. The NorthMet project provides a long-term viable industry that will create many jobs; both directly at the mine and indirectly to many local businesses. The project has been studied for over 10 years and the Environmental Impact Statement has addressed all of the issues required by Federal and State regulations. I believe it is time to accept the adequacy of the report and move forward with the approval and permitting process.	GEN	NS	X	1	
Joseph Butler	I am writing to express my support for the poly met project. It is my opinion that the FEIS that has been prepared is adequate should be accepted.	O	NS	X	1	
Joseph Butler	Environmental Impact. As an engineer who has worked on the mines and worked on pre planning for this project, I have seen the effort and care of planning that has gone into this project. I have also reviewed the FEIS and it is my opinion that the project owner and design team has a plan in place that will properly protect our environment. Risks have been properly identified and mitigated. Environmental safeguards are planned and are more than adequate.	GEN	NS	X	1	

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Joseph Butler	Future of N. Minnesota Mining. The project and new mine will diversify the mining industry, leading to a more stable economic environment in Minnesota. The global economy causes steel prices to be boom or bust, thus the economy in northern MN tends to be cyclical. Diversifying mining in Minnesota will help create stability, which will create confidence for other industries to grow in the area, growing and stabilizing the economy even further.	GEN	NS	X	1	
Joseph Butler	My Personal Future. As noted above the economy in northern Minnesota can be very cyclical; it has and will continue to have a financial impact on me personally. I will work on this project, and it will have an immediate boost to financial security, but it will also improve the overall economy of Minnesota, creating long term security.	SO	NS	X	1	
Joseph Butler	Future of Friends and Family. In addition to impacting me personally, this project will provide immediate and long term financial stability for many businesses. Whether they are directly linked to mining or construction or just receive revenue, second, third or fourth hand, this new mine will improve the lives of the people I care about.	SO	NS	X	1	
Joseph Butler	Again, I am writing in support of the project, find the FEIS more than adequate, and ask that it be accepted.	O	NS	X	1	
Anita Tillemans	How would a land exchange void the responsibility vested in USFS as the steward of public lands presently in their care? With the proposed land exchange, USFS would be forfeiting its authority to mining interests over lands that were set aside for protection. The Forest Service would be trading, not only lands, but a trust that these ecosystems would be protected from exploitation for generations to come. Polymet will be mining water resources, destroying wetlands, by their own admission; and, in effect, degrading natural resources, flora and fauna, with its lease to continuously extract metals in an open-pit mine. They will be requiring permits to do all of this, including permits to take endangered species on lands that the Forest Service was given in trust, lands that USFS would need to trade in order for mining to occur. In addition, this would help establish precedent that could facilitate more land exchanges of this type. By trading these lands, USFS would, essentially, be demonstrating a lack of will in exercising its authority. This land exchange, essentially, would create a barter system that conflicts with the USFS' role as steward and allows exploitation. By any reasoning, the land exchange cannot be reconciled with this public trust.	LAN	NS	X	1	
Anita Tillemans	Is it wise to risk the security of the St Louis Watershed, one that feeds the greatest freshwater lake by area in the world, Lake Superior, and lies at the extreme headwaters of the St Lawrence River? All life depends upon reserves of water; and the Arrowhead is at the source of one of the largest supplies on Earth. St Louis River, at the extreme headwaters of the St Lawrence Seaway, supplies freshwater to Lake Superior and the Great Lakes. Products of the Laurentide Ice Sheet melt, Rainy Lake, Lake of the Woods, and Red Lake formed in the basin of Lake Agassiz, which extended over 170,000 square miles, possibly the largest freshwater lake ever (similar in size to the Black Sea). This glacial lake provided water to northern Minnesota, the Red River Valley and may still be discharging its glacial waters from the fractured metamorphic bedrock aquifers of the Arrowhead. The FEIS confirms that bedrock of the region has low conductivity and could take thousands of years to discharge. In addition to the glacial waters of Agassiz, others glacial lakes like Norwood, Upham and Aitkin, products of the LIS, as well, have discharged their waters into the Arrowhead of Minnesota. Diverse moraines such as the Vermilion Moraine, left evidence in patterns of glacial till that can be seen around Babbitt, Ely, the Embarrass River area, and Hoyt Lakes, overlain in many areas by lush vegetation and lakes. Covered by such a luxuriant carpet, the land that Polymet and	WAT	NS	X	1	

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	<p>others want to mine can be as difficult to inspect for existing aquifers, confined or otherwise, as it is to locate existing faults and fractures of bedrock in the area. This does not mean they don't exist. The fact that the NorthMet Project prospect lies within the boundary of the Vermilion Moraine, along with the BWCAW and Ely, makes this even more difficult. The potential of water traversing aquifers through fractured metamorphic bedrock, sight unseen, is heightened. No one spot duplicates another, essentially with variations in depth to bedrock by hundreds of feet, coverage of waterlogged vegetation and lakes, and a diversity that is like no other on earth. Like faults, aquifers can be inferred invariably through their effects. Observe the copious discharge of water from the Big Stoney along the north shore of Minnesota. Observe the waters that so readily flow from the area of the Mesabi Widjiu, in rivers like Prairie River and Swan River from the Hill of Three Waters, the Vermilion River, St Louis River, Rainy River, and the great Mississippi. All one needs to do is observe. As faults and fractures allow water to disperse in bedrock, these aquifers eventually find outlet in rivers, streams, fens, wetlands, falls, ponds and lakes at varying distances and directions from the site of recharge in the Laurentian Uplands. According to the FEIS, surficial aquifers surrounding the mine site have a low conductivity, though not as low as bedrock in the same area, which supposedly decreases with depth. In this environment, then, it took thousands of years for glacial waters to make their way to the basin of Lake Superior. These waters can be seen dispersing in rich wetlands and rivers throughout; and they continue to nourish land in the Arrowhead supporting a vast and intricate ecosystem. Does it make ecological sense to place a copper mine where it can do so much harm to water resources, with the potential of collecting into highly toxic sludge, polluting more and more of the surficial aquifers of the region, as waters are made stagnant and dead over the years? There will be floods. There will be upheavals, as history proves ... waters will disperse, as it is the nature of water to do. What will be left after the mine extracts precious reserves of water from aquifers, seen and unseen, confined or not, to process metals that serve its profit margin? Will there be any wild areas left, named or unnamed, categorized or not when the pollution from concentrates, waste rock and filters have found their way through this valuable ecosystem and the watersheds of the Arrowhead? Our national security depends upon protection of freshwater resources, and the Arrowhead stands as a source of one of the largest fresh water reserves on earth. No copper mine is worth the risk of degrading this precious resource.</p>					
Anita Tillemans	<p>How can protection of a species be reconciled with destruction of habitat and nesting sites? Since the various animal species do not pay attention to lines drawn on a map, they will trespass naturally. Water knows no real boundaries, either, over time; and time is the key word. In time, all things great and small in this water dependent ecosystem will be affected by actions proposed today in the Arrowhead. The FEIS notes, that approximately 1,535 acres (58 percent) of mature forest would be lost at the mine site alone, that the species of greatest conservation need (SGCN) found at the mine site would be birds from Table 4.2.5-1 and that they would be "displaced." The FEIS goes on to state that it is likely these birds would not be injured or killed, though nesting birds could be affected. The FEIS states that the mine would not likely affect individual migratory songbirds or other bird species protected under the MBTA; but would likely affect habitat and nest sites used by them. How does one "affect" another's home, without affecting the individual; and, as a matter of course, disturb nesting sites without disturbing the propagation of a species? With time, more species than those cited by the FEIS would be "affected" in the course of their reproductive cycles; and this, in turn, would naturally affect survival of a number of species in the area.</p>	WI	S	O	2	FEIS Section 5.2.5

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Anita Tillemans	<p>What security is there in a mining economy that depends entirely on the market, one that will not contribute to the real long-term wealth of this area? Such an economy based on mining depends on the whims of a market. Copper mining will pollute the resources essential to our survival, perhaps into perpetuity, while providing profits and wealth to relatively few people over twenty years, more or less. After the mines have gone, as we see today, there will be masses of unemployed people, desperate, in a failing economy. Recycling metals is on the upswing and processes for this type of recovery are being more fully developed as the North Met Project is being pondered. This could make mining for copper less profitable in a very short time. The price of commodities will vary, and markets are fickle. As a consequence, copper cannot guarantee a secure future, and certainly not a green economy in the Arrowhead. Statistics abound concerning the wealth of wilderness tourism; and it cannot be reconciled with a mining scenario. When the copper mines are gone, what will be left? The choice is truly between wilderness and mining. Transport down scenic highways to and from the NorthMet Project will weave a web far beyond the sites that FEIS reviewed. Tourists will be traveling down the Superior National Forest Scenic Byway, along highways and roads to Hoyt Lakes, Embarrass, Ely, Babbitt and Silver Bay. These potential long-term customers will see the effects of mining and it will affect the tourist industry. The sounds of blasting, trucks and drilling are not conducive to wilderness by any stretch; and neither is the potential of streams and waterways polluted with sulfuric acid and other toxins from mining copper. Atmospheric conditions are unpredictable and Polymet will not be able to control these. The sounds of drilling from exploratory wells for copper and other metals can be heard in the BWCAW at this time. If Polymet gets permission to pollute and take lands in the Laurentian Uplands, there will be little peace for these areas, no chance of true wilderness experience and tourism. Jobs that create a steady future do not lie in mining a land that, once mined, is degraded. Fields that once grew wild rice, grow no more. Waters that held rich stores of fish are dead and dying. Ecosystems fail and waters need constant treatment. Wetlands that once held diverse flora and fauna are no more. This is not security.</p>	NEPA	NS	X	1	
Anita Tillemans	<p>The FEIS did not adequately address the potential effects of fossil fuels on the atmosphere surrounding the NorthMet Project. Fossil fuel needs will escalate at LTV and the mining site, fuel and coal needs for the plant and mine, fuel for the vehicles, the crushers, the earthmovers and trains. Acid rain will emerge as an even greater problem, and the FEIS did not address this issue sufficiently. Repercussions will be felt in the Boundary Waters Canoe Area Wilderness, most certainly, from atmospheric effects alone. Coal fired plants have provided energy to mines along the Mesabi Range for decades and, in the last 50 years, signs of acid rain have degraded foliage and forests in the path of their plumes. Witness dying birch, and mountain ash (that have all but entirely disappeared along the North Shore of Minnesota). The effects of a copper mine in this fragile ecosystem will reach far beyond the boundaries of the plant and mine sites with potentially devastating effects.</p>	AIR	NS	X	1	

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Anita Tillemans	<p>This FEIS does not address known fractures, fault lines within the project site, and those along the Range. What of the Waasa and Camp Rivera Faults? What of the Vermilion Fault? The effects of faults and fractures have been downplayed in models, which were made to inform the FEIS. The connectivity of bedrock with surficial aquifers assumed to be low, and the upper surface of fractured metamorphic bedrock assumed to be fractured more heavily at the top than down under. This conclusion seems convenient and arbitrary, since these structures cannot be truly known, sight unseen. Is there some reason that Polymet did not use the available information on inferred faults for more in depth field study on these particular areas? The devil is always in the details. Though details can be used to obfuscate and avoid larger issues, these particular details are major omissions in a study that assumes to represent a truthful picture of the potential risks involved to groundwater from seepages and discharge through cracks, joints, fractures, faults, bore holes, from waste rock, slurry and tailings basins in the Laurentian Uplands. Inferences are made all the time in science, through reason and implication, through the use of data and study. All knowledge is brought about in this way. To discount information on inferred faults is careless. The FEIS makes its own inferences. It infers that bedrock has low conductivity around the site and plant. It infers that the pollution would not travel far from the sites. It infers that all systems will operate sufficiently as expected over the lifetime of the mine and into perpetuity. It infers that, if a fault is found, it will be dealt with successfully. It infers much in supporting a copper mining scenario. Details and independent, in depth fieldwork is still needed concerning bedrock aquifers, faults and fractures in the area because of their potential for being conduits of pollution into ground water reserves, sight unseen. Polymet admits seepage will occur, but it continues to minimize the risks through assumptions concerning the conductivity of fractured metamorphic bedrock and sand and gravel aquifers throughout the area. Water will most assuredly traverse aquifers and find the path of least resistance. The FEIS minimizes and leaves these pathways open to conjecture with promises that all will be handled, in time.</p>	GT	S	O	2	SDEIS Theme WR 012
Anita Tillemans	<p>Potential effects that can be caused by drawdown in artesian springs, are given little review and field study, limited by assumptions and documents supporting the FEIS conclusion that bedrock geology plays a small part in hydrology of the area. At the same time, we are assured that if there are, indeed, fractures, faults and confined aquifers found during operation, or that drawdown becomes a problem, these issues will be dealt with at the time. Of course, once an artesian has been drawn down, the chances of drawing it back up are limited. At this point, there does not appear to be any technology that can guarantee the renewal of an aquifer, or restoration of ground waters fouled?</p>	WAT	S	O	2	SDEIS Theme WR 087
Anita Tillemans	<p>Considering the importance of geology in this complex area of Minnesota, the FEIS omits much in detail. Ground water in the Laurentian Divide frequently diverges from surface topography and therefore locations of recharge and discharge can be impossible to predict. Polymet's probabilistic models cannot possibly be informed adequately to address the enormous danger of mining water, drawdowns, depressurization of artesian, and upwelling of brackish water to name only a few dangers posed by this project. In the process of review, some of the most relevant information appears to be missing from the FEIS, or discounted, much of the obvious geological and hydrological evidence that would prove a no action alternative best for the environment and for the habitants upstream and downstream of the proposed mining project. For instance, significant evidence on the fractured metamorphic nature of these lands, inferred and actual fractures and faults that have been named, the prospect of artesian springs, other faults and fractures in bedrock that may conduct water from the site, the potential that water inflows are much greater by many accounts have been given short shrift in deference to a computer model fed with data chosen, in particular, for this study. It all seems quite arbitrary, and these omissions are significant. The</p>	WAT	S	O	2	FEIS Sec. 4.2.2.2.1; SDEIS COOP Responses #9051, #19667

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	area that includes Babbitt, Hoyt Lakes and the transportation corridor are covered with sand and gravel surficial aquifers, which run the possibility of overdevelopment in irrigated areas. This region also includes igneous and fractured metamorphic bedrock aquifers, where water can be found in cracks, joints and fractures within otherwise solid rock formations. Hoyt Lakes is a land of sand and gravel buried aquifers, which can be a major source of water (eg the Biwabik formation). Further down the St Louis River, in addition to sand and gravel surficial, and buried aquifers, igneous and fractured metamorphic bedrock aquifers, there are also sedimentary bedrock aquifers. Even though yields from these sedimentary cretaceous deposits are supposed to be low, the possibility that ground water discharges in lowlands from sand and gravel and fractured aquifers, also in the area, certainly exists. Igneous and fractured metamorphic bedrock aquifers line the North Shore of Minnesota where there are over sixty water features in falls, rivers, and streams. The St Louis Watershed drains a basin of over 3500 square miles at the extreme headwaters of the St Lawrence Seaway. It appears that waters from glacial lakes, formed during the melt of the Laurentide Ice Sheet might still be discharging into Lake Superior as these waters work their way through the fractured bedrock aquifers of St Louis, Lake and Cook Counties. As noted, FEIS confirms that due to low permeability of the bedrock, discharge could take thousands of years... and so it seems that polluted waters could do the same. Polymet would be long gone before the consequences of copper mining could be fully assessed. The FEIS avoids much discussion on differentiating major geologic areas, although Ely, Babbitt, Hoyt Lakes, Embarrass, the BWCAW and the whole of Giants Ridge are encompassed in a single one of these regions. The FEIS avoids in depth review of the existence of confined aquifers (extremely important in the security of the groundwater), avoids discussing in particular dissimilarities in surface composites and bedrock as relates to their conductivity and connectivity, specifics on the variability of depth to bedrock, inevitable flooding scenarios, weather anomalies, likely spills and exposures, drumlin fields, watershed anomalies (for instance, the fact that the tailings pond at the LTV plant has outgrown what was once the boundary of the Vermilion Watershed, redrawn on maps to put it within the St Louis Watershed). Polymet's NorthMet Project will increase the size of this tailings pond and so it is crucial to understand fully the hydrology of both surficial and bedrock aquifers directly underlying this tailings pond in particular. Metamorphic rock is mentioned very little in the FEIS, as it fails to note that most of the Arrowhead is covered by fractured metamorphic rock, and in the area of the project, that sand and gravel surficial aquifers are prevalent as well, major omissions in outlining the geology of the area. Through these errors of omission, the probability of surficial and bedrock transport appears minimal at best. Is it possible to make a valid review of the project's feasibility without details like this?					
Anita Tillemans	why experiential data from over 100 years of mining was not favored over probabilistic prognostications and limited field study prepared specifically for the NorthMet Project?	WAT	S	O	2	FEIS Section 5.2.2.2
Anita Tillemans	What would be the result after 500 years of seepage from the degraded rotted and rusted infrastructure of a copper sulfide mine?	PD	NS	X	1	
Anita Tillemans	Just as the tailings pond at the LTV plant site outgrew the boundary of the St Louis Watershed into the Vermilion Watershed, will the pits and ponds at the North Met mine site, so close to the northern boundary of the St Louis Watershed, outgrow its boundary as well, reaching into the watershed of Rainy River?	PD	S	O	2	FEIS Section 3.2.2, Fig. 3.2-9
Anita	If water seepage and inflow has not been predicted realistically for this study, then, the potential for harming watersheds of	WAT	NS	X	1	

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Tillemans	the St Louis River, Vermilion River and the Rainy River is great. Tribes inform the co-lead agencies that inflows are considerably higher than suggested by the EIS. How has related data from this observation informed the FEIS?					
Anita Tillemans	Due to the precedent that a copper mine in Babbitt will set, if granted, the potential for mining pits and tailings basins surrounding the area of the BWCAW watershed will be greatly increased. Exploratory wells have been made well past the northern boundaries of the St Louis River Watershed, into the Rainy River Watershed, and on the boundary of the BWCAW. As a consequence, if the North Met project for a copper mine is granted, this will create the potential of a succession of mining pits and wells that move from the NE of Giants Ridge into the domain of the BWCA Wilderness. Consequently, the NorthMet Project prospect has the potential of affecting a larger area than the study proposes. Elevated levels of arsenic can be found in the BWCAW along with brackish waters from exploratory wells. These details cannot be overlooked because it foretells the real possibility of pollution from Polymet's mine pits traversing aquifers and connecting the St Louis Watershed to the Rainy River Watershed. The potential of surficial and bedrock connectivity from the mine site to this highly diverse geology of the BWCAW region through fluid and interconnected wilderness waterways, glacial moraine and diverse geology is relevant to the discussion.	CUM	NS	X	1	
Anita Tillemans	Relying on probabilistic outcomes that narrow the view and minimize the prospect of pollution reaching downstream seems unrealistic. The potential of downstream contamination throughout the St Louis River Watershed should be given full consideration in any responsible environmental study concerning the prospect of a copper mine in this ecologically important area at the headwaters of the greatest body of freshwater on earth. The St Louis River Watershed is composed of tilted bedrock planes that lean toward Lake Superior. Some of this can be seen in Jay Cook State Park, downstream from the prospect. The topography of the Laurentian Uplands and the swampy lowlands is diverse, including beds of wavy bedrock and washboard effects in areas like the Toimi Drumlin Field. The diversity of topography is as great as the diversity of flora and fauna. These areas are hardly flat. Consider that the final drainage of the Laurentide Ice Sheet is said to have occurred around 8200 YBP and this caused sea levels to rise between 2.6 to 9.2 feet. Can the inevitable flow of local waters to the sea be discounted in a study that truly represents the risk of pollution from a copper mine? Lake Superior is the product of glacial waters that flowed from the LIS and from glacial lakes that grew from the LIS melt. The St Louis River developed in the basin of Glacial Lake Upham. Relative to the age of this earth, the rivers in Minnesota are young, still cutting paths to the sea. If downstream effects were given due merit, the facts would be clear that the entire Arrowhead of Minnesota would eventually suffer loss and damage from the operation of a copper mine in the Laurentian Uplands. No reassurance will carry the weight of facts before our eyes, the water we drink, and the air we breathe.	CUM	S	O	8	FEIS Section 6.2.2.1.1
Anita Tillemans	Please do not permit this land exchange to occur.	LAN	NS	X	1	
George Kluempke	I have taken the time to review the Executive Summary and some of the related documents included FEIS document as prepared by MDNR; USACE and the US Forest Service. I believe that the studies conducted as part of this comprehensive Final EIS document clearly supports approving and going forward with the PolyMet project.	GEN	NS	X	1	
George	The analysis concludes that PolyMet's treatment and mitigation plans will prevent acid mine drainage and will meet all water quality standards. In addition, the studies conclude that groundwater flows from the project will not directly or	WILD	NS	X	1	

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Kluempke	indirectly affect the BWCA.					
George Kluempke	I believe that the FEIS meets all of the requirements of both the Federal and Minnesota Environmental Policy Acts.	MEPA	NS	X	1	
George Kluempke	I urge you to accept this FEIS as submitted and continue forward with the permitting process.	PER	NS	X	1	
Robert Hagen	I am writing to express my opposition to the proposed PolyMet mine.	GEN	NS	X	1	
Robert Hagen	While it may create over 300 jobs it is not worth the lasting risk to the State's natural resources, its reputation as a tourist destination and its reputation as a steward of wild areas.	SO	NS	X	1	
Robert Hagen	I think the financial assurance provisions are inadequate, and the risks of the mine and its waste underestimate it affects.	FIN	NS	X	1	
Robert Hagen	Furthermore, the existing price of copper does not bode well for economic returns to the mine. The price of copper is notoriously sensitive to world economic forces. While its price may rebound eventually, how many economic cycles will we see during the mine's operation? Having grown up in a copper mining community, I know the hardships endured by local citizens when a copper mine closes. It would be in the public's long-term interest if the Iron Range's economy were diversified through retraining programs designed to meet known and forecast shortages in selected occupations.	SO	NS	X	1	
Dennis and Audrey Peterson	The FEIS does not ask or answer all the important questions regarding ground water flow. The models must be run to predict groundwater flow from the North Met east pit at the time of closure. The east pit appears to be hydraulically connected to the Peter Mitchell pit; therefore, it is logical that flow would run downward from the east pit into the Peter Mitchell pit and finally into the BWCAW. This is one of the most important issues to be analyzed concerning the environmental effect of the proposed mining operation after its closure. Until this is modeled the EIS is not complete and therefore unsatisfactorily done.	WAT	S	O	2	SDEIS Themes WR 011, WR 024, WR 111
Dennis and Audrey Peterson	If modifying or redoing the model to get the correct results requires a lot more work than it still has to be done. The modeling must be redone anyway as it was done by a consultant of PolyMet and not by an independent party. The modeling should be started over by an independent party to determine; what are all the possible ground water pollution scenarios, and determine the effect of each. To ignore what are potentially the worst scenarios is unsatisfactory.	WAT	S	N	8	SDEIS Themes WR 110, WR 193. The Co-lead Agencies independently reviewed all applicable documentation submitted by the Proposer for use in the impact assessment modeling. This included detailed technical design documents, such as the Project Description, Mine Plan and several resource-specific management plans, all of which are summarized in FEIS Chapter 3. The impact assessment is based on information generated from resource-specific data packages, modeling results, and technical data memos. The level of detail describing the NorthMet Mining Project provided in

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						the EIS is consistent with the requirements of NEPA/MEPA for similar projects at this stage of environmental review.
Dennis and Audrey Peterson	Until the correct model with the correct water levels and permeability are run the model results will be worthless and do not predict anything. The purpose of an EIS is to predict the environmental impact. The FEIS does not do this.	WAT	S	O	8	SDEIS Theme WR 049
Greg Keilback	I understand the flood of emails and template comments that are being received. I will keep my words short: Please for the long term health of both the human and ecological environment do not allow this mining project to occur.	GEN	NS	X	1	
Ellen Hawkins	We believe the PolyMet NorthMet proposal should be rejected. We live in northeast Minnesota and have a number of concerns about how the proposal would hurt this area's natural resources and economy.	GEN	NS	X	1	
Ellen Hawkins	The EIS is inadequate; the Forest Service Record of Decision does not provide convincing support for the land exchange;	ROD	NS	X	1	
Ellen Hawkins	the Clean Water Act Section 404 permit should not be issued by U.S. Army Corps of Engineers or allowed by U.S. Environmental Protection Agency.	PER	NS	X	1	
Ellen Hawkins	The FEIS fails to meet state and federal standards, and in a project with so much potential for doing great harm to Minnesota, this is unacceptable.	MEPA	NS	X	1	
Ellen Hawkins	Most sections I commented on in the DEIS seem not to have changed much in the FEIS. Predictions about where PolyMet's polluted water would spread are not backed up by independent science.	WAT	NS	X	1	
Ellen Hawkins	There are still no realistic plans for ensuring a damage deposit big enough to protect generations of taxpayers from being stuck with a massive cleanup bill.	FIN	NS	X	1	
Ellen Hawkins	The FEIS does not consider the impacts of likely toxic seepage of groundwater to the north, even though this failing was pointed out by Great Lakes Indian Fish and Wildlife Commission (GLIFWC) months ago and there has been ample time to consider it; even though the volume of seepage could be huge – perhaps hundreds of gallons per minute or up to a million gallons per day as opposed to the 10 gallons per minute indicated by Barr Engineering modeling; even though this groundwater is not treated, as a percentage of the surface water is supposed to be; and even though the resources at risk include the BWCAW – America's great canoe country wilderness and the basis of the economic health of the region. Because if the untreated toxic seepage flows north, as GLIFWC predicts and DNR apparently concedes is likely, it will flow into the	WAT	S	O	2	SDEIS Theme WR 024

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	South Kawishiwi River, which flows into the heart of the Boundary Waters Canoe Area Wilderness.					
Ellen Hawkins	DNR's public discussion of GLIFWC's findings, invoking what sounds like a fantasy groundwater mound and insisting on sticking with a theoretical, rather than a common sense version of whether water flows uphill or down, call into question the EIS's findings on everything to do with waterflow, which is crucial to the impacts of the operation and post operation stages of this project.	WAT	NS	X	1	
Ellen Hawkins	The FEIS fails to analyze the risks of pollution to wild rice, wildlife, and human health using realistic estimates as to how successful treatment can be for the total volume of contaminated water across all stages of the operation.	WAT	NS	X	1	
Ellen Hawkins	It fails to analyze in any meaningful way the health risks from air and water pollution on local communities and visitors, even though Minnesota has a long history of issues related to asbestos-like particles and is very aware of the connections between human health vulnerabilities and methylmercury.	HU	NS	X	1	
Ellen Hawkins	At least 5 of the 10 toxins listed by the World Health Organization as dangerous to human health are released into the environment by mining of copper-nickel in sulfide ores (mercury, lead, asbestos, particulate air pollution, and arsenic). Of particular concern are likely impacts to the neurodevelopment of infants and children from heavy metals, including methylmercury, lead, arsenic and manganese. The governor's opportunity to repair this gap in the FEIS has been thrown away with his decision to disregard the pleas of health professionals.	HU	NS	X	1	
Ellen Hawkins	Although the results of catastrophic dam failures and tailings pile collapse have been clearly illustrated by disasters around the world, the FEIS does not show how these sorts of threats would be effectively mitigated.	GT	S	O	2	SDEIS Theme GT 07
Ellen Hawkins	There is no consideration given to the thousands of good jobs in northeast Minnesota that rely on a healthy environment. Instead, there is a cheering section for the promised mining jobs and spin-offs based on an economic model that pretends to calculate the alleged economic benefits but ignores what jobs would be lost, whether jobs will go to transient workers, what happens when the commodities market shifts, or what happens during the bust part of the boom and bust mining cycle. Both of us recently retired from good jobs here in northeast Minnesota that will not be available to others if this beautiful place turns into a mining district.	SO	NS	X	1	

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Ellen Hawkins	The land exchange would be bad public policy. Turning ownership of National Forest Lands over to a private mining company would be contrary to the Forest Service's mission: it would not serve the people well and it would demonstrate the very opposite of caring for the land. The land exchange would be in direct opposition to long-standing federal policy that protects wetlands: it would result in the direct destruction of 914 acres of wetlands as well as the destruction or impairment of up to 7,694 additional acres of wetlands. More, it would apparently degrade surface waters and groundwater to the extent that they would not meet state, federal and tribal water quality standards. The ROD does not acknowledge, nor does the FEIS weigh heavily enough, the harm that would be done to vulnerable species, including moose, lynx, and northern goshawks. The ROD and the EIS do not indicate serious consideration of the loss of ecological services so that all of those benefits can be weighed against the mining company's gains. This exchange would mean the destruction of 700 acres of imperiled Black Spruce – Jack Pine Woodland, now protected as part of the Superior National Forest, and among our favorite places for birding, botanizing, and hiking. Many other special plant communities - some micro habitats that are easy to miss for most of us, yet still significant, and including rare species and many sites of High Biological Significance, as identified by Minnesota Biological Survey, would be traded away - in most cases with no equivalent replacement. Lands that the Forest Service would gain ownership of in the exchange are for the most part already used in ways that are consistent with the Forest Plan. There is no great advantage, in terms of land use, in bringing them under Forest Service management. The meager list of benefits to the Superior National Forest derived from the exchange doesn't begin to offset the loss of habitat, water quality, ecological services, ecological health, and recreational uses. There has been no analysis of the cumulative impact of similar deals involving transfers of public lands and access to minerals to the mining and drilling extraction industry across the nation. In these transactions the value of the lands is transferred from the public to industry investors (who are often not U.S. corporations or citizens) with relatively little or no value flowing back to the public. The interests of future generations, the uncountable numbers of which obviously have an even bigger stake than we present day citizens do, are not represented. And although industry benefits from these deals, taxpayers foot the bill for the years of work that public land managing agencies dedicate to facilitating deals requested by industry. Consideration of this proposal should have included documentation of the time and money the Superior National Forest has invested in this exchange over the past decade and show how that weighs against impacts to ecosystem components and benefits/losses to the public, as well as the big picture view of how this fits into similar actions across the U.S. Public Lands System, or at least in those lands managed by the USFS.	ROD	S	N	8	SDEIS Theme LAN 01
Ellen Hawkins	A Clean Water Act Section 404 permit should not be issued by U.S. Army Corps of Engineers or allowed by U.S. Environmental Protection Agency that would allow PolyMet to engage in an operation that would result in large scale destruction of wetlands and degradation of water resources.	PER	NS	X	1	
Ellen Hawkins	The complex hydrologic system underlying and surrounding the operations sites is not adequately described in the document or its technical reports, and it appears that it is not understood by the authors - even though it is the key to a safe mining operation.	WAT	NS	X	1	
Ellen Hawkins	This project would result in the direct destruction of 914 acres of wetlands as well as the destruction or impairment of up to 7,694 additional acres of wetlands. More, it would apparently degrade surface waters and groundwater to the extent that they would not meet state, federal and tribal water quality standards.	WET	NS	X	1	

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Ellen Hawkins	The FEIS does not provide for real mitigation of wetland destruction. It seems that there is no way to replicate the rich mix of plant and animal communities from the great diversity of wetland types: coniferous bog, shrub swamp, coniferous swamp, shallow marsh, deep marsh, sedge/wet meadow, hardwood swamp, and open bog – all of which would be lost from the very large project area. The FEIS does not provide assurance that a wetland credits system could come close to replicating the degree of biodiversity that would be lost.	WET	S	O	8	SDEIS Theme WET 03
Ellen Hawkins	The FEIS admits that water treatment would be required for “...a minimum of 200 years at the Mine Site” and “a minimum of 500 years at the Plant Site”. There is obviously no precedent to indicate that such a feat might be possible; it’s impossible to imagine this could happen. The conclusion must be that the polluted water cannot and will not be treated for as long as it poses a risk to the downstream environment and for this reason alone it’s clear that a permit under the Clean Water Act Section 404 should not be granted.	WAT	S	O	8	SDEIS Theme WR 189
Ellen Hawkins	PolyMet proposes storing billions of gallons of toxic mine waste behind a forty year old leaky dam despite the clear warning sounded by the Mount Polley mine disaster in Canada, where a similar strategy was used.	GT	NS	X	1	SDEIS Theme GT 01
Ellen Hawkins	Mention of disposal of some of the toxin-bearing sludge offsite does not include location of the dump site or mention of treatment of this by-product, but it’s a fair guess that there will be further water pollution somewhere, to a degree unknown.	HAZ	NS	X	1	
Ellen Hawkins	The 21,600 acres that would be make up the PolyMet site wouldn’t be subject to any water quality standards. Even if waters somehow come clean as they leave the site, an area the size of all the North Shore state parks combined would be severely, and essentially permanently, polluted. This is a huge loss of high quality and mostly unspoiled wildlands. The PolyMet operation would contaminate the highest quality water resources with arsenic, aluminum, beryllium, copper, zinc, nickel and sulfate, among others. It would likely lead to violations of state, federal and tribal water quality standards. Claims to the contrary are unsubstantiated.	WAT	NS	X	1	
Ellen Hawkins	As described in the FEIS, toxic discharge and wetland destruction would negatively impact aquatic life, other wildlife, human health and quality of life, environmental justice issues, and municipal water supplies. Moreover, the proposal is not the Least Environmentally Damaging Practical Alternative and in fact it does not seriously consider alternatives that could reduce environmental degradation.	ALT	S	O	8	SDEIS Theme ALT 20
Ellen Hawkins	Even at the very optimistic 90% of groundwater seepage the EIS claims would be contained and treated, the volume of untreated “seepage” – at nearly 30,000 gallons per day surely more of a healthy flow than a seep – is an unacceptable volume of polluted water to send out into the environment. This volume would be significantly greater if water flows as GLIFWC suggests; and if all tailings storage piles, pits, and dumps are considered.	WAT	NS	X	1	
Ellen Hawkins	Impacts of mitigation measures such as application of lime to acid mine drainage on aquatic life are not adequately analyzed, yet experience in other mining situations indicates these impacts would likely be significant.	PD	S	N	8	SDEIS Themes PD 34, ALT 06, AQ 06, AQ 08
Ellen	This proposal would critically harm an important headwaters of the Lake Superior Basin, with direct destruction of 914 acres	GEN	NS	X	1	

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Hawkins	of wetlands and indirect loss or degradation of an additional 7,694 acres.					
Ellen Hawkins	Left unanswered are questions about impacts to the Rainy River Basin that arose when new information about likely flow of contaminated seepage northward was revealed by Great Lakes Indian Fish and Wildlife Commission.	WAT	S	O	2	FEIS Section A.5.24. SDEIS Theme WR 085
Ellen Hawkins	All of this foreshadows a bad outcome should the project be permitted. An invaluable natural reservoir of fresh unpolluted water, wild rice, waterfowl habitat, healthy fish populations, unique wildlife habitat, great places to recreate, and possibly the BWCAW – these are some of the things at risk of being permanently ruined. Because so much is at stake, and there are so many unanswered, poorly addressed or unanswerable questions, NorthMet shouldn't be allowed to go forward.	GEN	NS	X	1	
George Wollenburg	I don't see this in any way worth the risk to any state's environment let alone our boundary waters. None of the parties to this decision will be around for much of the time that this pollution will endure. The known risk and the damage that we know will occur to land and water during the normal process is without any known or affordable cleanup remedy. With clean water supplies diminishing on this planet, why on earth would we put any of our known sources of fresh water at such risk. Decision makers must think long term. PolyMet is not owed anything from the people of Minnesota. What they want is to make a business from extracting our resources for huge profits for themselves and jobs that will mostly disappear once the plant is operational. If the end goal is for the benefit of jobs for the people of Minnesota, we need to go back and think this through. It just is not worth it!	GEN	NS	X	1	
Sophie Nethercut	It's absolutely vital to keep mining, especially sulfide mining, away from the Boundary Waters Canoe Area. The Boundary Waters isn't just a sacred ecological place - it also contributes millions of dollars to our state economy. People from all over the world come to visit the Boundary Waters and see first-hand our clear and beautiful lakes and rivers. Tourism along the North Shore generates over \$800 million dollars of revenue for the state annually and employs over 18,000 people. Why would we jeopardize all of this?	WILD	NS	X	1	
Sophie Nethercut	I worked for several years at YMCA Camp Menogyn, a camp on the Gunflint Trail that takes kids on canoeing, backpacking, rock climbing, and dog sledding trips around the very landscape that these mines threaten to harm irreparably. Our country made a promise to me, the kids I take on my trips, and all future generations when we signed the Wilderness Act of 1964 and the BWCA Wilderness Act of 1978. We declared that this place would remain untrammelled by industry forever. I urge you not to go back on that promise, no matter the political pressures. If not for my sake, don't allow this to mine to be built for the sake of anybody who has never heard a loon call as the sun sets over a pristine Boundary Waters lake, anybody who's never swatted mosquitoes through a muddy, wet, 250 rod portage, or anybody who hasn't yet received what this amazing, uniquely Minnesotan slice of wilderness-perfection has to offer.	WILD	NS	X	1	
Judy Linman	There is NO WAY this will be any different. Minnesota has a unique gem in the BWCA and wild rice alone is going to be more and more of a treasured commodity. Even organic rice today has high levels of arsenic in it and people are becoming sensitive to that rice. I suggest ALL the time, for people to try river wild harvested rice instead. THIS IS A TREASURE we MUST PROTECT.	AQ	NS	X	1	
Robert	I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal.	GEN	NS	X	1	

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Eliason						
Jay Newcomb	The final EIS for PolyMet is inadequate for the following reasons:	MEPA	NS	X	1	
Jay Newcomb	The option of a dry-land, lined dump site was not considered	ALT	NS	X	1	
Jay Newcomb	The exchange of land proposed is outside of the St.Louis River watershed	LAN	NS	X	1	
Jay Newcomb	The health effects of mercury and other pollutants on people has not been considered	HU	S	O	8	SDEIS Theme HU 02
Jay Newcomb	These omissions violate current laws and endanger the heath of Minnesotans.	PER	NS	X	1	
Jay Newcomb	This makes the EIS totally inadequate.	MEPA	NS	X	1	
Keeley Todd	I am against permitting PolyMet to begin mining in the Superior National Forest for the following reasons: 1. I have lived on the Western Mesabi area all of my life. My father made a living in the iron ore mines and supported his family of 8 well enough that as a child I did not notice if there were economic downturns related to his job. In reality, there were some financial difficulties that my father overcame with his skills as a logger. Those options are no longer available to miners should their main source of employment be jeopardized due to global economic factors. In fact, there are very few options for laid off miners to earn a living wage in northern MN.	NEPA	NS	X	1	
Keeley Todd	The mining industry has served its purpose in Minnesota during the 19th and 20th centuries. To open up the Star of the North state to further destruction of the environment for the benefit of a few years of profit and a few jobs in the future, with the likelihood of destruction of the Lake Superior and Rainy River watersheds is in my opinion irresponsible to future generations. You are well aware of the high risk of pollution from PolyMet so there is no need for me to elaborate here.	SO	NS	X	1	
Keeley Todd	Mining in the past has been very good to northern Minnesota however, now is the time to look for other, more sustainable means of economic stability. All you have to do is drive from the Western Mesabi on Highway 169 on up the range to see the impact an unstable mining industry has had. Houses and businesses sit empty and unkempt because the labor force has had to move on. People who live on the Range need stability, not feast or famine. Industry that is tied to global market fluctuations is not stable.	SO	NS	X	1	

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Keeley Todd	One industry that is growing at a surprising rate in this area is the Whole Foods market. The food co-ops in Duluth and Bemidji, and the whole foods stores in Virginia and Grand Rapids are outgrowing their locations. Will there be millions of dollars in funding to support their continued growth? Restaurants are serving locally sourced food more and more, and the outdoor farmer's markets in northern MN are growing as well. I know that people are more concerned than ever about where their food comes from. I do frequent those businesses mentioned above and the writing is on the wall – they are ready to expand and would benefit from local organic food sources (livestock as well as produce). Would there be funding available for organic farming year round in northern MN? What an innovative move that would be for our beautiful state! Fresh, locally sourced organic food would do more for the future of Minnesotans than toxic water that will be with us for 200 years.	NEPA	NS	X	1	
Patricia Isaacs	I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal.	GEN	NS	X	1	
Patricia Isaacs	I personally have three major objections to the mine.	GEN	NS	X	1	
Patricia Isaacs	my understanding is that the mine would provide employment opportunities in northeastern Minnesota for about 20 years. Two decades will go by in the blink of an eye, but the natural beauty and precious water resources of the area will be compromised for much longer than that.	SO	NS	X	1	
Patricia Isaacs	if there is an environmental disaster, I have serious doubts about PolyMet's ability to pay for mitigation. As a taxpayer I don't want to be stuck with a bill they cannot pay.	FIN	NS	X	1	
Patricia Isaacs	in the long run pure water is much more valuable than ore. We have it here in Minnesota, and we need to protect it. The PolyMet mine trades long-term sustainability for short-term profit. Don't give in to that flawed reasoning.	SO	NS	X	1	
Nancy Schuldt	The proposed mine would be the first-of-its kind in Minnesota. It would affect land, water and air over a broad geographical scope – extending to both the St. Louis River/Lake Superior watershed during the mine's operations, and into the Rainy River Basin and the Boundary Waters Canoe Area Wilderness postclosure. Its impacts would be felt not only during its operations but generations to come – more than 200 years.	GEN	NS	X	1	
Nancy Schuldt	The responsibilities of the federal government under the trust responsibility and environmental justice doctrine are at their zenith here, as the proposed mine is located within the area where the Band holds its 1854 Treaty protected off-Reservation rights to hunt, fish, and gather – the exercise of which would be adversely affected by the proposed mine and the related proposed land exchange. In addition, the proposed action would also impact on-Reservation waters, which are also held by the Band under the 1854 Treaty.	SO	NS	X	1	

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Nancy Schuldt	In sum, the Band has special expertise on the environmental issues that are presented by the proposed mine. The CEQ regulations provide that the lead agencies shall “use the environmental analysis and proposals of cooperating agencies with . . . special expertise, to the maximum extent possible consistent with its responsibility as lead agency.” 40 C.F.R. §1501.6(a)(2). In addition, the CEQ’s guidelines confirm the importance of incorporating comments of the cooperating agency with special expertise on a subject wherever possible: “If the lead agency leaves out a significant issue or ignores the advice and expertise of a cooperating agency, the EIS may later be found to be inadequate.” See Council on Environmental Quality, 40 Most Asked Questions Concerning CEQ’s National Policy Act Regulations, 46 Fed. Reg. 18026, 18031 (March 21, 1981).	NEPA	S	O	5	SDEIS Theme NEPA 08
Nancy Schuldt	Chapter 8 was updated in the FEIS but only to show the Co-lead agencies’ additional views. The Chapter was not updated to reflect the additional major differences of opinion identified thereafter – namely an additional error in the groundwater modeling, the correction of which showed the mine site’s north flow of the waters to the Rainy River Basin post-closure, which was identified in 2015 when the Band and other tribal cooperating agencies were provided with access to the final hydrologic model. Similarly, while the FEIS includes an Appendix C which contains the tribal cooperating agencies’ comments and supporting documentation representing major differences of opinion, Appendix C was not updated to include any of the additional documentation provided by the Bands following release of the 2013 SDEIS.	NEPA	S	O	2	SDEIS Theme NEPA 12
Nancy Schuldt	As detailed in extensive comments submitted by tribal cooperating agencies to the Co-lead agencies over the past eight years, water quantity and water quality analyses for both the Mine Site and Plant Site are inadequate. Subsequent water modeling results, whether deterministic (DEIS) or in the form of probability distributions (SDEIS, FEIS) are based on flawed understanding of hydrology. One example of this flawed understanding is the error in baseflow calculations, which is carried forward in the MODFLOW hydrologic modeling.6 At the mine site, MODFLOW under-predicts the amount of water that would flow into the mine pits and thus under-predicts the amount of water treatment needed for both short and long term closure. Most of the deficiencies in hydrologic characterization and water modeling dating from the 2009 DEIS and the 2013 SDEIS persist in the 2015 FEIS.	WAT	S	O	2	SDEIS Theme WR 176
Nancy Schuldt	But perhaps the most stunning deficiency of this environmental review process has been the continued application of the fundamentally flawed MODFLOW model, which the Co-lead agencies have long maintained was intended only to predict mine pit inflow, but which was inappropriately used for numerous other purposes (i.e., defining contaminant flowpaths from the mine pits at closure; using those flowpaths to define the Area of Potential Effect for cultural and cumulative impacts analysis; critical inputs to the GoldSim water quality model). The MODFLOW model cannot generate reliable outputs for these and other environmental impact predictions, because it was calibrated to conditions that did not exist at the same point in time: water levels in the Northshore Peter Mitchell taconite pits from 1996, and Partridge River baseflows from 1979-1988. Furthermore, the MODFLOW model fails to incorporate the Peter Mitchell pit elevations predicted for closure conditions, which will be 300 feet lower than the bottom of the NorthMet pits. The PolyMet engineers’ approach, which has become the Co-lead agencies’ approach in the FEIS, is in conflict with accepted modeling methodology and represents an unacceptable calibration error.	WAT	S	O	3	SDEIS Theme WR 049

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Nancy Schuldt	Because of refusal on the part of the Co-lead agencies to properly calibrate the MODFLOW model for the Mine Site, GLIFWC staff undertook independent review of the MODFLOW model in order to better characterize the hydrology at the Mine Site and understand potential environmental impacts from the Proposed Project and at closure ⁸ . By simply correcting the calibration error in PolyMet's model, the model generates results showing clearly that the majority of bedrock groundwater flow from the NorthMet pits and the permanent Category 1 stockpile will move north from the Mine Site towards the Peter Mitchell pit, which outflows to Birch Lake in the Rainy River/BWCAW basin, not south as shown in the FEIS. This fundamental discrepancy invalidates any conclusions in the FEIS about Mine Site water quality at closure, and the lack of any analysis of impacts to Birch Lake and the BWCAW is a major FEIS deficiency.	WAT	S	O	3	SDEIS Theme WR 081
Nancy Schuldt	Despite tribal analyses that firmly dispute this characterization of groundwater hydrology at the Mine Site, the Co-lead agencies have concluded that their flawed approach represents the most likely scenario, but that any future evidence that groundwater is flowing northward towards the Peter Mitchell pit could be solved through "contingency mitigation" ¹¹ such as grouting pit walls, lowering West Pit and/or East Pit water levels, groundwater extraction wells, or artificial recharge. Unfortunately, each of these potential contingency mitigation actions, individually or in combination, actually represents a significant departure from the existing Project, as it has been defined for environmental review. There has clearly not been adequate evaluation or analysis of the relative feasibilities, never mind costs, associated with these alternative mine/reclamation plans, to fulfill NEPA requirements.	WAT	S	O	8	FEIS pg. 5-240
Nancy Schuldt	Actually, the Co-lead agencies eventually agreed that GLIFWC's MODFLOW analysis is correct, and that the northward flowpath would result when the correct Peter Mitchell pit elevations are used for calibration. ¹² But they have also put forward, as their official position, the Project Proponent's rationale for the unlikelihood of northward groundwater flow at closure: that a groundwater mound would form in the bedrock underlying the Hundred Mile Swamp (north of the Mine Site), and this mound would prevent northward flow of groundwater at closure ¹³ . This scenario is physically impossible, but despite repeated requests by the tribal cooperating agencies to have a technical discussion with the Co-lead agencies about this theoretical groundwater mound, they have flatly refused to do so. It is truly unfortunate, in the context of an environmental impact disclosure process, that this absurd basis for rationalizing the dismissal of a valid technical criticism has apparently justified the Co-lead agencies' 'waving away' serious consideration of likely Project impacts. This conclusion represents a new Major Difference of Opinion between the tribal cooperating agencies and the Co-lead agencies that is not presented in Chapter 8, and the tribes have presented sufficient evidence to justify the need for independent analysis of the Project's hydrologic characterization.	WAT	S	N	12	DNR disagrees with GLIFWC's application of the EIS Mine Site MODFLOW model because that agency modified the model outside its intended purpose as defined in Final SDD Section 6.2. The Final SDD required the groundwater flow model to predict pit inflows at various stages of pit development (i.e., year 1, year 5, year 10, year 20) and include operation, closure, and post-closure. The model satisfies this condition of the final scoping decision. GLIFWC changed the EIS Mine Site MODFLOW model to include future mining activity at the NorthShore Mine Peter Mitchell Pits, which is outside the scope of the EIS. If the EIS scope were defined to assess of how future activity at the Peter Mitchell Pit might influence the closure conditions at the NorthMet site, then additional data would be required north of the Mine Site on which to refine the EIS Mine Site MODFLOW model for : 1) vertical hydraulic conductivity for wetlands and surficial deposits; 2) horizontal hydraulic conductivities in bedrock (e.g., Virginia Formation; BIF); 3) variability of hydraulic conductivities within the bedrock units, and 4) the hydrologic significance of 100 Mile Swamp in providing a source of water for downward leakage.

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						<p>Each of these refinements is important to quantitatively assess the likelihood and potential magnitude of a northward bedrock flowpath. Modeling would also have to reconcile uncertainty regarding the sequence and timing of future Northshore mining operations, including the depth of pit excavations and development of pit lakes relative to NorthMet-related pit conditions during operations and closure. Absent these changes, the results of GLIFWC's modeling is unreliable for impact assessment. Although not identified as an issue for assessment in the EIS, DNR considered potential future operations at the Northshore Mine against information that is available. DNR acknowledges that it cannot rule out that future operations at the Northshore Mine could induce northward groundwater bedrock flow from the NorthMet Mine Site. See Final EIS Section 6.2.2.3.1. This might happen if there is insufficient natural downward leakage into bedrock from the overlying wetlands and surficial materials between the proposed NorthMet Mine (in closure) and the Northshore Mine (in future operations and closure). If there is sufficient downward leakage, then there would be groundwater flow divide between the two mines where there is no continuous one-way flow between the facilities. If natural leakage is insufficient to maintain a groundwater flow divide between the two facilities, then it is possible a northward groundwater flowpath would be present. DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected. The possibility of northward flow between the proposed NorthMet Mine and Northshore Mine is speculative and is not</p>

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						<p>reasonably foreseeable with current information. There is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When this might occur is not known, but it is most likely to occur after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. There would be ample opportunity to collect necessary data, and complete applicable environmental review and/or permitting prior to the development of a northward flowpath, including preparation of an EIS supplement if the conditions of Minnesota Rules, part 4410.3000, subpart 3 are met.</p>
Nancy Schuldt	<p>At the Plant Site, insufficient consideration of bedrock fracture has resulted in claims of virtually complete seepage collection by PolyMet engineers¹⁵, and this conclusion has been accepted by the Co-lead agencies and presented in the FEIS¹⁶. However, no bedrock monitoring wells were installed near the tailings basin. Storage coefficients used to model the entire Plant site area are not consistent with any peer reviewed scientific literature.</p>	WAT	S	N	2	<p>SDEIS Theme WR 008. The possibility of northward flow between the proposed NorthMet Mine and Northshore Mine is speculative and is not reasonably foreseeable based on current information. There is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When this might occur is not known, but it is most likely to occur after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. There would be ample opportunity to collect necessary data, and complete applicable environmental review and/or permitting prior to the development of a northward flowpath, including preparation of an EIS supplement if the conditions of Minnesota Rules, part 4410.3000, subpart 3 are met.</p>

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Nancy Schuldt	<p>The FEIS assumes that 100% of tailings surface and groundwater seepage would be captured on the east side and south side of the tailings basin,17 and that 100% of the surface seepage and 90% of the groundwater seepage would be captured at the north, northwest and west toes of the basin.18 These assumptions are not consistent with expert opinions from geologists, submitted in response to the SDEIS. For example, geologist J.D. Lehr was critical of the “simplistic and cursory treatment of the role that bedrock fractures may play in the transmission of groundwater” at the tailings basin, and objected to the assumption of a “no-flow boundary” underneath the basin, which implied that groundwater flow through bedrock at the site “is so insignificant that it can be ignored”. He considered a “major omission” the failure to identify fractures or assess groundwater flow through fractured bedrock, and noted that the result was “unsupported assumptions and inadequate information regarding groundwater flow at the tailings waste site”. He was also critical of the failure to include any hydraulic testing of bedrock, and emphasized that “what the SDEIS requires is data.” Based upon his professional expertise in regional geology, Lehr concluded “bedrock fractures will play a significant role in groundwater and contaminant transport” at the tailings basin.</p>	WAT	S	O	3	<p>SDEIS Theme WR 018 The possibility of northward flow between the proposed NorthMet Mine and Northshore Mine is speculative and is not reasonably foreseeable based on current information. There is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When this might occur is not known, but it is most likely to occur after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. There would be ample opportunity to collect necessary data, and complete applicable environmental review and/or permitting prior to the development of a northward flowpath, including preparation of an EIS supplement if the conditions of Minnesota Rules, part 4410.3000, subpart 3 are met.</p>
Nancy Schuldt	<p>The Project XP-SWMM model is based on a stream gauging station for the Partridge River that is seventeen miles from the mine site and the data from that station are twenty years old19; and stream gauging data for the Embarrass River that is based in data that is more than fifty years old from eleven miles downstream.20 Therefore, the results are highly unlikely to be representative of current conditions at the mine or plant site. This baseline hydrologic data deficiency has been carried forward from the 2009 DEIS and the 2013 SDEIS, despite ample time and opportunity to collect sufficient new hydrologic data.</p>	WAT	S	O	3	<p>SDEIS Theme WR 047. The possibility of northward flow between the proposed NorthMet Mine and Northshore Mine is speculative and is not reasonably foreseeable based on current information. There is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When this might occur is not known, but it is most likely to occur after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. There would be ample opportunity to collect necessary data, and complete applicable environmental review and/or permitting prior to the development of a northward flowpath, including preparation of an EIS supplement if the conditions of Minnesota Rules, part 4410.3000, subpart 3 are met.</p>

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Nancy Schuldt	<p>In a report comparing predicted and actual water quality at hard rock mines, two types of characterization failures were identified that led to differences between the predicted water quality in EIS documents and the actual water quality either during or after mining began.²⁶ These included: (1) insufficient or inaccurate characterization of the hydrology. The authors reported primary causes of hydrologic characterization failures as overestimations of dilution, lack of hydrological characterization, overestimations of discharge volumes, and underestimations of storm size.²⁷ (2) insufficient or inaccurate geochemical characterization of the proposed mine.²⁸ The primary causes of geochemical characterization failures were identified as lack of adequate geochemical characterization, in terms of sample representativeness and sample adequacy.²⁹ The primary causes of mitigation failures were that mitigation measures were not identified, were inadequate, or were not implemented; waste rock mixing and segregation was not effective; liners leaked; tailings were spilled; or embankments failed, and land application discharge was not effective. The NorthMet FEIS includes all of these characterization failures.</p>	WAT	NS	X	1	<p>The possibility of northward flow between the proposed NorthMet Mine and Northshore Mine is speculative and is not reasonably foreseeable based on current information. There is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When this might occur is not known, but it is most likely to occur after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. There would be ample opportunity to collect necessary data, and complete applicable environmental review and/or permitting prior to the development of a northward flowpath, including preparation of an EIS supplement if the conditions of Minnesota Rules, part 4410.3000, subpart 3 are met.</p>
Nancy Schuldt	<p>However, despite extensive review of the several hundred pages of Section 5.2.2, Water Resources found in Chapter 5, Environmental Consequences, it is difficult to find a clear or simple statement regarding the Proposed Project's ability to meet Minnesota water quality standards. The FEIS does not speak in terms of 'compliance', but rather 'probabilities of exceedances of evaluation criteria', which are not synonymous with water quality standards. In presenting only modeled probabilities and frequency distributions in their "data" tables and figures, it is challenging, if not impossible, for the general public to understand the significance of the numerical information in the FEIS.</p>	NEPA	NS	X	1	<p>The possibility of northward flow between the proposed NorthMet Mine and Northshore Mine is speculative and is not reasonably foreseeable based on current information. There is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When this might occur is not known, but it is most likely to occur after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. There would be ample opportunity to collect necessary data, and complete applicable environmental review and/or permitting prior to the development of a northward flowpath, including preparation of an EIS supplement if the conditions of Minnesota Rules, part 4410.3000, subpart 3 are met.</p>

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Nancy Schuldt	<p>Evidently, the public is expected to uncritically accept the Project proponent’s conclusion that a 700-ft deep open pit sulfide mine, with a 526-acre permanent reactive waste rock stockpile, a pit lake requiring water treatment in perpetuity, a tailings basin that has already contaminated ground and surface water that now will also host reactive sulfide tailings, and a permanent hazardous waste facility constructed within a wetland, will collectively result in only two exceedances of water quality standards – and they are not even directly attributable to the Project Proposed Action! This astonishing conclusion is a result of flawed modeling assumptions (baseflow, hydraulic connectivity, etc.), dubious decisions on data usage (omitting ‘outliers’, concentration caps, etc.), fuzzy compliance thresholds, and inordinate reliance on engineering controls that must perform flawlessly, most of them in perpetuity. In short, the assurances provided in the FEIS Executive Summary are not supported by the underlying analysis. Surface water quality remains insufficiently characterized or left uncharacterized, and the defects in analysis are profound in this area. The limited data used indicates that surface waters have already been adversely impacted by mining activity, which should give rise to more scrutiny, not less.³⁰ Contaminant transport modeling suggests that the Project will cause manganese, aluminum, and sulfate to exceed Minnesota Water Quality Standards (“MN WQS”).³¹ Mercury, sulfate, and specific conductance already exceed surface water criteria in surface water samples collected near the tailings basin at nearby Area Pit 5, and mercury and aluminum exceed surface water criteria in the Partridge River downstream of Colby Lake.³² Aluminum, iron, manganese, and mercury all exceed MN WQS in Colby Lake.³³ Contaminants from the Project will likely contribute additional loading to these existing exceedances of MN WQS in the Embarrass River, Colby Lake, and the Partridge River. It appears that, as a result of the Proposed Project, arsenic will exceed drinking water standards in Colby Lake.³⁴ There have not been any water samples collected from lakes in proximity to the tailings basin (Hiekillilla, Mud, Kaunonen, or Hay Lakes) to determine if the pollutants found in the surface and groundwater at the existing tailings basin have caused contamination of those waterbodies.</p>	WAT	S	O	3	SDEIS Theme WR 071. FEIS Table 5.2.2-32
Nancy Schuldt	<p>The claim that 100% of the seepage from the tailings basin can be captured is implausible and is unsupported by authority. The Tribes requested that the Co-lead agencies or their contractor provide references for a similar facility to the 90% or greater capture efficiency rate they were confident could be achieved (which was also claimed in the SDEIS); they were not able to provide a single example from anywhere in the world. The Co-lead agencies provided a single citation from a USEPA guidance document (generally intended to inform solid waste sites) that revealed: [M]ost barriers in the study have been in place for fewer than 10 years; therefore, long-term performance can only be extrapolated... All sites included in the study were existing sites that had vertical barriers and, in many cases, caps. None of the sites has an engineered bottom barrier. Therefore, the effect of leakage through aquitards was not evaluated in this study. Regardless of this study’s applicability (or lack thereof) to seepage capture systems proposed for the PolyMet Project, the EPA found that 10% of the reviewed containment systems failed to meet the desired performance objectives and required corrective action. An additional 19% of the evaluated facilities did not have sufficient data to conclude whether the containment system was operating successfully or not. There is no information on the effectiveness of any of these facilities at timeframes remotely comparable to what will be required for PolyMet. In the EPA study, ‘long term’ is considered 30 years, whereas the seepage capture requirements for PolyMet facilities are on the order of centuries for the flotation tailings basin and category 1 stockpile, and in perpetuity for the hydrometallurgical residue facility. None of the facilities in the study are as large as the one proposed by PolyMet. A search for examples similar to the Project Proposed Action identified the Zortman-Landusky mine in Montana, which installed containment and pumpback systems to be used in conjunction with a wastewater</p>	WAT	S	O	8	SDEIS Themes WR 018, WR 020, WR 101

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	<p>treatment facility. However, they “did not capture all surface and subsurface drainage”. At the Molycorp, Inc., mine site in New Mexico, “The pathway for contaminant migration is the leaching of tailing seepage downward from the tailing facility to ground water that migrates through fractures to surface water.” Examples of similar seepage capture systems installed and operating in northeastern Minnesota are at the US Steel-MINNTAC tailings basin, and the former LTV tailings basin seep SD0026 (the same tailings basin PolyMet proposes to re-use), and demonstrate capture rates of less than 60%. The US Steel -MINNTAC tailings basin is of similar age and design as the former LTV tailings basin that PolyMet proposes to reuse. Both are large, unlined facilities that are designed to allow massive volumes of water to seep to surface and groundwater in order to maintain structural stability. Both facilities have been discharging many thousands of gallons per day of high sulfate wastewater into the environment for decades. US Steel-MINNTAC, as required under a schedule of compliance for their long-outdated NPDES permit, has begun constructing a multi-phase seepage capture system that is intended to bring the facility into compliance with applicable water quality standards. The capture system is similar to the one proposed by PolyMet, in that it consists of a trench for capturing seepage and a pumping system that would return tailings effluent back into the facility. The US Steel-MINNTAC system was originally intended to extend to bedrock, but that proved impossible in some locations because of the presence of large boulders within the glacial till that hindered construction. Because the surficial geology is similar at the LTV facility, it is likely that similar difficulties will be encountered by PolyMet, which will significantly decrease expected seepage capture efficiency. It is important to note that seepage capture of greater than 95% would be required at MINNTAC in order to achieve compliance with applicable water quality standards. However, at this facility, this high capture efficiency was concluded to be infeasible, and MINNTAC predicted that their capture efficiencies would not exceed 60%; actual performance of the capture system is below 50%. The primary purpose of this system was to achieve compliance with MN WQS, yet the capture system alone will not be able to achieve that goal. The primary purpose of the seepage capture at the Proposed Project is to achieve compliance with MN WQS, but it is not likely to be successful, based upon limited but relevant regional experience. The FEIS acknowledges that seepage from the existing LTV tailings basin continues to drain south to Second Creek long after LTV operations have ceased⁴⁷. PolyMet and the state regulatory agencies are fully aware that that this seepage pumpback system is not nearly as effective as claimed in the SDEIS⁴⁸. According to MPCA staff, the pumpback system has not resulted in the water quality improvements required under the Consent Decree, so there are two modifications currently proposed by Cliffs Natural Resources: 1) dewater the pond that is an additional source of water contributing to water quality concerns (pending a US EPA wetlands determination); or 2) create an additional barrier (dam) for seepage collection and pumpback between the existing dam and monitoring station SD026.⁴⁹ But the need for evaluating water quality impacts is simply dismissed by the statement “PolyMet has committed to future upgrades to achieve 100% capture by this system if the NorthMet Project Proposed Action is approved.”⁵⁰ There has been no bedrock hydrogeologic study at this site to even determine what possible engineering alternatives would be effective in capturing 100% of the seepage that surfaces to the south of the tailings basin.</p>					
Nancy Schuldt	<p>There is simply no evidence to support the rosy scenario that PolyMet will be able to capture 97% of the shallow seepage and 90% of the deep seepage from an unlined, purposefully ‘leaky’ tailings basin, despite the Co-lead agencies’ assurances. The FEIS has not adequately evaluated the impacts of polluted tailings basin seepage to Second Creek and the Partridge River.</p>	WAT	S	O	8	SDEIS Themes WR 018, WR 020, WR 101

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Nancy Schuldt	The unsupported prediction of complete seepage capture efficiency is unfortunately carried forward into other critical analyses. The FEIS claims that construction of a groundwater containment system along the north, northwest and west sides of its unlined tailings basin “would capture virtually all of the Tailings Basin seepage presently flowing in those directions to restore water quality” (FEIS 5-186 (based upon PolyMet 2015(d)). Without even a single bedrock monitoring well installed to confirm or deny this assumption, the FEIS maintains that this prediction is “conservative”, because the modeling done by PolyMet assumes that bedrock hydraulic conductivity is “negligible” (FEIS p. 5-29). Disturbingly, the tailings basin model uses storage coefficients that are not found anywhere in peer reviewed scientific literature ⁵¹ .	WAT	S	O	3	SDEIS COOP Response #9063
Nancy Schuldt	These parameters are highly critical for establishing a reliable model, because the volume of groundwater that a geologic formation can contain (storativity or storage coefficient) and the rate of flow (hydraulic conductivity) are functions of the amount of open pore spaces or fractures/faults in rock, the quantity of water that infiltrates from the surface, and the groundwater gradient. The storage coefficient incorporated in the plant site model (including the tailings basin) for bedrock is 0.20, and for the surficial deposits 0.0002 (FEIS 5-46, Table 5.2.2-9), suggesting that the bedrock contains several orders of magnitude more water than the surficial deposits. When questioned about these extraordinary storage coefficients, the Co-lead agencies’ explanation was that the model was “calibrated to match predicted and measured groundwater levels”. Essentially, this model simulates a bedrock ‘storage tank’ where large volumes of water go in but virtually nothing comes out. Since this is not conceptually accurate, the modeled hydraulic conductivity and/or modeled storage coefficients cannot be relied upon to estimate the amount of seepage that will bypass the seepage capture system, or the amount of time before seepage upwells to surface waters in adjacent wetlands and the Embarrass River, where MN WQS must be met.	WAT	S	O	3	SDEIS COOP Response #19659. Bedrock flowpaths are not a part of the Plant Site modeling PolyMet 2015j pg. 20. The connection the commenter is making between bedrock storativity, surficial aquifer seepage capture and surface water quality is unclear.
Nancy Schuldt	The FEIS maintains that mine pit dewatering impacts will be very limited or non-existent based on an assumption carried forward from the DEIS that there is little or no connection between the bedrock and surficial aquifers. This assumption is based solely on an unsupported “professional opinion,” when in fact there is ample evidence that there may be substantial connection between the bedrock and surficial aquifers. Such a connection indicates that dewatering the mine pits could cause significant drawdown of the water table in the surficial aquifer, potentially dewatering wetlands and ephemeral streams.	WAT	S	O	3	SDEIS COOP Response #19664
Nancy Schuldt	Tritium and unionized ammonia nitrogen were found in water samples collected from two deep boreholes in the area where the Project mine pits will be located. Both tritium and unionized ammonia are classic indicators for a strong connection with surface water. Tritium indicates water found in the deep boreholes was surface water that originated post-1952, during or after nuclear testing. The boreholes are approximately one mile southwest of the Peter Mitchell Pit, which is the closest and most likely source of this pollution. Production at the Northshore mine started in 1955. Review of the Peter Mitchell Pit discharge monitoring data for SD001 from 2006 and 2008 shows the average concentration of unionized ammonia exceeded their 0.04 mg/l NPDES permit limit. Unionized ammonia and tritium in the deep boreholes suggest that travel time of contaminants through bedrock fractures will be on the order of decades, not the hundreds or thousands of years that are assumed in the FEIS. Impacts to surface waters, groundwater, and wetlands for a Project of this size and complexity demand a scientific, data-driven approach rather than one based on opinion and scant, selectively used data.	WAT	S	O	3	SDEIS COOP Response #19665

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Nancy Schuldt	The lack of fracture and fault analysis remains a major deficiency in this FEIS. The map provided by GLIFWC in their SDEIS comments, Geologic Faults at the PolyMet Mine and Plant Site ⁵⁹ , indicates: 1. There are several faults extending from Northshore pits to the PolyMet mine site. This may explain why there is ammonia and tritium in the deep borehole samples. 2. There is an inferred fault running right through the area of the Hydrometallurgic Residue Facility. (Not only is the HRF proposed to be constructed within wetland, with a buried stream and springs, but it will also be receiving seepage from the tailings basin and it could be geologically predisposed to facilitate groundwater movement. 3. There is a fault system right where water would exit the tailings basin on the east side. Notice that the inferred fault may connect to other fault systems running east-west to the south of the facility.	WAT	S	O	3	SDEIS COOP Response #19667
Nancy Schuldt	The FEIS also diminishes the lessons learned from the Dunka Pit, located on the former LTVSMC site approximately five miles north and east of the PolyMet Project mine site. Within the Dunka Pit, LTVSMC contacted the Duluth Complex and the Virginia Formation while mining for taconite in the Biwabik Iron Formation. ⁶⁰ By 1991, LTVSMC had removed about 50 million tons of Duluth Complex material from the Dunka pit and placed it in "gabbro" stockpiles. ⁶¹ Monitoring of the drainage from these stockpiles beginning in 1976 revealed a decrease in pH and an increase in trace metals. ⁶² Copper and nickel concentrations as high as 1.7 and 40 mg/l respectively were observed in seepage/run-off from the Duluth Complex waste rock stockpiles and pH was observed as low as 5.0 at seep 1 between 1976 and 1980. ⁶³ Most of the seepage from waste rock piles at the Dunka site was discharged to Bob's Bay in Birch Lake via Unnamed Creek. ⁶⁴ A 1976-1977 study of trace metals in Bob's Bay found that concentrations of copper, nickel, cobalt, and zinc in the water of the Bay were higher than regional average concentrations and decreased with distance from the mouth of Unnamed Creek. ⁶⁵ Additionally, it was determined that Unnamed Creek contributed more than 90% of the trace metals load to Bob's Bay. ⁶⁶ The NPDES permit for this discharge expired in 2005 ⁶⁷ and another variance request is expected. A WWTF located at the site has been inactive because Cliffs Erie, LLC, the owner who acquired the property from LTVSMC, declared bankruptcy and claims it is simply too expensive to continue running. ⁶⁸ Unfortunately, the passive wetland treatment system did not function well enough to remove nickel and copper in waters still discharging from the mine pit and stockpiles to a concentration that complies with MN WQS.	WAT	S	O	3	SDEIS COOP Response #19669
Nancy Schuldt	The potential for water quality impacts from prospecting and mining operations that have contacted the Duluth Complex have long been known to the MNDNR and MPCA. The State of Minnesota spent \$4.3 million over three years in the late 1970s to produce the Regional Copper-Nickel Study, a 5-volume compilation of technical information regarding the potential impacts of copper-nickel mining in the Duluth Complex. Nevertheless, predicted water quality impacts and ineffective mitigation methods referenced in the Study were unheeded when the technical documents and FEIS were drafted for PolyMet.	WAT	S	O	3	SDEIS COOP Response #19668

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Nancy Schuldt	Similarly, the Mining Simulation Project (funded in part by a Minnesota Legislative appropriation of \$185,000 to the MNDNR and MPCA) was a cooperative study to identify and resolve environmental issues associated with non-ferrous mining and to anticipate industry and government data needs to address those issues before commercial development occurred in Minnesota. ⁷² The study clearly identified those state ground and surface water quality regulations that would apply to copper-nickel mining operations in Minnesota, including applying the 10 mg/l sulfate criterion to effluent discharges where wild rice is present; it prioritized nondegradation of both surface and groundwater and protection of groundwater as a drinking water source; and it rejected using natural wetlands for mine effluent treatment (“as a toxic metals dumping ground”). ⁷³ The tribal cooperating agencies have also consistently elevated our concerns for the Proposed Project’s potential to adversely impact groundwater quality and quantity. “Groundwater maintains stream flows and wetlands during dry periods, supporting significant ecosystem functions. Groundwater is an important source of drinking water in the Great Lakes Basin, where 8.2 million people, or 82% of the rural population, rely on groundwater for their drinking water.” ⁷⁴ In Minnesota, all groundwater is protected for drinking water supplies, “constituting the highest priority use, and as such, to provide maximum protection to all underground waters.” ⁷⁵ When considering water allocations, drinking water is supposed to be considered the highest priority by the MN DNR. ⁷⁶ According to MPCA’s groundwater profile for Northeastern MN including the Project area: “Glacial aquifers are commonly thin and limited in their extent and yield. Bedrock aquifers have limited yield, generally from fractures; groundwater movement is difficult to define. There are no large-scale regional aquifers. The Biwabik Iron Formation is the only source of groundwater for many Iron Range cities.” ⁷⁷ Yet despite the importance of this critical resource, the FEIS has not adequately evaluated the potential for impacting drinking water sources, and it is clear from the state regulatory agencies’ uncertainties about the frequency, volume, and water quality of other mine discharges (i.e., the Peter Mitchell Pit) even while regulated under permits, that this issue remains a significant deficiency in the FEIS analysis.	WAT	S	O	3	SDEIS COOP Response #19670
Nancy Schuldt	The tribal cooperating agencies have consistently raised concerns about reactive dust and ore fines along the Transportation and Utility Corridor, and potential for water quality impacts to the three streams and wetlands that are crossed within the corridor. Yet these concerns have been repeatedly kicked back and forth between the Air IAP and Water Quality IAP work groups, with neither group ultimately resolving the information and risk analysis gap. The end result of this ‘oversight’ in the FEIS is that little consideration, discussion, or proposed management of this potential water and wetland quality impact is provided for the public to review.	WAT	S	O	3	SDEIS COOP Response #19671
Nancy Schuldt	“An estimate of the spillage of ore fines along the rail corridor is provided in Section 8.4.3 of the Waste Characterization Data Package (PolyMet 2015q). Assuming that all spillage of the coarse material would occur in a 2-meter-wide strip on both sides of the centerline of the railway (total width equals 4 meters) over the entire haul distance after loading (approximately 8 miles or 13,000 meters), results in approximately 0.11 kilograms per square meter (kg/m ²) of ore fines annually or 2.14 kg/m ² for the 20-year NorthMet Project Proposed Action. This equates to 0.002 inch of depth annually or 0.05 inches for the 20-year NorthMet Project Proposed Action”. (FEIS page 5-313). However, the above FEIS language is incorrect because PolyMet 2015q, Section 8.4.3 (page 101) actually says “Assuming that all spillage occurs in a 2 meter wide strip along this portion of the rail corridor, it is estimated that approximately 2.78 kg/m ² could spill annually or 55.7 kg/m ² over the life of the Project. This is equivalent to 1.25 inches of spilled material over a 2,000 m ² area”. The values of “total width = 4 meters”, “0.11 kg/m ² ”, “2.14 kg/m ² ”, “0.002 inch of depth annually” and “0.05 inches deposited for the 20-year Project”	WAT	S	N	3	SDEIS Theme WR 151. The area of deposition analyzed in PolyMet 2015q and PolyMet 2015b is different, which explains the difference in reported values. The editorial error is correctly identified by the commenter. The correct reference is PolyMet 2015b.

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	mentioned in the FEIS actually come from a different document - PolyMet 2015b (page 57, Section 5.2.3.2.1). These numbers also appear in Attachment D to PolyMet 2015b, which is a 2012 memo from Barr Engineering (PolyMet 2015b, page 259/273). There are three issues that arise from the above discussion. First, the FEIS incorrectly references its estimated deposition values. Second, there has been no discussion of the differences between what is stated in PolyMet 2015b and PolyMet 2015q, nor any discussion of why the lower overall numbers from the older document (the Barr memo from PolyMet 2015b was dated December, 2012, while PolyMet 2015q is dated February, 2015) were chosen for inclusion in the FEIS. Third, there has been no discussion of the fact that there will be 55.7 kg/m ² of potentially reactive dust deposited near the rail line over the estimated life of the mine. The FEIS does not include this number at all.					
Nancy Schuldt	Regardless of the 'footprint' of the equalization basins, the liner leakage estimate of 5 gallons per acre per day (gpad) is not consistent with what we have found in the literature for the maximum allowable, or "Action Leak Rate", above which a leak must be found and repaired.	WAT	S	O	3	SDEIS COOP Response #19673
Nancy Schuldt	US EPA terms this the 'de minimis' leak flow rate, which for a reference evaporation pond 70 acres in area and with an average depth of 30 feet is 28 gpad, or a total of 840 gallons per day for a 0.040-inch thick HDPE geomembrane. ⁸¹ The Band was unable to find detailed designs for the equalization basins in either the Adaptive Water Management Plan or the Water Management Plan – Mine (PolyMet 2013i), to determine the size of the basins or specifications for the proposed geomembrane liner system, but it is fundamentally understood that all liners leak. Some liners are damaged during installation, but most damage occurs when the liner is covered by drainage or protective soil. ⁸² The relevance to water quality predictions is again linked to model inputs. The west equalization basin receives highly contaminated process water from stockpile liner drainage, OSP liner and reject concentrate (brine) from the WWTP, all with high levels of sulfate and metals. The east equalization basin receives drainage from the haul roads, the RTH, pit dewatering and the Category 1 Waste Rock Stockpile drainage, with relatively lower sulfate and metals concentrations but still requiring ultrafiltration/nanofiltration. ⁸³ If a substantially higher (and more realistic) rate of concentrated contaminant leakage to groundwater is incorporated into the mine site water model, it would likely result in significantly different water quality model predictions.	WAT	S	O	8	Golder Associates Inc. Draft Percolation Estimates for Drainage Sumps, Process Water Ponds and WWTF Equalization Ponds, PolyMet Project, MN. December 2007.
Nancy Schuldt	A 2011 Minnesota Department of Health study of infants in the Lake Superior basin found that 1 in 10 infants are born with unsafe mercury levels in blood. Blood spot mercury concentrations in infants from Minnesota were significantly higher than infants born in the Lake Superior basin in Wisconsin and Michigan.	HU	NS	X	1	
Nancy Schuldt	The Band has consistently raised concerns and supported our opinion that the NorthMet Project will increase mercury concentrations in fish within the St. Louis River watershed, where we exercise water quality jurisdiction, and within the 1854 Ceded Territory where Band members can exercise treaty fishing rights.	AQ	S	O	3	SDEIS COOP Response #19674. Golder Associates Inc. Draft Percolation Estimates for Drainage Sumps, Process Water Ponds and WWTF Equalization Ponds, PolyMet Project, MN. December 2007.
Nancy Schuldt	The Project cannot be permitted, as it would contribute to an existing water quality impairment for which there is no approved TMDL. And once again, the flawed hydrologic model renders the FEIS mass balance approach untenable; by	MERC	S	O	3	SDEIS Theme MERC 22. Golder Associates Inc. Draft Percolation Estimates for Drainage Sumps, Process Water Ponds and WWTF Equalization Ponds, PolyMet Project, MN. December 2007.

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	definition, a mass balance model requires accurate flow and concentration data.					
Nancy Schuldt	Despite years of raising concerns for mercury mobilization and increased methylmercury release from excavated peat soils at the Overburden Storage and Laydown Area (OSLA), this mercury source is completely missing from FEIS Fig. 3.2-12 (Water Management Schematic – Initial Years of Operations – Approximately Years 1-11). A significant portion of the pulse of mercury released to the surrounding environment will neither be contained nor captured; rather, it will flow unabated through surficial till to the Partridge River and contribute to existing mercury impairments in fish and water. Table 5.2.2-27 indicates that the groundwater flow rate from the OSLA would be 14 gpm. Further, the FEIS does not evaluate the effect of peat overburden storage on methylmercury formation, through recurring wetting and drying cycles that not only release stored mercury, but also regenerate sulfate ⁸⁹ and promote mercury methylation. This recurring deficiency in the Project mercury mass balance is unacceptable.	WAT	S	O	3	SDEIS COOP Response #9022. Golder Associates Inc. Draft Percolation Estimates for Drainage Sumps, Process Water Ponds and WWTF Equalization Ponds, PolyMet Project, MN. December 2007.
Nancy Schuldt	The FEIS also assumes that existing tailings in the LTV Tailings Basin will indefinitely adsorb mercury. However, the data in Tables 4.2.2-23, 4.2.2-24 and 4.2.2-35 clearly demonstrate that existing seepage mercury concentrations exceed the GLI standard, and are higher than many of the data shown for most of the tributary streams. Coupled with the lack of confidence in predicted seepage capture rates, Tailings Basin seepage is another source loading that has been greatly underestimated in the FEIS analysis.	WAT	S	O	3	SDEIS COOP Response #19682. Golder Associates Inc. Draft Percolation Estimates for Drainage Sumps, Process Water Ponds and WWTF Equalization Ponds, PolyMet Project, MN. December 2007.
Nancy Schuldt	The FEIS states that the current fish tissue concentrations in the five local lakes that were studied result in Hazard Quotients (HQs) that exceed 1, but gives no further interpretation in the text of the document. The Cumulative Impacts Analysis, Local Mercury Deposition and Bioaccumulation in Fish (July 2012) (Barr report) provides the actual HQs for these local lakes. While Table 6.2.6-1 of the FEIS does contain these values, they are not pointed out in the text or expanded upon. The highest HQ is 46.2, times the health-based target. It is difficult to understand why, despite repeated requests by the tribes, no further discussion is provided of a HQ that exceeds a health-based target by such a large number. The report also ignores the fact that the HQ of 46.2 is for tribal anglers, whereas the highest HQ value for recreational anglers is much lower, at 6.2. This is very obviously an issue of environmental justice, but the FEIS completely ignores issue this other than by saying “Note that the current fish tissue concentration in the five lakes results in Hazard Quotients that exceed 1, leading to the need for the fish consumption advisories currently in effect”. ⁹³ The Barr report also states that “the existing health risk under Scenario 1 and 2 to subsistence/tribal and subsistence anglers eating three pounds or more per week of fish from these lakes would be significantly higher – up to fifteen times the EPA assumed safe risk intake level for a pregnant mother or child under the age of 15”. While the incremental risk from the Project may be small, the existing risk is large and has not yet been addressed through a total maximum daily load (TMDL) or other reduction program. Figure 9 from the July 2012 Barr report should be included to give the public a clear idea of the existing condition of the local waters and why the tribes believe that no additional mercury should be added at this time. The FEIS does not provide any rationale for more mercury to be added to a system that is already so high in mercury, but rather only suggests that the TMDL should take care of this. The Band does not believe this will be the case.	MERC	S	N	8	SDEIS Theme AQ03. EIS Section 6.2.6.4.3 and Barr 2012b. The mercury concentration in the fish in these nearby lakes and many lakes in Minnesota already exceeds the State of Minnesota’s health-based target of 0.2 ppm (See Barr 2012b, Table 4, Column B). The MPCA Statewide Mercury TMDL (TMDL) and Strategy Framework are intended to provide the long-term framework to reduce the mercury in fish in Minnesota lakes. The Proposed Project would be required to meet sulfate and mercury effluent limits and not impede the Statewide Mercury TMDL goals that aim to reduce mercury contamination in fish. Section 5.2.7.2.5 reports the project risk to subsistence and tribal anglers.

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Nancy Schuldt	The FEIS also fails to evaluate other scientifically documented factors that affect mercury methylation and bioaccumulation. The FEIS approach to evaluating mercury impacts of the Proposed Project avoids addressing complex but well-studied environmental processes by modeling, and instead relies upon an incomplete mercury mass balance to predict future conditions. It superficially references some of the large body of literature related to sulfate, pH, dissolved organic carbon, iron, and microbial activity, but in some cases erroneously interprets it. Research in northern Minnesota peatlands by Jeremiason, Swain and others has clearly demonstrated the enhancement of mercury methylation by sulfate. ⁹⁸ It considers sediments in downstream waterbodies to be exclusively 'sinks' for mercury, rather than recognizing that these sediments are also active sources of mercury in the ecosystem.	MERC	S	O	3	SDEIS Theme MERC 04
Nancy Schuldt	The FEIS acknowledges the need to incorporate Project design elements to reduce sulfate losses to both surface and groundwater pathways, ⁹⁹ but the presumed seepage capture rates and unspecified treatment technology do not provide enough support to conclude that the proposed mitigation would be effective. The small tributaries near the mine site are clearly sulfate-limited; any increase in sulfate loading to the watersheds (either by direct discharge or additional atmospheric deposition) will increase net methylmercury production. The FEIS is inconsistent in its discussion of the sulfate/mercury methylation relationship; in FEIS 5-21 that relationship is "only partially understood", while FEIS 5-313 cites Jeremiason et al (2006) in recognizing that even small increases of sulfate to sulfate-poor wetlands can increase mercury methylation.	MERC	S	O	3	SDEIS Theme MERC 08
Nancy Schuldt	The FEIS evaluation of mercury impacts is exceptionally deficient, and the conclusion of 'no mercury impacts' downstream in the St. Louis River watershed is not supported by the information presented. Our analysis and the expert opinions of mercury researchers conclude that the FEIS approach is not scientifically defensible, and the NorthMet Project is likely to result in significant and long-lasting downstream mercury impacts to aquatic life, wildlife and human health. Furthermore, the Band would bring attention to the alarming lack of regulatory controls for the very processes that will most likely contribute to the identified mercury impacts, with the sole exception of the §404 permit and connected §401 certification.	MERC	S	O	3	SDEIS Theme MERC 01
Nancy Schuldt	It is clear that the NorthMet Project Proposed Action would require long term treatment of water at both the Plant and Mine Sites. The minimum duration of this treatment is on the order of centuries, but the FEIS does not provide an estimate of when mechanical treatment would no longer be needed to meet MN WQS. Therefore, as provided in multiple comments on the preliminary SDEIS, Fond du Lac conservatively assumes that water treatment for the proposed PolyMet mine is perpetual and the FEIS should be clear on this issue.	WAT	S	O	3	SDEIS Theme WR 035
Nancy Schuldt	However, instead of clarifying this factor, it appears that the Co-lead agencies are attempting to minimize the significance of the necessity for long term/perpetual treatment by repetitively using vague and confusing language in the FEIS. The specific language describing long term water treatment has changed during the development of the document, even though the model results have not. The Colead agencies use creative wording to obscure the results of the modeling; this is misdirection at best and highly inappropriate for the Co-lead agencies to present to the public.	NEPA	S	O	3	SDEIS COOP Response #19625

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Nancy Schuldt	<p>In addition to water treatment, there will also need to be a substantial investment in long-term or perpetual operation, maintenance and replacement of other environmental controls for the Project, including seepage capture and pumping at multiple locations at both the mine site and plant site, repair and replacement of liners, managing appropriate stream augmentation and Tailings Basin pond elevation, and pumping, treating, and disposal of seepage from the HRF: The rate of drainage would decrease over time as the pore water within the hydrometallurgical residue is collected and removed. Once the entire facility is closed, the volume of water from the drainage collection systems would decline. In the long term, the volume of water requiring treatment would decline to the point that the remaining reclamation activity may consist of periodic pumping of remaining drainage into tank trucks for transportation, treatment, and disposal, as appropriate, and of inspection of the closed cells to verify integrity of the reclamation systems. ...The water quality of both mine pits, however, is predicted to improve over time as the pits become flooded, thereby effectively eliminating oxidation of the pit walls, the primary source of solutes, except for the upper few feet where water levels may fluctuate. Figures 5.2.2-41, 5.2.2-42, and 5.2.2-43 show how the water quality in the West Pit is predicted to improve over time for three representative solutes: cobalt, nickel, and sulfate. It is expected that eventually the solute concentrations in the pits would stabilize to more or less steady-state values, although the timeframe for this would likely be greater than 200 years as indicated by Figures 5.2.2-41 to 5.2.2-43, which show solute concentrations continuing to decrease at year 200, although still above the evaluation criterion. These predicted improvements in water quality suggest that the WWTF may not need to operate permanently, but that at some point, non-mechanical treatment systems may be sufficient to meet water quality based effluent limits. The FEIS frequently states the long-term goal is to transition to non-mechanical treatment, but there is little evidence to suggest that current treatment technologies can consistently treat large volumes of water to meet WQS. Furthermore, constructed wetlands would require substantial acreage to handle the volume of wastewater that will perpetually be collected, and do not function well in our cold climate for at least half of the year (when vegetation is not actively growing). They are not likely to be able to treat wastewater sufficiently to consistently meet water quality standards, including the wild rice sulfate criterion. Given the absence of scientific or evidentiary support, it is irresponsible for the FEIS to sustain the myth that long-term water quality maintenance at the Project area can ever transition to non-mechanical treatment.</p>	WAT	S	O	3	SDEIS Theme WR 035
Nancy Schuldt	<p>However, the true legacy of this Project, should it be permitted and operated, will be the unquantified volume and mass of contaminants that will be released to groundwater, untreated and in perpetuity, in both the Partridge and Embarrass River watersheds (and ultimately the St. Louis River), and to the north (and ultimately the BWCAW). Some of this contaminated groundwater will 'daylight' to surface water features, including streams and wetlands, and will result in unacceptable hazard to aquatic species and wildlife dependent upon these waters. This is not conjecture; existing ferrous mines have already adversely impacted surface and groundwater resources (private drinking water wells near the tailings basin; aquatic life use impairments identified in the final MPCA 2012 303(d) list) from what the regulatory agencies consider relatively 'benign' ore bodies and the customary permitted mining practices (i.e., storage of waste rock, "leaky" unlined tailings dumps). Contaminant loads from even this low-grade, disseminated sulfide ore will be significantly more toxic than the releases that Minnesota waters have received over the past century of ferrous mining. Furthermore, peak concentrations in this contaminated groundwater won't reach surface waters until many decades after closure. There is no analysis in the FEIS that acknowledges, let alone addresses, the perpetual and uncontrolled release of highly contaminated groundwater, affecting water resources far beyond the Project boundary. The FEIS requires substantially more public transparency and less equivocation on what is arguably one of the most fundamental issues at stake for this Project: how long will the</p>	WAT	S	O	3	SDEIS Theme WR 070

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	company be required to flawlessly operate and maintain expensive mechanical treatment to comply with MN WQS? Clearly there are other engineering controls and management actions that will also have to operate faultlessly and that will require maintenance in perpetuity (seepage collection, liners, pumps, waste rock stockpile cover systems, waste disposal, stream augmentation, Tailings Basin pond elevation management). This singular issue has significant repercussions for the public interest determinations and the scale of required financial assurance.					
Nancy Schuldt	The tribal cooperating agencies have repeatedly requested a clear answer to our question regarding remedial action requirements for the legacy contamination at the portion of the former LTV site that PolyMet has acquired and proposed to use for their processing operations. While the Co-lead agencies stipulate in the FEIS that PolyMet will bear liability through financial assurance, it is troubling to see that apparently, they will not be required to complete remedial activities until closure, many decades from now:	FIN	S	O	3	SDEIS Theme FIN 11
Nancy Schuldt	The FEIS identifies 29 Areas of Concern (AOCs) that are now PolyMet's legal responsibility, but still does not provide the necessary clarity about the status of remedial investigations and/or actions necessary to clean up the contamination that occurred over decades of taconite mining and processing.	HAZ	S	O	3	SDEIS Theme HAZ 05
Nancy Schuldt	Despite repeated requests for a clear response from the Co-lead agencies, the tribal cooperating agencies still do not know what PolyMet will be required to do, or when they will be required to do it, regarding their legacy contamination liabilities. The FEIS does not provide sufficient information for the public to understand whether the NorthMet Project Proposed Action will be required to remediate these and other AOCs before commencing Project operations, or be allowed to defer remediation until closure. It is not clear in the FEIS how the Voluntary Investigation and Cleanup ("VIC") program requirements will be applied to PolyMet:	HAZ	S	O	3	SDEIS Theme HAZ 05
Nancy Schuldt	Cliffs Erie (now Cliffs Natural Resources) was party to a Consent Decree and approved work plan(s) with MPCA regarding their remedial responsibilities, but there is little information in the FEIS for the public to be assured regarding the need for PolyMet to enter into a legally binding agreement and develop approvable work plans to address their responsibilities. We understand that PolyMet has been coordinating with Cliffs on the reissuance of the Tailings Basin NPDES permit (and variance too, apparently), and incorporating corrective actions in their Project design, but the FEIS is virtually silent on the other AOCs. It seems reasonable to expect PolyMet to clean up all legacy contamination as quickly as possible; in fact, remedial actions should be integrated with the 'refurbishing' actions they plan to do to re-tool the taconite processing facilities to accommodate their processing needs. The FEIS should clearly acknowledge in its analysis of the No Action Alternative that, under the existing Consent Decree, Cliffs Natural Resources is required to complete remediation and reclamation/closure activities on the identified AOCs, and absent the NorthMet Mining Project, these requirements would not be deferred for 20 years. The Project Proponent has frequently touted the redevelopment of a 'brownfield site' as	ALT	S	O	3	SDEIS Theme ALT 14

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	evidence of its environmental sensitivity, but the public may not realize that the actual cleanup of LTV's legacy contamination may be deferred until reclamation and closure of the NorthMet Project. In fact, four of the AOCs identified in Table 4.2.1-2 as PolyMet liabilities stipulate in the "status" column to "Further investigation at PolyMet closure." This timeline is not acceptable, and the FEIS should not be vague about the pace of fulfilling remedial requirements. Instead, the Co-lead agencies should stipulate in the FEIS a clear requirement that PolyMet will provide an approved Work Plan and expedited remedial timeline for all 23 remaining AOCs on their property, as a condition of the DNR Permit to Mine.					
Nancy Schuldt	The initial description of wild rice's preferred habitat and life cycle ¹¹⁸ is strangely silent on one of the most significant - and regulated - water quality parameters under evaluation for Project impacts: sulfate. The Co-lead agencies acknowledge that distribution and abundance of wild rice is dependent upon specific habitat requirements, including "Water chemistry – wild rice grows within a wide range of chemical parameters; however, productivity is highest in water with a pH of 6.0 to 8.0 and alkalinity greater than 40 mg/l "(FEIS 4-31). Yet there is no background or context provided for the section titled Regulations Applying to Waters that Contain Wild Rice. Minnesota's sulfate criterion for the protection of wild rice waters has been in approved state rules since 1973, and has been the subject of considerable controversy, legislative overreach, and accelerated experimental research throughout the entirety of the PolyMet environmental review process. The tribal cooperating agencies have, concurrently with our involvement as cooperating agencies for the EIS process, been engaged with the MPCA in consultation on the state's legislatively-directed water quality rules revision for wild rice waters. In fact, our very legitimate concern for new sulfate loadings to wild rice resources in the ceded territories originates with documented impacts from existing hard rock (ferrous) mining and patently inadequate regulatory oversight to protect this significant cultural and subsistence resource.	WAT	S	O	3	SDEIS Theme WR 152
Nancy Schuldt	The Band has consistently challenged the conclusion that the NorthMet Project will not result in damage to wild rice waters in the Partridge and Embarrass Rivers and their watersheds. Our skepticism arises from growing knowledge of the extent to which state and federal regulatory agencies have consistently failed to enforce standards and regulations on the mining industry that are intended to protect wild rice. We have exhaustively commented on the specific threats of this Project from the very beginning of our involvement as a cooperating agency, and our previous concerns are carried forward to the FEIS, despite the inclusion of engineering controls and water treatment. It is commendable that PolyMet has committed to constructing wastewater treatment plants that include reverse osmosis, which has the potential to meet the low sulfate effluent limit if designed and operated properly, including at the Mine Site at year 1. But the damage to wild rice will be just as real and just as permanent if it results from inadequate regulatory controls, as if it results from inadequate engineering controls.	WAT	S	O	3	SDEIS COOP Response #19684
Nancy Schuldt	Minnesota tribes have engaged in consultation with the MPCA on this culturally vital issue and provided recommendations for better protection of the wild rice that remains across a much-diminished range. The tribal cooperating agencies have engaged in consultation with the federal Co-lead agencies under Section 106 of the National Historic Preservation Act, continually elevating the need for protection of all remaining wild rice in the 1854 Ceded Territory. During consultation the Bands have provided information about tribal wild rice harvest in the Embarrass River far upstream of where the MPCA has recommended as 'waters used for the production of wild rice'. The wild rice sulfate standard must apply throughout the Embarrass River watershed. The scant remaining stands in the upper reaches have already been severely impacted by	WAT	NS	X	1	

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	previous mining disturbances and continued releases of high-sulfate water, and are in need of restoration.					
Nancy Schuldt	This contorted interpretation of 'compliance' under the Clean Water Act is not defensible. The NorthMet Project Proposed Action must meet MN WQS, including the sulfate criterion to protect wild rice. The FEIS fails to acknowledge that under the Clean Water Act, the state of Minnesota is required to bring impaired waters into compliance through TMDLs and other watershed restoration actions. The existing LTVSMC tailings basin, along with other inactive mine features, is clearly causing an exceedance of the wild rice sulfate criterion and has led to the decline in stand density and productivity within the watershed. The CEC scenario is not representative of the state's CWA obligations to restore impaired beneficial uses. As stated previously, our concerns for protecting wild rice within this region of the 1854 Ceded Territory is based as much upon inadequate implementation of MN WQS protections, as upon the high likelihood that surface and groundwater discharges from the Project will exceed MN WQS. We consider the high probability of continued degradation of remaining wild rice stands in the Partridge and Embarrass River watersheds as a result of the NorthMet Project to be an unacceptable environmental impact.	WAT	S	O	3	SDEIS COOP Response #19687
Nancy Schuldt	The FEIS does not adequately discuss impacts to traditional uses such as hunting and trapping, nor does it adequately discuss impacts to traditional game and furbearer populations. This is a major discrepancy in these documents as healthy wildlife populations, particularly game and furbearer species, and access to them is critical for the exercise of treaty rights for tribal members.	CR	S	O	3	SDEIS COOP Response #19689
Nancy Schuldt	The Proposed Project will result in over 4,000 acres of direct habitat effects (i.e., loss). Fond du Lac's comments on the DEIS regarding the existing wildlife corridors are still applicable: they are fundamentally inadequate to maintain habitat connectivity across the heavily disturbed Mesabi Iron Range. As evidenced from aerial photographs, they're narrow and often heavily intruded upon by roads, utility corridors, mine pits and urban development. These features serve as barriers to many kinds of wildlife. While the existing corridors may function well enough for large, mobile species like deer or wolves, they are inadequate for smaller, less mobile species.	WI	S	O	3	SDEIS COOP Response #19690
Nancy Schuldt	The FEIS concedes that increasing development of urban areas alongside the corridors will render some of the existing corridors "less suitable" for wildlife in the future. Increased urban development and associated transportation and utility infrastructure should be expected if the Project provides even a fraction of the economic benefits claimed in the FEIS. Yet there is no minimization or mitigation proposed or even evaluated in the FEIS for this significant environmental impact. The Band specifically requests that state and federal regulatory agencies work with the tribal agencies to establish dedicated and protected wildlife corridors and enhance reclamation of existing mine lands to mitigate wildlife impacts within the 1854 Ceded Territory.	WI	S	O	3	SDEIS COOP Response #19691
Nancy Schuldt	The Band does not agree with this casual dismissal of an issue we consistently brought forward in our comments and in meetings with the Co-lead agencies. The ESA §7 consultation process is intended to determine jeopardy (likelihood of a species' extinction from the Proposed Action) and address mitigation for impacts to endangered species. The ESA §7 process would not address mitigation measures for other species which are not presently endangered but which would be adversely affected by the loss of wildlife corridors. Again, the only reasonable process for fully evaluating likely impacts and then	WI	S	O	3	SDEIS Theme WI 03

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	identifying and requiring mitigating actions is through the EIS and then with a fair examination of the impacts and mitigation measures in the EIS, implemented through the MnDNR Permit to Mine. The FEIS here fails to address an important issue, incorrectly leaves it to a process that will not address it, and deprives the public and the MnDNR of the information it should have to address this issue.					
Nancy Schuldt	But, from the Band’s perspective, perhaps the most significant deficiency in the FEIS analysis of wildlife impacts is its failure to critically analyze potential impacts to moose. As to moose, the FEIS states: The moose (<i>Alces americanus</i>) is not federally listed, but was added to the Minnesota ETSC species list as a species of special concern in 2013. Moose, which have been observed in the NorthMet Project area (ENSR 2005), are a species of specific importance to the Bands...The overall moose population in Minnesota declined approximately 35% from 2012 to 2013 (MDNR 2013d). The 2014 winter aerial moose survey estimated the population at 4,350 animals, up from the 2013 estimate of 2,760 (DelGiudice 2014). However, this is likely due to variability in the survey conditions from year to year and uncertainty inherent in the survey itself...Due to decreased population levels in the state of Minnesota and its new state listing as a species of special concerns, the moose hunting season was closed in 2013 and not reopened. In previous years, when moose hunting was open, the NorthMet Project area would have been outside of the hunting zone, though moose zone 30 is located to the south of the Transportation and Utility Corridor. In 2012, two moose were harvested in zone 30 (DelGiudice 2012). The tribal cooperating agencies have consistently raised impacts to moose as an issue of critical importance throughout the DEIS, SDEIS, Section 106 consultation, and ‘sieve list’ meeting processes. We have valid concerns about the Project’s impact on moose habitat at a time when their population is crashing, and they should be addressed immediately. Tribal wildlife biologists have been working alongside DNR biologists and academic researchers to try to understand the relevant factors. Hunting pressure has been ruled out as a major contributing factor to population-level declines, but the appearance of holding a hunt does not sit well with the public, so the DNR, 1854 Treaty Authority and Fond du Lac have all closed their respective moose seasons since 2013. However, the Band’s concern for Project impacts to moose is not simply potential effects to hunting zones and seasons; we are gravely concerned about protecting sustainable moose populations for future generations. In considering the potential causes of the moose population decline, wildlife biologists recognize the importance of thermal refuge for moose when temperatures exceed 70o F.126 Undisturbed, high-quality wetlands and forests - essentially all of the landscape that will be destroyed at the mine site – represent the type of habitat that serves as thermal refuge, along with shelter and forage.	WI	S	O	3	SDEIS Theme WI 01
Nancy Schuldt	Notwithstanding EPA’s recommendation, the FEIS includes no discussion of means by which the adverse impacts on moose might be avoided or mitigated. Instead, the response to the recommendation was the boilerplate statement ascribed to most of the substantive comments provided by cooperating agencies on the PFEIS: “The information and analysis as offered in the PFEIS is sufficient and appropriate for purposes of environmental review.” This disposition by the Co-lead agencies of a critical deficiency in the EIS process is indefensible.	NEPA	S	O	3	SDEIS Theme NEPA 08

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Nancy Schuldt	<p>The FEIS presentation of existing conditions for aquatic communities (fish and macroinvertebrates) is deficient and potentially misleading.¹²⁸ The Co-lead agencies neglected to include and consider substantial readily available biological and water quality data from the MPCA, no less, which characterizes aquatic life use impairments in several streams and rivers within the NorthMet Project area, namely the Embarrass River, Wyman Creek, and Spring Mine Creek. The intensive watershed monitoring done in 2009-2010 within the St. Louis River Watershed also included substantial physical, chemical and biological data for many other stream and river stations within the Project area, and the Stressor ID Report for the waters in the St. Louis River watershed that were assessed as ‘impaired’ also includes a list of the stream and river stations that were used to develop summary statistics and establish ‘reference condition’ for this watershed. The Band’s comments on this matter in the 2009 DEIS pointed out the limitations of relying solely upon PolyMet-collected data to base predictions of Project impacts, and that criticism is still relevant. By only presenting their evaluation of biological community condition within the limited universe of data collected by the Project Proponent, the Co-lead agencies deliberately neglect to provide important context to the public about actual baseline or reference condition and existing impairments for fish and benthic macroinvertebrate communities that are largely the result of existing mining impacts. And, more importantly, these impairments have not yet been addressed through a TMDL or watershed restoration action.</p>	AQ	S	O	3	SDEIS Theme AQ 01
Nancy Schuldt	<p>Lake sturgeon have been successfully reproducing in the estuary for several years, and Fond du Lac Resource Management Division’s successful reintroduction and tracking efforts in the upper river have been documented.¹³⁰ After the construction of hydroelectric facilities on the St. Louis River in the early 1900’s, the lake sturgeon population in the upper St. Louis River was isolated from the lower estuary and Lake Superior. The remaining sturgeon population was likely extirpated due to exploitation and pollution from the wood products industry and municipal waste. In addition, many of the upper tributaries were dammed during the extensive white pine logging era (1800’s) in order to float logs down during the high water spring runoff. Pollution and degraded water quality has been identified as a factor limiting sturgeon abundance in many locations. ¹³² The conclusion at FEIS 4-275 that “There are no known occurrences of lake sturgeon and not likely habitat for lake sturgeon within the NorthMet Project area” neglects to consider that downstream water quality effects may result from the Proposed Project. This water quality effect is specifically what the Band expected to see addressed in the FEIS, as it represents yet another potential degradation of our downstream water quality that is explicitly relevant to our stated resource management goals for name, or lake sturgeon. A dramatic recovery in lake sturgeon abundance in Rainy River and Lake of the Woods followed improvements in water quality in the Rainy River, which resulted from substantial reductions in the amount of wood fiber and untreated chemical wastes discharged by upstream pulp and paper mills. Evidence from hatchery rearing studies show that juvenile sturgeon can only tolerate salinity < 23 ppt.¹³⁴ The Band is concerned about protecting the both the habitat and water quality necessary to support our reintroduction efforts. Uncontrolled contaminant loading from existing mine facilities, added to elevated contaminants from the Proposed Project, have the potential to affect the successful establishment of a sustainable lake sturgeon fishery throughout the St. Louis River. This potential impact should have been fully evaluated in the FEIS.</p>	AQ	S	O	3	SDEIS Theme AQ 02

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Nancy Schuldt	FEIS (Table 5.2.7-1) is incomplete; it does not show the recently promulgated ozone standard of 0.070 ppm. This value should be added.	AIR	S	N	8	The USEPA published the final, revised ozone standard in the Federal Register on October 26, 2015. This was after the air analysis for the FEIS was completed. The ozone standard does not affect the conclusions in the FEIS. This information will be available to the Proposer and regulatory agencies so that it may be considered during any future permitting for the project.
Nancy Schuldt	The FEIS states that the ambient air boundary for the Plant and Mine Sites (and 1,000 meters beyond) is used to define the maximum extent of NorthMet air impacts that would have the potential to affect wetlands that were not directly affected.135 The Band again asserts (as we have previously) that these property boundaries cannot arbitrarily be used for acid dust and metal deposition boundaries because there are no ambient air quality standards for these pollutants. While secondary ambient air quality standards do exist for vegetation, these are not to be used for deposition. "Deposition" is a concentration of a pollutant that settles out of the air onto a surface. Therefore, compliance with traditional ambient air quality modeling and the range where such compliance occurs cannot be used with regard to the deposition of these pollutants on the ground, water surfaces, and vegetation.	AIR	S	O	3	SDEIS COOP Response #19698. This information will be available to the Proposer and regulatory agencies so that it may be considered during any future permitting for the project.
Nancy Schuldt	The FEIS states on page 5-310 that modeled annual dust deposition rates were compared to an "annual effects-level deposition rate" (background) of 365 g/m2/yr. Apparently this "annual effects-level deposition rate" is a potential effects threshold for photosynthesis due to "dusting" of the plant's surface. However, direct physical effects of mineral dusts on vegetation can be seen at a surface load of 7 g/m2 and chemical effects of reactive materials can be seen at 2 g/m2 136. These levels indicate that the proposed "impact" level of 365 g/m2/yr is too high. Further, as the Band commented on both the PSDEIS and the SDEIS, the modeled deposition rates only look at impacts to photosynthesis due to blocking sunlight from the plants' leaves, they do not include the effects of contamination from metals, nor contamination from other sources, such as pit leaks and seepage, nor are cumulative impacts from all of these sources included in Chapter 6. The Class I Deposition Analysis Threshold set by Federal Land Managers for both nitrogen and sulfur deposition in the eastern half of the US (including Minnesota) is 0.01 kg/ha/yr. If one takes the effects level threshold discussed on page 5-310 of the FEIS (365 g/m2/yr) and converts it to similar units (assuming the dust is 0.12% sulfur), the threshold level proposed as adequate for the area is 438 kg/ha/yr, or 43,800 times the amount of sulfur deposition that is allowed in a Class I area. While the proposed site is not a Class I area, this DAT is a better measure for the type of impact that the Band fears.	WET	S	O	3	SDEIS COOP Responses #19702, #19703, #19704. This information will be available to the Proposer and regulatory agencies so that it may be considered during any future permitting for the project.
Nancy Schuldt	The FEIS (page 5-312) erroneously states that "all of the receptor nodes with the highest model estimated deposition rates were located within the ambient air boundary". The following paragraph contradicts this statement by saying "of the 234 acres of wetlands, (that could be potentially indirectly affected) 228 acres would be located within the Mine Site ambient air boundary". While only 3% of the affected acres are outside of the boundary, these two statements should be reconciled. The inaccuracy serves to diminish consideration of any impacts.	WET	S	O	3	SDEIS COOP Response #19705. This information will be available to the Proposer and regulatory agencies so that it may be considered during any future permitting for the project.

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Nancy Schuldt	FEIS Figure 5.2.3-22 depicts receptors outside the plant site that are predicted to receive dust deposition rates higher than 100% of background. FEIS Figure 5.2.3-23 depicts receptors outside the plant site that are predicted to receive metal deposition rates higher than 100% of background, but there is no discussion regarding monitoring or management actions to quantify or mitigate affects. As the Band has commented before, 90% of the area predicted to be impacted does not lie within the ambient air quality boundary (text states that 90% of the receptor nodes lie within the boundary); it appears to be only about 60% contained to the ambient air quality boundary. It is also irrelevant whether these areas lie within the ambient air quality boundary, as they are not required to meet ambient air quality standards for deposition - it is more relevant whether they are all within the Plant and Mine Site, and both Figures 5.2.3-22 and 5.2.3-23 show that this is not the case.	WET	S	O	3	SDEIS COOP Responses #19706, #19707. This information will be available to the Proposer and regulatory agencies so that it may be considered during any future permitting for the project.
Nancy Schuldt	Page 5-559 of the FEIS states that "mitigation measures would be taken to avoid or minimize effects on historic properties, to the extent practicable" but the impacts of dust on these important properties were not specifically mentioned.	CR	S	O	3	SDEIS Theme CR 05. This information will be available to the Proposer and regulatory agencies so that it may be considered during any future permitting for the project.
Nancy Schuldt	Further, the FEIS confuses the results from PolyMet 2015b and PolyMet 2015q. The FEIS statement: "An estimate of the spillage of ore fines along the rail corridor is provided in Section 8.4.3 of the Waste Characterization Data Package (PolyMet 2015q). Assuming that all spillage of the coarse material would occur in a 2-meter-wide strip on both sides of the centerline of the railway (total width equals 4 meters) over the entire haul distance after loading (approximately 8 miles or 13,000 meters), results in approximately 0.11 kilograms per square meter (kg/m2) of ore fines annually or 2.14 kg/m2 for the 20-year NorthMet Project Proposed Action. This equates to 0.002 inch of depth annually or 0.05 inches for the 20-year NorthMet Project Proposed Action" 137 is incorrect because these results actually came from PolyMet 2015b. What PolyMet 2015q finds is different. See PolyMet 2015q, Section 8.4.3 - "Assuming that all spillage occurs in a 2 meter wide strip along this portion of the rail corridor, it is estimated that approximately 2.78 kg/m2 could spill annually or 55.7 kg/m2 over the life of the Project. This is equivalent to 1.25 inches of spilled material over a 2,000 m2 area". The FEIS also leaves out any mention of the 55.7 kg/m2 value. Additionally, the FEIS (page 5-164) states that the spilled material would become rapidly depleted of sulfide materials compared to the waste rock stockpiles. This statement offers nothing in the way of quantification of the amount of sulfide that would be released, nor does it address the metals that would also leach from the material. As mentioned above, PolyMet 2015q predicts that metals concentrations have the potential to exceed water quality standards for four metals: aluminum, cobalt, copper, and nickel. On the basis of this and the above arguments, the Band believes that the FEIS does not adequately address this topic. The FEIS discusses refurbishment of existing ore cars that would reduce spillage by 97%, to 0.20 tons per year. (PolyMet 2014a)". The Band proposes that this modification requirement be incorporated into the final permit for the facility. The FEIS states that most of the potential spillage from the rail cars will occur within the first 1,000 meters of rail from the Rail Transfer Hopper (page 5-164). The Band disagrees with this assessment. "The Fugitive Dust Risk Management Plan (FDRMP) for Red Dog Operations, Alaska (August 2008, draft) states: "Elevated metal concentrations have been identified in tundra in areas surrounding the DMTS, primarily as a result of deposition of fugitive dust originating from the DMTS corridor, which is used to transport zinc and lead ore concentrates from the Red Dog Mine, operated by Teck Cominco Alaska Incorporated (Teck Cominco)". The use of 2 meters on either side of the railway is inadequate.	WAT	S	N	3	SDEIS Theme WR 151. The area of deposition analyzed in PolyMet 2015q and PolyMet 2015b is different, which explains the difference in reported values. The editorial error is correctly identified by the commenter. The correct reference is PolyMet 2015b.

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Nancy Schuldt	As the Band has noted in previous comments on this issue, the Co-lead's only 'mitigation' for fugitive sulfide dust is recommending future wetlands monitoring. Additionally, the FEIS suggests water spraying for areas of fugitive dust release during dry periods as mitigation.138 In the case of dust that may have high acidic content, this would be a poor choice for management action, as the addition of water to the dust would likely create or accelerate toxic run-off, as the Band suggested in our comments on previous versions of this EIS.	WET	S	O	3	SDEIS COOP Response #19711
Nancy Schuldt	Another inadequacy of the FEIS is its failure to predict impacts from sulfate from both fugitive dust and railcar spillage on methylation of mercury in wetlands and waters on-site.	WAT	NS	X	1	
Nancy Schuldt	Also from the FEIS (Table 6.2.7-6), cumulative inhalation risks for cancer are four times greater than the guideline of 1E-05. Although much of this risk comes from existing facilities, this number indicates that the area cannot sustain pollution that adds to what is already there without compromising health. Our previous comments on this issue have not been adequately addressed.	AIR	S	O	3	SDEIS COOP Response #19716
Nancy Schuldt	The Band has also continued to raise concerns for amphibole fibers, and what we perceive as insufficient analysis in the FEIS. According to the FEIS, the BACT-like fine particulate controls will control the release of more than "99.9% of amphibole fibers that are emitted from controlled sources", not "99.9% of fibers in the ore". The second statement is incorrect, because some sources of fibers from the ore are uncontrolled, like blasting operations, or are unable to be controlled up to 99.9%, like haul roads, tailings, crushing and screening, and stockpiles.	AIR	S	O	3	SDEIS COOP Response #19717
Nancy Schuldt	The SDEIS stated that the Biwabik Iron Formation (which has been found to contain amphibole fibers) slopes under the Duluth Complex at the Mine Site, coming within 100 feet of the area that the company plans to mine. The Band's previous comments regarding unexamined hydrological connections between geologic layers or formations are also applicable in this instance. With fractured bedrock present, that could establish a hydrological connection, and 100 feet would be an insufficient barrier. Additionally, these types of formations are characteristically not homogeneously distributed, meaning that pockets of fibers could be found unexpectedly. While it is true that some information on the occurrence of amphibole fibers has been gathered from the site, the drill locations were chosen with regard to studying minerals of economic interest, and did not specifically target locations where fibers may be expected to occur. The Band notes that the FEIS does not provide the same level of detail that the SDEIS did regarding this subject. Page 5-515 of the FEIS only states that "It should be noted that taconite is mined in the Biwabik Formation, whereas the ore proposed to be mined for the NorthMet Project Proposed Action is from the Duluth Complex, which is not in contact with the Biwabik Formation at the NorthMet Deposit". This appears to be an attempt to address concerns regarding potential contact with fibers by misleading the public, i.e. simply removing any data that may cause concerns.	AIR	S	O	3	SDEIS COOP Response #19718
Nancy Schuldt	As the Band commented at that time, the report from the epidemiologic study of Minnesota iron mine workers actually states that the rate of mesothelioma among mine workers is nearly three times the rate found in the rest of the state. 141 It was a matter of great concern to the Band to find that most pertinent details of this study have now been removed from the FEIS.	HU	NS	X	1	

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Nancy Schuldt	The Taconite Workers Health Study concluded that: - Taconite workers had higher than expected death rates from three diseases: mesothelioma, lung cancer, and heart disease. - The length of time people worked in the industry was linked to higher levels of mesothelioma but not lung cancer. - Exposure to elongate mineral particle was linked to mesothelioma but not lung cancer - Workers with above-average exposure to dust containing EMPs were twice as likely to develop mesothelioma as workers with below-average exposures. - A screening of current and former taconite workers and their spouses revealed x-ray evidence of dust-related scarring of the lung and lung lining in workers. - There was a link from EMP exposure in workers to scarring of the pleura. - Spouses of taconite workers had comparable evidence of lung scarring on chest x-ray, to what's been reported for the broader general public. The Band is extremely disturbed to note that the FEIS (page 5-515 through 5-516), while including some brief conclusions from the study, does not list the conclusions shown in the bullet points above. While the study concludes that "The role of a specific EMP type of exposure is not clear" it appears that the FEIS is attempting to downplay the possibility of a causal relationship between exposure to fibers and the occurrence of the diseases listed above.	AIR	S	O	3	SDEIS Theme HU 07
Nancy Schuldt	The FEIS assures that ambient air monitoring for amphibole fibers will be conducted following facility start-up. While no schedule of frequency or duration for amphibole fibers monitoring has been proposed in the FEIS, the Band continues to assert, as we have throughout the environmental review process, that monitoring will need to continue over the life of the mine, as no one can predict when fibers might be contacted and released. The Band cautions that several monitors may be needed to adequately protect human health in the future.	AIR	S	O	3	SDEIS COOP Response #19720
Nancy Schuldt	A cumulative analysis of fibers expected from the site along with fibers currently being emitted from other sources should be performed. Human health risk assessments should be expanded to include scenarios of worker exposure to amphibole fibers.	AIR	S	O	3	SDEIS COOP Response #19753
Nancy Schuldt	On October 6 and 7, 2015, a conference on Asbestos-like Mineral Fibers in the Upper Midwest was held at the EPA's Mid-Continent Ecology Division facility in Duluth, MN. Several prominent scientists in the field presented research at this conference. Although much of the data has not yet been publicly released, it is surprising that this section of the FEIS was not updated to discuss the preliminary findings of these scientists.	AIR	NS	X	1	
Nancy Schuldt	In the FEIS, the Co-lead agencies have chosen to forego analysis of dam failure, a reasonably foreseeable occurrence, sufficiently to understand the risks of the Proposed Project's tailings disposal and explore alternatives to minimize those risks. Fond du Lac continues to question the design, location, and performance estimates for the Hydrometallurgical Residue Facility.	GT	NS	X	1	
Nancy Schuldt	As previously expressed, we do not share PolyMet's confidence in being able to virtually eliminate leakage to groundwater from any type of containment system. Some leakage must always be assumed, and given the site-specific conditions for the proposed location of the HRF, the risk for highly contaminated seepage to exit the HRF and flow to wetlands in the Embarrass River watershed is high.	GT	S	O	3	SDEIS COOP Response #19723

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Nancy Schuldt	The significance of the site topography and natural drainage features is more relevant to our concerns than the regulatory status of the wetlands. The FEIS simply does not address the potential lack of integrity or risk of failure when constructing a hazardous waste facility within a wetland. Assumptions about hydraulic head being removed from the lower liner are not reassuring when the lower liner (geosynthetic clay) has been installed within a wetland and natural drainage ravine.	GT	S	O	3	SDEIS COOP Response #19725
Nancy Schuldt	Any leakage that escapes from the geomembrane liner has an increased risk of draining to shallow groundwater in this environment as compared to a dry, upland environment. That is why modern landfills cannot be sited as proposed for the NorthMet Project; federal standards or equivalent state standards must be met. Minnesota statutes preclude the siting of a hazardous waste or solid waste facility in a wetland or in a location where the topography, geology, hydrology or soil is unsuitable for the protection of the ground water or surface water. Although the Co-lead agencies maintain that the HRF is not subject to RCRA, and exempt from hazardous waste restrictions and reporting, it is still subject to state law on the matter.	WAT	S	O	3	SDEIS Theme WR 126
Nancy Schuldt	There is insufficient information revealed in the FEIS to clearly understand the chemical composition of the HRF waste material, and unreasonable assumptions of liner leakage and performance. And as presented in the FEIS, there are two new sources of contaminants planned for disposal in the HRF: water treatment plant solids (primarily gypsum), and coal ash wastes from the existing LTVSMC site Coal Ash Landfill, one of the previously identified AOCs subject to the Consent Decree. These new, potentially toxic and reactive wastes may represent up to 10% of the HRF solids volume ¹⁵⁵ , yet there is no characterization of the mass or concentration of chemicals resulting from the co-disposal of these wastes with the Hydrometallurgical process wastes. The FEIS, instead of providing this analysis up front, states that if the Project is approved, the residue should then be tested to verify that it is not hazardous. ¹⁵⁶	HAZ	S	O	3	SDEIS Theme HAZ 02
Nancy Schuldt	The potential for substantial volumes of seepage flowing from the Tailings Basin to the HRF has not been addressed in the FEIS; this represents another potential structural hazard. We can assume that the HRF has been designed to capture toxic drainage from the hydromet residue itself, with seepage volume estimates associated with the hydromet process. But we have no assurance that the HRF is designed to structurally withstand thousands of gallons per day of Tailings Basin seepage along the dikes that do not have seepage capture features installed.	WAT	S	O	3	SDEIS Theme WR 066
Nancy Schuldt	The tribal cooperating agencies have exhaustively challenged the Co-lead agencies' approach to predicting indirect impacts to wetlands and their resulting conclusions, as an overly simplistic method based upon a flawed concept of hydrology at the mine site. This remains a major deficiency in the FEIS, and is a significant unresolved issue for the Bands, who are concerned about direct, indirect, and cumulative effects to the high quality wetland resources that would be affected by the NorthMet Proposed Project.	WET	S	O	3	SDEIS COOP Response #19728
Nancy Schuldt	GLIFWC staff have long advocated for the use of the 'Crandon method' of determining indirect wetland impacts; this method was based upon their experience, working with the US Army Corps of Engineers, in reviewing other proposed mines in the region including the proposed Crandon mine in Wisconsin. While the FEIS maintains that the Crandon method is used in the assessment of indirect wetland impacts for the NorthMet Proposed Project, it clearly has not been used. The Crandon method relies upon a detailed delineation of wetlands leading to accurate wetland classifications, and an accurate characterization of groundwater hydrology supported by a calibrated groundwater model. The NorthMet Project lacks both	WET	S	O	3	SDEIS Theme WET 08

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	of these critical data elements.					
Nancy Schuldt	GLIFWC found that direct impacts of the Proposed Project would result in loss of \$1,358,089 to \$5,134,185 per year in wetland ecosystem services; over the 20 year life of the Proposed Project, the St. Louis River watershed would lose between \$27,161,780 and \$102,683,700 in wetland services. This is but one example of the possible applications of the ecosystem valuation study that should have been done by the Co-lead agencies as part of the NorthMet FEIS.	WET	NS	X	1	
Nancy Schuldt	The proposed mitigation plan is inadequate; it allows for the vast majority of mitigation and/or restoration credits to come from outside the Partridge, Embarrass, and St. Louis River watersheds. There is no justifiable reason to permit out-of-watershed mitigation when in-watershed opportunities still exist, especially when the St. Louis River watershed as a whole has experienced cumulative wetland destruction, degradation and hydrologic alterations in well over 50% of the watershed.162	WET	S	O	3	SDEIS COOP Response #19732
Nancy Schuldt	The Band objects to the issuance of a §404 permit, and the approval of any out-of-watershed mitigation credits or restoration for impacts to irreplaceable high quality aquatic resources of national importance, which include all remaining unimpacted wetlands within the St. Louis River watershed/Lake Superior Basin. ... However, given the Corps' approval of an inadequate and inappropriate compensation plan, and failure to conduct an adequate and comprehensive alternatives analysis or identify a Least Damaging Practicable Alternative (LEDPA), the EPA should elevate the permit under CWA §404©. The same inadequacies that EPA identified in the 2009 DEIS and the 2013 SDEIS remain in this FEIS, and the NorthMet Proposed Project does not meet regulatory requirements for a permit.	WET	S	O	3	SDEIS Theme COE 02
Nancy Schuldt	Furthermore, the adaptive management plan in the FEIS is, in and of itself, inadequate. An adaptive management plan, to be effective should include: clearly defined monitoring and reporting protocols; specific action criteria/triggers; detailed mitigation measures the effectiveness of which have been evaluated; management requirements and decision tree; identity of technical advisors and decisionmakers; and financial assurance for entire plan, including contingencies. The "adaptive management plans" for hydrological characterization of the site, for indirect wetlands impacts, and other potential Project impacts, contain none of these elements.	O	NS	X	1	
Nancy Schuldt	While the FEIS correctly recognizes that the Band holds treaty-reserved rights to hunt, fish and gather in the area where the proposed mine would be located,168 the FEIS does not give proper consideration to the adverse impacts that the proposed mine would have on those federally-protected rights or the government's trust responsibility with regard to those rights.169	CR	S	O	3	SDEIS Theme CR 01
Nancy Schuldt	Although the Final EIS recognizes and discusses the Band's treaty rights and the federal government's trust responsibilities, the FEIS does not give proper effect to either the protection of the treaty right or the exercise of the trust responsibility.	CR	S	O	3	SDEIS Theme CR 01

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Nancy Schuldt	<p>But the FEIS analyzed the impact of the Project on the Bands’ treaty rights under an improper test which it then applied in a manner that is contrary to the record. The FEIS states that because of the limited accessibility to the Project area, “there is likely limited present day or recent past subsistence gathering in the NorthMet Project area” and concludes that the proposed Project is therefore “unlikely to further diminish the exercise of 1854 treaty rights in the area.” FEIS 5-569; see also FEIS at 5-572 (imposing this standard). The law says otherwise. Under well-settled law, denial of access to an area where treaty rights are reserved does not “diminish” the treaty-reserved rights. See <i>Winans</i>, 198 U.S. at 381 (rejecting claims by a landowner who obtained a license to use a ‘fish wheel’ – a device capable of catching salmon by the ton and totally destroying a run of fish – of a right to exclude the Indians from their treaty-reserved “usual and accustomed” fishing areas); see also <i>Washington State Commercial Passenger Fishing Vessel Ass’n</i>, 443 U.S. at 684-85 (“property law concepts, devices such as the fish wheel, license fees, or general regulations” cannot be used to deprive the Indians of a fair share of the fish). Further, under the law, it is enough that the rights are reserved in the treaty to be entitled to protection. The notion, expressed in the FEIS, that the tribes somehow were required to prove “present day or recent past” 178 hunting, fishing or gathering activities on specific portions of the Project site in order to ensure that the natural resources on which the right depends are protected, is entirely without basis in the law.</p>	CR	S	O	3	SDEIS Theme CR 01
Nancy Schuldt	<p>But even if the formulation set out in the FEIS were the test, (although it isn’t), the statement made is contrary to the record. As set out in detail in the comments provided by the Bois Forte Band, the oral testimony provided by Band members described the use of this area for gathering and hunting. <i>Latady & Isham 2011</i>. There is no dispute that the Spring Mine Lake Sugarbush lies within the area of potential effect of the proposed mine, and encompasses 80 acres of maple and basswood trees which may be up to 200 years old and have well documented evidence of Chippewa use for maple sugar making over an extensive period of time, including photographic evidence of Chippewa use in the 1940s. See FEIS 4- 438. It is not only eligible for inclusion in the National Register of Historic Places, but is recognized as “being integral to traditional cultural practices and beliefs.” <i>Id.</i> The Sugarbush is further located near to the Beaver Bay to Lake Vermilion Trail which passes through the Project area. This Trail is a major Chippewa trail (one of many) within a system of water and overland routes that crisscrossed northeastern Minnesota and extended to the border lakes long before the fur trade and continued to be used through the early 20th century. The FEIS recognizes that this trail is eligible for inclusion in the National Register of Historic Places, FEIS at 5-560, and “is significant for the role it played in the broad patterns of Ojibwe land use . . .” but “would be directly affected by the NorthMet Project Proposed Action, which would result in its permanent removal.” FEIS at 5-565. Surely, as the Chippewa travelled on this trail and gathered sap at the Sugarbush, they engaged in other hunting, fishing and gathering activities in the areas that would have been essential to their survival. <i>Latady & Isham</i> confirm that this was the case.</p>	CR	S	O	3	SDEIS COOP Response #2978
Nancy Schuldt	<p>The FEIS also incorrectly assumes that the loss of these critical areas will have no effect on natural resources outside the Project area itself. The land within the Project area serves as a vital habitat for a wide variety of resources. The land is an important wildlife corridor in a region that has otherwise been the subject of extensive iron ore mining. The history of mining in the region and the adverse environmental impacts from those mines have steadily reduced the Chippewas’ access to critical resources from the natural environment which only serves to make these remaining areas – as well as the resources they contain – all the more valuable. Indeed, careful consideration of the impacts of a proposed project on habitat and wildlife corridors is required even where the proposed project would not adversely affect treaty-protected</p>	CR	S	O	3	SDEIS Theme CR 01

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	rights.					
Nancy Schuldt	The adverse effect on the treaty rights is not mitigated by the lands to be provided through the land exchange. The FEIS improperly assumes that because 7,075 acres of land will be provided to replace the 6,495 acres of land that would be exchanged, that the Band's treaty rights are enhanced simply by virtue of the increase in net acres of land that will be administered by the Forest Service. FEIS 5-672. But a comparison of acreage, without consideration of the functional value of the lands that would be lost, is fundamentally flawed. The lands to be exchanged include 6,025 acres that have been designated by Minnesota as Sites of High Biodiversity Significance. FEIS 5-701. The ecological term 'biodiversity' equates to 'abundance' and 'subsistence' for the Bands. Of these, nearly 2,000 acres of coniferous bog wetlands will be lost to the federal estate and therefore effectively to the Bands, if the Land Exchange Proposed Action is implemented. FEIS Table 5.3.4-1. This is significant because many tribally-harvested resources are only available in coniferous bogs (e.g. cranberries, soft-leaved blueberries, sweet flag), and mitigation for coniferous bogs is simply not feasible.	LAN	S	O	3	SDEIS Theme LAN 03
Nancy Schuldt	The site for the proposed mine also provides habitat for other species of importance to the Band – in particular moose. As the FEIS recognizes, the key habitat types considered moose habitat include "mature forest, grassland/brushland and aquatic environments," FEIS 5-439, all of which are present at the proposed mine site. The FEIS further recognizes that moose and their sign (tracks, droppings, browsing evidence etc") have been observed at the site. FEIS 5-439. The FEIS also recognizes that the population of moose in northeastern Minnesota has seen a severe decline in recent years the causes of which include habitat fragmentation and loss. Id. While measures to prevent that decline from continuing are the subject of on-going study by both the State and the Chippewa Bands, the FEIS simply announces without any supporting basis that the proposed mine (and its destruction of moose habitat at the proposed mine site) "would affect moose individuals in the vicinity through habitat loss and fragmentation, though not likely at the population level." Id. The FEIS provides no scientific support for its assertion that the loss of several thousand acres of moose habitat will not adversely affect the moose population.	WI	S	O	3	SDEIS COOP Response #2715
Nancy Schuldt	Out of the lands to be provided to the federal estate in exchange for the lands at the NorthMet Project site, only 160 acres (Tract 4) include both the surface land and mineral rights. The rest of the proposed lands for exchange do not include the mineral rights, and because these lands would not be transferred under the Weeks Act, they would not carry the protections from later mining development afforded the current lands.	LAN	S	O	3	SDEIS Theme LAN 02
Nancy Schuldt	Further, the lands to be provided are scattered sites, almost entirely located outside of the St Louis Watershed and therefore will neither provide the functions nor serve the critical ecosystem purposes that the lands which would be lost to the mine now serve. In sum, while the lands to be provided may increase total acreage of Forest Service lands, those lands will not provide the critical habitat – either now or possibly even in the future -- on which important and unique plants, fish and game depend. The exchange of thousands of acres of high quality wetlands and forests containing some of the few remaining wildlife corridors in northeastern Minnesota available to the Bands to exercise reserved 1854 treaty rights for	LAN	S	O	3	SDEIS Theme LAN 05

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	lands that have moderate diversity is inconsistent with fiduciary responsibilities that are shared by all federal agencies. The loss of these lands will impair the Bands' treaty reserved rights.					
Nancy Schuldt	The potential adverse impacts on water quality illustrate this risk. The natural resources on which the Band depends have already been damaged by pollution. As discussed above, many of the waters that would be affected by the Project and their fish have been significantly affected by toxic methyl mercury and are designated as impaired waters. Mercury contamination in these waters is of grave concern to Band members, who fish in them. The increasing methylmercury bioavailability in these watersheds is unacceptable because access to fish that can be safely consumed is an essential component of treaty resource harvest rights. The Band is equally concerned about the impact of increased sulfide levels on the viability of wild rice. Wild rice has been and continues to be a staple of Band members' diet and at the core of Chippewa culture. The continued loss of wild rice resources is an impermissible adverse impact on the rights reserved by Treaty.	WAT	NS	X	1	
Nancy Schuldt	The FEIS here does not contain a proper analysis of the environmental justice impacts of the proposed mine as is required by Executive Order 12898 and the CEQ Environmental Justice Guidance. The Project here is not one intended to serve broad public interests or needs. It is not a reservoir that would provide stable public water supply, nor a public work needed to address flood control. It is a mine which is sought by a privately-owned company and intended, first and foremost, to generate profits for that company. While the Project may create jobs and generate tax revenues, those are the only potential benefits which may inure to the public (and may well be negated by the potential adverse environmental impacts of the Project). The FEIS otherwise gives no meaningful consideration to the disproportionate impact that the Project would have on Indian people as is required by Executive Order 12898. Contrary to the CEQ Guidance, the FEIS, focuses on a simple recitation of census numbers and proportions of Native Americans in the regional and statewide populations. FEIS 5-590. While acknowledging that the Project has the potential to disproportionately affect the Chippewas' right to hunt, fish and gather in the area, the FEIS otherwise ignores those impacts, asserting only that the proposed land exchange would provide the Bands with access to other lands. FEIS 5-778 - 5-779. But for the reasons discussed above, the land to be exchanged does not mitigate the loss of these critical resources or their adverse impact on the exercise of the treaty rights. More fundamentally, the proposed land exchange does nothing whatsoever to mitigate the disproportionate adverse effects on Indians who depend heavily on fish and wild rice from exposure to mercury and arsenic. The FEIS simply dismisses these concerns, commenting that "bioaccumulation of mercury in fish could affect Band members' willingness to rely on subsistence fishing as a contribution to household economies, as well as affect continuation of traditional fishing practices." FEIS 5-573. The FEIS suggests no alternatives that might have a less adverse environmental impact, nor any measure to mitigate the harm. Telling Indian people who hold treaty protected rights that they should stop fishing is not the kind of mitigation measure that environmental justice requires.	SO	S	O	3	SDEIS Theme SO 09
Nancy Schuldt	The FEIS's discussion of Socioeconomic impacts of the propose Project, §4.2.10 is deficient as it fails to consider, much less address, the value of ecosystem services as required by the Council on Environmental Quality,186 as well as the Office of Management and Budget, and the Office of Science and Technology Policy.187 Consideration of ecosystem service values has been required for plans and proposals that affect management of federal assets including National Forests, and are to	SO	S	O	8	FEIS Section 5.2.10.1.4

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	be implemented to address a broader range of federal decision-making in the future. Id. at 1-5.					
Nancy Schuldt	As it became apparent to the Band that none of the Co-lead Agencies on the EIS was examining this issue, the Band, as a cooperating agency secured expert services to undertake the necessary study with grant funding from EPA. The study, entitled The Value of Nature’s Benefits in the St. Louis River Watershed, was prepared by Earth Economics, a nonprofit organization with expertise in science-based ecological economic analysis. The study was completed in June 2015. The Band submitted this study to the Co-lead Agencies as work proceeded on the EIS, and, in the Band’s August 2015 comments on the Preliminary Final EIS, the Band urged its consideration in the EIS. The FEIS, however, makes no mention at all of ecosystem service values. The failure to address ecosystem service values is another substantial deficiency in the FEIS.	SO	S	N	8	FEIS Section 5.2.10.1.4 The study was for the whole St. Louis Basin and it would be difficult, if not impossible, to extrapolate information from the report to accurately characterize impacts to the subwatersheds. NEPA does not require cost-benefit analysis. Non-monetary values and ecosystems services are briefly discussed in the socioeconomics sections.
Nancy Schuldt	The economists at Earth Economics then quantified the value of the ecosystem services in the watershed, using a conservative approach that underestimates the full value of the ecosystems in the watershed. As a result of their analysis, the economists determined that “[t]he St. Louis River watershed provides an estimated \$5 billion to \$14 billion in ecosystem service benefits per year.” ¹⁸⁹ They further found that “[t]aking a conservative approach and considering natural capital as a shortlived economic asset, like roads and bridges, the asset value of the watershed is between \$273 billion and \$687 billion over 140 years.” Id. The study concludes that “[t]he landscape of natural capital and associated ecosystem services in the St. Louis River watershed is highly valuable and provides the foundation for the regional economy.” Id.	SO	S	N	8	FEIS Section 5.2.10.2.2
Nancy Schuldt	The Band, in its comments on the 2009 DEIS and again in its comments on the 2013 SDEIS, has repeatedly requested that the lead agencies develop a comprehensive analysis of the Project’s potential impacts on climate change beyond a greenhouse gas inventory. The FEIS fails to adequately address this critically important issue.	AIR	NS	X	1	
Nancy Schuldt	Inadequately addressing – or just ignoring – both the potential climate change impacts of the proposed mine, as well as the affects climate change might have on the mine’s environmental impacts in the future, is directly contrary to these policies. Indeed, the CEQ has released revised draft guidance regarding climate change impacts and the NEPA process, see Revised Draft Guidance for Greenhouse Gas Emissions and Climate Change Impacts (December 18, 2014), ¹⁹⁶ which although not yet final, confirms what Executive Orders and existing federal policies already require under the NEPA review process.	AIR	S	N	5	FEIS Section 5.2.7.1.3; FEIS Section 5.2.7.2.4. SDEIS Theme AIR 01

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Nancy Schuldt	A proper climate change analysis for this proposed Project would illustrate the adverse impact that the loss of wetlands will have on climate change. In addition to the broadly recognized services that wetlands provide, they also store significant amounts of carbon. It has been estimated that wetlands (only about 6% of the world's terrestrial area) contain carbon equal to the total atmospheric carbon store (Intergovernmental Panel on Climate Change, Working Group 11: Impacts, Adaptation and Vulnerability, 5.8.1 (2001)). Much of the carbon stored in wetland soils and vegetation will be released if they are drained, and the release of carbon will exceed sequestration. Yet despite elevating this issue repeatedly to the Co-lead agencies over the course of this environmental review process, the FEIS "analysis" of climate change impacts – all three paragraphs – fails to seriously evaluate Project impacts. ¹⁹⁸ It gives a brief recitation of recent rulemaking on greenhouse gas emissions reductions, and then simply provides an estimate of Project direct and indirect GHG emissions. As with mercury, the FEIS claims: "...there are no analytical or modeling tools to reliably evaluate the incremental impact of a proposed action's discrete GHG emissions on the global and regional climate. In addition there are not analytical or modeling tools to reliably evaluate any cascading effects, or cumulative effects, from a particular proposed action's GHG emissions on natural ecosystems and human economic systems in a given state or region." ¹⁹⁹ This claim is particularly galling, in light of the St. Louis River ecosystem services valuation study that the Band provided to the Co-lead agencies in June, which they chose to disregard. The study explicitly analyzed the carbon sequestration capacity for the land cover classes that were evaluated for the study, including forests and various wetland types. The headwaters region of the watershed is essentially a large peatland complex, representing a vast carbon sink; loss of peatlands equals a loss of an enormous sink in the region and the release of carbon to the atmosphere. Peatlands contain greater than 3X more carbon per hectare than other ecosystems, ²⁰⁰ and this important function (carbon storage) is so critical that its value is calculated separately from the other ecosystem services in the asset valuation. For the St. Louis River watershed, the carbon storage alone is valued between \$56 billion and \$95 billion ²⁰¹ . The FEIS should have incorporated this information alongside the emissions estimate for a more comprehensive accounting of Project impacts.	AIR	S	O	8	SDEIS Themes AIR 01, WET 05
Nancy Schuldt	the wetland mitigation proposed will not adequately compensate for this ecosystem service; simple acre-for-acre consideration fails to account for the disproportionate loss in carbon sequestration capacity from mature, intact peatlands.	WET	S	O	2	SDEIS Theme WET 05
Nancy Schuldt	Including carbon storage in the §404 permit avoidance and minimization sequencing through the 'least damaging practical alternative' evaluation would be a logical step towards reducing the regional carbon footprint. Carbon sequestration services provided by forested wetlands and peat bogs must be considered in the avoidance equation alongside mitigation.	COE	S	O	2	SDEIS Theme WET 05
Nancy Schuldt	the FEIS completely neglects to reference Executive Order 12898 (requiring agencies try to avoid disproportionate and adverse environmental impacts on low-income and minority populations, including impacts on culturally important religious, subsistence or social practice); Executive Order 13007 (requiring agencies try not to damage "Indian sacred sites" on federal land and avoid blocking access to such sites by traditional religious practitioners); the Archeological Data Preservation Act and the Archeological and Historic Preservation Act (requiring agencies to report any perceived impacts that their Projects and program may have on archeological, historic and scientific data, and requires them to recover such data or assist the Secretary of the Interior in recovering them).	CR	S	O	2	SDEIS Themes CR 01, SO 09

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Nancy Schuldt	Although clear adverse impacts to Traditional Cultural Properties have been identified through the §106 consultation process with the tribal cooperating agencies, the Co-lead agencies, the State Historic Preservation Offices (SHPO), and PolyMet, improperly discounted all of the information that was provided, and instead demand that the Bands satisfy an unwarranted level of proof before according these resources the protection required by law.	CR	S	O	2	SDEIS Themes CR 05
Nancy Schuldt	they fail to take into account the history of actions by federal and state officials during the early to middle twentieth century to disrupt and prevent the Chippewa from engaging in traditional cultural practices. They also fail to take into account the general reluctance to share sensitive cultural information with non-Band members in light of this history, not to mention the cultural restrictions on who (inside and outside the Band) can legitimately and safely be trusted with sensitive information.	CR	S	O	2	SDEIS Theme CR 03; Appendix C
Nancy Schuldt	The FEIS's Figure 4.2.9-5, Cultural Resources Analysis Surficial Groundwater Quality Area of Potential Effect is incorrect; the flawed MODFLOW hydrologic characterization is carried forward to an inaccurate determination of the Area of Potential Effect (APE).	CR	S	O	2	SDEIS Theme CR 02
Nancy Schuldt	The Band does not agree with the Co-lead agencies' assessment of the visual effects from the Skibo Scenic Overlook205. It is likely that the 200' tall stockpiles will eventually overshadow the plant site and be considerably more visible, especially on a clear day.	LU	NS	X	1	
Nancy Schuldt	Mesabe Widjiu is correctly identified as a sacred landform, but needs to be considered in its entirety, as the Band stated in its comments on the SDEIS. The segment encountered within the Project area is small, but integral to the property. Adverse affects to any portion impact the entire feature.	CR	S	O	2	SDEIS Theme CR 05
Nancy Schuldt	The Beaver Bay to Lake Vermillion Trail, as a traditional cultural property, requires further clarification. The trail is one of many within a system of water and overland routes that crisscrossed northeastern Minnesota and extended to the border lakes long before the fur trade and continued to be used through the early 20th century. To date, the BBLVT has not been fully researched or field verified within the Project area. The trail needs to be better documented. There has been no rigorous attempt to research the BBLVT by the Bands or Lead Agencies, although the Superior National Forest Heritage Program reviewed the GLO plats and conducted field investigations on Superior National Forest land. Additional fieldwork should be conducted in the spring or fall when ephemeral features such as foot trails are less easily concealed by vegetation and more easily discerned.	CR	S	O	2	SDEIS Theme CR 05
Nancy Schuldt	The Bands remain skeptical of the Co-leads claim that there will be no effect to the Spring Lake Mine Sugarbush from the proposed NorthMet Project. Indirect effects through dust deposition and unauthorized collection are anticipated since the Sugarbush is situated immediately adjacent to the proposed plant site.	CR	S	O	2	SDEIS Theme CR 05
Nancy Schuldt	The proximity of the plant site to the Sugarbush and the cumulative effects of dust on leaves, trees and understory flora have not been examined in detail and their long term effects may well be detrimental to vegetation, other than maples, that comprise the Sugarbush."206	CR	S	O	2	SDEIS Theme CR 05

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Nancy Schuldt	Tribal cooperating agencies believe the CEA for land use should encompass the 1854 Ceded Territory, as the signatory Bands have lost access to substantial portions of the 1854 CT and the resources within. The tribal cooperating agencies believe the water quality and hydrologic cumulative effects analysis should incorporate the entire St. Louis River watershed. This watershed has experienced substantial historic, current and proposed expanded mining activities, as well as other industrial, agricultural and urban development. In addition to the direct surface water and wetland impacts (loss and/or degradation) from these activities, nearly half of the watershed has experienced hydrologic alteration from extensive ditching. Tribal cooperating agencies consider a 216,300 acre area bounded by the St Louis River, Lake Superior, Lake Vermilion and the Beaver Bay to Vermilion Trail to be a Tribal Historic District, and the pertinent area for consideration of cumulative effects to cultural resources.	CR	S	O	2	SDEIS Themes CR 03, CR 04
Nancy Schuldt	The tribal cooperating agencies' review of the water modeling data packages for the NorthMet Project Proposed Action led to our conclusion that GoldSim did not accurately predict existing conditions, and cannot be relied upon to accurately predict future Project conditions.	WAT	NS	X	1	
Nancy Schuldt	Neither history nor geography is used in the FEIS to determine the areas in which cumulative impacts are to be considered. Instead, the FEIS instead uses an arbitrary and narrow construct. Such an approach, which is unmoored from the topography and hydrology of the area where the Project would be located, and which does to give full consideration to past, current and foreseeable future mining activity, are contrary to NEPA.	CR	S	O	2	SDEIS Themes CR 03, CR 04
Nancy Schuldt	the cumulative effects analysis is partially based on the flawed hydrologic characterization, the incorrectly calibrated groundwater model, unrealistic seepage capture rates, and adaptive management concepts that have not been rigorously explored and objectively evaluated. Based upon these flawed presumptions, the Co-lead agencies maintain that the Project will meet MN WQS, and that "the potential for exceedances of water quality evaluation criteria as a result of cumulative effects from the NorthMet Project Proposed Action and other reasonably foreseeable actions is considered unlikely."	WAT	NS	X	1	
Nancy Schuldt	Recently, the Grand Portage Band contracted with the University of Minnesota Duluth Natural Resources Research Institute to analyze 1854 Ceded Territory cumulative impacts to wetlands, historic trails connectivity, public access to enable the exercise of usufructuary rights, and wildlife passage. In all four areas of analysis, the cumulative effects to the 1854 Ceded Territory resulting from mining on the Iron Range are distinctive and well-defined. But again, the Co-lead agencies declined to include this relevant technical analysis in the FEIS.	CR	S	O	8	SDEIS Themes CR 03, CR 04
Nancy Schuldt	The failure to determine the financial assurances required for the Project, and its indefinite post-closure water treatment, is contrary to NEPA. It circumvents an important aspect of the public's ability to review and evaluate the costs and benefits of the proposed Project, and develop an informed opinion as to whether a Project of this magnitude should move forward into permitting. The absence of an analysis on financial assurances further compromises the environmental review, as it precludes any informed assessment of whether the proposed plans for controlling and mitigating the mine's adverse environmental impacts would be effective – either during mine operations and for hundreds of years after closure.	NEPA	S	O	2	SDEIS Theme FIN 13

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Nancy Schuldt	But in the FEIS, no detail is provided regarding the estimated amount of financial assurance that would be sufficient for reclamation, closure, mitigation, and remediation of adverse effects from the Project, despite clear and consistent recommendations from EPA to do so. Even though the DNR has earlier stated that PolyMet financial assurance will include clean-up costs for contamination resulting from LTV operations, the FEIS provides neither a timeline nor a discussion regarding financial assurance for the existing contamination associated with previous mining activities at the site. This is of particular concern because the hardrock mining industry has a pattern of failed operations, which often require significant environmental responses that cannot be financed by industry.	FIN	S	O	2	SDEIS Theme FIN 05
Nancy Schuldt	These concerns – as to whether the mine will generate sufficient revenues to cover the cost of the necessary environmental protections – are heightened by the absence of any discussion in the FEIS of the potential profitability of the mine including the costs of the waste water treatment facilities and other environmental controls that are essential elements of the Project. The uncertain viability of the propose mine is further heightened by the decline in the price of copper.	PD	NS	X	1	
Nancy Schuldt	The financial assurance costs for long-term post-closure monitoring and maintenance identified in the FEIS range from \$3.5 to \$6 million, but these appear to be an estimate for monitoring activities only ²²⁶ without any long-term wastewater treatment costs. At another mine site on the same property, the estimate of annual operation and maintenance costs for the same type of wastewater treatment the Project proposes to use (reverse osmosis/nano-filtration) was \$2.6 million. ²²⁷ Perpetual operation and maintenance of mechanical wastewater treatment is an additional cost that must be represented in the estimate of financial assurance. The cursory estimate of financial assurance provides little detail about how the cost estimates were derived. Instead, specific discussions about the scale and appropriate instruments for financial assurance have been postponed until the permitting phase of this Project. This approach fundamentally contradicts federal and state environmental policy and the FEIS should have incorporated significant additional study to appropriately evaluate closure, mitigation, reclamation, and perpetual treatment cost estimates.	FIN	S	O	3	SDEIS Theme FIN 05
Nancy Schuldt	Contrary to the explicit requirements of the Council on Environmental Quality (CEQ) rules, the FEIS does not evaluate or examine in any substantive way potentially viable Project alternatives. Even the no action alternative, which is the only alternative to the NorthMet Project Proposed Action evaluated in the FEIS, is lacking in detail and analysis. Tribal cooperating agencies identified this deficiency in the 2009 DEIS, consistently brought it forward for discussions throughout the SDEIS process, and US EPA cited the lack of alternatives as a factor when issuing an EU-3 rating for the DEIS. Although the SDEIS was revised to reflect the Project proponent’s preferred action, and the FEIS includes several new modifications and mitigation measures, the only alternative analyzed in any detail concerns simply the acreage of the proposed land exchange (Alternative B). This is contrary to the CEQ regulations that require federal agencies to evaluate in detail the reasonable alternatives in an EIS.	ALT	S	O	2	SDEIS Theme ALT 21
Nancy Schuldt	Nor is there any evaluation or identification in the FEIS of the ‘least environmentally damaging practicable alternative’ (“LEDPA”) as required before approving a CWA §404 wetlands permit. 40 CFR § 230.10(a) specifies that “no discharge of dredge or fill material shall be permitted if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem, so long as the alternative does not have other significant adverse environmental consequences.” In addition, the CEQ guidance clarifies that “Reasonable alternatives include those that are	ALT	S	O	2	SDEIS Theme ALT 20

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
	practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.”231 For the reasons set out below, and as discussed in Section 5, infra, the Project is not the least environmentally damaging practicable alternative and the application for a section 404 permit should be denied.					
Nancy Schuldt	Multiple mine plan alternatives exist that could provide mitigation for or prevent long-term environmental damage, but none are considered in the FEIS. Examples of alternatives and their resultant environmental benefits include: - paste or dry tailings disposal to reduce the Project footprint, use less water, and minimize longterm treatment and maintenance (decreasing the risk of surface and groundwater pollution); - back-filling all waste rock into the east, central and west mine pits (reducing the mine foot print at closure, reducing contaminant runoff to surface and groundwater, reducing volume of water requiring perpetual treatment, restoring additional mine site wetlands); - provide reverse osmosis treatment at the mine site immediately rather than waiting until year 40 (augmenting water loss in adjacent high quality wetlands in the Partridge River watershed), and; - underground mining (multiple and substantial environmental benefits).	ALT	NS	X	1	
Nancy Schuldt	Dewatered or paste tailings placed on a liner and covered could substantially minimize the mass and concentration of pollutants reaching the Embarrass River watershed wetlands and the Embarrass River. This is a modern mine waste management technique used by many mines in the US and around the world,240 yet it has never been adequately evaluated as an alternative for improving this Project. “Converting to paste tailings technology from conventional slurry tailings at most mines makes sense, both environmentally and economically. Paste tailings use less water, require less land, do not require engineered containment dams, generate less acid and contaminants, reduce long-term costs and allow for early reclamation. Slurry tailings use and discharge large volumes of water, require dust control measures, require large land areas and containment dams for disposal, and create contaminated water that must be captured and treated.” Despite specific comments on the SDEIS and preliminary FEIS, any acknowledgement, consideration or discussion of the substantial environmental benefits of paste or dry-stack tailings is completely missing from Table 3.2-17 in the FEIS. This is a significant deficiency in the analysis of alternatives, as it would provide substantive environmental benefits.	ALT	S	O	2	SDEIS Theme ALT 06
Nancy Schuldt	In the 2009 DEIS, the Co-lead agencies maintained that all waste rock should be considered reactive. FEIS Table 3.2-8, Waste Rock Categorization Properties242, acknowledges that the Category 1 waste rock (rock that is <0.12% sulfur), which constitutes 70% of the volume of waste rock, has a “low potential to generate acid, but may leach metals.” Back-filling all of the mine pits with all of the waste rock would reduce the final surface footprint of the mine at closure, and make possible 526 acres of wetland restoration where the Category 1 stockpile is now proposed to be stored in perpetuity. This alternative would prevent the need for a permanent separate seepage capture system around an unlined waste rock pile, as proposed in the Project, which would have to perform at an above-optimum capture rate in perpetuity to comply with Minnesota Water Quality Standards (“MN WQS”). Capping and re-vegetating the mine pits after backfilling with waste rock would prevent deep infiltration of precipitation and reduce mobilization of toxic metals.	ALT	S	O	2	SDEIS COOP Response #19581

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Nancy Schuldt	The FEIS inexplicably removes the stockpile liner described in the 2009 DEIS for Category 1/2 waste rock in the current Project proposed action. A comparison of Table 3.2-16 as set out in the 2009 DEIS, and the subsequent elimination of the liner for the stockpile in the SDEIS and FEIS is as follows: DEIS: "Category 1 and 2 waste rock would be stored in a permanent lined/covered stockpile (Category 1/2 Stockpile) north of the west pit (years 1-11)" SDEIS, FEIS: "Category 1 waste rock mined from years 1-13 would be stored in an unlined, permanent stockpile north of the West Pit. The stockpile would have a geomembrane cover system at completion and surface water and groundwater collection system would encompass the entire stockpile and direct water to the Mine Site WWTF." (emphasis supplied). The Band maintains that, if not backfilled, the Category 1 waste rock stockpile must be lined.	ALT	S	O	2	SDEIS COOP Response #19582
Nancy Schuldt	The Minnesota Department of Natural Resources (DNR) and US Army Corps of Engineers (USACE) superficially evaluated and subsequently dismissed underground mining as an alternative to the proposed open pit Project for the 2009 DEIS. The Co-lead agencies eliminated this alternative from further evaluation because it would have had "a significantly reduced rate of operation that would not be considered economically feasible, and, therefore, would not meet the Purpose and Need of the Project." Tribal cooperating agencies urged the Co-lead agencies, now including the US Forest Service (USFS), to do a more robust analysis of the underground mining alternative for the SDEIS, but the Colead agencies did not "exercise a degree of skepticism in dealing with self-serving statements from the prime beneficiary of a Project." when analyzing this alternative. This alternative was eliminated by the Project proponent based purely on an economic decision that underground mining would not be as profitable as open pit mining. The Co-lead agencies claim that "it was not possible to undertake a quantitative, side-by-side assessment of the underground mining alternative." An underground mine would have a reduced mining rate and life of mine, employed fewer workers for a shorter period of time, and reduced state and local tax revenues. Although the underground mining alternative would offer substantial environmental benefits (significantly less wetland destruction, less mine-generated waste, less groundwater and surface water pollution generated and requiring perpetual treatment and control, less reclamation and closure activities, less nuisance and reactive dust to be controlled, less noise and vibration impacts, less visual impacts), the economic and intrinsic value of those benefits are not even estimated. In addition, an underground mine Project would not require a federal land exchange, resulting in lower start-up costs and avoiding the permanent loss of high quality resources (as discussed in later comments on Land Exchange impacts). Based upon an incomplete analysis of the benefits of an underground mine, the Co-lead agencies determined that this alternative would result in reduced socioeconomic benefits, and; "PolyMet would not move forward with an unprofitable Project, thus any potential environmental or socioeconomic benefits associated with this alternative are moot."	ALT	S	O	2	SDEIS COOP Response #19584
Nancy Schuldt	The Co-lead agencies determined that underground mining was considered technically feasible, but concluded that "PolyMet is a private sector and for-profit company, the value of the saleable material would need to provide sufficient income to cover operating cost (which includes, but is not limited to, the cost of mining, processing, transportation, and waste management), capital cost (to build and sustain facilities), an adequate return to investors, reclamation, and closure costs and taxes. An underground mining Project would leave most of the NorthMet Deposit unmined because of its low metal value relative to the cost of mining and mineral processing. Other material would have to be left in place for safety reasons, to prevent collapse."248 Therefore, "the Co-lead Agencies found that while underground mining is technically feasible, available, and would offer significant environmental benefits over the proposed NorthMet Project, it would not be	ALT	S	O	2	SDEIS COOP Response #19585

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	economically feasible and would not meet the Purpose and Need. Since the underground mining alternative would not meet all of the screening criteria, it is not considered to be a reasonable alternative. Therefore, the underground mining alternative was eliminated from further evaluation in the SDEIS."249 The SDEIS did not contain the appropriate level of detail required to eliminate this alternative. The conclusion that underground mining is neither viable nor preferable remains substantially unjustified, despite repeated requests by the tribal cooperating agencies for further analysis.250					
Nancy Schuldt	The Project Proponent, without considering the economics of perpetual treatment, the purchase of thousands of acres of land for the federal land exchange, direct and indirect wetland mitigation costs, etc., concludes in their economic analysis that underground mining is "[n]ot economically viable" while simultaneously claiming that backfilling the west pit would create encumbrances not allowed in their mineral lease due to mineral resources located below the west pit that could only be accessed through underground mining. This is not the appropriate rigor in a cost-benefit analysis for thoroughly evaluating an EIS alternative. The CEQ regulations require that, where a cost-benefit analysis is "relevant to the choice among environmentally different alternatives," there are a variety of additional requirements, including "analysis of unquantified environmental impacts, values, and amenities,"251 in addition to other CEQ alternatives rules.	ALT	S	O	2	SDEIS COOP Response #19587
Nancy Schuldt	Further, as consultation with tribal cooperating agencies under §106 of the National Historic Preservation Act has continued, an additional reason for re-examining the underground mining alternative emerged: avoidance of adverse impacts to a traditional cultural property, the Beaver Bay Trail to Lake Vermillion Trail, which transects a portion of the proposed east pit. Yet despite the numerous and substantive environmental and cultural resource benefits that an underground mine would afford, it remains eliminated from consideration in the FEIS.	ALT	NS	X	1	
Nancy Schuldt	As already argued in the Tribal Position,252 significant additional study of the underground mining alternative is mandated, and the FEIS offers no new discussion of the reasons for rejecting the alternative. The economic viability of an underground mine depends on a variety of factors including ore grade, market prices, cost of tailings management, and waste rock disposal. A study of this particular deposit was performed by the prior owner of the site, US Steel, which actually recommended underground mining.253 PolyMet is well aware of this study, given that the company included it in a filing with the Securities and Exchange Commission in 2003.254 In fact, by examining geologic cross-sections showing the distribution of ore by depth,255 it appears that there are substantial ore reserves at depths that likely could not be accessed by the proposed open-pit mine.	ALT	S	O	2	SDEIS COOP Response #19588
Nancy Schuldt	The environmental costs of open-pit mining and the requisite wetland mitigation and above-ground disposal of tailings and waste rock are immense. These environmental costs, combined with the most current understanding of deposit ore grades, reasonably potential metals prices, and the costs associated with perpetual treatment must all be evaluated to determine the feasibility of this alternative.	ALT	S	O	2	SDEIS COOP Response #19589

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Nancy Schuldt	The FEIS's brief discussion of the No Action Alternative is misleading. Its statement that under the No-Action Alternation the "Mine Site would be returned to pre-exploration conditions under the requirements of exploration approvals to reclaim surface disturbance associated with exploratory and development drilling activities," it creates the inaccurate impression that biological integrity of the mine site is somehow already damaged. The FEIS compounds this by then wholly failing to explain, in detail, that the No Action Alternative would also avoid all adverse environmental impacts of the Project. The No Action Alternative means that: there would be no direct loss of over 900 acres of high quality wetlands, no adverse indirect impacts to thousands more wetland acres, no loss of high quality forested uplands, no further diminishment of wildlife habitat, no permanent loss of treaty resources under the land exchange, no cumulative effects to resources and environmental quality.	ALT	S	O	2	SDEIS Theme ALT 14
Nancy Schuldt	Compliance with the law – the Cliffs Erie Consent Decree and the Minnesota Pollution Control Authority's water quality standards for the impaired waters – would improve water quality, and should have been affirmatively discussed in the FEIS's description of the No Action Alternative The failure to do so creates the inaccurate impression that the baseline conditions – a brownfield and impaired waters would continue – when, in fact a no action alternative cannot include elements that would not comply with the law. The No Action Alternative must take into account current legal proceedings and assume compliance with the law. Friends of Yosemite Valley v. Kempthorne, 520 F.3d 1024, 1038 (9th Cir. 2008); Conservation Northwest v. Rey, 674 F. Supp. 2d 1232, 1245-1246 (W.D. Wash. 2009); see also Preserve Our Island v. United States Army Corps of Engineers, 70 ERC 16222009 WL 2511953 (W.D. Wash. 2009) (Corps failed to properly evaluate the no action alternative when it incorrectly assumed that an old dock would remain and "would continue to degrade, leaching creosote into the water" – an assumption that was contrary to the lease which required removal of the dock whether or not the proposed action was approved). See also Center for Biological Diversity v. U.S. Department of the Interior, 623 F.3d 633, 643-646 (10th Cir. 2010) (BLM's assumption that mining would occur in the same manner whether or not the proposed land exchange occurred was erroneous in light of other law that would still have applied, and resulted in an inaccurate examination of the no action alternative).	ALT	S	O	2	SDEIS Theme ALT 14
Nancy Schuldt	The FEIS here is not adequate. It does not satisfy the requirements of Minn. R. 4410.2800, subp. 1.A, as it does not fully or fairly present all "significant issues for which information can be obtained," did not consider other reasonable alternatives, and did not provide accurate and complete information on the environmental, economic, employment and sociological impacts of the proposed Project or the alternatives. As described in detail above, the FEIS fails to base its assessment of the environmental impacts of the proposed Project on sound scientific analysis across a range of significant environmental impacts – including water quality, mercury loading, wetlands, air quality, and wild rice, among others. Instead, the FEIS bases its conclusions on flawed application of its models, incorrect baseline data, and untested assumptions. As set out above, the Band and others have provided scientific analysis which refutes the conclusions reached in the FEIS. The FEIS's failure to give effect to the relevant available data and the relevant substantial scientific analysis leads the FEIS to conclusions that are arbitrary and capricious and unsupported by the evidence in the record. In addition, the FEIS did not satisfy the requirements of Minn. R. 4410.2800, subp. 1. B. While the FEIS includes appendices which report on the comments made, and contains columns intended to provide the agencies' responses to those comments, the responses are in substantial respects nonsubstantive, limited to conclusory statements that the matter was considered. But the flaws in the models and studies preclude a conclusion that the MDNR has complied with its obligation to carefully consider the	MEPA	S	O	2	SDEIS Theme NEPA 08

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	comments made. Further, the FEIS does not satisfy the requirements of Minn. R. 4410.2800, subp 1.C. While notice and an opportunity to comment on the draft and final EIS have been provided, the time allocated for review and comment on the FEIS was not adequate for a proposed project that is the first of its kind in Minnesota, has extensive environment impacts, and is the subject of discussion in a 3500 page document, which, in turn cites to thousands of pages of source documents, many of which were prepared after comments were submitted on the DSEIS. In these circumstances, a period of only 37 days – which began shortly before the Thanksgiving holiday – in which to review this volume of material was not adequate. Because of the fundamental errors in the FEIS, it cannot be relied on to make decisions regarding permits for the proposed mine. The FEIS should be found inadequate.					
Nancy Schuldt	The purpose of the Clean Water Act is to “restore and maintain the chemical, physical, and biological integrity of the Nation's waters.” 33 U.S.C. § 1251(a). The Clean Water Act generally prohibits the discharge of dredged or fill materials into waters of the United States unless authorized by a permit. Id. § 1311(a). While the Secretary of the Army is authorized to issue permits for the discharge of dredged or fill material into waters of the United States, section 404 of the Clean Water Act and the guidelines implementing it prohibit the issuance of such permits unless a number of critical criteria are satisfied. Id. § 1344; 40 C.F.R. Part 230; 33 CFR Part 320. The application here does not satisfy those requirements and must be denied.	COE	NS	X	1	
Nancy Schuldt	the Project here is not the least environmentally damaging practicable alternative (LEDPA).	ALT	NS	X	1	
Nancy Schuldt	As a result, the FEIS does not provide a basis for determining whether the underground mine alternative is in fact “impracticable” or whether it might simply be less profitable than PolyMet’s preferred alternative. In the absence of a clear basis for finding economic impracticability, the underground mine remains a less environmentally damages practicable alternative.	ALT	S	O	2	SDEIS Theme ALT 01
Nancy Schuldt	The FEIS also rejected modifications to the proposed Project that, if implemented, would result in other less damaging alternatives if an open pit mine were permitted. Here too, as discussed in detail in section 3 above, a number of mine plan alternatives exist that could mitigate or prevent long-term environmental damage, but none are considered in the FEIS. Examples of alternatives and their resultant environmental benefits include: - paste or dry tailings disposal to reduce the Project footprint, use less water, and minimize longterm treatment and maintenance (decreasing the risk of surface and groundwater pollution); - back-filling all waste rock into the east, central and west mine pits (reducing the mine foot print at closure, reducing contaminant runoff to surface and groundwater, reducing volume of water requiring perpetual treatment, restoring additional mine site wetlands); and - provide reverse osmosis treatment at the mine site immediately rather than waiting until year 40 (augmenting water loss in adjacent high quality wetlands in the Partridge River	ALT	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
	watershed).					
Nancy Schuldt	There is no question that the Project here will result in the permanent loss of 913.8 acres of wetlands that have high quality and functional values. And as discussed in section 1.J, nearly 2,000 acres of coniferous bog wetlands will be directly impacted by mine pit(s) and stockpiles, or indirectly impacted due to drawdown and/or pollution. The no-action alternative and denial of the 404 permit are the only means offered in the FEIS to avoid the loss of these irreplaceable resources.	GEN	NS	X	1	
Nancy Schuldt	The wetlands that would be directly lost by this Project are important, scarce and sensitive. Portions of them are irreplaceable. It is undisputed that they are Sites of High Biodiversity Significance, on which there are imperiled and vulnerable plant communities which “have high ecological value, are rare in a given area, and/or could face danger of extirpation.” In these circumstances, all measures should be taken to avoid their loss. The application for the 404 permit should be denied for this reason alone.	COE	NS	X	1	
Nancy Schuldt	A watershed approach could have been used here as in-watershed opportunities still exist. A watershed approach should have been used here especially in light of the undisputed fact, discussed in more detail in Section 1.J, that the St. Louis River watershed as a whole has experienced cumulative destruction, degradation and hydrologic alterations in well over 50% of the watershed.	WET	S	O	2	SDEIS Theme WET 03
Nancy Schuldt	Compounding these losses, the proposed mitigation plan provide no compensatory mitigation at all for the likely severe adverse indirect impacts that the Project will have on thousands of additional acres of wetlands from mine pit drawdown – a larger area than that described in the FEIS – and which should be addressed by up-front mitigation. The FEIS’ plan to “monitor” the indirect impacts on the adjacent wetlands and then, based on undefined criteria consider some possible additional mitigation measures, is insupportable and provides no basis on which a 404 permit could properly be issued.	WET	S	O	2	SDEIS Theme WET 02
Nancy Schuldt	The fact that Project is not the least environmentally damaging practicable alternative, and would have an unacceptable adverse effect on water supplies, fishery areas and wildlife, are each independent, and more than sufficient, grounds for denying the 404 permit. But if more were needed, the permit should be denied for the additional reason that it would not be in the public interest as required by 33 C.F.R. part 320.	NEPA	S	O	3	SDEIS Theme NEPA 04
Nancy Schuldt	The proposed Project is not based on any public need. Development of this mine is sought by a private company for the purpose of extracting and processing the minerals for profit. The Project does not involve any public work – such as a road, or reservoir, or flood control Project. It is a development sought by and which would directly benefit private interests. The FEIS’s description of the Applicant’s Purpose and Need for the Project, suggests that there might be some greater public good to be served by the mine stating that “[d]emand continues to rise for these metals due to the expansion of the green economy and rising demand from developing countries like India, China, and Brazil.” FEIS, 1-11. But in fact the demand for the these metals is, and has been dropping, and the reduced demand is occurring in developing countries, in particular China, which had previously been a strong consumer of such metals. 266 The decline in the price of copper has led PolyMet’s stockholder and investor, Glencore, like other major international mining companies, to sell some of its mines and to suspend production in others. Id. The decline in the demand for copper and copper prices calls into question not only the	NEPA	S	O	3	SDEIS Theme NEPA 06

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	public need for this Project, but the private need as well.					
Nancy Schuldt	First, the risk of serious environment harm is real. As discussed in detail in Section 1 above, the FEIS's discussion of the impacts of the proposed mine on water quality, mercury, wild rice, and air quality, among others, suffers from a lack of proper scientific analysis. These flaws lead to incorrect conclusions in the FEIS that, for example, the mine will not increase mercury concentrations in fish within the St. Louis River watershed, see FEIS at 5-10, and "would not directly, indirectly, or cumulatively affect the water" in either the Boundary Waters Canoe Area Wilderness or Voyageurs National Park, see FEIS at ES-36.	O	NS	X	1	
Nancy Schuldt	Second, the risk of environment harm is compounded by the fact that for many potential adverse environmental impacts, the FEIS substitute of vague plans on "adaptive management" in lieu of science based analysis of the potential impacts of the Project. See Section 1.K above. In other words, after the mine is approved and in operation, monitoring would be done to determine potential adverse impacts, and if such were to occur, then future mitigation measures would be identified, developed and implemented on an as-needed basis. But this approach does not avoid or prevent mine related environmental impacts. Monitoring can only detect impacts after they have begun to occur and the adaptive management activities would only be a reaction to an impact. At that point, it may well be too late to prevent or mitigate the damage in any cost-effective or meaningful way.	O	NS	X	1	
Nancy Schuldt	Third, the FEIS recognizes that Project will require ongoing wastewater treatment not only during the mine's 20-year operations, but for several hundred years after the mine closes. At the same time, the FEIS concedes that the calculation of the full costs of these measures has not yet been done, and therefore the financial assurances that would be required to ensure the necessary environmental protections are presently unknown. FEIS 3-140. Thus, even if the discussion of the environmental impacts of the mine in the FEIS were correct, the FEIS's conclusion that the mine will cause no environmental harm is wholly predicted on fully-functioning wastewater treatment facilities for several hundred years. The absence of a calculation of the financial assurances needed to make that a reality deprives the Corps of any basis for determining that the public interests in the environment would be protected if a permit were issued.	FIN	S	O	3	SDEIS Theme FIN 05
Nancy Schuldt	Fourth, the FEIS contains no assessment of the value of the ecosystem services – an analysis required by the Council on Environmental Quality, ²⁶⁷ the Office of Management and Budget, and the Office Science and Technology Policy ²⁶⁸ As discussed in Section 1.N above, the natural resources in St Louis Watershed are an essential component of the economy in this region. They provide protection from flooding, habitat for plants and animals which, in turn, provide food – fish, game and wild rice – as well as recreational opportunities on which the economy in the region depends. In addition, the wetlands that are part of ecosystems in the St Louis Watershed play a critical role in removing pollutants from water and protecting water quality. ²⁶⁹ Their value has been quantified, and they provide an estimated \$5 billion to \$14 billion in ecosystem	SO	S	O	3	SDEIS Theme SO 03

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	service benefits per year. The asset value of the watershed is between \$273 billion and \$687 billion over 140 years. Id.					
Nancy Schuldt	Fifth, the regulations governing the public interest analysis clearly “discourage as contrary to the public interest” the “unnecessary alteration or destruction of” wetlands as they “constitute a productive and valuable public resource.” 33 CFR 320.4(b)(1). Given the high quality and large area of wetlands that would be directly lost if the Project were developed, this element of the public interest analysis weighs against the issuance of a permit.	COE	S	O	3	SDEIS Theme COE 03
Nancy Schuldt	Sixth, the Fond du Lac Band, along with the Grand Portage and Bois Forte Bands, hold treaty-protected rights to hunt, fish and gather in the territory, and important cultural and historic resources that would be adversely affected by the proposed mine. In addition, the reservation established for the Fond du Lac Band by that treaty –the Band’s permanent home and a small fraction of the its aboriginal territory – lies downstream from the Project. The federal government, by the promises made in the treaty, has a trust responsibility to protect those important treaty rights and the resources on which they depend from the harms that would result if the mine were developed.	CR	S	O	3	SDEIS Theme CR 01
Nancy Schuldt	In general, the language found in Chapter 4 of the FEIS regarding accessibility suggests that Tracts 2, 3, 4 and 5 plus a portion of Tract 1 have similar accessibility as the federal lands proposed for exchange (i.e., no improvement in public access). High quality/high biodiversity lands will be exchanged for lands with moderate quality and biodiversity. Proposed lands to be brought into the federal estate will not have Weeks Act protection, and do not include mineral rights. These factors do not support a public interest determination, nor do they comport with the federal trust responsibility. The FEIS fails to evaluate the entirety of impacts as a result of the Land Exchange; i.e., that over 6,000 acres of high quality forests and wetlands will be permanently destroyed or degraded, that downstream ecosystems will be degraded, that treaty resources will be permanently lost.	O	NS	X	1	
Nancy Schuldt	Table 7.3.5-1 in the FEIS presents the Public Interest Factors That Must be Considered for the Land Exchange Proposed Action. The Band will be providing more detailed comments to the US Forest Service in response to their draft Record of Decision, but notes our significant disagreements with their conclusions, in the FEIS, on securing important objectives, “greater preservation protection” of cultural resources, consistency with relevant executive orders, consolidation of interests in lands and split estates, socioeconomic effects, whether the proposed action is “environmentally sound”, potential effects to water resources, and “positive effects on environmental justice populations”. Overall, the USFS cannot “ensure that these mineral resources can be produced in an environmentally sound manner contributing to economic growth,” because the water modeling and impact assessment process is not scientifically defensible.	LAN	S	O	3	SDEIS Theme LAN 04
Nancy Schuldt	The Land Exchange Proposed Action also does not meet the federal government’s trust responsibility to protect the Band’s treaty rights and the resources on which those rights depend in the 1854 Ceded Territory. It results in a permanent loss of 382 acres, does not protect fish and wildlife habitat within the Mine Site, does not protect important cultural resources such as wild rice beds, historic trails, and a substantial portion of the Mesabi Widjiu, does not protect the Embarrass, Partridge or St. Louis River watersheds, does not consolidate mineral interests in the private parcels that would be	CR	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
	conveyed to the federal estate, does not promote multiple-use values, or fulfill public needs.					
Nancy Schuldt	In the 1854 Ceded Territory, Fond du Lac, Bois Forte and Grand Portage band members can exercise treaty rights on private land, but only with landowner permission unless the land is generally open to public use; therefore, maintaining public land ownership is critical for the exercise of treaty rights. The Forest Service should consider exchange for private lands only in order to maintain - or better yet, increase - the total public land acreage within the 1854 Ceded Territory, if it is adequately considering trust responsibility and tribal interests in its determination.	O	NS	X	1	
Nancy Schuldt	Inexplicably, the FEIS removes from Chapter 4, Affected Environment, this salient description of existing land use in the federal tract that appeared in the SDEIS: The federal lands proposed for exchange contain portions of the Minnesota County Biological Survey (MCBS) Headwater Site. "The Headwaters Site straddles the continental divide, with water from the Site flowing both east through the Great Lakes to the Atlantic Ocean and north to the Arctic Ocean. Paradoxically, the divide runs through a peatland. Although the peatland appears flat, water flows out of it from all sides, forming the ultimate source of rivers that eventually reach two different oceans. The Site is the headwaters of four rivers: Stony River, Dunka River, South Branch Partridge River, and the St. Louis River, which is the second largest tributary to Lake Superior....[t]hese conservation areas are the best opportunities for conserving the full diversity of terrestrial and aquatic ecosystems and globally rare or declining species." It is hard to understand why, in the face of explicit SDEIS narrative noting the biodiversity significance of the Mine Site in its current condition and land use, the Co-lead Agencies would expunge this information from the FEIS. It does not serve the public, nor comport with federal trust responsibility, to deliberately diminish the ecological values provided by such a large expanse of intact, functional, diverse forest and wetland habitat.	VEG	S	O	3	SDEIS Theme VEG 03
Nancy Schuldt	In FEIS 3.2.2.1.2, Existing Conditions: the statement regarding recent harvest of timber in mine site area in 2008 directly contradicts statements in Chapter 4 (4-629) "...no ongoing forestry activity on the federal lands and not evidence of recent past forestry activity" and Chapter 5 (5-678) regarding "...no current economic activity (e.g., forestry, etc.) on the federal lands. The Band questions, more importantly, the statement "...federal lands are not accessible to the public for economically measurable use, such as forestry or recreation...Thus while the federal lands may hold some theoretical economic value for timber harvest, their practical economic value is zero." But as discussed in detail in Section 1.N, ecosystem services valuation is a necessary but missing component to this review process.	O	NS	X	1	
Nancy Schuldt	Indeed, the public interest determination cannot be made without considering the ecosystem services provided by the lands in both the federal and non-federal estates. As discussed above, although required by the Council on Environmental Quality,276 as well as the Office of Management and Budget, and the Office of Science and Technology Policy, the FEIS provisions on the proposed land exchange wholly fail to consider, much less address, the value of ecosystem services. Consideration of ecosystem service values has been required for plans and proposals that affect management of federal assets including National Forests, and are to be implemented to address a broader range of federal decision-making in the future. Id. at 1-5. The record includes an economic analysis of the ecosystem service value of the St Louis Watershed. Fond du Lac submitted an expert economist report, The Value of Nature's Benefits in the St. Louis River Watershed278 to the Co-	SO	S	O	3	SDEIS Theme SO 03

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	lead Agencies with the expectation of its consideration in the environmental review (and its inclusion in Appendix C of the FEIS), and GLIFWC provided additional preliminary analysis of the value of the wetlands/floodplains/forests for properties conveyed. Despite the available expert analysis of ecosystem service values, the Co-lead agencies did not consider it at all in their environmental review process, and chose not to include this additional analysis in Appendix C where it would be readily available to the public.					
Nancy Schuldt	As to FEIS section 3.3.1.1, the Band disputes that the Land Exchange meets Criteria A for a land exchange, without benefit of an ecosystem service value comparative analysis. Further, the Band and the other tribal cooperating agencies have consistently maintained that protection of cultural resources and the healthy habitats and watersheds necessary to sustain them are not met by the proposed Land Exchange. Certain rare cultural resource types (trails, ceremonial sites) will be both directly and indirectly adversely affected.	O	NS	X	1	
Nancy Schuldt	3.3.2.2 All federal lands except Tract 4 have severed mineral and surface rights; this is inconsistent with Forest Plan guidelines for acquisition and Desired Condition ("...eliminate conflicts..."). The lands to be acquired have less protection (Weeks Act) than the lands currently in the federal estate. This is not in the public interest.	LAN	S	O	3	SDEIS Theme LAN 02
Nancy Schuldt	The FEIS does not provide adequate discussion of the adverse effects of the proposed land exchange on wetlands and headwater streams within the St. Louis River watershed/Lake Superior Basin, where the loss of first-order headwaters streams, second-order streams and wetlands have the potential to significantly adversely impact downstream water quality, fisheries, and wildlife that are important to the Bands. The Land Exchange Proposed Action would relinquish water resources within the Lake Superior basin for wetlands and surface water resources outside the Lake Superior basin and the St. Louis River watershed, although still within the 1854 Ceded Territory. Federal lands include 4,164 acres of wetlands within the Lake Superior basin; non-federal lands contain 4,669 acres of wetlands, of which only 373 acres are within the Lake Superior Basin, demonstrating there would be a permanent loss of 3,791 acres of federally managed wetlands within the Lake Superior Basin. ²⁸⁶ It is well known that wetlands play an important role in protecting the quality and condition of downstream waters by retaining floodwaters, sediment, nutrients, and other pollutants. Wetlands also function as thermal refuge for moose when summertime temperatures exceed 14oC, the point at which moose become thermally stressed, ²⁸⁷ and wetlands provide an important forage resource for moose during the open water season.	O	NS	X	1	
Nancy Schuldt	In summary, federal land exchanges are discretionary, and federal agencies cannot approve permits that will have impacts to treaty resources without additional evaluation and mitigation. ²⁹¹ No mitigation has been identified in the FEIS for this permanent loss of lands and resources (natural and cultural) to the 1854 Ceded Territory. The public interest determination must include a specific finding that "The intended use of the conveyed Federal land will not substantially conflict with established management objectives on adjacent Federal lands, including Indian Trust lands" (36 C.F.R. 254.3(b)(2)(ii)). This threshold has not been met, and the Fond du Lac Band objects to the implementation of the Land Exchange Proposed Action. Additional comments on and objections to this proposed action will be provided to the US Forest Service in response to the draft Record of Decision published on November 17, 2015.	LAN	S	O	3	SDEIS Theme LAN 01

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Nancy Schuldt	For all of the foregoing reasons, the Fond du Lac Band of Lake Superior Chippewa submits that the FEIS is not adequate and does not comply with NEPA in material respects. The information regarding the potential environmental impacts of the proposed Project require denial of the section 404 permit and denial of the proposed land exchange.	NEPA	S	O	3	SDEIS Theme NEPA 09
Joe Moriarity	It's with the utmost gravity that I am writing regarding the plans for the PolyMet NorthMet copper-nickle sulfide mine proposal. I've read all the claims of the companies. . . and yes, they all look good. But. . . it's all well and good on paper, but you need to take off your blinders because NONE of these type of mines as escaped the years without some kind accident, usually catastrophically polluting the environment for decades if not longer. This is a disaster waiting to happen. . . but a preventable one.	GEN	NS	X	1	
Joe Moriarity	Yes, the mine will provide jobs, but only in the short run. eventually the mine will play out, or a catastrophe will force the State and PolyMet to shut it down. . . and the latter is the most likely outcome.	SO	NS	X	1	
Joe Moriarity	I've spent many a summer and fall canoeing and hiking in the areas that will be ruined. . . and ruined for generations. All the money in the world cannot stand against the irreplaceable beauty and value to ours and coming generations. You simply do NOT have the right to even take a chance on polluting that amazing wilderness.	LU	NS	X	1	
Joe Moriarity	I request a specific response to my comments.	O	NS	X	1	
Louis Mielke	Hello, although I admire the dedication of Kathleen Atkinson, Tamara Cameron, Susan Hedman, and Tom Landwehr and many others to make this proposal work, I do not think that the PolyMet NorthMet copper-nickel sulfide mine proposal should be passed.	GEN	NS	X	1	
Louis Mielke	It's is great that PolyMet will be able to create new wetlands in replace of the old ones; however, what about future effects of tainted groundwater? Can PolyMet create some brand new aquifers that are adequate for tribal and state standards? Also, what about the chance for tainted groundwater to ruin more wetlands than have been planned to restore? If this proposal is passed, please do not let PolyMet NorthMet, nor Glencore get away with destroying the land and leaving incomplete restoration job. What will this copper and nickel be used for? Get them legally bound as tight as you can to restore the land. Please, don't put the burden of restoration on MN taxpayers.	PD	S	O	8	SDEIS Theme PD 06
Louis Mielke	The prices of Copper and Nickel have dramatically dropped in the past 5 years. PolyMet and Glencore say they will be able to pay for it, but how can one completely restore tainted groundwater? PolyMet discharge of pollutants and wetlands destruction and impairment would degrade surface and groundwater and violate federal, state and tribal water quality standards.	WAT	S	O	8	SDEIS Themes NEPA 06, WR 195
Louis Mielke	Plus, the FEIS fails to analyze health risks and impacts on WORKERS and communities who rely on fish and wild rice for subsistence, including risks from asbestos-like particles and methylmercury.	HU	S	O	8	SDEIS Themes HU 03, AQ 05
Louis	Mining effluent would degrade surface and groundwater, violating the Superior National Forest plan and state, federal and	LAN	S	O	8	SDEIS Themes LAN 04, WR 195

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Mielke	tribal water quality standards.					
Louis Mielke	PolyMet and Glencore will not pay for what they will have done to the land, and the burden of restoration will be put on the people of MN. Why is okay for the taxpayers of Minnesota agree to pick up after a foreign company's risky venture?	FIN	S	O	8	SDEIS Themes FIN 01, FIN 04, FIN 10
Louis Mielke	I would like a specific response to my comments and questions.	O	NS	X	1	
Jeff Conrod	I'm sure you have received the below form-letter hundreds of times. I'm leaving it because it lists some great reasons for opposing the proposal and I agree with them.	GEN	NS	X	1	
Jeff Conrod	The beauty of the BWCA is too great to risk. What if the claims that the mine won't hurt the BWCA or anyone or anything are right but we don't approve the project? What do we loose? We loose some jobs that will go away when the mine closes (in 30 years?) and we lose the use of the minerals that are extracted. But what if the claims are wrong? What do we loose? We loose thousands of jobs, clean water, the BWCA and all the other things you have been told about already. Which way would you rather be wrong? Please please please oppose the proposal! Please protect our water, plants, animals and our health.	SO	NS	X	1	
Nick Rowse	Because the underground minerals are non-federally owned, there is no requirement by the Cooperating Agencies to include the Bureau of Land Management (BLM) in the NEPA or MEPA process. However, no mention was made in either in the FEIS or in the DROD, that BLM was consulted over the proposed NorthMet mine and land exchange by the Cooperating Agencies. This was a significant oversight because BLM could have provided the best reasonably available resources in evaluating both surface and underground mining.	NEPA	S	O	5	SDEIS Themes NEPA 08, NEPA 14
Nick Rowse	In comparing the pros and cons of underground mining, it is very evident that there are many more pros than cons as follows: The pros of underground mining at the proposed NorthMet mine site would: • significantly reduce adverse visual effects, • set a precedent for how to underground-mine for copper, nickel, and other highly valuable ores under a high-quality northern Minnesota forest, • eliminate almost entirely the need for excavating and disposing hundreds of millions of tons of waste rock and the need for long-term management, in perpetuity, of acid runoff from this waste rock, • create hundreds of new jobs, including mining, transportation, and local service businesses for northeast Minnesotan communities, • provide millions of new tax dollars for Minnesota and local communities, • create a stable domestic source of copper, nickel, and other rare earth minerals, • reduce adverse impacts to environmental justice-designated communities by significantly reducing air and water pollution, • significantly reduce the loss of 914 acres of contiguous wetland, including coniferous fen, which would require up to 1,800 acres of mitigation-wetlands across Minnesota, the mitigated wetlands located entirely outside of the St. Louis River watershed, • maintain protection and management of northern forest habitat, including wetlands, which are both large carbon sinks, under the ownership of the USFS, • significantly reduce adverse impacts to federally-listed species – Canada lynx (<i>Lynx canadensis</i>) and its Critical Habitat, northern long-eared bat (<i>Myotis septentrionalis</i>), and gray wolf (<i>Canis lupus</i>), • significantly reduce adverse impacts to state-listed species or species of special concern – moose (<i>Alces americanus</i>), little brown bat (<i>Myotis lucifugus</i>), eastern pipistrelle (<i>Periomyotis subflavus</i>), northern goshawk (<i>Accipiter gentilis</i>), boreal owl (<i>Aegolius funereus</i>), wood turtle (<i>Glyptemys insculpta</i>), eastern heather	ALT	S	O	4	SDEIS Themes ALT 01, ALT 02. FEIS App. B

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	vole (<i>Phenacomys ungava</i>), yellow rail (<i>Coturnicops noveboracensis</i>), Laurentian tiger beetle (<i>Cicindela denikei</i>), taiga alpine butterfly (<i>Erebia mancinus</i>), Freija's grizzled skipper (<i>Pyrgus centaureae freija</i>), Nabokov's blue butterfly (<i>Lycaeides idas nabokovi</i>), and Quebec emerald dragonfly (<i>Somatochlora brevicincta</i>), • significantly reduce adverse impacts to 1854-Ceded Territory lands and waters, • significantly reduce adverse impacts to wild rice-designated waters in the St. Louis River drainage, • avoid need to implement complex and expensive water modeling and adaptive drainage water management from proposed surface mining, • eliminate need for exchanging 6,650-acre tract of USFS land with non-contiguous lands, • and, finally would save significant financial costs to USFS, Minnesota, Tribes, and other stakeholders by eliminating litigation.					
Nick Rowse	The cons of underground mining at the proposed NorthMet mine site would: • require additional environmental analysis under both NEPA and MEPA due to lack of environmental analysis under the FEIS produced by USACE and MDNR and under a DROD published by the USFS, • require additional permitting from the USFS and probably from the Bureau of Land Management, • and, would extend time needed to implement environmental analysis and permitting.	ALT	S	O	4	SDEIS Themes ALT 01, ALT 02. FEIS App. B
Nick Rowse	One major flaw in the Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange (Appendix B), was that the screening criteria used in the FEIS was the same as in the DEIS. This assumes that the economic criterion (i.e. economic conditions have not changed over the last six years from 2009 to 2015. Appendix B relies on a Memorandum provided by Foth Infrastructure and Environment, LLC (2013). The Foth Memo overtly states that it relied upon information provided by PolyMet, AGP Mining Consultants, and other publically available documents. Foth (2013) states, "The assessment of the prospects for economically viable extraction utilizes simplifications, generalization, assumptions, and qualifications within the scope of the assignment and is believed to be substantially correct".	ALT	S	N	3	The alternative screening criteria were set based on the requirements of NEPA and MEPA. FEIS Section 3.2.3.4.1 describes how the potential alternatives were re-assessed at appropriate stages in the EIS process. Minnesota Rules part 4410.2300, item g, requires alternatives to be considered as a function of comments received during scoping and the draft EIS. DNR considered the underground mining alternative during scoping, the Draft EIS, and the Supplemental Draft EIS. DNR asserts it has satisfied its obligations as RGU in consideration of this issue.
Nick Rowse	Instead of relying on the current escalating environmental review process (e.g. my drag race analogy), I recommend that the Cooperating Agencies (i.e. USACE, MNDNR, and USFS) implement a stakeholder resolution process and public involvement using the St. Croix River Crossing Project (FHWA-MN-EIS-90-02-FS) and ROD as a template to successfully complete a cooperative environmental review and negotiation under NEPA and MEPA. From 2002 until its conclusion in July under the guidance of the facilitation firm, RESOLVE, Inc., federal, state, and other stakeholders came to concur on all the environmental issues (e.g. resolving a requirement for no additional bridge crossings over the St. Croix National Scenic Riverway or relocating all federally endangered, Higgins eye pearly mussels (<i>Lampsilis higginsii</i>) from the Crossing Project site). On 11/13/2006, Thomas Sorel, Division Administrator, Federal Highway Administration, concluded that all issues relative to the adequacy of the Supplemental Final EIS (SEIS) had been fully addressed and consequently signed the Record of Decision. No comments were received concerning the adequacy of the SEIS. The stakeholder process required only three	NEPA	S	N	5	Comment noted. The EIS is not a project approval process and the type of public engagement recommended by the commenter is not required by MEPA or NEPA. Regarding interactions with the Tribal Cooperating Agencies. SDEIS Theme NEPA 12

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	years to complete with complete concurrence at a minimal cost to federal and state taxpayers.					
Kelly G. Ramer	The risk of the North Met is not worth the reward. Our watersheds in MN are so precious, we must protect them with all that we can.	SO	NS	X	1	
Wendy Robertson	<p>The FEIS fails to include the value of the natural capital of the St. Louis Watershed when mitigating the wetlands for the Polymet Project. Natural capital is defined as “minerals, energy, plants, animals, ecosystems, (climatic processes, nutrient cycles and other natural structures and systems) found on Earth that provide a flow of natural good and services” (Daly and Farley, 2004). Two of the three mitigation sites for this project are not in the watershed thus result in a loss to the St. Louis Watershed area. In June 2015, a study was commissioned by the Fond du Lac Band of Lake Superior Chippewa. The band and the U.S. EPA. provided the funding for the study, “The Value of Nature’s Benefits in the St. Louis River Watershed”, which was completed by a team employed by Earth Economics, Tacoma, WA. Their findings were published in a 105 page report that may be reproduced for educational and non-commercial use without prior copyright permission from the holder provided the source is acknowledged. I have used some of their data to defend my comments. In the valuation results from this study, the total land cover of the St Louis watershed area is 2,376,286 acres. It provides between \$5 billion and \$13.7 billion (low and high figures) in benefits each year to people. The numbers indicate investment in natural capital that supports an ecosystem of services and benefits. An example would be in carbon sequestration from the extensive acreage of peatland. Peatlands hold three times as much carbon as other ecosystems. From recreation and tourism, this area is valued at \$12,843.00 per acre. Local businesses benefit from this value. The proposed mitigation plan falls short in the FEIS for three reasons: one, all the mitigation is not within the St. Louis watershed, two, there is no determination by the state and federal agencies on the drainage status of the bog restoration sites (compensatory mitigation) from active sod farms and agricultural production, and three, the USACE has not made a final decision on the mitigation ratios that would be required to compensate for direct wetland impacts. To date about \$750,000,000.00 has been spent to clean-up from the industrial pollution disaster of the St. Louis River watershed area. It is still unsafe for certain human populations to consume fish from the river without heeding the MN Dept. of Health’s warning guidelines. It is still considered an endangered river without the additional impact of sulfide mining. The amount of short-term proposed economic gains or benefits from the Polymet project in comparison with the costs of jeopardizing the long-term environmental economic value of the St. Louis River watershed should not be given any more consideration. Therefore, I am against the MNDNR giving the NorthMet Mining Project and Land Exchange project a green light. I’m asking them to state, “No Alternative Action”, in their decision on the FEIS. I am also asking the USACE not to issue any 404 permits to the Polymet project. The USAD Forest Dept. should not agree to any land exchange. Leave our future generations and the deserving non-defendable wildlife of the St Louis River watershed with the highest value of natural capital intact and do not support this project.</p>	WET	S	O	8	FEIS Section 8.3. MDO 12. SDEIS COOP Response #19732

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William Lynch	I think no permit should be given unless a upfront bond is given to the state of MN DNR to cover the cost of continuous clean up of ground water for 200 years as expected in the EIS. There is no way the company can be expected to pay for environmental clean up for 200 to 500 years without a pre paid bond. After the 20 year life of the mine they could declare bankruptcy and leave state taxpayers with pollution clean up costs for the next 500 years. If they can't afford a 200 to 500 year up front bond it is not a viable project.	FIN	NS	X	1	
Noreen Tyler	There seems to be a stubborn unwillingness to consider practical mining practices that would reduce the damage to public resources from the absolutely unacceptable levels proposed in this mine plan. Cost alone should not rule out these practices! We say, leave acres of wetland destruction and drainage; active water treatment required in perpetuity to control toxic seepage; and a refusal to consider underground mining, or dry storage of tailings, which would reduce these damages to the public resources. This is a shameful proposal, which passes these resource damages on to future generations, and is not worthy of serious consideration by the state of Minnesota.	GEN	NS	X	1	
Noreen Tyler	The PolyMet Final EIS should be rejected as inadequate because it fails to accurately model water seepage from the tailings basin, some of which will flow north towards the Boundary Waters Wilderness, due to alteration of the Laurentian Divide from nearby taconite mining.	WAT	S	O	3	SDEIS Theme WR 111
Noreen Tyler	The PolyMet Final EIS should be rejected as inadequate, because the mine plan does not detail plans to protect Birch Lake and the Boundary Waters from centuries of this toxic drainage, instead, it assumes the planned clay-lined trench will collect 100% of groundwater seepage (Figure 3.2-28).This is patently impossible. The mine plan proposes only monitoring of groundwater flows leading north to the Boundary Waters (p 3-150, Section 3.2.3.3.4) with the possibility of future "adaptive management." This is insufficient analysis and incomplete planning for this likely outcome.	WAT	S	O	3	SDEIS Theme WR 081
Noreen Tyler	The PolyMet Final EIS should be rejected as inadequate because it fails to examine an important alternative which could greatly reduce the hazard of future tailings dam failure and environmental damage: dry stack storage of tailings. (This is the recommended "best practice" after the disaster at Mount Polley.) Instead, the FEIS rejects examining this alternative in depth, because the quantity of seepage would be reduced, concentrating pollutants into the remaining waters, making it difficult to meet water quality standards through passive treatment – which has not yet been developed! This suggests that PolyMet's solution to pollution is dilution – clearly an unacceptable approach. (pp 3-156-158.)	ALT	S	O	3	SDEIS Theme ALT 10
Noreen Tyler	The PolyMet Final EIS should be rejected as incomplete because it fails to detail future risks and costs that are necessary to determine financial assurances to protect our children from paying for the clean up of this proposed mine.	FIN	NS	X	1	
Noreen Tyler	Please reject the FEIS as inadequate, and send this document back for further revision, or better, the complete reformulation of this mine plan.	MEPA	NS	X	1	

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Gary Horning	1- Nowhere could I find anything about site clean-up and remediation funding. Poly-Met is a \$.90 stock company. They have no money to put up. Glencore has it's own financial problems. I would estimate at least \$500m would need to be put in escrow for cleanup and remediation when the mine shuts down. Mines when they cease operations have a habit of going out of business, sticking the state and taxpayers with the bill. That money needs to be guaranteed before any permits are issued, otherwise Minnesota and the taxpayers will lose big time. How much money is the DNR going to require Poly-Met to put up before issuing permits?	FIN	S	O	2	SDEIS Themes FIN 01, FIN 02, FIN 03, FIN 05, FIN 07
Gary Horning	2- I could not find where the Division of Tourism has been involved. I say that because I could not find anywhere what the effect on tourism would be if such things as water, wetlands, vegetation, wildlife, fishing etc.became effected because of pollution from this mine. That needs to be addressed.	SO	S	O	2	SDEIS Theme SO 02
john.coleman	It is inappropriate and contrary to modeling practice to calibrate to an extreme event. In order to estimate "conservatively high groundwater inflows to the proposed NorthMet pits", the groundwater model should have been calibrated to the most accurate data available. Only after calibration, should predictive runs been conducted with the Northshore pit water levels raised to an artificially high level (Anderson et al. 2015, Section 10.4.1, attached). Using Northshore water levels of 1616 ft during calibration is likely to have produced model final parameters that are too low. See our comment letter of December 14th for additional detail on model calibration.	WAT	S	N	12	DNR disagrees that establishing the Northshore pit lake water level at 1,616 feet above mean sea level as a boundary condition for the Mine Site MODFLOW model constitutes calibrating to "an extreme event." It is reasonable and entirely consistent with Final SDD Section 6.2 for the Northshore pit lake water levels to be modeled artificially high since such an approach would lead to conservatively high groundwater inflows to the proposed NorthMet pits during operations prior to the refilling (with water) during the transition to closure and reclamation. This approach is also consistent with Final SDD Section 3.3.4 which requires hydrologic modeling to be done to estimate the quantity and timing and outflow from the pit after mining to determine potential treatment needs for reclamation. DNR asserts that the treatment of the Northshore pit lake water level in EIS-related modeling is consistent with the Final SDD requirements. The approach taken supported a very robust evaluation of the sizing and effectiveness of the proposed WWTF system.
john.coleman	the colead agencies appear to claim that the modeling was only for pit inflow and also only for looking at outflow to the south. A model that is only appropriate to predict one preconceived result (flow to the South) is not a predictive model at all but simply a tool to support preconceived notions.	WAT	S	N	12	DNR acknowledges that the Mine Site modeling was designed to evaluate the issues identified in EIS scoping. Modeling was required to estimate potential pit inflows in Final SDD Section 6.3. Modeling was also required under Final SDD Section 3.3.6 for mining-related surface water and/or groundwater quality impacts to water resources, including the Partridge River (that is downgradient from the Mine Site to the south). EIS-related modeling is consistent with the EIS scope because

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						potential impacts are addressed in Final EIS Section 5.2.2.
john.coleman	The applicant and co-leads have contended since at least 2008 that the extensive wetland soils in the 100 Mile Swamp would render recharge close to zero. In fact, contrary to the statement above, the applicant's hydrologic characterization of the site, which is used in the FEIS, assumes that recharge in the wetland soils is only 0.36 in/year while upland deposits have 1.8 in/yr of recharge (PolyMet 2015m, Attachment B). Given that the 100 Mile Swamp is the most extensive wetland feature in the area, it seems unlikely that the co-leads contention, above, would be correct.	WAT	S	N	12	DNR acknowledges the Mine Site modeling was designed to evaluate the issues identified in EIS scoping. Modeling was required to estimate potential pit inflows in Final SDD Section 6.3. For the purposes of meeting this EIS scoping requirement, it was not necessary to characterize the vertical hydraulic conductivity for wetlands and surficial deposits at the 100 Mile Swamp beyond the data already obtained. It was also not necessary to precisely determine the downward recharge flux from the 100 Mile Swamp into the bedrock groundwater system north of the Mine Site. Rather, the Mine Site MODFLOW model relied on data collected from other parts of the site that were generalized to the north in the model assumptions, including the 100 Mile Swamp. The values used for representing wetland soils in the modeling have no bearing on the impact assessment for wetlands conducted for the EIS. This is because Section 3.3.3 of the Final SDD did not require modeling for assessment of wetland impacts. The scope only stated that wetland impacts associated with the entire project should be identified and discussed in the EIS. Consistent with Section 3.3.3 DNR relied on the non-modeled, analog method to assess project-related potential indirect wetland impacts. The wetland soils values cited in the comment are relevant to modeling maximum pit inflows only in a modeling construct, not the unique hydrology of 100 Mile Swamp.

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john.coleman	The co-leads seem to overlook the fact that the PolyMet east pit inflow is coming from the north side of the project. If the project data was adequate for looking at water movement toward the east pit from the north, it should be adequate to look at flow from the east pit going to the north.	WAT	S	N	12	DNR does not challenge that there is northward groundwater flow in bedrock in the Mine Site MODFLOW model if Northshore Mine pit lake elevations are lower than the proposed NorthMet pits in closure. DNR asserts that these results are unreliable for use as the basis for assessing any impacts associated with closing the NorthMet Mine. The model is not designed to predict the potential interaction of the NorthMet Mine Site with future operations of the Northshore Mine and its westernmost pits. If this was feasible and a requirement of the EIS, far greater emphasis would be placed on assessing the hydrogeology of the surficial and bedrock units than is available with the current NorthMet Mine Site model. Integrating assumptions on the potential staging of future Northshore operations into the model would also be necessary. DNR's concession that northward flow between the NorthMet Mine and Northshore Mine is possible is not based on modeling. If the existence of a northward flow path was possible, it would be happening now. There is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When and if this might occur is not precisely known, but it is most likely to occur after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. DNR asserts that any such phenomena can be detected, and if detected, it can be prevented.

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john.coleman	As the applicant and the co-lead agencies have contended since before 2008 the vertical conductivities under the 100 Mile swamp are likely to be low because of thick wetland soils. As we demonstrate in our comment letter of December 13th, even with higher conductivities than those previously supported by the co-leads, it is impossible for enough leakage to enter the bedrock in this area to support a bedrock groundwater mound adequate to prevent northward flow.	WAT	S	N	12	DNR acknowledges that it cannot rule out that future operations at the Northshore Mine could induce northward groundwater bedrock flow from the NorthMet Mine Site. See Final EIS Section 6.2.2.3.1. This might happen if there is insufficient natural downward leakage into bedrock from the overlying wetlands and surficial materials between the proposed NorthMet Mine (in closure) and the Northshore Mine (in future operations and closure). If there is sufficient downward leakage, then there would be groundwater flow divide between the two mines where there is no continuous one-way flow between the facilities. If natural leakage is insufficient to maintain a groundwater flow divide between the two facilities, then it is possible a northward groundwater flowpath would be present.
john.coleman	The elevation of the land surface is, among other reasons identified in our December 13th letter, why the hypothetical mound cannot exist. Both Figures 5 and 6 of the co-lead agencies' memo erroneously place the surficial deposits 25-50 feet in the air above the 100 Mile Swamp. Correct elevations for the land surface and bedrock top are shown in attached Figure 2. Analysis based on the bedrock formations, their conductivities, and the elevation of the land surface and bedrock top, does not support the maintenance of an adequate bedrock groundwater mound between the mine projects.	WAT	S	N	8	MDNR et al, 2015c. DNR acknowledges the surface and bedrock elevations in Figures 5 and 6 could be refined to better reflect site topography. Regardless, the agency acknowledges that it cannot rule out that future operations at the Northshore Mine could theoretically induce northward groundwater bedrock flow from the NorthMet Mine Site. See Final EIS Section 6.2.2.3.1. The purpose of Figures 5 and 6 of the interagency memorandum was to illustrate the results of the downward flux scoping calculations. The figures are a reasonable representation of the downward leakage estimates necessary for a groundwater flow divide to be present between the facilities.
john.coleman	The amount of precipitation is largely irrelevant. The amount of the precipitation that can pass through the surficial deposits to the bedrock is relevant. Unfortunately, neither the co-lead agencies nor their consultant looked at how much water could pass through the surficial deposits. Our analysis, documented in our December 13th letter, demonstrates that there would not be enough leakage to create an adequate mound.	WAT	S	N	12	Although not identified as an issue for assessment in the EIS, DNR considered potential future operations at the Northshore Mine against information that is available. DNR acknowledges that it cannot rule out that future operations at the Northshore Mine could induce northward groundwater bedrock flow from the NorthMet Mine Site. See Final EIS Section 6.2.2.3.1. This might happen if there is insufficient natural downward leakage into bedrock from the overlying wetlands and surficial materials between the proposed NorthMet Mine (in closure) and the Northshore Mine (in future operations and closure). If there is sufficient downward leakage, then there would be groundwater flow divide between the two

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						mines where there is no continuous one-way flow between the facilities. If natural leakage is insufficient to maintain a groundwater flow divide between the two facilities, then it is possible a northward groundwater flowpath would be present.
john.coleman	In fact, MODFLOW modeling by GLIFWC indicates that the full Area003 West pit would mostly negate the effect of the dewatered Area003 East pit. Groundwater level trends in the region are also relevant to interpretation of the 5 bedrock wells. Five relatively stable wells in the context of regionally increasing water levels would require a different interpretation than that presented in the colead agencies' memo. Wells, relatively far from the Area003-East pit, without greater clarity as to the hydrologic effect of one full and one empty taconite pit, and without the context of regional water levels do not tell us very much about the relationship of the Peter-Mitchell taconite pits and the PolyMet site hydrology. Data from these 5 bedrock wells in conjunction with data from other site wells and trends in taconite pit water levels could be formally analyzed to better understand the site hydrology. Unfortunately such analysis was not conducted by the applicant or the co-lead agencies.	WAT	S	N	12	The Co-lead Agencies acknowledge in the interagency memorandum (MDNR et. al., 2015c) that the existing bedrock groundwater monitoring well data is not definitive and it remains uncertain if a bedrock groundwater mound would form (thus preventing northward flow between the two sites). The agencies then detail why this is the case.
john.coleman	However, the map (co-lead agency memo Figure 8) of proposed monitoring well locations shows sparsely placed wells all within or very close to the PolyMet project boundary. To be effective, bedrock monitoring wells should be at greater distances from the PolyMet project boundary. In particular, monitoring wells should be placed farther north from the edge of the Type I stockpile. Surficial aquifer containment efforts at the Type 1 stockpile may interfere with interpretation of bedrock well readings at the immediate edge of the Type 1 stockpile.	WAT	S	N	8	MDNR et al. 2015c. Comment noted. Details on the specifics of the monitoring program, including placement, would be considered and finalized in permitting.
john.coleman	Our modeling suggests that northward flow may be at depth. This is not surprising given that at depth, the PolyMet east pit either comes very close to or intersects the more conductive Biwabik Iron Formation. Monitoring wells that are not placed at the proper depth or do not intersect the formations or features (fractures/faults) that transmit water in the bedrock aquifer will not provide useful information on northward flow. The feasibility of any particular monitoring plan must be evaluated against what is known about the bedrock aquifer and the bedrock formations. Such evaluation has not been done. Without such an evaluation it is doubtful that the proposed monitoring plan would detect relevant hydraulic head in the bedrock.	WAT	S	N	8	MDNR et al. 2015c. Comment noted. Details on the specifics of the monitoring program, including the well depth necessary to intersect the formations or features that transmit water in the bedrock aquifer, would be considered and finalized in permitting.
john.coleman	it is very unclear what useful information would be collected by the monitoring plan as proposed by the co-lead agencies or how that information can be translated into knowledge on the existence of a hypothetical mound at closure. There needs to be much greater detail on how the information collected by the monitoring plan would inform decisions on prevention of northward flow.	WAT	S	N	8	MDNR et al. 2015c. The monitoring network would measure bedrock groundwater water levels based upon a three-point, triangular monitoring network design. The water level data would provide sufficient information to determine bedrock groundwater flow direction.

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john.coleman	Several adaptive management approaches are proposed to prevent northward flow of contaminants from the Polymet project. Because the approaches are not evaluated in the context of the site hydrology or the site physical character it is impossible to determine if any are feasible.	WAT	S	N	8	MDNR et al, 2015c. DNR concurs that contingency mitigation can only be considered based on available information. The exact type, location, scale, and timing of contingency measures is unknown. When and if employed, a flexible approach is advised where the mitigative response evolves over time in as the efficacy of the mitigation is evaluated. The original need for and performance of any mitigation would be subject to continual reassessment.
john.coleman	Grouting.- Grouting has potential for reducing flow to the north but does nothing to eliminate the gradient that would move contaminants to the north. The success of grouting depends on the location and extent of the transmissive features on the north side of the PolyMet pits some of which may occur at great depth. Multiple, diffuse features that transmit water to the north from the pit would require a grout curtain to reduce flow. If northward flow is in both the shallow and deep bedrock, as suggested by our water budget analysis, the grout curtain may have to be vertically continuous to the depth of the east pit. A grout curtain of that extent appears impractical. If northward flow is in discrete fractures or faults, locating those features could be problematic, particularly at depth.	WAT	S	N	8	MDNR et al, 2015c. Each type of potential contingency mitigation, including grouting-based approaches, will need to be tailored to the address the monitoring information and site-specific constraints. It is acknowledged that grouting may need to be combined with other mitigation options.
john.coleman	Pit lake depression.- East pit lake depression to prevent flow to the north creates a plethora of undesirable side effects. Most of those are mentioned in the co-lead agencies' memo. They include: ? Exposure of reactive pit wall rock that would generate acid mine drainage. ? Elimination of, or at least great reduction in, the Type 2 and Type 3 and Type 4 waste rock disposal area. Those types of waste generate contaminated leachate. ? Decrease in west pit lake water quality. ? A need for additional water treatment and disposal, indefinitely.	WAT	S	N	12	The Co-lead Agencies acknowledge in interagency memorandum (MDNR et. al. 2015c) that, depending on the timing, depressing the East Pit water level as a contingency mitigation measure could have implications for mine waste rock management under the proposed mine plan. This is because the proposed inundation of Category 2, 3, and 4 waste rock, and a portion of Category 1 waste rock, is an important water quality control feature and waste rock management strategy for the project. Short-term application of this measure would likely have lesser consequences to pit water quality or operational requirements than long-term.

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john.coleman	Given that disposal of reactive waste rock in the east pit is integral to the current mine plan, eliminating that possibility by implementing east pit lake depression is tantamount to proposing another mine plan entirely. Such a plan must be evaluated under NEPA.	WAT	S	N	12	No change to management of Category 2, 3, and 4 waste rock is proposed from that identified in FEIS Section 3.2.2.1.10. DNR consideration of pit lake depression as a measure to prevent potential northward bedrock groundwater flow is only speculative. Pit lake depression is a contingency mitigation measure that is technically feasible should engineering controls (both fixed and adaptive) be determined ineffective at preventing a northward bedrock groundwater flowpath from the NorthMet Mine Site. The possibility of northward flow between the proposed NorthMet Mine and Northshore Mine is speculative and is not reasonably foreseeable based on current information. If the existence of a northward flow path was possible, it would be happening now. There is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When and if this might occur is not known, but it is most likely to occur after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. DNR asserts that any such phenomena can be detected, and if detected, it can be prevented.
john.coleman	Groundwater extraction or injection wells - As noted in the co-lead agencies' memo, the number, geographic extent and configuration of the wells is unknown. In addition the cost, feasibility and environmental impacts of installation and operation of an unspecified number of wells in the 100 Mile swamp is unknown. If northward flow is diffuse and occurring at depth, the wells would need to be at multiple depths and across the full extent of the north side of the east pit. If the northward flow is primarily fracture driven the injection or extraction wells would need to target the fracture zones, a difficult proposition. Without further analysis, the feasibility of this mitigation is unknowable.	WAT	S	N	12	DNR concurs that contingency mitigation can only be considered based on available information. The exact type, location, scale, and timing of contingency measures is unknown. When and if employed, a flexible approach is advised where the mitigative response evolves over time as the efficacy of the mitigation is evaluated. The original need for and performance of any mitigation would be subject to continual reassessment.
john.coleman	Infiltration trench.- The physical constraints of the site make it unlikely that an infiltration trench could create a bedrock mound adequate to prevent northward flow. As with natural recharge in the 100 Mile Swamp (see our letter of December 13th), an infiltration trench would have limited hydraulic head. Only by building a lake in the 100 Mile Swamp could enough head be generated to push enough recharge into the bedrock to create an adequate mound.	WAT	S	N	12	DNR concurs that contingency mitigation can only be considered based on available information. The exact type, location, scale, and timing of contingency measures is unknown. When and if employed, a flexible approach is advised where the mitigative response evolves over time as the efficacy of the mitigation is evaluated. The original need for and performance of any mitigation would be subject to continual reassessment.

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john.coleman	The co-lead agency memo concludes with identification of a new conceptual model of site hydrology that is contrary to 8 years of statements by the applicant, their consultant and the co-lead agencies. The memo proposes a conceptual model that includes high vertical flow rates through the 100 Mile Swamp into the bedrock. If such a conceptual model was correct, then project impacts to wetlands due to pit dewatering would be substantial, an impact denied by the applicant and the co-lead agencies.	WAT	S	N	12	There is no definitive means to address the issue raised in the comment because the EIS was not scoped to address how future activity at the Peter Mitchell Pit might influence the closure conditions at the NorthMet site. The modeling satisfies Final SDD Section 6.2, which required the groundwater flow model to predict inflows at various stages of pit development (i.e., year 1, year 5, year 10, year 20) and include operation, closure, and post-closure. DNR notes the Mine Site MODFLOW model reflects available information between the proposed NorthMet project site and the Northshore Peter Mitchell Mine pits, which is in turn reflected in the current conceptual model. The wetland impacts alleged in the comment cannot be assessed with available information, which is why the analog method has been applied to assess potential wetland impacts, including for 100 Mile Swamp. DNR asserts that the requirements of Final SDD Section 3.3.3 are satisfied through the analysis provided in Final EIS Section 5.3.3.

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john.coleman	if the project data was adequate for looking at water movement toward the east pit from the north, it should be adequate to look at flow from the east pit going to the north.	WAT	S	N	12	DNR does not challenge that there is northward groundwater flow in bedrock in the Mine Site MODFLOW model if Northshore Mine pit lake elevations are lower than the proposed NorthMet pits in closure. DNR asserts that these results are unreliable for use as the basis of assessing any impacts associated with closing the NorthMet Mine. The model is not designed to predict the potential interaction of the NorthMet Mine Site with future operations of the Northshore Mine and its westernmost pits. If modeling potential groundwater interactions between the two mining actions was feasible and made a requirement of the EIS, far greater emphasis would be placed on assessing the hydrogeology of the surficial and bedrock units than is available with the current NorthMet Mine Site model. Integrating assumptions on the potential staging of future Northshore operations into the model would also be necessary. DNR's concession that northward flow between the NorthMet Mine and Northshore Mine is possible is not based on modeling. If the existence of a northward flow path was possible, it would be happening now. There is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When and if this might occur is not known, but it is most likely after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. DNR asserts that any such phenomena can be detected, and if detected, it can be prevented.

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john.coleman	<p>The project mine site MODFLOW model distributed to cooperating agencies on January 5, 2015 was used by the applicant to predict that contaminants would flow from the mine site at closure to the south and south-east (for example: Large Figures 28 & 29 of FEIS reference PolyMet 2015m, attached as Figures 3 and 4). In those project runs of closure conditions, the water levels in the P-M taconite pits were assumed to remain at the level found in 1996. At closure the P-M pits will not be at 1996 levels but over 300 feet lower. In fact those 1996 levels were atypical; they did not occur in the 1980s, do not occur now and will not occur at closure. A plot of water levels in the Area 003-East P-M pit, the pit closest to the PolyMet east pit, show how atypical the mid-1990s water levels were (attached as Figure 5). In the project predictive models of closure conditions, the adjacent taconite pits to the PolyMet project site were set to have a 1996 water elevation of 1616 feet or 493 meters. However, the P-M taconite pit water levels expected at P-M pit closure are 1300 feet or 396 meters. After reflooding of the P-M pits, the water levels in those pits will be maintained by an outfall in the north-east at 1500 feet or 457 meters (see figure from Barr Engineering's Northshore Watershed Mitigation Plan (FEIS reference Barr 2010e), attached as Figure 1).</p>	WAT	S	N	4	<p>MDNR et al, 2015c. Establishing the Northshore pit lake water level at 1,616 feet above mean sea level as a boundary condition for the Mine Site MODFLOW model was done to meet the requirements of Final SDD Section 6.2. The Northshore pit lake water levels were modeled artificially high to provide conservatively high groundwater inflows to the proposed NorthMet pits during operations prior to the refilling (with water) during the transition to closure and reclamation. This approach is also consistent with Final SDD Section 3.3.4, which requires hydrologic modeling to be done to estimate the quantity and timing and outflow from the pit after mining to determine potential treatment needs for reclamation. See MDNR et al, 2015c. The Final SDD did not require assessment of Northshore mining operations beyond potential cumulative impacts associated with: wetlands (Section 3.3.8.7); streamflow (Section 3.3.8.9); water quality (Section 3.3.8.10). DNR did not receive comments during EIS scoping public review period, or during the DEIS and SDEIS public review periods, regarding Northshore Mine-related pit dewatering. Although it is not identified as an issue for assessment in the EIS, DNR considered potential future operations at the Northshore Mine against information that is available. DNR acknowledges that it cannot rule out that future operations at the Northshore Mine could induce northward groundwater bedrock flow from the NorthMet Mine Site. See Final EIS Section 6.2.2.3.1. This might happen if there is insufficient natural downward leakage into bedrock from the overlying wetlands and surficial materials between the proposed NorthMet Mine (in closure) and the Northshore Mine (in future operations and closure). If there is sufficient downward leakage, then there would be groundwater flow divide between the two mines where there is no continuous one-way flow between the facilities. If natural leakage is insufficient to maintain a groundwater flow divide between the two facilities, then it is possible a northward groundwater flowpath would be present.</p>

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john.coleman	Given the large effect that the project groundwater MODFLOW model and ERM's MathCad cross-section model indicate the water in the taconite pits has on the local bedrock hydrology, one would expect that a large change in the elevation of the water in the taconite pits would have a significant impact on local hydrology and predictions of closure conditions. The close proximity of the P-M pits to the Partridge River and PolyMet mine features (attached Figure 6) suggests that the taconite mine pits would impact the hydrology of these features. In fact, runs of the project model indicate that the groundwater flow direction between the PolyMet project and the taconite pits would be reversed if the taconite pits had the correct P-M pit closure water elevation of 396 meters or even the very long-term level of 457 meters.	WAT	S	N	12	DNR notes the Mine Site MODFLOW model and associated scoping calculations reflect available information between the proposed NorthMet project site and the Northshore Peter Mitchell Mine pits. Even with improved data and analytical techniques, proximity alone to a taconite facility does not automatically result in commensurate effects to local hydrology. There is no evidence that the Partridge River, 100 Mile Swamp, or Argo and Iron Lakes, have been measurably impacted by Northshore Mining activity to date; whether this would hold into the future is uncertain. Also see: Opinion Paper #2 Response to Tribal Comments Concerning Potential PolyMet Impacts to Wetlands and Streamflow October, 2009.
john.coleman	Additional MODFLOW modeling with recharge to the top of the surficial layer set at over 8 in/yr also showed northward flow from the PolyMet project at closure. Under this high recharge modeling scenario, a small mound does develop in the bedrock aquifer but one not nearly large enough to prevent northward flow. Development of a groundwater mound is limited, not because of low recharge, but because of the low vertical conductivity of the surficial deposits and the strong pull of the low water levels in the P-M pits.	WAT	S	N	12	DNR notes the Mine Site MODFLOW model and associated scoping calculations reflect available information between the proposed NorthMet project site and the Northshore Peter Mitchell Mine pits. It should also be noted the purpose of the scoping calculations is to provide insights into the degree of downward recharge across the respective Northshore Mine closure conditions, first at the maximum depth of dewatering at the cessation of mining (1,300 ft amsl), then the pit lake elevation after 10 years of pit refilling (1,500 ft amsl). Regardless, if there is sufficient downward leakage, then there would be groundwater flow divide between the two mines where there is no continuous one-way flow between the facilities. If natural leakage is insufficient to maintain a groundwater flow divide between the two facilities, then it is possible a northward groundwater flowpath would be present.
john.coleman	Formation of such a substantial mound by movement of water downward from the 100 Mile Swamp is simply not possible given the hydrogeology defined by project documents (FEIS reference Polymet 2015m) and the physical position of the land and bedrock surface (see our letter of December 13th).	WAT	S	N	8	MDNR et. al.,2015c. DNR notes the Mine Site MODFLOW model and associated scoping calculations reflect available information between the proposed NorthMet project site and the Northshore Peter Mitchell Mine pits. It should also be noted the purpose of the scoping calculations is to provide insights into the degree of downward recharge across the respective Northshore Mine closure conditions, first at the maximum depth of dewatering at the cessation of mining (1,300 ft

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						amsl), then the pit lake elevation after 10 years of pit refilling (1,500 ft amsl). Regardless, if there is sufficient downward leakage, then there would be groundwater flow divide between the two mines where there is no continuous one-way flow between the facilities. If natural leakage is insufficient to maintain a groundwater flow divide between the two facilities, then it is possible a northward groundwater flowpath would be present.
john.coleman	What has not been demonstrated by the co-lead agencies is that the 8 inches per year of leakage into the bedrock is theoretically possible, given the low vertical conductivity of the overlying wetlands. Our analysis reported in our letter of December 13th demonstrates that it is not possible.	WAT	S	N	12	DNR notes the Mine Site MODFLOW model and associated scoping calculations reflect available information between the proposed NorthMet project site and the Northshore Peter Mitchell Mine pits. It should also be noted the purpose of the scoping calculations is to provide insights into the degree of downward recharge across the respective Northshore Mine closure conditions, first at the maximum depth of dewatering at the cessation of mining (1,300 ft amsl), then the pit lake elevation after 10 years of pit refilling (1,500 ft amsl). Regardless, if there is sufficient downward leakage, then there would be groundwater flow divide between the two mines where there is no continuous one-way flow between the facilities. If natural leakage is insufficient to maintain a groundwater flow divide between the two facilities, then it is possible a northward groundwater flowpath would be present.
john.coleman	No natural mechanism for such a mound has been articulated. A bedrock groundwater mound at the level necessary to prevent northward flow, i.e. a mound of elevation of approximately 1600 feet, appears to be hydrologically impossible without long-term active management.	WAT	S	N	8	MDNR, et. al., 2015c. Absent more specific information, existing data provides some insight into the ability of the surficial aquifer to contribute sufficient downward recharge into the bedrock groundwater system. Specifically, the lack of water level response in the existing NorthMet bedrock monitoring wells to decreasing Northshore Area 003 East Pit water levels suggests that there is sufficient leakage into bedrock to maintain bedrock groundwater levels despite the influence of lower Area 003 East Pit lake elevations. The aerial downward leakage into bedrock would reduce (buffer) the drawdown response propagating away from Northshore Area 003 East Pit. If insufficient leakage was operative, it would be reasonable to expect to see at least some drawdown in the existing

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						NorthMet bedrock monitoring wells.
john.coleman	Preliminary MODFLOW modeling of the surficial aquifer shows northward flow of contaminants from the PolyMet east pit in the surficial aquifer. This is the case if model recharge is limited to the 0.75 in/yr used in the PolyMets closure model (PFEIS page 5-27) but also if the model is run with more than 8 in/yr of recharge to the surficial aquifer. The drawdown by the over 300 foot deep taconite pits is so great that the surficial aquifer becomes partly dewatered and all baseflow in the upper Partridge ceases.	WAT	S	O	10	SDEIS Theme WR 089
john.coleman	A coherent conceptual model needs to be articulated, either one in which surface water features are poorly connected to the bedrock aquifer and are therefore, unaffected by pit dewatering, or one in which surface water features are well connected to the bedrock aquifer and can provide leakage to support a groundwater mound between the PolyMet and Peter-Mitchell pits. If the first model is accepted then wetlands and the upper Partridge River may be little affected by pit dewatering but dewatering of the Peter-Mitchell pits causes a bedrock northward flowpath to develop at closure. If the second conceptual model is accepted then a bedrock groundwater mound develops, but wetlands and the upper Partridge River are severely impacted by PolyMet and Peter-Mitchell pit dewatering.	WAT	S	N	12	There is no definitive means to address the issue raised in the comment because the EIS was not scoped to address how future activity at the Peter Mitchell Pit might influence the closure conditions at the NorthMet site. The modeling satisfies Final SDD Section 6.2, which required the groundwater flow model to predict inflows at various stages of pit development (i.e., year 1, year 5, year 10, year 20) and include operation, closure, and post-closure. DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected.

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john.coleman	Preliminary water budget analysis indicates that approximately 300 gpm will exit the PolyMet east pit through bedrock post-closure, when the P-M pits are at 1300 feet. This is in contrast to the total of 10 gpm that Barr Engineering estimated using the same mine pit inflow/outflow model but with P-M pit water elevations that were 316 feet too high	WAT	S	N	12	DNR has not assessed the quantity of water that might be associated with a potential northward groundwater flow in bedrock under Peter Mitchell Pit closure conditions. DNR acknowledges that absent changes in modeling assumptions in the EIS MODFLOW model, flow rates would be commensurate with rates associated with the Proposed Project condition. Depending on the natural downward flux from the surficial materials into bedrock, this rate of flow might be lessened. The rate would also lessen as the Northshore Mine pit lake fills to its outlet elevation of 1,500 ft amsl. DNR's concession that northward flow between the NorthMet Mine and Northshore Mine is possible is not based on modeling. There is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When and if this might occur is not known, but it is most likely to occur after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. DNR asserts that any such phenomena can be detected, and if detected, it can be prevented.
john.coleman	Additional modeling, with the P-M pit water elevation at 1500 feet (the very long-term P-M pit water elevation), unsurprisingly, shows less flow from the PolyMet east pit (approximately 75 gpm), but the northward flow is still approximately 90% of the total flow from the east pit. The amount of east pit water loss when the P-M pits are at 1300, or at 1500 feet is large, but is of similar scale to the quantities of bedrock flow found by ERM in their bedrock cross-sectional models using MathCad.	WAT	S	N	12	DNR has not assessed the potential quantity of water that might be associated with a potential northward groundwater flow in bedrock under Peter Mitchell Pit closure conditions. DNR acknowledges that absent changes in modeling assumptions in the EIS MODFLOW model that flow rates would be commensurate with rates associated with the Proposed Project condition. Depending on the natural downward flux from the surficial materials into bedrock, this rate of flow might be lessened. The rate would also lessen as the Northshore Mine pit lake fills to its outlet elevation of 1,500 ft amsl. DNR's concession that northward flow between the NorthMet Mine and Northshore Mine is possible is not based on modeling. There is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When and if this might occur is not known, but it is most likely to occur after the proposed NorthMet Mine

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						East Pit (of particular interest) has been reclaimed in mine year 20. DNR asserts that any such phenomena can be detected, and if detected, it can be prevented.
john.coleman	The large underestimate of water leaving the PolyMet east pit by PolyMet's consultant deserves additional evaluation, evaluation that should be conducted by independent experts	WAT	S	N	12	The Co-lead Agencies acknowledge in interagency memorandum (MDNR et. al., 2015c) that data evaluation and quantitative analysis would be used to predict the ultimate flow direction before the proposed NorthMet pits (both East and West) are fully refilled. Absent the data collection program proposed in Section 3.1 of the interagency memorandum, further analysis is unduly speculative.
john.coleman	? It is inappropriate and contrary to modeling practice to calibrate to an extreme event. In order to estimate "conservatively high groundwater inflows to the proposed NorthMet pits", the groundwater model should have been calibrated to the most accurate data available. Only after calibration, should predictive runs been conducted with the Northshore pit water levels raised to an artificially high level (Anderson et al. 2015, Section 10.4.1).	WAT	S	N	12	DNR disagrees that establishing the Northshore pit lake water level at 1,616 feet above mean sea level as a boundary condition for the Mine Site MODFLOW model constitutes calibrating to "an extreme event." It is reasonable and entirely consistent with Final SDD Section 6.2 for the Northshore pit lake water levels to be modeled artificially high since such an approach would lead to conservatively high groundwater inflows to the proposed NorthMet pits during operations prior to the refilling (with water) during the transition to closure and reclamation. This approach is also consistent with Final SDD Section 3.3.4, which requires hydrologic modeling to be done to estimate the quantity and timing and outflow from the pit after mining to determine potential treatment needs for reclamation. DNR asserts that the treatment of the Northshore pit lake water level in EIS-related modeling is consistent with the Final SDD requirements. The approach taken supported a very robust evaluation of the sizing and effectiveness of the proposed WWTF system.

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john.coleman	? The stated and actual uses for the MODFLOW modeling are documented in our letter of December 14th. Despite the many uses that the MODFLOW results were put to in formulating the FEIS, the co-leads appear to be now claiming that it is only appropriate for evaluating flow to the south. A model that is only appropriate to predict one preconceived result (flow to the south) is not a predictive model at all but simply a tool to support preconceived notions.	WAT	S	N	12	DNR acknowledges the Mine Site modeling was designed to evaluate the issues identified in EIS scoping. Modeling was required to estimate potential pit inflows in Final SDD Section 6.3. Modeling was also required under Final SDD Section 3.3.6 for mining-related surface water and/or groundwater quality impacts to water resources, including the Partridge River (that is downgradient from the Mine Site to the south). EIS-related modeling is consistent with the EIS scope because potential impacts are addressed in Final EIS Section 5.2.2.
john.coleman	? If the project data was adequate for modeling water movement to the east pit from the north, it should also be adequate to look at flow to the north from the east pit.	WAT	S	N	12	DNR does not challenge that there is northward groundwater flow in bedrock in the Mine Site MODFLOW model if Northshore Mine pit lake elevations are lower than the proposed NorthMet pits in closure. DNR does assert these results are unreliable for use as the basis of assessing any impacts associated with closing the NorthMet Mine. This is because the model is not designed to predict the potential interaction of the NorthMet Mine Site with future operations of the Northshore Mine and its westernmost pits. If modeling potential groundwater interactions between the two mining actions was feasible and made a requirement of the EIS, far greater emphasis would be placed on assessing the hydrogeology of the surficial and bedrock units than is available with the current NorthMet Mine Site model. Integrating assumptions on the potential staging of future Northshore operations into the model would also be necessary. DNR's concession that northward flow between the NorthMet Mine and Northshore Mine is possible is not based on modeling. If the existence of a northward flow path was possible, it would be happening now. For the NorthMet project there is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When and if this might occur is not precisely known, but it is most likely to occur after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. DNR asserts that any such phenomena can be detected,

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						and if detected, it can be prevented.
john.coleman	? The applicant and the co-lead agencies have contended since before 2008, that the vertical conductivities under the 100 Mile swamp are likely to be low because of thick wetland soils. Even with higher conductivities than those previously supported by the co-leads, it is impossible for enough leakage to enter the bedrock to support a bedrock groundwater mound adequate to prevent northward flow	WAT	S	N	12	DNR acknowledges that it cannot rule out that future operations at the Northshore Mine could induce northward groundwater bedrock flow from the NorthMet Mine Site. See Final EIS Section 6.2.2.3.1. This might happen if there is insufficient natural downward leakage into bedrock from the overlying wetlands and surficial materials between the proposed NorthMet Mine (in closure) and the Northshore Mine (in future operations and closure). If there is sufficient downward leakage, then there would be groundwater flow divide between the two mines where there is no continuous one-way flow between the facilities. If natural leakage is insufficient to maintain a groundwater flow divide between the two facilities, then it is possible a northward groundwater flowpath would be present.

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john.coleman	? Bedrock wells, relatively far from the Area003-East pit, without greater clarity as to the hydrologic effect of one full and one empty taconite pit, and without the context of regional water levels do not tell us very much about the relationship of the Peter-Mitchell taconite pits and the PolyMet site hydrology. ?	WAT	S	N	10	Comment noted. Details on the specifics of the monitoring program, including placement, would be considered and finalized in permitting.
john.coleman	The feasibility of any particular monitoring plan must be evaluated against what is known about the bedrock aquifer and the bedrock formations. Such evaluation has not been done. Without such an evaluation it is doubtful that the proposed monitoring plan would detect relevant hydraulic head in the bedrock. At this point it is very unclear what useful information would be collected by the monitoring plan as proposed by the co-lead agencies or how that information can be translated into knowledge on the existence of a hypothetical mound at closure.	WAT	S	N	11	Comment noted. Details on the specifics of the monitoring program would be considered and finalized in permitting.
john.coleman	Given that analysis based on the bedrock formations, their conductivities, and the elevation of the land surface and bedrock top does not support the maintenance of a bedrock groundwater mound adequate to prevent northward flow, a monitoring and adaptive management approach is not appropriate.	WAT	S	N	8	Comment noted. The possibility of northward flow between the proposed NorthMet Mine and Northshore Mine is speculative and is not reasonably foreseeable with current information. There is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When this might occur is not known, but it is most likely to occur after mine year 20 when the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed. There would be ample opportunity to collect necessary data, and complete applicable environmental review and/or permitting for implementation of preventative measures prior to the development of a northward flowpath, including preparation of an EIS supplement if the conditions of Minnesota Rules, part 4410.3000, subpart 3 are met.
john.coleman	The success of grouting as a mitigation approach depends on the location and extent of the transmissive features on the north side of the PolyMet pits, some of which may occur at great depth. Given that northward flow may occur at great depth, grouting to stop northward flow does not appear to be feasible.	WAT	S	N	8	Each type of potential contingency mitigation, including grouting-based approaches, will need to be tailored to the address the monitoring information and site-specific constraints. It is acknowledged that grouting may need to be combined with other mitigation options.

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john.coleman	Given that disposal of reactive waste rock in the east pit is integral to the current mine plan, eliminating that possibility by implementing east pit lake depression is tantamount to proposing another mine plan entirely. Such a plan must be evaluated under NEPA.	WAT	S	N	12	No change to management of Category 2, 3, and 4 waste rock is proposed from that identified in FEIS Section 3.2.2.1.10. DNR consideration of pit lake depression as a measure to prevent potential northward bedrock groundwater flow is only speculative. Pit lake depression is a contingency mitigation measure that is technically feasible should engineering controls (both fixed and adaptive) be determined ineffective preventing a northward bedrock groundwater flowpath from the NorthMet Mine Site. The possibility of northward flow between the proposed NorthMet Mine and Northshore Mine is speculative and is not reasonably foreseeable with current information. If the existence of a northward flow path was possible, it would be happening now. For the NorthMet project there is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When and if this might occur is not known, but it is most likely to occur after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. DNR asserts that any such phenomena can be detected, and if detected, it can be prevented.
john.coleman	If the northward flow is primarily fracture driven or at great depth the effective installation of injection or extraction wells would be a difficult if not unworkable proposition.	WAT	S	N	12	DNR concurs that contingency mitigation can only be considered based on available information. The exact type, location, scale, and timing of contingency measures is unknown. When and if employed, a flexible approach is advised where the mitigative response evolves over time as the efficacy of the mitigation is evaluated. The original need for and performance of any mitigation would be subject to continual reassessment.
john.coleman	The physical constraints of the site make it unlikely that an infiltration trench could create a bedrock mound adequate to prevent northward flow. As with natural recharge in the 100 Mile Swamp (see our letter of December 13th), an infiltration trench would have limited hydraulic head and would not be able to create a northward flow-stopping bedrock groundwater mound.	WAT	S	N	12	DNR concurs that contingency mitigation can only be considered based on available information. The exact type, location, scale, and timing of contingency measures is unknown. When and if employed, a flexible approach is advised where the mitigative response evolves over time as the efficacy of the mitigation is evaluated. The original need for and performance of any mitigation would be subject to continual reassessment.

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john.coleman	The results of modeling with the correct closure water elevations indicate that water in bedrock will flow to the north from the PolyMet site at closure. No natural mechanism for such a mound has been articulated. A bedrock groundwater mound at the level necessary to prevent northward flow, appears to be hydrologically impossible without long-term active mitigation. The proposed mitigation approaches do not appear to be feasible or practical.	WAT	S	N	8	Although not identified as an issue for assessment in the EIS, DNR considered potential future operations at the Northshore Mine against information that is available. DNR acknowledges that it cannot rule out that future operations at the Northshore Mine could induce northward groundwater bedrock flow from the NorthMet Mine Site. See Final EIS Section 6.2.2.3.1. This might happen if there is insufficient natural downward leakage into bedrock from the overlying wetlands and surficial materials between the proposed NorthMet Mine (in closure) and the Northshore Mine (in future operations and closure. If there is sufficient downward leakage, then there would be groundwater flow divide between the two mines where there is no continuous one-way flow between the facilities. If natural leakage is insufficient to maintain a groundwater flow divide between the two facilities, then it is possible a northward groundwater flowpath would be present. Contingency mitigation can only be considered based on available information. The exact type, location, scale, and timing of contingency measures is unknown. When and if employed, a flexible approach is advised where the mitigative response evolves over time as the efficacy of the mitigation is evaluated. The original need for and performance of any mitigation would be subject to continual reassessment. Implementation of this or other contingency mitigative measures would be subject to the applicable environmental review and permitting requirements. Preparation of an EIS supplement could be required if the conditions of Minnesota Rules, part 4410.3000, subpart 3 are met.
john.coleman	In addition to potential for northward flow of contaminants in the bedrock, there is evidence that flow to the north may occur in the surficial aquifer at closure.	WAT	S	O	10	SDEIS Theme WR 089

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john.coleman	Because of more highly conductive bedrock to the north, the scale of flow from the PolyMet pits when the P-M pits are set at their correct closure levels appears to be approximately an order of magnitude greater than the quantity of flow previously considered in FEIS contaminant transport to the south.	WAT	S	N	12	DNR has not assessed the potential quantity of water that might be associated with a potential northward groundwater flow in bedrock under Peter Mitchell Pit closure conditions. DNR acknowledges that absent changes in modeling assumptions in the EIS MODFLOW model that flow rates would be commensurate with rates associated with the Proposed Project condition. Depending on the natural downward flux from the surficial materials into bedrock, this rate of flow might be lessened. The rate would also lessen as the Northshore Mine pit lake fills to its outlet elevation of 1,500 ft amsl. DNR's concession that northward flow between the NorthMet Mine and Northshore Mine is possible is not based on modeling. There is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When and if this might occur is not precisely known but it is most likely to occur after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. DNR asserts that any such phenomena can be detected, and if detected, it can be prevented.
john.coleman	A coherent conceptual model needs to be articulated, either the one previously supported by the co-leads in which surface water features are poorly connected to the bedrock aquifer and are therefore, unaffected by pit dewatering, or one in which surface water features are well connected to the bedrock aquifer and can provide abundant leakage to support a groundwater mound between the PolyMet and Peter-Mitchell pits. If the first model is accepted then wetlands and the upper Partridge River may be little affected by pit dewatering but dewatering of the Peter-Mitchell pits causes a bedrock northward flowpath to develop at closure. If the second conceptual model is accepted then a bedrock groundwater mound develops, but wetlands and the upper Partridge River are severely impacted by PolyMet and Peter-Mitchell pit dewatering.	WAT	S	N	12	The modeling satisfies Final SDD Section 6.2, which required the groundwater flow model to predict inflows at various stages of pit development (i.e., year 1, year 5, year 10, year 20) and include operation, closure, and post-closure. DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected.

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Em Westerlund	it is clear that the impacts of copper-nickel mining in this region, and in the manner proposed, would likely cause environmental degradation as well as negative impacts upon human health.	GEN	NS	X	1	
Em Westerlund	The EIS does not include a strong analysis of the consequences of chemical-laden seepage from the mine site infiltrating our drinking water and watershed. Chemicals like methylmercury and sulfur which may escape the containment site can degrade our drinking water, as well as negatively impact wild rice and fish.	WAT	NS	X	1	
Em Westerlund	the EIS does not include plans to mitigate future failure of NorthMet mining infrastructure, ecological changes due to climate change, or equipment malfunction. The EIS should have identified the potential outcomes if these should occur, and a contingency plan from NorthMet in order to minimize harm caused by these problems.	PD	NS	X	1	
Jason Peterson	The most common sense argument in my mind is that containment in these types of mines hasn't proven effective. In the time horizon's we're talking about, the risk of failure is very, very high. This is not the place to take these kinds of risks. The known and unknown surface and ground water flows make this too risky in this part of the country.	WAT	NS	X	1	
Jason Peterson	The risk and reward for Minnesota are way out of balance. In the unthinkable event of this project moving forward, I am also very skeptical about this business concern being accountable for the proposed containment and treatment for the centuries they will be required. Once they've got their metal out of the ground, one or more of these companies in this complicated chain will fold up, leaving MN holding the sack and the investors shielded from their responsibilities. Sad that anyone could consider doing this to the environment and leaving others to clean up the mess, but that seems to be all too common. Too much risk, too little reward.	FIN	NS	X	1	
Jim and Diane Malcolm	I fear there is a great danger of severe and widespread environmental damage as result of this mine. Mines nearly the same as this proposed one have caused much damage in other parts of the world.	GEN	NS	X	1	
Jim and Diane Malcolm	It has been stated that the water could possibly be contaminated for at least the next 500 years. Apparently, SDEIS does not contain any credible information on actual ongoing costs. How can anyone estimate the costs for such a disaster that far to the future? This would mean perpetual clean-up.	FIN	NS	X	1	
Jim and Diane Malcolm	Keep in mind, that water will be the next big shortage in this country and elsewhere. We in Minnesota have been blessed with bountiful good and clean water. This mine will draw many, many gallons of water to process its operation. We can't afford to drain our aquifer for this purpose.	WAT	NS	X	1	
Jim and Diane Malcolm	Property values would plummet and the tourism which that area of Minnesota greatly depends upon, would decrease significantly. My family are campers, hunters, and fishermen. Our lakes and streams are suffering already. We can't afford to risk damaging them further. That region of Minnesota depends a great deal on tourism. If that source of income and state revenue is taken away, the people in the area will have an even greater difficulty sustaining their way of life.	SO	NS	X	1	

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Jim and Diane Malcolm	I understand their reason for supporting the mine because of the need for jobs in the area. But, there really is no guarantee that the mine will actually provide good paying jobs for those who now live in the area. It often is the practice of these companies to bring in from outstate, people to fill the high paying jobs claiming there weren't any local people trained or educated to fill those jobs. The jobs left for local citizens will be unstable as they will be based on the demand for copper. When people are laid off the state will be left to pay unemployment.	SO	NS	X	1	
Jim and Diane Malcolm	If would be much more beneficial to the region to look elsewhere for companies willing to relocate in their area of Minnesota. There is some new businesses doing quite well in northern and northwest Minnesota. Look to the real and long lasting future. Many people would love to live there. New startup companies would be a good place to start for recruitment. We need to stop looking at "today" and plan for the future.	SO	NS	X	1	
Lyndon Nurmi	We also do not want our beautiful area ruined forever.	GEN	NS	X	1	
Lyndon Nurmi	That being said, we also want the jobs so our young people can stay up here, find jobs in 'GOD's Country'.	SO	NS	X	1	
Lyndon Nurmi	Our voices should be heard as going with the outcome of the research already done for many years. I (we) would say the project should be a 'go' if that is what the technology shows can be done safely.	GEN	NS	X	1	
Wendy Robertson	The FEIS fails to include the value of the natural capital of the St. Louis Watershed when mitigating the wetlands for the Polymet Project. Natural capital is defined as "minerals, energy, plants, animals, ecosystems, (climatic processes, nutrient cycles and other natural structures and systems) found on Earth that provide a flow of natural good and services" (Daly and Farley, 2004). Two of the three mitigation sites for this project are not in the watershed thus result in a loss to the St. Louis Watershed area.	WET	S	O	8	SDEIS Theme WET 03
Wendy Robertson	In June 2015, a study was commissioned by the Fond du Lac Band of Lake Superior Chippewa. The band and the U.S. EPA. provided the funding for the study, "The Value of Nature's Benefits in the St. Louis River Watershed", which was completed by a team employed by Earth Economics, Tacoma, WA. Their findings were published in a 105 page report that may be reproduced for educational and non-commercial use without prior copyright permission from the holder provided the source is acknowledged. I have used some of their data to defend my comments. In the valuation results from this study, the total land cover of the St Louis watershed area is 2,376,286 acres. It provides between \$5 billion and \$13.7 billion (low and high figures) in benefits each year to people. The numbers indicate investment in natural capital that supports an ecosystem of services and benefits. An example would be in carbon sequestration from the extensive acreage of peatland. Peatlands hold three times as much carbon as other ecosystems. From recreation and tourism, this area is valued at \$12,843.00 per acre. Local businesses benefit from this value. The proposed mitigation plan falls short in the FEIS for three reasons: one, all the mitigation is not within the St. Louis watershed, two, there is no determination by the state and federal agencies on the drainage status of the bog restoration sites (compensatory mitigation) from active sod farms and agricultural production, and three, the USACE has not made a final decision on the mitigation ratios that would be required to compensate for direct	WET	S	O	8	SDEIS Themes WET 03, WET 04, WET 05, WET 15

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	wetland impacts.					
Wendy Robertson	To date about \$750,000,000.00 has been spent to clean-up from the industrial pollution disaster of the St. Louis River watershed area. It is still unsafe for certain human populations to consume fish from the river without heeding the MN Dept. of Health's warning guidelines. It is still considered an endangered river without the additional impact of sulfide mining.	WAT	NS	X	1	
Wendy Robertson	The amount of short-term proposed economic gains or benefits from the Polymet project in comparison with the costs of jeopardizing the long-term environmental economic value of the St. Louis River watershed should not be given any more consideration.	SO	NS	X	1	
Wendy Robertson	Therefore, I am against the MNDNR giving the NorthMet Mining Project and Land Exchange project a green light. I'm asking them to state, "No Alternative Action", in their decision on the FEIS.	GEN	NS	X	1	
Wendy Robertson	I am also asking the USACE not to issue any 404 permits to the Polymet project. The USAD Forest Dept. should not agree to any land exchange.	ROD	NS	X	1	
Wendy Robertson	Leave our future generations and the deserving non-defendable wildlife of the St Louis River watershed with the highest value of natural capital intact and do not support this project.	GEN	NS	X	1	
Paul Mandell	With regard to the first issue, clearly the pollution will be hazardous, as evidenced by the extent to which capture and eventual dilution of any runoff has been addressed in the proposal and in the EIS. I believe that for the EIS, the two processes were tested, but for taconite tailings, not one we know will produce sulfuric acid and which is dramatically different from taconite. My understanding is that the proposed process is a cheaper and more problematic one that has failed in several locations, most notably in northwest Canada. It is inferior to the safer "reverse osmosis" process. Given that we are looking at a clean-up that may last more than two hundred years, long after the mine is closed and probably long after the company or those financially benefitting from the project may themselves be long gone, why should we not demand the more proven albeit more expensive process in order to protect both our environment and our people.	WAT	S	O	2	FEIS Section 5.2.2
Paul Mandell	As for any assurance, as stated above, I understand that the question of assurance is not settled in the EIS; but with the mine likely to close after twenty-to-thirty years and the clean-up (water treatment of the tailings) expected to be needed for what is likely to be far longer than the companies behind the proposal, how much will be enough to guarantee that we, the taxpayers don't end up paying for the mess we allowed them to create. At what point, if the taxpayer bailout may be necessary, do we see a cost benefit analysis that state creation of jobs to match to possible workforce payroll might be	FIN	S	O	6	SDEIS Theme FIN 05

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	cheaper in the long run, and a lot safer for the environment?					
Paul Mandell	Lastly, where are the failsafe measures to address any possibility that the plume of toxic runoff may head north, as some have speculated using different models, is a possibility.	WAT	NS	X	1	
Peder Otterson	I am also concerned that the ore being proposed for mining is quite low grade. This is a problem both for the economics and the environment. It was a proposal by Minnamax back in the 1970's that triggered the Regional Copper Nickel Study, but it was a drop in the price of copper and nickel that scuttled it. Currently, taconite mines on the Range are laying off people because of the competing costs of foreign ore and low demand. Although boom/bust is common to the industry, this project carries the added need to continually safeguard its toxic wastewater long after it is ended.	SO	S	O	8	FEIS Section 5.2.10
Peder Otterson	The study does not appear to even address the energy demands of the project. I may be wrong, but I could find no analysis of the energy that will be required to get this low grade ore from the ground and concentrate it into a form in which it can be marketed. I believe that is a gross error that should be addressed—especially in these days of heightened awareness to the long-term consequences of global climate change and the need for each country to manage its energy use to reduce carbon emissions. I may be wrong, but I have heard that Minnesota Power is already soliciting the expansion of western coal mining in order to meet the demand of the proposed Polymet operation. So what is this demand and how will it be met? And what is the overall carbon contribution to the atmosphere from it? This is a related action to the project that, again, could have unintended negative consequences to the region if not the world.	O	S	O	6	FEIS Section 5.2.7. SDEIS Themes AIR 01, AQ 16, COE 03, PD 22, VEG 03, WET 07, WET 13, WI 02, WI 03, WI 08, WR 180. DEIS Theme AQ 03
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Peder Otterson	Perhaps a time will come when both the need for the ore and the technology to process it without consequences have both advanced to a stage when it can be safely done. But not now. A few jobs and temporary economic gain to the Range are simply not worth the risk.	SO	NS	X	1	
Mary Slattery	Among the thousands of legitimate concerns already received by your office, I am most concerned about the probable contamination of our drinking water.	WAT	NS	X	1	
Mary Slattery	The post mine closure plan contradicts state law (closure and post closure maintenance "the mining area shall be closed so that it..... is maintenance free"). Even if this law is broken, we have no guarantee that Polymet will be around 500 years to	PER	NS	X	1	

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	clean up a possible leak.					
Mary Slattery	The loss of fish and wild rice have also not been addressed.	AQ	NS	X	1	
Mary Slattery	The Scandinavian countries can find ways for people to be provided for without jobs that destroy the earth. Can't a country as creative and great as the USA do the same, or are we so dominated by the few, amassing great wealth at the expense of the many and the earth?	SO	NS	X	1	
Brenda Simonson	We now have another industry possibility in PolyMet on the Iron Range that would create employment for many people. This allows families to stay in northern Minnesota rather than leave the area for other employment.	SO	NS	X	1	
Brenda Simonson	The extensive environmental review has assured us that mining can be done without environmental damage. It has been a lengthy review process that has proven to be effective. The State of Minnesota, along with the DNR, the US Army Corps of Engineers, and the US Forest Service has agreed that mining will be done safely to ensure no long-term harm to the environment.	GEN	NS	X	1	
Shirley Huskins	Nature/Creation is not meant to be harmed or destroyed in any way that it would be subject to an environmental impact statement.	GEN	NS	X	1	
Shirley Huskins	PolyMet's proposal does not offer regulations regarding health standards affecting humans,wildlife, birds, fish,etc.	PER	NS	X	1	
Shirley Huskins	polluted water will affect directly the production of wild rice. Proposal does not address how wild rice growers/producers will be reimbursed for loss of income.	SO	NS	X	1	
Shirley Huskins	PolyMet admits run-off water pollution could continue for countless (100 –500) years. What financial assurances are in place to counteract the damage done by pollution?	FIN	NS	X	1	
Shirley Huskins	PolyMet does not address how they would handle climate change as it progresses in the coming years.	AIR	NS	X	1	
Shirley Huskins	Direction of water flow – would be hazardous to any direction – to St. Louis River and to Lake Superior; north to Quetico region or wherever.	WAT	NS	X	1	
Shirley Huskins	Wetland damage – Proposal does not address this, all over the Minnesota region.	WET	NS	X	1	
Shirley Huskins	PolyMet does not present facts presenting absolute benefits, without reservation, of their proposal.	SO	NS	X	1	

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Shirley Huskins	PolyMet's proposal indicates NO plus benefits, only MINUS benefits.	SO	NS	X	1	
Janet McTavish	The nickel resources belong to the public and as a member of the public and a Minnesota resident and tax payer, I Do Not give my permission for a private Company to use this resource of mine to make a profit at the expense of the public.	SO	NS	X	1	
Janet McTavish	I also object to the way my input has been solicited. You imply that the project is a "done deal" and that the public can only "fine tune it".	NEPA	NS	X	1	
Ivan Weber	We respectfully urge denial of the application on a number of bases, particularly the biogeochemical fate of contaminants inevitably produced, consequent water quality effects, and impacts of the proposed land exchange.	GEN	NS	X	1	
Ivan Weber	Sulfide ores are highly variable, but they will inevitable produce acidic waters and a suite of contaminants, including (most significantly) selenium, arsenic, mercury, cadmium, cobalt and aluminum. All come to bear on natural systems, many through multiple pathways, affecting multiple life-forms. • "Wet" disposal of acid-producing waste rock and tailings, as proposed here, is a sure way to maximize their long-term acidification, mobilizing the full spectrum of toxic metals and associated compounds.	WAT	S	O	2	SDEIS Theme WR 001
Ivan Weber	"Treatment" is not discussed in a forthright manner, but the cast of characters involved would seem to lead inevitably to the choice of reverse osmosis (RO), with disastrous consequences in the offing. Disposal of RO 'concentrates' on-site or in the vicinity appears impossible, and the prospect of shipping 1/4 to 1/3 of the total treatment volume would be infeasible and environmentally damaging.	WAT	S	O	2	SDEIS Theme WR 128
Ivan Weber	The proposed land exchange would constitute an unnecessary and relatively enormous diminishment of forests and wetlands, as well as of watersheds.	LAN	NS	X	1	
Ivan Weber	It is striking that the NorthMet Mine investigative documents appear not even to consider several of these analytes, particularly selenium, cobalt, cadmium and chromium, as well as aluminum; and the way mercury is addressed is not at all adequate. Several of these analytes and their molecular variants and compounds are toxic, depending on levels and on receptors. Selenium, particularly, is tremendously dangerous to reproductive mechanisms of amphibians, fish, and water-birds, often at levels found to be beneficial to humans. Animals can't live with what humans prefer. On the other hand, I observed and, in effect, discovered that a selenium-rich spring, fed from the upgradient Kennecott Refinery, was devoid of nearly all life except hardstem bulrush and Baltic rush. The water was completely clear, showing no invertebrate life, and smelling strongly of selenium compounds. (That spring was diverted to the preferred disposal point nearby on the south shore of the Great Salt Lake, and is now concealed.) Bottom line: selenium is deadly to aquatic ecosystems.	WAT	S	O	3	SDEIS Theme WR 025

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Ivan Weber	Under the direction of Mr. Cherry and other Kennecott leadership inclined toward simple solutions, however, the subtlety and thoroughness of the sequential 'separation' approach to water remediation was discarded in favor of reverse osmosis (RO), an extreme high-pressure filtration technology that produces 'permeate' in the form of clean water, and 'concentrate' as a dense sludge of contaminant minerals. Pressure is usually required to be around 650-700 pounds per square inch; permeate is typically 65%-75% of the original feed, and concentrate amounts to 25% to 35%. In most general terms, you can predict that concentrate will amount to from 1/4 to 1/3 of the treatment infeed. Although RO appears not to be discussed in the NorthMet submittals, thusfar, that I have seen, this technology must be addressed head-on, because of the sheer volume of 'concentrate,' the highly concentrated contaminant load that must be accommodated in the waste disposal strategies of the facility. How concentrated the concentrate actually is, and how much there will be, will obviously be determined by the molecular mass of contaminant chemicals and the rate of flow.	WAT	S	O	2	SDEIS Theme WR 128
Ivan Weber	Fish, amphibians, birds and natural wild rice production systems all stand to be impacted catastrophically by the discharge of RO, or of any other, 'water treatment' technologies. RO is by far the most likely, partly due to the alignment of key personnel (i.e., PolyMet's Mr. Cherry) with not only the Kennecott/Rio Tinto experience, but also with other RO applications at other Rio Tinto mines. But you should not take my word for it: Study these cases deeply and honestly, on your own, and draw your own conclusions. You in northern Minnesota have a future likely to produce far more RO concentrates than you ever thought possible, and you have no place to put this daunting quantity of toxic materials.	WAT	S	O	3	SDEIS Themes WR 023, WR 128, WR 182
Ivan Weber	Where could this magnitude of water contamination originate? Pit, industrial process management, and water used in the process would be one 'zone' of contamination source. But the more likely sources are in the waste rock and tailings, which are described as being disposed on-site or at site boundaries. The idea that mine management can know when the sulfides are becoming acidic, and respond to modify by adding neutralization compounds, hasn't worked elsewhere. Why should it work here?	WAT	S	O	3	SDEIS Themes WR 027, WR 173; SDEIS COOP Response #17812

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Ivan Weber	1. Oxidation of sulfides takes place not just through direct uptake of oxygen, but rather, through the oxidizing effects of bacteria and bacterial films that prefer sulfide minerals. Everyone seems to be aware of iron-oxidizing bacteria, Thiobacillus ferrooxidans, which is an aerobic iron oxidizer. 2. Bacterial species in the genus Desulfovibrio, in the genus Desulfotomaculum are anaerobic sulfate-reducers can actually render selenium to be more toxic to wildlife when deprived of oxygen. The proposed inundation of acid-prone tailings and waste rock can fail, and probably will fail, due to the development of these anaerobic sulfate-reducing communities, such as Desulfovibrio, Desulfotomaculum, or others of the type. "Sub-aqueous disposal" is a bad idea, put bluntly. This is the subject of vigorous debate and investigation, with some very convincing critiques of mines' discharge into nearby oceans (see Roger Moody's Into the Unknown Regions: The Hazards of STD" [STD refers to submarine tailings disposal], for example. Nevertheless, like RO 'treatment,' it is a fad in the mining industry.	WAT	S	N	12	The comment is noted. Final SDD Section 2.3.1 required the EIS to evaluate in-pit reactive waste rock disposal to retard oxidation of sulfide minerals as a means to in turn reduce the magnitude of long-term treatment of water contacting reactive rock. This action was incorporated into the project design to mitigate potentially adverse effects as originally anticipated in the scoping decision. During operations (Mine year 1-20) the East Pit would be flooded with treated water, precipitation and groundwater and the level of waste rock used as backfill would be above the pit water level elevation (FEIS pg. 5-101). Once backfilling of the East Pit is complete, the backfill would continue to saturate and the pore water would be sent to the WWTF for treatment and returned to the East Pit to improve pore water quality (FEIS pg. 5-102). During closure, a wetland would be created over the backfilled East Pit. Depending on weather, there could be pumped flows from the WWTF to the wetland (PolyMet 2015d). Given that there would be no standing water during operations and re-circulation of treated water is a part of the operations, reclamation and closure plan, impacts from exposure to East Pit water to wildlife are expected to be minimal.
Ivan Weber	Dry disposal of tailings offers much better prospects, though northern Minnesota is a difficult challenge for it execution. 4. The old LTV plant does not seem to be the appropriate location for still more degradation. Environmental restoration would appear to be the much better strategy. Instead of perpetuating the description of the former LTV plant as 'impaired' or 'derelict,' why not make it an industry to restore this place to an acceptable, functional ecological balance? We have dozens of photographs in digital formats of the worst of Kennecott's acid mine drainage, and some available from the Tar Creek case, but any and all of these cases could be remedied by diligent application of water management, soils management, wetlands design and construction, and responsible wetlands plant community manipulations. Wetlands really are that impressive and effective in their benefits, which we must recognize as being due to the microbiological systems with which they are interlinked.	ALT	S	O	4	SDEIS Theme ALT 10
Ivan Weber	Wetlands, especially naturally occurring wetlands of an extensive nature, like those that create wild rice habitat types, must be valued at the lofty level that recognizes what they are and do. Wetlands plants and their microbiological contexts are as near to magic as exists. Wild rice is surely the Boundary Waters indicator of a penultimately magical condition, one that is as sacred as Native American tribes contend. We honor them, as we pray the Minnesota regulatory community will do, as well.	WET	NS	X	1	

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Ivan Weber	The FEIS and the NorthMet project are negligent and just plain wrong on several fundamental scientific points, particularly in sections 4, 5 and 6 of the ponderous EIS document dealing with environmental scientific disciplines, particularly water, sulfide minerals, mercury, selenium and the microbiology and botany of an environment that has the misfortune of being mined.	MEPA	NS	X	1	
Ivan Weber	Please reject, defer or indefinitely delay mining projects of this sort in this region, including land exchanges that are integral to them.	ROD	NS	X	1	
Mary Heise	The potential for water contamination is highlighted by the stated acreage of wetlands that will be or may be impacted.	WET	NS	X	1	
Mary Heise	This EIS does not adequately address previous concerns about guaranteed funding in the event of water contamination or failure of mine infrastructure for the entirety of the mining waste generated from mining operations.	FIN	NS	X	1	
Mary Heise	It also does not adequately compensate for the impacted wetlands.	WET	NS	X	1	
Mary Heise	the groundwater modeling is still not sufficient enough to conclude that water treatment during and after mine operations will contain the contaminated water.	WAT	NS	X	1	
Mary Heise	Also, the timeline for necessary treatment and monitoring is unreasonable and is not in accordance with state law.	PER	NS	X	1	
Robert V. Hovelson	have a concern that the State has not required that Poly Met provide to the State third party issued Payment and Performance bonds covering its commitment to protect the environment during the term of the mining operations and the restoration of the environment after mining has ceased, including provisions that would indemnify the State from having to pay for post-mining inspections to assure that the provisions of the EIS in this regard are properly performed.	FIN	NS	X	1	
Stephanie Weller-hanson	After citing all of the above information, I am truly appalled that our state's Department of Natural Resources would even consider damaging those same precious natural resources, despite the strenuous objections of so many of Minnesota's citizens. I know that the economic realities on the Iron Range are difficult, and, yes, there is the benefit of several hundred jobs in the region for 50 years or so. But when weighed against the cost of vital environments being polluted and requiring cleanup FOR THE NEXT 500 YEARS, there can be no answer to this issue except to soundly refuse PolyMet's proposal. The children and grandchildren of those same miners will thank you and the rest of Minnesota will, too. Please, please don't give in to the big mining interests. Stop this mine right now.	GEN	NS	X	1	
Arno S. Kahn	The proposed extraction of copper-nickel, as proposed by Poly-Met, will, without question, add sulfide pollution to our area's pristine watershed. We owe it to subsequent generations of Minnesotans, as well as to the rest of the planet, to safeguard this rare fresh water treasure.	WAT	NS	X	1	
Arno S. Kahn	The addition of sulfide to this watershed will heavily impact both the plants and the fish population.	WAT	NS	X	1	
Arno S.	The requirement that a company maintain the "holding ponds" for 500 years is crazy. Companies don't have 500 year life	FIN	NS	X	1	

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Kahn	spans.					
Arno S. Kahn	Construction projects also don't tend to do well over that cycle of time. The proposed ponds are unlined and rely on dams that can easily fail. As our climate continues to change, we will see more heavy rains that can easily deliver 12" or more of precipitation in a day, and the likelihood of contaminated water being released in large quantities seems to be a certainty. Unlike petroleum, there doesn't appear to be any way to remove the sulfide from the watershed after it is released.	GT	NS	X	1	
Arno S. Kahn	Given the certainty of contamination by sulfide and other mine spoils, it appears to me to be highly unethical to approve this method of mining.	GEN	NS	X	1	
Arno S. Kahn	The small economic benefit will assist very few people and the total impact on the environment is massive and irreparable.	SO	NS	X	1	
Pauline Callahan	The beauty of our state would be severely compromised if this project is allowed to go forward. So many people in the Northern part of Minnesota depend on our water resources for recreation. It is the basis for our tourism there. I believe that the defacing of the land by the NorthMet project would impact far more people than we realize.	SO	NS	X	1	
Pauline Callahan	The added threat that it could pollute our drinking water is one that we SHOULD NOT risk.	WAT	NS	X	1	
Dan Wegman	The Final EIS for PolyMet's proposed mine provides a thorough and more than adequate review of potential environmental effects the project may cause. This process has taken far longer than what should be needed to address such a project. The Minnesota Department of Natural Resources, U.S. Army Corps of Engineers, and U.S. Forest Service have looked at the evidence and correctly found that the NorthMet Mine can comply with strict state and federal environmental standards. I am an avid outdoorsman that spends considerable time in the awesome wilderness areas of Northern Minnesota and would never endorse a project I thought could endanger the environment I enjoy so much. In my opinion, the Final EIS for the NorthMet Mine shows this is an environmentally safe and viable project with no valid reason to block or delay the project. Every potential reason for blocking or delaying further the start of this project has been properly addressed in the document.	O	NS	X	1	
Dan Wegman	In addition to these facts it is my view along with many others that: The economic future of Northern Minnesota requires diversification away from iron ore mining. The NorthMet project provides a long-term viable industry that creates many jobs, both directly at the mine and indirectly to hundreds of other businesses. The majority of taxpayers across our great nation are fed up with economic stagnation created by the current political will to hamper growth through unnecessary and unwarranted regulatory barriers. This issue had been studied for over 10 years and the EIS has addressed all of the issues required by Federal and State regulations. It's time to accept the adequacy of the report and move forward with the permitting/approval process.	O	NS	X	1	
Donna Buckbee	We should not allow an activity that will put our water resources at risk. Nor should we allow mining activity that would risk the wild rice pools that our Native American brothers and sisters depend upon.	GEN	NS	X	1	

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Esteban Chiriboga	The FEIS has adopted the term “adaptive management” to describe monitoring and potential future mitigation actions that would be implemented on an as needed basis. We agree that adaptive management is an important part of a mine project but it is intended to address unforeseen impacts only.	ALT	NS	X	1	
Esteban Chiriboga	The FEIS uses adaptive management for areas for areas in which the FEIS does not make reliable predictions about environmental impacts. As we have repeatedly stated, monitoring does not prevent mine related environmental impacts. Monitoring can only detect impacts after they have begun to occur and the adaptive management activities that are listed in the FEIS would only be a reaction to an impact that has already begun to occur.	ALT	S	O	2	FEIS Section 3.1.1.7
Esteban Chiriboga	In contrast, a federal EIS document is not reactive but forward looking. The purpose of an EIS is to identify all reasonably foreseeable impacts and scientifically characterize them so that decision makers can evaluate the cost and benefits of a proposed action.	NEPA	NS	X	1	
Esteban Chiriboga	The EIS does have the additional purpose of identifying mitigation and monitoring activities but this task does not obviate the need for meaningful and scientifically defensible predictions and characterizations of expected impacts. The FEIS has failed to adequately define the impacts (costs) of the proposed PolyMet project in several critical areas. Therefore, decision makers will not have the information they need to make informed decisions.	NEPA	S	O	3	SDEIS Theme NEPA 09
Esteban Chiriboga	The 2009/2014 analog approach was previously chosen by the lead agencies because they contended that a more quantitative method based on MODFLOW groundwater modeling and field collected data would not yield information useful to assess indirect impacts. GLIFWC staff disagree with this contention (see indirect wetland impact section). A site specific MODFLOW model that incorporates existing information could provide reasonable estimates of the potentiometric surface (water table). The model could then be stressed by incorporating the proposed PolyMet Mine pits and the neighboring Northshore Mine pits and reasonable estimates of drawdown under the wetlands could be developed. The development of this model, including field data collection to support it, could have been accomplished in far less than the 8 years the EIS process for this project has lasted. Groundwater models, using the MODFLOW software, are standard techniques for assessing groundwater impacts of proposed mines at newly proposed projects across the country. Statements in the FEIS regarding the complexity of the site and the impossibility of successfully modeling water table drawdown cannot be supported. GLIFWC staff disagree with further simplification of the indirect wetland impact analysis. This approach relies on monitoring that by definition would detect impacts after they have already begun to occur. Only then would adaptive management techniques be used to attempt to mitigate the damage. This approach is contrary to the goals of the NEPA process, which is designed to be forward looking.	WET	S	O	3	SDEIS Theme WET 08

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Esteban Chiriboga	Mine Site Groundwater Movement. According to the co-lead agency memo of June 22, 2015, it is not possible to rule out a northward bedrock flowpath from the proposed NorthMet pits to the Northshore pits during the closure period and beyond (MODFLOW Teleconference of July 2015 and Draft Interagency Memorandum: Co-Lead Agencies' Consideration of Possible Mine Site Bedrock Flowpath, June 22, 2015). The results of both complex (MODFLOW) and simplistic (ERM's MathCad) modeling of flow direction indicate that there will in fact be a northward flowpath. The existence of a bedrock groundwater mound that would prevent a northward flowpath, is not plausible given the hydrogeology of the site. Adaptive management cannot be a substitute for understanding the hydrology of a northward flowpath through the development of an analytical model based on site data and a consistent conceptual model. Such an understanding would provide critical information on contaminant flow paths and travel times of contaminants to the north as well as to the Partridge River. The current proposal to have a system of monitoring wells that could detect contaminants moving out of the mine pits is appropriate, but is not a substitute for understanding and predicting the scope of potential impacts. Only with an understanding of the site hydrology and the potential impacts can the feasibility of mitigation measures be evaluated. GLIFWC disagree with this adaptive management approach and maintain that the FEIS is inadequate. A defensible, site specific groundwater model, based on a consistent conceptualization of the site hydrology should be used to characterize site hydrology, understand the effects of the PolyMet project and its interactions with adjacent projects and define contaminant flows.	WAT	S	O	3	MDNR et al. 2015c
Esteban Chiriboga	The analysis conducted in support of the proposed mine is inadequate in that it fails to predict the length of time that water treatment would be required in order to avoid exceedance of water quality standards.	FIN	S	O	8	SDEIS COOP Response #2994
Esteban Chiriboga	GLIFWC staff agree that the statement above is accurate however we note that it is not very informative. The bottom line is that the FEIS does not predict how long water treatment will be needed for this project. Tribal cooperating agencies and intertribal agencies requested that this analysis be done but the co-lead agencies denied that request. This lack of knowledge has serious implications on financial assurance and the logical feasibility of the project. The notion of water treatment and maintenance for hundreds of years, supported by financial assurance instruments that must also be available for hundreds of years, is difficult to justify.	FIN	NS	X	1	
Esteban Chiriboga	While the duration of water treatment is unknown, there are many engineered features proposed for this project for which perpetual maintenance is a certainty. These include the water capture and pumpback systems at the flotation tailings basin, the Category 1 stockpile cover system, the hydrometallurgical tailings facility, the overflow control structure at the west pit lake, etc. The FEIS also includes a goal to transition from mechanical water treatment (water treatment plant using reverse osmosis) to non-mechanical methods such as constructed wetlands, permeable reactive barriers, etc. The FEIS does not provide detail on the passive systems, because it states that their effectiveness would have to be demonstrated at a later date. However, it is important to note that passive systems are not maintenance free systems. Available literature indicates that non-mechanical systems require periodic maintenance and replacement. Therefore, the hypothetical transition to a non-mechanical treatment method does not eliminate the need for perpetual maintenance, in fact perpetual maintenance is guaranteed. Minnesota Rule 6132.3200, regarding closures and postclosure maintenance of mines, states that the goal of closure and reclamation is that "[t]he 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." Because perpetual maintenance will be required at the hydrometallurgical residue facility, as well as at the numerous	FIN	NS	X	1	

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	engineered features listed above, the project does not appear to meet this goal.					
Esteban Chiriboga	Throughout the FEIS, the co-Lead agencies state that they expect the proposed project to meet all applicable water quality standards. This expectation is based on modeling and GLIFWC does not believe that the modeling is robust enough to support such a statement. However, even assuming that the modeling accurately represents the real future of the project, it is illogical to assume that standards will be met because the modeling assumes effective operation of water capture and treatment facilities in perpetuity. As stated above, the idea that water treatment plants will operate for hundreds of years is not believable. Therefore, the statement that water quality standards will be met is also not believable.	PER	NS	X	1	
Esteban Chiriboga	GLIFWC staff began reviewing the potential environmental impacts of the NorthMet Mine in early 2008. Since the beginning of our review, staff have expressed concerns regarding the hydrologic characterization of groundwater and surface water at the mine site. These concerns have never been fully addressed, which had led to an EIS that inadequately and incorrectly characterizes hydrology at the mine site.	WAT	NS	X	1	
Esteban Chiriboga	Early in the environmental review, the lead agencies and their contractor (ERM) assumed that the mine site was a "greenfield." This meant that the agencies did not intend to collect baseline water quality data from the Partridge River and Yelp Creek nor did they intend to collect groundwater quality data and groundwater flow information prior to mining. It is now recognized that the mine site has been impacted by the Northshore Mine and is not a greenfield site. But, the co-lead agencies never implemented a robust baseline data collection program to support impact prediction and, compared to other recently proposed mines, NorthMet remains data poor.	WAT	S	O	8	PolyMet 2015r, Large Tables 3-11
Esteban Chiriboga	The lack of field data means that the NEPA process must rely on models and data interpolations that are not adequate substitutes for site specific data collection. In comments on the DEIS, SDEIS, and PFEIS, GLIFWC staff have repeatedly identified fatal flaws in the XP_SWMM, and MODFLOW models. The co-lead agencies have not been receptive to these comments and have instead relied extensively on materials prepared by Barr Engineering to develop the NEPA document.	WAT	S	O	8	Co-Lead Agency Memos: Northshore Discharge Values Used in the Mine Site GoldSim Model Project Specific and Cumulative Impacts Evaluations, September 11, 2015; NorthMet Project FEIS Bedrock Hydrology at the NorthMet Mine and Plant Sites Rationale for Model Change Recommendations, November 17, 2014; NorthMet Environmental Impact Statement Co-lead Agencies' Response for GLIFWC Comments on Calibration of the Mine Site MODFLOW Model to Partridge River Groundwater Baseflows; MDNR Et al. 2015c; MDNR et al. 2015a. Minnesota Rules, part 4410.2300, subpart H, states that data and analyses (in the EIS) must be commensurate with the importance of the impact and the relevance of the information to a reasoned choice among alternatives and to the need for mitigation measures. DNR asserts that the data and analyses supporting the EIS are consistent with the

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						cited rule. The Co-lead Agencies reviewed data, reports, and other materials related to the EIS analyses submitted by the Proposer and its consultant. Final SDD Section 6.0 explains that the EIS will require state/federal agencies or the EIS contractor to review the reports and studies supplied by the Proposer. See Co-lead Agencies Responses to: MDO #1; MDO #7; and MDO #13.
Esteban Chiriboga	<p>The lack of data and lack of understanding of mine site groundwater hydrology is evident in the fatally flawed MODFLOW modeling presented in the FEIS. An adequate characterization of the groundwater system at a proposed mine site is essential to understanding most of the potential impacts from the project. As stated in the GLIFWC letter to the co-lead agencies of August 11, 2015: "The amount of water entering the groundwater system, be it precipitation or discharge from the bed of lakes, rivers or mine pits, determines the direction of flow and dilution of contaminants, and dictates points of compliance for both ground and surface waters. The horizontal and vertical conductivity of the soil and bedrock materials determines how the groundwater system responds to stresses and the rate at which the groundwater flows horizontally and vertically. The character of interaction between surface water features and the groundwater system, whether it is loss of water from rivers or wetlands to the groundwater system, or discharge from the groundwater system to the surface water features, determines predicted impacts to surface water features by stresses such as mine dewatering. Estimating water budgets and quantities of water that must be treated requires an adequate understanding of the groundwater system. None of the above effects of a mine project can be predicted accurately if there is not an adequate characterization of the groundwater system. Without an integrated model of the groundwater system, one would be left with only professional judgment to determine the value of the many interrelated parameters that are used for impact prediction. Professional judgment is useful in checking the reasonableness of the predictions from a groundwater model but, by itself, cannot adequately integrate the complex site specific information, all pieces of which must fit together like a complex puzzle." MODFLOW is the primary source of information for defining flowpaths of contaminants from the NorthMet Mine pits at closure. The flowpaths are used to define the area of potential effect for cultural resource impact analysis. The flowpaths and the speed of groundwater flow from the MODFLOW model are critical inputs into the GoldSim water quality model. In fact, without MODFLOW results, the GoldSim model could not be run. Thus the outputs generated by GoldSim that predict ultimate water quality parameters in the Partridge River and property boundary points of compliance are not accurate. MODFLOW is fatally flawed for one simple reason. It was calibrated to conditions that did not exist at the same point in time. Water levels in the Northshore taconite pits from 1996 were used along with Partridge River baseflows from 1979-</p>	WAT	S	O	8	MDNR, et al. 2015c

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	<p>1988. In addition, the modeling does not incorporate the predicted Northshore pit elevations at closure which would be significantly lower in elevation than the bottom of the NorthMet pits. This approach is contrary to accepted modeling methodology and constitutes an unacceptable calibration error. These concerns were described in detail in comments on the CPDEIS of 2008 emailed to the lead agencies on February 6th, 2009. It is unclear why the lead agencies have failed to correct an error of this magnitude. GLIFWC staff have corrected the calibration error in the applicant's model. When corrected, the model indicates that the majority of bedrock groundwater flow from the NorthMet pits and Category 1 stockpile will be to the north toward the Northshore Mine pits and not to the south as described in the FEIS. See GLIFWC letters to the co-lead agencies dated August 11 and December 14th for more information. This 180 degree change in flow direction is significant because it invalidates all mine site water resources conclusions in the FEIS regarding water quality at closure. Furthermore, the water quality effects to Birch Lake and the Boundary Waters of Northshore Mine pit water mixing with NorthMet pit effluent have not been evaluated. The co-lead agencies now agree that GLIFWC's assessment of the MODFLOW model is correct and that the northward flowpath results when the correct water elevations in the Northshore pits are used. However, the co-lead agencies have adopted an idea developed by the applicant to claim that the north flowpath is unlikely. The idea is that a groundwater mound has/would form in bedrock north of the NorthMet Mine pits and would prevent northward flow of pit water through bedrock at closure. This mound cannot form given the hydrogeologic setting of the area. In fact it is physically impossible for a mound to form. See GLIFWC letter of December 14th for additional detail. A webinar and teleconference was scheduled by the co-lead agencies on November 17th, 2015 to discuss the inadequacies of the MODFLOW model and the flawed understanding of mine site hydrology presented in the PFEIS. Since that time, the co-lead agencies have refused to discuss this issue with tribal cooperating agencies and intertribal agencies. In an email dated November 30th, 2015 the co-lead agencies communicated that there would be no additional technical engagement with tribal staff on the topic. GLIFWC staff have attempted to engage in this discussion and continue to provide information to the lead agencies. GLIFWC staff have developed the following technical comments letters: • Dec. 13, 2015. Titled: "Comments on NorthMet FEIS and Section 404 permitting Re: Hypothetical groundwater mound between PolyMet and Peter-Mitchell pits" • Dec. 14, 2015. Titled: "Comments on NorthMet FEIS and Section 404 permitting Re: Mine site groundwater model calibration." • Dec. 15, 2015. Titled: "Comments on NorthMet FEIS and Section 404 permitting Re: Likely northward groundwater flowpath of contaminants." The assessment of hydrologic impacts of the proposed NorthMet mine does not meet the minimum standards of scientific integrity. The co-lead agencies assumed early in the process that bedrock groundwater flow would be to the south at closure. They have since attempted to support their pre-conceived notions about hydrology with information that runs contrary to physical reality. The NEPA process is not well served by this approach.</p>					
Esteban Chiriboga	<p>The Area of Potential Effect (APE) for groundwater resources presented in the FEIS is inadequate. The groundwater flowpaths at the mine site do not include the bedrock flow to the north, therefore the APE is incomplete. At the plant site, the APE ends at the property boundary north of the tailings basin. While that is the point of compliance for groundwater quality standards, it is not logical to assume impacts would stop at the property boundary.</p>	WAT	NS	X	1	MDNR, et al. 2015c. Interagency Memorandum: NorthMet Environmental Impact Statement--Co-lead Agencies' Consideration of Possible Mine Site Bedrock Northward Flowpath

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Esteban Chiriboga	The NorthMet Project Proposed Action and Land Exchange Proposed Action are both located entirely within the boundaries of the 1854 Ceded Territory. Current, historic, and ‘reasonably foreseeable’ mining activities have profoundly and, in many cases permanently, degraded vast areas of forests, wetlands, air and water resources, wildlife habitat, cultural sites, and other critical treaty-protected resources within the 1854 Ceded Territory. Lands within the 1854 Ceded Territory that have experienced urban and/or industrial development are permanently ‘lost’ as a source of treaty resources.	CUM	NS	X	1	MDNR, et al. 2015c. Interagency Memorandum: NorthMet Environmental Impact Statement--Co-lead Agencies’ Consideration of Possible Mine Site Bedrock Northward Flowpath
Esteban Chiriboga	Tribal cooperating agencies consider a 216,300 acre area bounded by the St. Louis River, Lake Superior, Lake Vermilion and the Beaver Bay to Vermilion Trail to be a Tribal Historic District, and the pertinent area for consideration of cumulative effects to cultural resources. Included within the proposed historic district are the headwaters of the St. Louis River, the site of ongoing mineral exploration. The co-lead agencies declined to consider this cultural district as an analysis area in the NEPA process. In addition, tribal cooperating agencies believe the relevant spatial scale for water quality and hydrologic cumulative effects analysis is the entire St. Louis River watershed. Detailed technical support is provided in Appendix C of the FEIS.	CUM	NS	X	1	MDNR, et al. 2015c. Interagency Memorandum: NorthMet Environmental Impact Statement--Co-lead Agencies’ Consideration of Possible Mine Site Bedrock Northward Flowpath
Esteban Chiriboga	GLIFWC staff have noted that elevated specific conductance is a water chemistry ‘signature’ for mining discharges. The analyses included in Appendix C demonstrates that existing mining discharges result in elevated concentrations of pollutants that persist far downstream in the St. Louis River, which is consistent with the findings of the USEPA in their assessment report on the effects of mountaintop removal and valley fill mining. Given that water quality modeling conducted by the applicant is not scientifically defensible, the co-lead agency contention that water quality impacts from the NorthMet project would not extend to the St. Louis River are not supported.	WAT	NS	X	1	MDNR, et al. 2015c. Interagency Memorandum: NorthMet Environmental Impact Statement--Co-lead Agencies’ Consideration of Possible Mine Site Bedrock Northward Flowpath
Esteban Chiriboga	The Embarrass River, Wyman Creek, Whiteface Reservoir, Stony Creek, West Two River, numerous lakes, and the entire St. Louis River all have mercury-based fish consumption advisories. The FEIS does not accurately account for the impacts of increased mercury loadings on subsistence fishing. Furthermore, increased sulfate concentrations increase methylation rates and bioaccumulation of methylmercury. See Mercury section for additional detail.	MERC	NS	X	1	MDNR, et al. 2015c. Interagency Memorandum: NorthMet Environmental Impact Statement--Co-lead Agencies’ Consideration of Possible Mine Site Bedrock Northward Flowpath
Esteban Chiriboga	The wild rice sulfate water quality standard is exceeded at almost every point where data is available in the Embarrass River watershed and the drinking water standard is exceeded at half of the monitoring locations. In the Partridge River watershed, the wild rice sulfate WQS is exceeded at fourteen of seventeen locations. The NorthMet Project Proposed Action will contribute additional sulfate to the groundwater from tailings basin water that is not captured and treated, water that seeps through fractures in the mine pit walls once the pit has filled with water, and stockpile infiltration and run-off.	WAT	S	O	2	FEIS pg. 5-155, 5-207. MDNR, et al. 2015c. Interagency Memorandum: NorthMet Environmental Impact Statement--Co-lead Agencies’ Consideration of Possible Mine Site Bedrock Northward Flowpath
Esteban Chiriboga	All of the PolyMet predictions regarding discharge from the mine pits and waste rock piles, including the more reactive waste rock piles and the ore surge pile as well as the unlined permanent Category 1 waste rock pile, are made without considering the effects of fractures on discharge to groundwater and surface water.	WAT	S	O	8	SDEIS Theme WR 009. MDNR, et al. 2015c. Interagency Memorandum: NorthMet Environmental Impact Statement--Co-lead Agencies’ Consideration of Possible Mine Site Bedrock Northward Flowpath
Esteban Chiriboga	Groundwater contamination from the previous mining activities is still an issue near the LTV tailings basin and mine pits more than twenty years after operations have ceased. The cumulative effects of historic mining are not properly accounted for in the FEIS.	CUM	S	N	3	MDNR, et al. 2015c. Interagency Memorandum: NorthMet Environmental Impact Statement--Co-lead Agencies’ Consideration of Possible Mine Site Bedrock Northward Flowpath

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Esteban Chiriboga	There are 1,387,630 acres of wetlands in the St. Louis River watershed, with 1732 individual wetlands impacted by ditching, totaling 198,989 acres. Approximately 50% of the sub-watersheds have had some degree of impact from ditching, while some have experienced ditching in nearly 100% of their wetlands. These historic impacts are not accounted for in the FEIS. Tens of thousands of acres of high quality wetlands within the St. Louis River watershed have been entirely and permanently lost to historic and current mining operations, many of them prior to regulatory requirements for mitigation. Most mitigation (since it has been required) has taken place outside the St. Louis River watershed and has not replaced the wetland types and functions that have been lost.	WET	S	O	3	SDEIS Theme WET07. MDNR, et al. 2015c. Interagency Memorandum: NorthMet Environmental Impact Statement--Co-lead Agencies' Consideration of Possible Mine Site Bedrock Northward Flowpath
Esteban Chiriboga	The tribal cooperating agencies believe that wind-blown dust particles containing sulfate compounds that are emitted from mining and beneficiation activities could contaminate wetlands, lakes, and streams near the project site and could cause harm to the Species of Special Concern that have been found in this area and to the animals that depend on these plants for food. The cumulative effects of these impacts are not properly characterized in the FEIS.	AIR	S	O	2	SDEIS Theme AIR 05. MDNR, et al. 2015c. Interagency Memorandum: NorthMet Environmental Impact Statement--Co-lead Agencies' Consideration of Possible Mine Site Bedrock Northward Flowpath
Esteban Chiriboga	The tribal cooperating agencies believe it is indefensible to conclude that, amidst a "mining district" with multiple active mine facilities operating in close proximity, that there is no cumulative effect of 24 hour/day, seven days/week of heavy industrial and blasting noise on sensitive wildlife and on traditional cultural practices. See Appendix C of the FEIS for additional detail.	N	S	O	2	FEIS Section 6.2.5.4.2, Table 6.2.5-1. FEIS Sections 6.2.9.4.3, 6.2.9.4.4
Esteban Chiriboga	The information in the FEIS on Wild Rice is inadequate. GLIFWC staff have submitted comments on the deficiencies in wild rice analysis in every previous version of the FEIS yet the issues remain. We are aware of the MPCA determination on waters that are defined as supporting the production of wild rice. We believe that the process used to inform this determination must incorporate historic information of wild rice presence, abundance and habitat. The following section provides historic information on wild rice that, when viewed in combination with other more recent information, suggests that the Embarrass River produces or has produced wild rice in several areas upstream of the current point of compliance. Therefore, we suggest that the compliance point for the wild rice sulfate standard should be upstream of the current location at all areas where rice is growing. Manoomin or Wild Rice can be found throughout the Great Lakes but the areas of greatest concentration are in Minnesota and Wisconsin (Peter David, GLIFWC wild rice biologist, personal communication, Jenks 1901, Moyle 1944, MRC 1969). The areas of greatest concentration, which are defined as wild rice districts by Jenks, encompass lakes and streams within the region covered by glacial outwash. Jenks' description of the wild rice district is often cited in other publications that describe the range of wild rice (GLIFWC, 1999). Jenks provides additional information on wild rice distribution by stating that within the wild rice district, rice is found wherever there is suitable habitat. Specifically: "Farther south the St. Louis River system tells the same tale – the streams all bear abundant stores of wild rice" (Jenks, 1901, page 1035) This publication supports the accounts of tribal members from the tribes acting as cooperating agencies for this project. The draft Cultural Landscape Report prepared as part of the Polymet SDEIS dated September 15, 2011 states, "With the potential for wild rice in the shallow margins of lakes and streams, and abundant wild plant, fishing and hunting habitats, portions of the Preliminary Project APE may have been very attractive to the Ojibwe" (pg. 48). That report also includes an account from a Bois Forte tribal member indicating that harvest occurred on the Embarrass River. Another tribal member stated that she knows of a family that harvested wild rice in the vicinity of the LTV tailings dam on the Embarrass River. These specific descriptions would indicate harvest occurring upstream of Embarrass Lake and upstream	WAT	S	O	8	SDEIS Themes WR 083, WR 152, WR 154. Table 6.2.5-1, Sections 6.2.9.4.3, 6.2.9.4.4. MDNR, et al. 2015c. Interagency Memorandum: NorthMet Environmental Impact Statement--Co-lead Agencies' Consideration of Possible Mine Site Bedrock Northward Flowpath

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	<p>of Wynne and Sabin Lakes. This supports the notion of abundant wild rice stands in areas where only smaller stands now remain. Another corroborating piece of information is the presence of a wild rice farm straddling the Embarrass River. This wild rice farm operated from 1957 until 1993 when the operation went bankrupt (Barr, 1995). Aerial Photos taken in the spring of 1991 and 1992 show the flooded rice paddies and some ditches connecting the farm to the Embarrass River. The use of water from the river in the farm operation clearly defines the Embarrass River as used for the production of wild rice. In addition Unnamed Creek was likely a source of water for the farm. This creek currently originates at the northwest corner of the LTV tailings basin. According to the Clean Water Act (CWA) this use of water for production of wild rice is a designated use. As such, the sulfate standard applies for the Embarrass River. Field data collected by Barr Engineering (Barr, 2011) indicates that mine related sulfate effluent has already impacted the river to the point of exceeding the wild rice standard. The Draft Staff Recommendation does not provide information on how the MPCA considered the existing water quality in its recommendation and to what extent the high sulfate values have already impacted wild rice on the Embarrass River. This basic analysis should be part of describing existing conditions in the FEIS. A description of how the issues of wild rice habitat protection and existing elevated sulfate levels in the Embarrass River water were treated in the development of the recommendation is needed. Wild rice in this area is a degraded resource. As such, all remnant populations are in need of protection. This need is further emphasized by the designation of the Embarrass River as impaired in the 2012 draft 303d list. The current wild rice standard language clearly states that wildlife use of wild rice is an important factor in protecting the plant. It is not clear how MPCA staff determined that the number of wild rice plants upstream of the current point of compliance is not enough to be used as a food source by wildlife. GLIFWC staff is not aware of research that defines the number of plants or the density of a rice bed that would make it usable to blackbirds, muskrat, geese, or other wildlife. A single plant can provide nutrition to wildlife. Furthermore, browsing by wildlife is one of the reasons that wild rice fluctuates in abundance and density from year to year (Peter David, GLIFWC wild rice biologist, personal communication). The variability that is observed in the wild rice survey data on the Embarrass River may well be the result of wildlife use. Finally, Barr Engineering field notes indicate wildlife is using the wild rice stands in the area. These observations of browsing include small stands that are classified in the lowest density and lowest abundance categories (Barr, 2013). This supports the tribal position that all locations where rice is growing should be points of compliance for the 10 mg/l sulfate standard. Based on available information the GLIFWC staff believes that productive wild rice waters on the Embarrass River are where wild rice is currently growing and is confirmed to have been present in the past. The basis for this view is:</p> <ul style="list-style-type: none"> • Wild Rice has been present at these locations during at least one of the five survey years (2009 – 2013). • The wild rice sulfate standard is 10 mg/l. • Wild Rice is food for wildlife regardless of its density and the observed inter annual fluctuation in abundance of wild rice in the Embarrass River is consistent with the ecology of wild rice. Barr field notes support this position. • Historic information from tribal sources indicates past harvest in this area and non-tribal sources support the assertion that this is an area where wild rice was found. • The existence of a rice farm in this area is consistent with the assertion that the Embarrass River water quality was supportive to wild rice prior to mining impacts. • Wild rice in the Embarrass River endures despite degraded water quality. It is likely that the degraded water quality has decreased the abundance of wild rice in this river. 					

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Esteban Chiriboga	<p>Since 2008, GLIFWC staff have consistently provided information to the co-Lead agencies on methods that could be used to properly characterize indirect impacts to wetlands from hydrologic disruption. This information is based on experience developed in the review of other proposed mines including the proposed Crandon Mine. This is important because the NorthMet FEIS states that the Crandon method is used in the assessment of indirect wetland impacts. Having participated in the development and application of the Crandon method, we can definitively state that the FEIS does not use the Crandon method. The Crandon method of indirect wetland impact assessment relies on two critical pieces of information; a) a detailed delineation of wetlands leading to accurate wetland classifications, and b) an accurate characterization of groundwater hydrology supported by a calibrated groundwater model. Uncertainty in Wetland Delineation. At the mine site, the applicant has delineated wetlands that are within the land proposed for exchange with the Superior National Forest. The delineation work has been reviewed and concerns regarding the accuracy of the delineation have been raised. Field work conducted in September of 2010 by staff from the co-lead agencies, tribal cooperating agencies, intertribal agencies and the consultant for the applicant determined that 25% of the wetlands that were visited were incorrectly classified. All of those wetlands were found to have more connectivity with groundwater (more minerotrophic) than the original classification indicated. Furthermore, the field observations did not definitively rule out groundwater connectivity for a number of wetlands (Eggers, 2015). Following the field review, the applicant conducted additional characterization of wetlands using remote sensing techniques (observations from a helicopter). However, these observations are not appropriate to determine groundwater connectivity in wetlands. The co-Lead agencies did not conduct any additional characterization of wetland – groundwater connections. Monitoring sites have been established in a subset of wetlands, but the data is not used in the analysis of indirect impacts.</p>	WET	S	O	3	SDEIS Themes WET 07, WET 08. Table 6.2.5-1. Sections 6.2.9.4.3, 6.2.9.4.4. MDNR, et al. 2015c. Interagency Memorandum: NorthMet Environmental Impact Statement--Co-lead Agencies' Consideration of Possible Mine Site Bedrock Northward Flowpath
Esteban Chiriboga	<p>Lack of a Calibrated Groundwater Model. GLIFWC staff have advocated for the development of a calibrated groundwater model so that the Crandon method could be properly implemented. The co-lead agencies have repeatedly refused to require the applicant to develop a model saying that such a model is too complicated to construct and would not yield useful information. This conclusion is not supportable. Groundwater models are standard requirements of NEPA processes and are routinely developed to provide information on the effects of groundwater drawdown at mines. During the IAP process, tribes, the US Fish and Wildlife Service and technical staff from the MNDNR and MPCA supported the development of a calibrated model. Management from the MNDNR and MPCA later declined to develop the model. The lack of a calibrated groundwater model was a management decision based on convenience rather than a technical decision based on science.</p>	WAT	S	O	8	NorthMet EIS Co-lead Agencies' Response to GLIFWC Comments on Calibration of the Mine Site MODFLOW Model to Partridge River Groundwater Baseflows, October 12, 2015

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Esteban Chiriboga	<p>In lieu of a groundwater model the co-lead agencies decided to use drawdown data from a taconite pit as an analog. This method is flawed for two main reasons. First, the Canisteo pit is located in a different geology and at a different elevation than the NorthMet Mine site. In short, the sites are not analogous. Second, the co-lead agencies used analog data in a selective fashion. They used wells that supported a conclusion that the drawdown in adjacent wetlands would be minor and ignored wells that indicated a substantial effect. To demonstrate this error, GLIFWC conducted an independent indirect wetland analysis for the NorthMet Mine site (Attachment A). The analog data in this analysis was provided by the former MNDNR Mining Hydrologist and ignored by the co-lead agencies. The GLIFWC analysis also used the Crandon method to determine the susceptibility of different wetland types to groundwater drawdown. We submit that the GLIFWC analysis is more defensible from a scientific point of view than the analysis in the FEIS because it uses all available data to establish impact zones and properly assigns impact values based on the Crandon method. One important difference in the analysis of the co-lead agencies and the analysis done by GLIFWC is in the assumption of impacts to ombrotrophic and minerotrophic bogs. The co-lead agency analysis assumes that there is a low risk of drawdown impacts to ombrotrophic bogs while the GLIFWC analysis assumes that impacts are more likely. The Crandon method did not make the assumption that ombrotrophic wetlands have a low risk of impact. It relied on the groundwater model to determine the stress on a wetland and then used the wetland classification to characterize the potential impact. The GLIFWC position is supported by literature and expert analysis. Whittington and Price (2013) describe drawdown impacts to peat bogs in the James Bay lowland of northern Ontario. Dr. Paul Glaser, a recognized authority on peatlands, indicated in his 2014 comments on the SDEIS that “Even if ombrotrophic raised bogs are present within the study area, they may still be hydraulically connected to groundwater flow systems and sensitive to impacts from mine development unless they support perched water table mounds (i.e. perched recharge mounds).” Dr. Glaser goes on to say that “no convincing evidence is provided to support their presence.” Finally, even if raised bogs occur at the site, there are a number of publications that report direct connections to groundwater flow systems in the underlying mineral sediments (Siegel and Glaser 1987; Siegel, et al., 1995; Glaser et al., 1990; 1997; 2004ab; 2006). Dr. Glaser states that “[t]hese publications demonstrate that peatland development is dominated by the hydrogeologic setting and not by surface processes.” This conclusion supports GLIFWC’s analysis assumption that wetlands labeled ombrotrophic by the co-lead agencies may indeed be impacted by drawdown. Additional support for Dr. Glaser’s conclusions and for the GLIFWC independent wetland analysis is found in the co-lead agency response to public comments on distinguishing between ombrotrophic and minerotrophic bogs (Eggers 2015). This document states that “all wetland types within this zone would experience some degree of hydrologic effects due to groundwater drawdown” and supports GLIFWC’s analysis by stating that “the potential for indirect impacts to all bog communities within the 0 to 1000 foot analog zone is acknowledged.” In conclusion, the analysis of indirect wetland impacts in the FEIS is not adequate. It relies on questionable wetland classifications, includes a flawed understanding and implementation of the Crandon method, uses a selective subset of available data, and includes a flawed understanding of the connection between bog wetlands and groundwater flow systems.</p>	WET	S	O	3	SDEIS Theme WET 08

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Esteban Chiriboga	<p>The proposed mitigation plan is inadequate. The vast majority of mitigation and/or restoration credits to come from outside the Partridge, Embarrass, and St. Louis River watersheds. There is no justifiable reason to permit out-of-watershed mitigation when in watershed opportunities still exist, especially when the St. Louis River watershed as a whole has experienced cumulative wetland destruction, degradation and hydrologic alterations in well over 50% of the watershed. There is a defined hierarchy for determining the appropriate type and location of wetland mitigation: 1. Credits at a mitigation bank 2. In-lieu fee program credits 3. Permittee-responsible mitigation using a watershed approach 4. Permittee-responsible mitigation through on-site- and in-kind mitigation 5. Permittee-responsible mitigation through off-site and/or out-of-kind mitigation The 2008 Federal Mitigation Rule also states that mitigation sites should be located in within the same watershed as the impact site, and where they are most likely to successfully replace lost functions and services. The Corps is required to “use a watershed approach to establish compensatory mitigation in their permits to the extent appropriate and practicable.” In fact, adhering to the watershed approach in approving compensatory mitigation sites is the only exception to the requirement for in-kind mitigation (§332.3(e)(2)). Although the Corps has some discretion in establishing compensatory mitigation, it must systematically consider options in the prescribed order. And although out-of watershed mitigation can be permitted, its appropriateness is usually considered at the scale of either 8-digit or 6-digit Hydrologic Unit Codes (HUCs). In the case of the NorthMet Proposed Project, PolyMet is proposing that two-thirds of its mitigation will occur outside the major continental drainage divide (see map in Attachment C), within a different 2-digit HUC scale, and based upon the lowest tier of compensatory mitigation types in the hierarchy.</p>	WET	S	O	3	SDEIS Themes WET 01, WET 03, WET 04
Esteban Chiriboga	<p>The potentially impacted wetlands have been recognized as Aquatic Resources of National Importance (ARNI). These wetlands have high functional values and 92% of them are of high overall quality. Finally, the entire mine site area has been characterized as an area of high biodiversity significance. Given the ecological value of the mine sites wetlands and habitat, the proposed mitigation ratios and mitigation sites are inadequate.</p>	WET	S	O	3	SDEIS Theme WET 19

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Estepan Chiriboga	<p>As detailed in comments submitted to the lead agencies for the 2009 DEIS, the 2014 SDEIS, and the 2015 PFEIS, the water quantity and quality analyses for the Partridge and Embarrass Rivers are inadequate. The results, be they deterministic (DEIS) or in the form of probability distributions (SDEIS), are based on a flawed understanding of hydrology at both mine site and plant site. This flawed understanding, reflected most prominently in the errors in the MODFLOW hydrologic modeling, are carried forward to the GoldSim water quality modeling. The co-lead agencies appear to disregard these problems because there is faith that the seepage capture and treatment systems will work at over 90% effectiveness for centuries. The FEIS claims of long term compliance with applicable water quality standards depend entirely on this leap of faith. On conference calls scheduled to discuss these issues, the lead agency consultants have stated that the effectiveness of the capture systems have not been questioned and the lead agencies have not been able to provide any references that would support their position. We suggest that there are substantial reasons for skepticism regarding capture efficiency for the flotation tailings basin, hydrometallurgical tailings basin, and Category 1 stockpile seepage capture systems. This skepticism is based on available literature and the performance of other facilities in the immediate vicinity. The EPA has conducted an analysis of the effectiveness of seepage capture systems (EPA, 1998). This analysis looked at capture systems at 36 facilities and evaluated their effectiveness based on the performance requirements at each site. It is difficult to extrapolate the results of this analysis to the PolyMet setting because a) the required effectiveness varied from facility to facility; b) the way in which effectiveness was measured was different (i.e. water quality improvements downstream versus change in hydrologic head pressure); and c) data collection varied between facilities. Despite these difficulties, the report indicates that 10% of the reviewed containment systems failed to meet the desired performance objectives and required corrective action. An additional 19% of the evaluated facilities did not have sufficient data to conclude whether the containment system was operating successfully or not. Furthermore, there is no information on the effectiveness of any of these facilities at timeframes remotely comparable to the needs at NorthMet. In the EPA report, long term is considered 30 years whereas the water capture needs at NorthMet are likely perpetual for the flotation tailings basin, Category 1 stockpile and hydrometallurgical tailings basin. Finally, none of the facilities in the study are as large as the one proposed by PolyMet. At the tailings basin, PolyMet has proposed to install a seepage collection system around the north, east, and west sides of the facility. The scale of this engineering control is extensive. It would be approximately 5 miles long and would have to be keyed to bedrock that is 25 to 50 feet below ground surface. The most likely pathway for leakage at this barrier will be in the vicinity of the key with bedrock (EPA, 1998). This feature and the similar containment system at the Category 1 waste rock stockpile are assumed to capture 93% of water leaving the facilities for an indeterminate period of time. As previously stated, there is no scientific justification for this number. The only examples we are able to identify at this time suggest capture rates that are lower. In the Iron Range, GLIFWC staff are aware of two examples that are directly analogous to the proposed PolyMet containment system. These are the seepage collection system at SD026 on the LTV basin itself, and the seepage collection system at the MINTAC tailings basin. SD026. The system is supposed to capture 100% of water leaving the tailings basin and entering Second Creek. The FEIS acknowledges that this water capture system is not operating as effectively as anticipated. Adaptive management is being proposed to augment the effectiveness of the system but no specific methods are identified. MINNTAC. The MINNTAC tailings basin is of similar age and design as the LTV tailings basin that PolyMet proposes to use. Both are large, unlined facilities that are designed to allow water seepage to surface and groundwater in order to maintain structural stability. Both facilities have been discharging thousands of gallons per minute of high sulfate wastewater into the environment for decades. MINNTAC, as part of a schedule of compliance, has begun</p>	WET	S	O	8	SDEIS Themes WR 018, WR 019, WR 020

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	<p>constructing a seepage capture system that is intended to bring the facility into compliance with applicable water quality standards. The capture system is similar to the one proposed by PolyMet in that it consists of a trench to capture seepage and a system that would pump tailings water back into the facility. The MINNTAC system was originally intended to extend to bedrock but that extension was not possible in some locations because of the presence of large boulders that made construction difficult. Because the geology of the surficial deposits is similar at the LTV facility, it is likely that similar difficulties will be encountered by PolyMet that would decrease capture efficiency. It is important to note that seepage capture of greater than 95% is needed at MINNTAC in order to achieve compliance with applicable water quality standards. However, this high capture efficiency was not considered feasible and MINNTAC predicted that their capture efficiencies would not exceed 60% (US Steel Corp., 2007). Actual performance of the capture system is below 50%. Ultimately, the main purpose of the system is to comply with water quality standards. The capture system will not be able to achieve that goal. Because MINNTAC is the only facility that is analogous to the LTV basin, there are serious doubts about the predicted 90% or greater capture efficiency used in the PolyMet FEIS. The prediction of water quality standard compliance for this proposed project hinges on the perfect operation of the water capture systems. The reliance on this engineered containment system that uses overly optimistic capture rates and must function in perpetuity is not scientifically supported and therefore is not appropriate for the FEIS.</p>					
Esteban Chiriboga	<p>The assessment of mercury and methylmercury impacts that would result from the proposed NorthMet project is not adequate. Cooperating tribes and intertribal agencies have raised mercury and methylmercury as concerns since the pre-draft environmental impact statement review of 2008. Methylmercury is a bioaccumulative neurotoxin that disproportionately impacts tribal populations that depend on fish for a subsistence diet. While the FEIS mentions this issue, the co-lead agencies have refused requests to properly characterize the additional influx of methylmercury to the St. Louis River as a result of wetland and saturated overburden excavations at the mine site. Predicted mercury loadings as a result of the NorthMet Project continue to constitute a Major Difference of Opinion (MDO) between the Co-lead and Tribal Cooperating Agencies. Again, the co-lead agencies have not been receptive to tribal input and thus the issue remains. The FEIS states that, based on mercury mass balance analyses, the NorthMet Project would result in a net increase in mercury loadings to the Embarrass River of 0.2 g/year (from 22.3 to 22.5 g/year), which would be offset by a 1.2 g/year net decrease in mercury loadings to the Partridge River (from 24.2 to 23.0 g/year), resulting in a combined overall decrease in mercury loading to the St. Louis River of 1.0 g/year. We disagree with the treatment of mercury in the FEIS and the resulting conclusions in three fundamental ways. In contrast to what is laid out in the FEIS, it is our expert opinion that: I. Increased mercury loadings to the Embarrass River may not be permissible. A net decrease in mercury loadings to the St. Louis River does not justify or make acceptable the increased mercury loadings to Embarrass River. II. The mass balance analyses that lead to the conclusion that mercury loadings will not increase in the St. Louis River are flawed in numerous ways. Mercury loadings to the St. Louis River are in fact likely to increase as a result of the NorthMet Project. III. While mercury loadings to the Partridge, Embarrass, and St. Louis Rivers are discussed, there is no adequate consideration of the fact that more of the mercury entering these systems will be in the form of methyl, rather than inorganic, mercury. This has the potential to greatly impact fish tissue mercury in these systems and the subsequent risk to fish consumers, both human and wildlife. Each of these three points is explained, in brief, below. I. Increased Mercury Loadings to the Embarrass River are not Legally</p>	MERC	S	O	3	SDEIS Themes MERC 01, MERC 22, COE 03; MDO #2; Table 8-1 of the FEIS

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	<p>Permittable. The Embarrass River flows through a chain of lakes including Wynn, Sabin, Embarrass, and Esquagama Lakes. Each of these lakes are on the 303(d) Impaired Waters List for mercury in fish tissue. In addition, Wynn and Sabin Lakes are on the proposed 2014 303(d) Impaired Waters list for mercury in the water column. According to the U.S. 9th Circuit Court of Appeals in the case of Friends of Pinto Creek vs. the U.S. EPA (“The Carlota Decision”), a new discharge that would further degrade waters with existing water quality impairments cannot be permitted. The decision further clarified that the Clean Water Act (“CWA”) does not have a provision that allows for “trades” in which increased pollutant discharges to one waterbody can be offset by decreases to another. Therefore it appears that under the CWA, a new source such as the NorthMet Project cannot discharge additional mercury to these mercury impaired waters. According to the FEIS, the NorthMet project would increase mercury loadings to the Embarrass River (which includes the lakes through which it passes) by 0.2 g/year (from 22.3 to 22.5 g/year). This does not appear, based on the Carlota Decision, to be permittable. Similarly, based on the Carlota Decision, it does not appear that the additional loading can be offset by decreases in mercury loadings to the Partridge River, as argued in the FEIS.</p>					
Esteban Chiriboga	<p>According to federal regulations [40 CFR 1502.16 (c)], a proposed action’s EIS must include a discussion of “possible conflicts between the proposed action and the objectives of federal, regional, state, and local land use plans, policies and controls for the area concerned.” It is further stated in 40 CFR 1506.2 (d) that “to better integrate environmental impact statements into state or local planning processes, statements shall discuss any inconsistency of a proposed action with any approved state or local plan and laws (whether or not federally sanctioned). Where an inconsistency exists, the statement should describe the extent to which the agency would reconcile its proposed action with the plan or law.” One such program with which the NorthMet Project is inconsistent is the Lake Superior Binational Program’s Zero Discharge Demonstration Program (ZDDP), as described in the Lake Superior Lakewide Management Plan (LaMP). The ZDDP established Lake Superior as a demonstration project to achieve zero discharge and zero emission of nine toxic, persistent, and bioaccumulative chemicals, including mercury, from within the Lake Superior basin by 2020. The LaMP Critical Contaminants Goal further states that “levels of persistent, bioaccumulative, and toxic chemicals should not impair beneficial uses of the natural resources of the Lake Superior basin.” The FEIS only mentions the ZDDP and the LaMP once, and only in Appendix A (A-405, Theme MERC 01; A-464 Theme PERM 27) in response to previous concerns raised about the failure to discuss the Project’s inconsistencies with these programs. The MERC 01 Thematic Response describes the ZDDP, but in no way discusses how the Project would address the fact that increased mercury loadings to the Embarrass River are in direct violation of the objectives of the ZDDP. Theme PERM 27 raises the concern that the Project is inconsistent with the LaMP, but the Thematic Response states only that, if permitted, the Project would be required to comply with applicable laws and regulations. There is no attempt in the FEIS to reconcile the proposed action with the objectives of LaMP and the ZDDP, as is required for an EIS under 40 CFR 1502.16 (c) and 40 CFR 1506.2 (d).</p>	MERC	S	O	3	SDEIS Themes MERC 01, PER 27

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Esteban Chiriboga	All surface waters within the Lake Superior basin, including all NorthMet Project area waters, are designated Outstanding International Resource Waters (OIRW) under Minnesota (MN) Administrative Rule 7050.0470. MN Rules 7052.0300 and 7052.0350 prohibit any new or expanded point source discharges of bioaccumulative substances of immediate concern (BSIC), including mercury, to any OIRW. Thus, under MN law, as under the federal law as described above, increased mercury loadings to the Embarrass River, or any other likely affected surface waters, do not appear to be permissible. All waters likely to be impacted by the NorthMet Project lie within the 1854 ceded territories. Several Chippewa tribes retain the right to hunt, fish, and gather throughout this territory, according to the 1854 Treaty of LaPointe. The federal government has a trust responsibility to the Bands to maintain these treaty resources. The fact that the NorthMet Project would increase mercury loadings to the Embarrass River and the chain of lakes through which it flows (Wynn Lake, Sabin Lake, Embarrass Lake), which are already listed on the 303(d) Impaired Waters list for mercury in fish tissue, represents an adverse impact to a critical trust resource and should not be permitted. Treaty fishing rights cannot be fully exercised when mercury contamination causes fish consumption to be restricted to protect human health.	MERC	S	O	3	SDEIS Theme CR 01
Esteban Chiriboga	II. Mercury Loadings to the St. Louis River are Likely to Increase as a Result of the NorthMet Project. The FEIS predicts that there will be a small decrease in mercury loadings to the Partridge River and thus an overall net decrease in mercury loadings to the St. Louis River, despite increased mercury loadings to the Embarrass River. In addition to the fact that a “tradeoff” between increased mercury loadings in the Embarrass River and decreased loadings in the Partridge River does not appear to be permissible (as described in Part I, above), critical flaws in the analysis of mercury in the FEIS have led to incorrect conclusions about mercury loadings from the NorthMet Project. It is likely the Project will actually result in a net increase in mercury loadings to the St. Louis River. Numerous critiques of the mercury mass balance analyses were submitted by GLIFWC staff and others as comments on the Project’s SDEIS and PFEIS. None of these concerns were addressed in the FEIS. Therefore, rather than detail each issue here, the main points are summarized. 1. The mass balance is based on flow estimates from flawed hydrologic models. A mass balance, by definition, relies on accurate estimations of concentration and flow. As a result, the accuracy of the predicted mercury loadings from the mass balance analyses is unreliable. See the hydrologic section for detail of the hydrology modeling issues that have been identified. 2. The mass balance at the plant site is dependent upon the assumption that the NorthMet tailings will adsorb mercury in a similar capacity as the existing LTVSMC tailings. This assumption is based on a 2006 bench top study conducted by Northeast Technical Services, Inc. (NTS). Study details can be found in Appendix B of FEIS reference “Barr 2007d.” This study is insufficient to predict the magnitude of mercury adsorption by the NorthMet tailings. The flask test was conducted over only an 8 hour period to model a centuries long process. There was only one sample with no replication and no attempt to mimic in situ conditions. Further, the study results were incorrectly interpreted, stating that after rapid initial adsorption, mercury levels remained stable throughout the experiment. In reality, the mercury concentrations in the water nearly doubled between hours 4 and 8, when the experiment was terminated, increasing from <0.5 to 0.9 ng/L. If this trend continued, the water would exceed the 1.3 ng/L GLI standard for mercury by hour 12.	MERC	S	N	8	SDEIS Themes MERC 01, MERC 06, MERC 11. It is also scientifically incorrect to compare well water in a tailing pond to water in a pore fluid environment outside the basin and conclude that mercury has been leached from the tailings along the flow path. This is because water in the tailings ponds is going to be affected by its own local environmental processes noted in the comment. In general, standing water tends to lose mercury over time as the mercury is lost to sediment or degasses Hg0 to the atmosphere.
Esteban Chiriboga	A superior test of the ability of NorthMet tailings to adsorb mercury was also performed by NTS, but was not discussed in the FEIS. Details can be found in the FEIS reference “SRK 2007b” (see discussion of mercury on page 82 of the reference). In contrast to the 8 hour bench top study, the results indicated that precipitation coming into contact with Duluth Complex rock decreased from 12 to 1.9-3.6 ng/L over 32 days, suggesting while the tailing may have some capacity to adsorb	WAT	S	O	8	FEIS pg. 5-229 to 5-230

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	mercury, the tailings basin water is still unlikely to meet the 1.3ng/L GLI standard.					
Esteban Chiriboga	The mass balance at the plant site is dependent upon the assumption that the existing LTVSMC tailings will continue to adsorb mercury in perpetuity. But, adsorption sites can saturate after sufficient exposure to mercury containing waters, allowing the mercury to flow through the system unimpeded. In addition, the adsorption sites can be unstable as a result of environmental conditions such as changes in pH, resulting in the release of previously adsorbed mercury. In fact, there is already existing seepage from the LTVSMC tailings exceeding the 1.3ng/L GLI standard, as shown in Table 4.2.2-35 of the FEIS.	WAT	S	O	3	SDEIS Theme WR 058
Esteban Chiriboga	The mine site mass balance does not account for seepage from the saturated overburden at the OSLA. This material contains sequestered mercury from past deposition. This is a particular concern for the peat overburden, as peat is known to be particularly efficient at sequestering mercury. There is no estimate of the amount of mercury in these materials or their propensity to release mercury when water moves through them.	WAT	S	O	3	FEIS pg. 5-227
Esteban Chiriboga	The mine site mass balance and estimates of mercury concentrations in the West Pit are supported by data presented in the FEIS for analog lakes. The data (FEIS Table 5.2.2-48) shows average mercury concentrations of 0.66 and 0.97 ng/L for analog natural seepage lakes and pit lakes, respectively. The more detailed source data for this summary table can be seen in Section 6.6 of the FEIS reference "PolyMet 2015m." At least 6 of the 26 analog lakes had individual samples over the GLI standard of 1.3ng/L, and two lakes had average concentrations above 1.3ng/L. Further, data collected by the Fond du Lac Band [available upon request] on total mercury in concentrations in seepage lakes on or near the Fond du Lac reservation between 2011 and 2014 suggest that levels may be much higher in analog natural seepage lakes closer to the proposed Project, than those presented in the FEIS which were further away in Voyagers National Park and sampled over a decade ago. For the 27 lakes sampled by the Fond du Lac Band, 22 had individual samples over the 1.3ng/L GLI standard, and 20 had mean concentrations exceeding 1.3ng/L. Of the 59 samples collected and analyzed from these lakes, 36 (61%) exceeded 1.3ng/L. This suggests that the analog lakes chosen for analysis in the FEIS are not representative of area lakes and underestimate the predicted West Pit mercury concentration. It is likely that the mercury concentration in the West Pit will exceed the GLI standard.	WAT	S	N	8	Any WWTP discharge and the WWTF discharge to the environment during closure are subject to the 1.3 ng/L water quality standard for total mercury. If estimated average concentrations of total mercury that would occur at the West Pit at the time of overflow during closure were underestimated, FEIS Section 5.2.2.3.5 identifies potential adaptive management strategies that would be implemented as necessary. Adaptive management strategies would include pretreatment modifications such as a chemical scavenger addition ahead of the greensand filter units to obtain additional metals, the use of tighter RO membranes for the primary RO system, treatment of some portion of the Vibratory Shear Enhanced Process (VSEP) permeate by the primary RO system to further remove some dissolved constituents, and addition of polishing treatment units for removal of trace metals (e.g., ion exchange).
Esteban Chiriboga	The mass balance analyses do not include mercury from air deposition, which has been quantified but is only treated independently. Appropriately accounting for the mercury reaching the Partridge and Embarrass River watersheds as a result of air deposition would increase the estimated mercury loadings to these systems calculated in the mass balance analyses.	AIR	S	O	3	SDEIS Theme AIR 05
Esteban Chiriboga	There is little confidence in the predicted tailings basin seepage capture rates, causing this mercury source to be underestimated. Predicted compliance with water quality standards is entirely dependent on the assumption that >90% of the seepage will be captured. The seepage capture efficiencies assumed in the FEIS are overly optimistic considering that the seepage capture systems at the MINNTAC tailings basin and the southern toe of the LTV basin have not been able to achieve	PD	NS	X	1	

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	these high efficiency rates. Any water that is not captured by the proposed capture systems that enters the waters of the U.S. is subject to NPDES permitting.					
Esteban Chiriboga	The FEIS further states that the mass balance estimates are conservative because waters will be further treated by reverse osmosis (RO) to remove additional mercury. According to FEIS reference "Barr 2013f", mercury capture rates by RO are known to be as low as 22%. Further, the capture rate is highly dependent on the form of mercury, with only particulate mercury generally being captured. Capture efficiency for free mercury is much lower. The only available data for methylmercury shows that RO is not capable of removing methylmercury. The lack of data demonstrating the ability of a RO system to adequately remove mercury from captured water is inappropriately compensated for in the FEIS by a number of proposed adaptive management strategies for the RO system should it prove inadequate.	MERC	S	N	8	Any WWTP discharge and the WWTF discharge to the environment during closure is subject to the 1.3 ng/L water quality standard for total mercury. This standard is based on the wildlife chronic standard which takes into account a bioaccumulation factor for fish and is more stringent than the human health-based chronic standard of 1.53 ng/L which incorporates a Lake Superior basin-specific fish consumption rate for humans. The standard is expressed as total mercury which includes particulate bound mercury as well as the dissolved forms of mercury which are more amenable to methylation. By incorporating considerations for both the protection of wildlife through the food chain and the protection of human health through fish consumption, compliance with the 1.3 ng/L water quality standard for total mercury for all project discharges to surface water provides assurance that mercury in its various forms is being adequately controlled. Separate analyses for the degree of removal of the various forms of mercury by RO or other technologies (for which available data is limited) is therefore not necessary to adequately evaluate the effects of the discharges. Based on the modeled water quality in the West Pit at the time of overflow, the proposed treatment system is expected to effectively treat the overflow to meet the water quality standards in the discharge. If estimated average concentrations of total mercury that would occur at the West Pit at the time of overflow during closure were underestimated, FEIS Section 5.2.2.3.5 identifies potential adaptive management strategies that would be implemented to improve mercury removal within the existing treatment units or to provide additional treatment types. Particulate and/or dissolved mercury could be targeted as necessary to meet the water quality standard. Adaptive management strategies would include pretreatment modifications such as a chemical scavenger addition

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						ahead of the greensand filter units to obtain additional metals, the use of tighter RO membranes for the primary RO system, treatment of some portion of the Vibratory Shear Enhanced Process (VSEP) permeate by the primary RO system to further remove some dissolved constituents, and addition of polishing treatment units for removal of trace metals (e.g., ion exchange).
Esteban Chiriboga	In addition, a mass balance approach is not the most appropriate mechanism for predicting mercury loadings to the Partridge and Embarrass Rivers, and ultimately the St. Louis River. The FEIS did not include mercury in the GoldSim model as it did for other models, citing an insufficient data and a lack of understanding of mercury dynamics. No reasonable attempt was made to model the impacts of mercury due to the NorthMet Project, even though other applicable models exist and should have been implemented. The adherence of the Project to applicable mercury water quality standards cannot be adequately determined without such modeling data.	MERC	S	O	8	SDEIS Theme MERC 13

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Esteban Chiriboga	A coherent conceptual model needs to be articulated, either the one previously supported by the co-leads in which surface water features are poorly connected to the bedrock aquifer and are therefore, unaffected by pit dewatering, or one in which surface water features are well connected to the bedrock aquifer and can provide abundant leakage to support a groundwater mound between the PolyMet and Peter-Mitchell pits. If the first model is accepted then wetlands and the upper Partridge River may be little affected by pit dewatering but dewatering of the Peter-Mitchell pits causes a bedrock northward flowpath to develop at closure. If the second conceptual model is accepted then a bedrock groundwater mound develops, but wetlands and the upper Partridge River are severely impacted by PolyMet and Peter-Mitchell pit dewatering.	AQ	S	N	12	There is no definitive means to address the issue raised in the comment because the EIS was not scoped to address how future activity at the Peter Mitchell Pit might influence the closure conditions at the NorthMet site. The modeling satisfies Final SDD Section 6.2, which required the groundwater flow model to predict inflows at various stages of pit development (i.e., year 1, year 5, year 10, year 20) and include operation, closure, and post-closure. DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected.
Esteban Chiriboga	GLIFWC staff believes that total mercury loading to the St. Louis River is likely to increase as a result of the NorthMet Project, as described in Part II, above. In addition, we assert that the FEIS is deficient in its characterization of methylmercury. The methylmercury data presented in surface and groundwater is insufficient to describe the current conditions and methylating environment. As a result, the potential impacts the Project is likely to have on mercury methylation, such as from changes in sulfate concentrations, hydrology, and water quality are not easily assessed. It is our expert opinion that the Project will result in a higher percentage of mercury in the form of methylmercury in receiving and downstream waters which will result in increased mercury entering the aquatic food web and ultimately higher fish tissue mercury. If a higher percentage of total mercury is released in the form of methylmercury, changes in fish tissue mercury are not directly proportional to changes in total mercury loads, as stated in the FEIS.	MERC	S	O	3	SDEIS Theme MERC 01
Esteban Chiriboga	The WWTP design, which utilizes reverse osmosis, is not only inefficient at removing non-particulate inorganic mercury, it is not capable of removing any methylmercury, as stated in the FEIS reference "Barr 2013". This is of particular concern because the seepage capture system isolates a portion of existing wetlands between the capture system and the basin that will receive most of the mercury coming from the tailings basin.	MERC	S	N	8	SDEIS Theme MERC 13

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Esteban Chiriboga	Wetlands provide a prime mercury methylating environment. In addition, the groundwater at the toe of the tailings basin is predicted to be very high in sulfate, which will further accelerate mercury methylation. The result will be a much greater proportion of the mercury entering the WWTP being in the form of methylmercury than is found in the current environment. Since there is no technology in place to remove this methylmercury, it will be discharged to the Embarrass River increasing fish tissue mercury in downstream waters, including the St. Louis River.	WAT	S	N	8	Methylmercury is created by bacteria in highly organic portions of aquatic systems, such as the sediment of lakes and wetlands. Relative to the wetland area located between the tailings basin and the Embarrass River, there would be minimal wetland areas between the toe of the tailings basin and the seepage containment system, which is where such methylation could potentially occur. See FEIS Figure 5.2.3-18.
Esteban Chiriboga	The FEIS limits its analysis of methylmercury to simple proportionality to total mercury, without considering other factors that affect mercury methylation, incorrectly claiming that the factors and mechanisms affecting methylation are poorly understood. In fact, many factors affecting mercury methylation are known (e.g. sulfate concentration, type and activity of methylating bacteria, pH, organic matter, dissolved oxygen, etc.) and models exist for predicting mercury methylation.	MERC	S	O	8	SDEIS Theme MERC 01
Esteban Chiriboga	Ombrotrophic bogs, which are peat-dominated, primarily rain-fed, and acidic, are extremely efficient mercury methylating environments. This methylation can be further enhanced by the addition of sulfate containing runoff. The FEIS does not present a consistent model for mine site hydrology. For many years the lead agencies have maintained that these peatland bogs are “perched” and therefore independent from any mercury and sulfate impacts on receiving waters (See GLIFWC comments on indirect wetland impacts above). In contrast to this position, the FEIS states that water can move from the surficial aquifer (where the wetlands are) to bedrock in a dewatering situation (FEIS page 5-111). These conflicting conceptual models of mine site groundwater hydrology are mutually exclusive. For mercury and methylmercury related conclusions to be defensible, a consistent model of the mine site hydrology must be developed. Any wetlands that have at least a partial connection to the groundwater should be considered a potential source of methylmercury. Enhanced vertical hydraulic gradients resulting from mine pit dewatering could result in significant interactions between the bogs and groundwater, even dewatering wetlands that may be entirely surface water dependent under normal conditions. If groundwater under these wetlands were to be drawn down, the wetlands would be impacted and there would be a likely dewatering of peat deposits. This cycle of wetland dewatering and rewetting is known to enhance mercury methylation. The resulting effect on methylmercury production and release, and ultimately on fish tissue mercury, have not been adequately evaluated in the FEIS.	WET	S	O	3	FEIS Section 5.2.2.3.4. MDNR et al. 2015c. SDEIS Theme MERC 20
Esteban Chiriboga	The assessment of environmental impacts resulting from spillage of ore fines along the rail corridor is inadequate. The FEIS acknowledges that PolyMet would use old side-dump rail cars and states that they would be refurbished. This refurbishment merely involves tightening screws and hinges and would do absolutely nothing to reduce the escape of ore fines. These dust sized particles of ore are highly reactive and would escape through hinges and openings on the rail cars. Given the duration of this proposed project and the large quantity of materials to be moved, approximately 228 million tons of ore and 394 million tons of waste rock, there will be tracking, dusting, and spillage of material that has been demonstrated to leach contaminants when exposed to air and water. Even a loss of only one thousandth of one percent (0.001%) of the extracted material to tracking, dusting or spillage would result in 6,220 tons of fine leachable material being released into the environment. Our experience with a much smaller, shorter duration, sulfide mine in Wisconsin (Flambeau Mine) indicates that tracking and dusting of ore and waste rock, even at a level that is unnoticed during operations, can result in soil and	WET	S	O	3	SDEIS Theme WET 11

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	runoff contamination that exceeds standards.					
Esteban Chiriboga	The FEIS states that dust deposition would occur within the first 1000 meters of the rail corridor. There is no scientific basis for this conclusion. This number is taken directly from a document prepared by the applicant and does not have support in literature. The FEIS does reference a preliminary geochemical model that is detailed in the Waste Characterization Data Package. This analysis assumes that ore dust is deposited evenly along the rail corridor, reports that water quality standards would be exceeded for Copper, Nickel, Aluminum and Cobalt. There are no mitigation strategies offered for this impact other than dilution from rainwater.	WAT	S	O	3	SDEIS Theme WR 151
Esteban Chiriboga	During the NEPA process, a number of alternatives were proposed to eliminate the deposition of ore dust along the rail corridor. One of these alternatives included sealing the gaps in the rail cars and another was the purchase of new rail cars that would be completely sealed. GLIFWC staff have advocated for the purchase of new rail cars to eliminate the possibility of dust spills along the rail line. However, the FEIS is only describing a tightening of hinges which would be completely ineffective. The permit to mine must include a permit condition requiring PolyMet to purchase sealed rail cars for ore transport. This is the only method for preventing releases of ore dust and violation of water quality standards.	ALT	NS	X	1	
Esteban Chiriboga	Underground Mining and West Pit Backfill Alternatives GLIFWC staff believes that the underground mine and west pit backfill alternatives were prematurely eliminated from consideration for the NorthMet project. We believe that there is potential for significant environmental benefits to these alternatives when compared to the proposed action. The discussion in the FEIS is inadequate because cost is ultimately the reason for exclusion of these alternatives. Furthermore, the co-lead agencies have not conducted independent investigations into the feasibility of the alternatives. Rather the lead agencies took the technical response memo presented by the applicant and adopted it as their own. Underground Mine Alternative. The Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange Environmental Impact Statement document dated February 5th 2013 provides the lead agency rationale for eliminating the alternative from further analysis in the FEIS. The document states that for an alternative to be evaluated it must meet 5 screening criteria: 1. be technically feasible 2. be available 3. offer significant environmental benefits over the proposed project 4. meet the purpose and need 5. be economically feasible The co-lead agency position paper correctly states that the underground alternative would offer significant environmental benefits over the proposed action. In some areas these benefits would be substantial. The roughly 1000 acre wetland fill could be almost completely eliminated and the amount of tailings and waste rock generated by the project would be significantly reduced. The water quality and quantity impacts on surface and groundwater would be mitigated. This is particularly important given the probability that the NorthMet project is likely to violate water quality standards and the certainty that the project would require perpetual water treatment. In addition to the environmental benefits the document correctly states that underground mining is technically feasible and available at the site. It is important to note that with underground mining the land exchange with the Superior National	ALT	S	O	3	FEIS Ref MDNR 2013a. NorthMet Project Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange Environmental Impact Statement. September 27, 2013.

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	<p>Forest would not be needed therefore environmentally sensitive areas like the 100 mile swamp and essential lynx habitat would remain in the federal estate. The only rationale that is used to eliminate the alternative is economic feasibility. However, no detailed economic information is provided to support that claim. All other objectives of the purpose and need statements in section 1.3.2.1 of the FEIS are met. Therefore, the question on further analysis is determined by the applicants' assessment of the economics of the alternative. In addition, no information on the economic benefits of an underground mining alternative are mentioned. These benefits include:</p> <ul style="list-style-type: none"> • An underground mine would not require a land exchange with the United States Forest Service. • Economic benefits (environmental goods and services) provided by wetlands that would not be excavated (see ecosystem valuation section). • Economic impact of perpetual maintenance and water treatment at the site. Of note, there is no discussion on the cost of wetland mitigation activities that are needed with an open pit mine. An underground mine would not require extensive wetlands mitigation costs for wooded swamp and bog sites that could reach between \$35,460,000-\$110,205,000 (i.e. 1200 acres x 1.5 rate x \$19,700/acre ACOE source and 1200 acres x 1.5 rate x \$61,225/acre MN Department of Transportation – (Environmental Law Institute, 2007 and US ACOE, 2010). The Underground Mining Alternative Assessment relied heavily on an InfoMine model to determine economic feasibility. However there is no detail on the model itself, the model assumptions or how the model calculates its results. For a complete evaluation of the alternative, a review of this model should have been done by the co-lead agencies. Finally, it appears likely that the project as proposed is likely to violate applicable water quality standards. This means that the current proposal is not likely to be permitted. Furthermore, underground mining would not result in excavation of overburden and would not result in mercury and methylmercury emissions at the mine site. Because of this, it seems reasonable that an underground alternative be considered as an additional mitigation measure. 					
Esteban Chiriboga	<p>West Pit Backfill Alternative. Based on the lead agency memorandum titled Co-lead Agencies' Consideration of a West Pit Backfill Alternative dated April 11, 2013 it is clear that this alternative meets the purpose and need, is available, is technically feasible, and is economically feasible. The document argues that environmental benefits are unclear. However, because of the screening level analysis used by the co-lead agencies the full effect of the alternative on the environment is not known. Page 3 indicates that there is no information to determine water quality projections under this alternative. Therefore the primary potential benefit of this alternative is not addressed. Until this information is developed, GLIFWC staff maintain that backfill of the west pit may provide long term water quality benefits. Given that the current project is likely to violate water quality standards, additional mitigation is needed and this alternative should be more fully analyzed.</p> <p>The proposed NorthMet project proposes to mine a relatively small portion of the ore body. Figure 3.2-10 of the FEIS indicates that an upper mineralization zone and a portion of the Unit 1 mineralization are the targets. This mine plan appears to leave behind a substantial portion of ore. GLIFWC staff has argued that the remaining ore could be accessed through underground mining methods. According to the co-lead Agencies' document "Consideration of a West Pit Backfill Alternative" dated April 11, 2013, a major reason for the development of an open pit mine plan is that there is a lease agreement between PolyMet and the owners of mineral rights immediately southwest of the toe of NorthMet's west pit. These private lease agreements apparently include using the west pit as a portal for future mining activities. In addition, tribal cooperating agencies have provided the lead agencies with PowerPoint presentations from PolyMet staff to their investors that tout the potential for future mining of these mineral resources southwest of the west pit. If the west pit is to be used as a portal for this future mining, then that should be described in the FEIS and the environmental consequences assessed. The Evaluation of Backfilling the NorthMet West Pit (December 2012) states on page 2 "mineralization on the</p>	ALT	S	O	3	MDNR, et al. 2013b. Interagency Memorandum: NorthMet Environmental Impact Statement Co-lead Agencies' Consideration of a West Pit Backfill Alternative. April 11, 2013, with September 30, 2013, Addendum

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	<p>western end is much more flat laying, dipping at about 15 degrees and could be developed in the future via expansion of the proposed open pit mining operation and/or underground mining from the base of the west pit.” It appears that the FEIS is describing a project that is not complete in that future mining is not included. What are the implications of developing an underground mine that extends from the west pit to surface and groundwater resources of the Partridge River watershed? Another stated reason for avoiding backfill for the west pit is the lease requirement of not encumbering the mineral resources to the southwest. The assertion that backfilling the west pit would encumber minerals is ludicrous. We disagree with the notion that the only way to access minerals at depth is through the bottom of the west pit. These minerals could be accessed through other standard underground mining techniques from other locations. In fact, these minerals are accessible now and would continue to be accessible even if the NorthMet project is never built. Taking advantage of an existing pit may provide economic benefits to a mining company but it is unclear why a regulatory agency would prefer this method without first conducting an analysis. If the co-lead agencies are taking the position that the preferred alternative of a future underground project includes a portal through the west pit, then they need to provide a scientifically defensible reason for that decision. Finally, the co-lead Agencies’ Consideration of a West Pit Backfill Alternative dated April 11, 2013 provides several reasons for the conclusion that backfill would not provide significant environmental and socioeconomic improvements over the proposed action. Page 3 of the document clearly states that there has been no analysis done to support these conclusions. It appears that economic considerations of a future mine expansion are the only concrete reasons for not conducting an analysis of the environmental and socioeconomic benefits of backfilling the west pit. The NorthMet project as proposed is a perpetual maintenance and water treatment facility. It seems logical that every available option that might improve the long term impacts of the project should be explored regardless of the commitments that applicant may have made on their mineral lease. GLIFWC staff suggests that this alternative has been eliminated prematurely and that a full analysis is needed.</p>					
Esteban Chiriboga	<p>The discussion of socioeconomic effects of the proposed NorthMet project is inadequate. The IMPLAN model is the primary tool for assessing the economic benefits of the proposed project. However, IMPLAN cannot calculate the negative effects of a mine project on other areas of the economy that depend on unspoiled and healthy natural environments (tourism, hunting, etc.). In addition, IMPLAN cannot assess the economic impact of the proposed project on ecosystem goods and services that nature provides to society. An example of these ecosystem goods and services is free water treatment and flood controls provided by wetlands. If the NorthMet project is permitted, thousands of acres of wetlands will be destroyed and their water treatment functions will have to be replaced by a constructed treatment plant costing millions of dollars a year to operate. Recently, an ecosystem services valuation has been completed for the St. Louis River watershed (Attachment B). This document provides many of the data and tools needed to properly assess the effects of the proposed project on the goods and services that the area provides. Tribal cooperating agencies and intertribal agencies asked the co-lead agencies to include the ecosystem valuation information in the FEIS. This request was declined. GLIFWC staff used the information in the Ecosystem Valuation Report for the St. Louis River watershed to characterize the losses in ecosystem services to the watershed as a result of the land exchange and the NorthMet Mine. The analysis of direct impacts includes wetlands filled at both the mine and plant sites. The analysis of indirect wetland impact focuses on the mine site of the proposed project which is the area of the proposed land exchange and does not include indirect wetland impacts at the plant site (Attachment C). This is one of the possible applications of the ecosystem valuation information that should have</p>	SO	S	O	2	SDEIS Themes SO 02, SO 04, SO 07, SO 08; FEIS Section 5.2.10.1.4 (Environmental Costs and Non-Market Values).

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	been done by the co-lead agencies as part of the NorthMet FEIS.					
Estepan Chiriboga	<p>The FEIS does not provide an adequate level of information on financial assurance. The FEIS lists items for which costs must be included in the financial assurance instrument (i.e. demolition of all structures and remediation of sites, fencing the perimeters, sloping and seeding the overburden, constructing outlet structures, removing culverts, etc.) yet fails to provide any estimated costs or the basis for these costs. This section also notes that reclamation and postreclamation costs are required yet fails to provide any estimated costs or the basis for their estimation (i.e. quantities, unit costs, inflation estimates). The FEIS provides an initial estimate for 3 years of operation (Table 3.2-15). However, there is no basis for their estimation or other assumptions. The FEIS failed to provide detailed costs for the physical closure and reclamation of the mine site that will need to be covered by financial assurance instruments, a detailed discussion as to how much money will be needed from financial assurance instruments and when. The basis for physical closure and reclamation costs need to be based on the private sector costs and include realistic profit margins when performing cleanup tasks. Cost to be covered by Financial Assurance need to include detailed information and cover the following areas: 1) interim operations and maintenance for agencies when a company declares bankruptcy and leaves the site, 2) water management and treatment, 3) removal of hazardous wastes and substances, 4) demolition, removal and disposal of facilities and equipment, 5) earthwork (sloping, backfill, grading), 6) re-vegetation, 7) long-term operations and maintenance, 8) Monitoring costs, 9) detailed inflation estimates, 9) provide a cash flow analysis, and 10) detail assumptions in the determination of risk and uncertainty. The FEIS should have included the lifecycle of the pollution control structures built, estimates for their original construction costs, and projections for replacement costs for timeframes of hundreds to thousands of years. In addition to providing detailed cost estimation, the FEIS should have identified and communicated assumptions regarding inflation rates, rates of return, contingencies, and labor rates. Closure and maintenance costs will need to be covered years into the future, so a net present value should have been part of the FEIS. For example, reverse osmosis is being proposed at the mine as a means of treating the mine's waste water and ensure compliance with water quality standards. Water treatment at this site is indefinite but will certainly be required for centuries. EPA has assessed reverse osmosis pollution control technology at mine sites within its Reference Guide to Treatment Technologies for Mining-Influenced Water published in March 2014 (EPA, 2014) and noted the following:</p> <ul style="list-style-type: none"> • Reverse osmosis is a proven method to demineralize acid mine drainage. However, it does require significant construction and operating costs. • With pre-treatment and routine maintenance, membranes typically last two to five years and frequent membrane monitoring and maintenance are required to ensure the effective operation of a reverse osmosis system. • Management and disposal of the brine solution that is generated can require higher operating costs. In arid climates, atmospheric evaporation may offer a technique for removing water in the brine 	FIN	S	O	8	FEIS Sections 1.4.5, 2.5, 3.2.2.4

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	<p>solution followed by appropriate solid waste disposal. For locations where atmospheric evaporation is not feasible, thermal treatment may be needed. The FEIS states that the atmospheric evaporation technique would be used at NorthMet. However, the feasibility of this proposal has not been evaluated. • Reverse osmosis is also in use at the Kennecott South site, which is located in the Salt Lake Valley, east-southeast of Copperton, Utah. The Bingham Canyon Water Treatment Plant (BCWTP), built as part of the site’s remedy, is located in operable unit (OU) 2. Reverse osmosis is being used as the primary technology for addressing total dissolved solids- and sulfate impacted ground water.... The total cost for the BCWTP was about \$16.1 million (2013 USD). Total yearly operation and maintenance costs (40 percent of these costs represent labor and 24-hour maintenance) for the BCWTP are about \$1.3 million (2013 USD). These capital and yearly operation and maintenance costs include energy requirements, but do not reflect the costs associated with extraction wells, feed pipelines, disposal infrastructure and off-site disposal. It is obvious that reverse osmosis requires high capital costs for the purchase, installation and operation of the membrane system. For a 1-million-gpd system, the total installed cost is estimated at \$42.9 million (2013 USD). Annual operation and maintenance costs for the same system are estimated at \$3.2 million (2013 USD). However, other features of the proposed mine will need to function indefinitely and must also be financially assured. The FEIS provides a listing of contingencies that may have to be covered by financial instruments including: 1) physical difficulties in implementing reclamation plans, 2) escalating standards of closure, reclamation, and long-term monitoring, 3) unanticipated liabilities, 4) unplanned cessation of mining, 5) failure of the mining company, and 6) failure or limitations on the ability of third parties to pay reclamation costs. Unfortunately the FEIS provides no discussion as to any of the costs of the contingencies that are identified. The FEIS also fails to discuss how financial instruments would be structured to meet those contingencies or the assumptions made by PolyMet to ensure an adequate stream of revenue is available to meet closure and maintenance costs. What fundamental economic assumptions are being made when PolyMet proposes to use surety bonds, irrevocable letters of credit, cash and cash equivalents, trust funds, insurance policies, or a combination of these Financial Assurance Instruments? The FEIS failed to clearly state how the State of Minnesota will determine the maximum bond requirements, how it estimated direct reclamation costs, how it determined its estimates for inflation (i.e. periodic bond recalculation or calculate an Inflation factor using a common index, such as the Construction Cost Indexes (CCI) from the Engineering News Record), and how it will determine indirect reclamation costs and how it will calculate the total bond amount. Historically, mining companies are temporary entities that disband soon after a mine project comes to an end. In reality, it is likely that PolyMet will not exist during post closure. The most reasonable scenario for long term closure is that a state or federal agency will be responsible for monitoring, maintenance, and cleanup activities because a mining company cannot be held accountable if it no longer exists. Similarly, the assumption that financial assurance instruments can be developed to ensure that funds will be available centuries from now is not logical. The State of Minnesota has existed for 155 years. The United States of America has existed for 237 years. The notion that a mining company and financial assurance instruments will be available to work on a mine site 500 years from now or longer, is not believable.</p>					
Esteban Chiriboga	The mine site MODFLOW model was incorrectly bounded and calibrated and does not provide the hydrologic characterization of the site that is needed in order to perform adequate project impact evaluation	WAT	S	O	8	MDNR et al. 2015c.

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Esteban Chiriboga	Unfortunately, the existing project MODFLOW model for the PolyMet mine site was calibrated using P-M taconite pit water levels that were 13 or more meters too high. The project model incorporates the P-M pits as constant-head-cell boundary conditions (FEIS Figure 5.2.2-2 or attached as Figure 1). The project model sets the P-M pit lakes as constant-head-cells approximately 5 meters above the level of the upper Partridge River, yet pit lakes during the period when flow data was collected (1979-88) were actually well below the elevation of the upper Partridge. Because of this error, the calibration model has the local direction of groundwater flow from the pits 180 degrees reversed from the actual conditions during the calibration period. The model predicts that during the calibration period water was flowing from the hydrologic high at the P-M pits to the hydrologic low at the upper Partridge River, when in fact, because the pits were partly to completely empty, water would have been flowing from the upper Partridge River to the P-M pits.	WAT	S	N	12	Co-lead Agencies' Response for GLIFWC Comments on Calibration of the Mine Site MODFLOW Model to Partridge River Groundwater Baseflows; MDNR, et. al., October 12, 2015.
Esteban Chiriboga	The significance of this is that using the high 1996 Peter-Mitchel pit water levels during calibration is likely to have resulted in restrictive (i.e. low) formation conductivities and recharge in order to force the model to match calibration targets. In order to conservatively estimate maximum PolyMet project pit inflows, the models should have been calibrated with realistic P-M water levels and only during pit inflow predictive runs should the P-M pit water levels been raised to their likely maximum level such as that found in 1996. Such procedures for worst-case scenario analysis (Anderson et al. 2015, Section 10.4.1 Scenario Modeling) is basic to hydrologic modeling.	WAT	S	N	12	Sensitivity runs of the Mine Site MODFLOW model predictions for pit inflows were conducted for the Final EIS; see pages 5-35 through 5-37. DNR asserts that the information allows adequate consideration of factors related to the sizing and effectiveness of the proposed WWTF system consistent with the Final SDD.
Esteban Chiriboga	Contrary to Barr's statements in the Model Technical Review Checklist (MTRC) section (PolyMet 2015m.pdf document page 2971), the MODFLOW model was not evaluated to sensitivity of some of the most significant boundary conditions, the constant-head boundary conditions representing the P-M taconite pits. That quality control document has errors and misstatements, raising questions about adequate quality control. For example the local scale models were 8 layers, not the 7 stated in the MTRC, and the software used for the base case was outdated MODFLOW96 not the current industry standard MODFLOW-NWT. These errors cast doubt on the adequacy of the review to which the groundwater models were subjected.	WAT	S	O	8	ERM Water Team, November 11, 2015 NorthMet EIS Phase 4 Water Models Quality Assurance Technical Memorandum
Esteban Chiriboga	The closure period model, on which the sensitivity analysis was conducted, was configured with boundary condition in the form of P-M pit water levels at their 1996 levels, over 300 feet higher than the water levels actually expected at closure. Those P-M pits are close to the center of the model used for sensitivity analysis and, therefore, erroneous boundary conditions of this magnitude invalidate the results of the sensitivity analysis. Not only was the calibration model incorrectly bounded but the closure predictive runs use the same abnormally high P-M pit water levels. In particular the predictive runs for long-term closure (MODFLOW run "SS_west_fill_Sept2014_1585ec1595" resulting in Large Figures 29 and 30 of PolyMet 2015m) use the 1996 taconite pit water levels that are over 300 feet higher than the expected closure water levels.	WAT	S	N	12	The EIS was not scoped to address how future activity at the Peter Mitchell Pit might influence the closure conditions at the NorthMet site. Absent changes to NorthMet Mine Site pit lake elevations from the closure conditions evaluated for the EIS, future pit lake elevations for Northshore are not expected to appreciably affect the Mine Site flowpaths to the Partridge River. The predictive runs would remain valid.

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Esteban Chiriboga	Project documents include very clear statements about the importance of MODFLOW in formulating impacts, for example PolyMet 2015m Section 5.1.2.6 states: "Groundwater contours for the unconsolidated deposits and bedrock are the primary source of information used to delineate the flow path areas. The groundwater contours are from the Mine Site MODFLOW model" The GoldSim contaminant transport modeling in particular uses many outputs from the MODFLOW groundwater modeling (attached as Tables 2 and 3). These extend far beyond the stated purpose of the groundwater model; which in one of several statements was to "estimate the amount of pit inflow and evaluate groundwater flow conditions following pit closure (SDEIS reference Polymet 2013i; available at: http://www.lic.wisc.edu/glifwc/polymet/sdeis/references/), thus making it very clear that a valid model that characterizes site groundwater hydrology is foundational for impact prediction. The project MODFLOW model was used to characterize post closure contaminant flow paths (Large Figures 28 & 29 of PolyMet 2015m, attached as Figures 3 & 4, and FEIS Figure 5.2.2-7) and the general nature of the groundwater system such as mine site groundwater levels at closure (e.g. Large Figure 30 of Attachment B of PolyMet 2015m, attached as Figure 6). In addition, the MODFLOW model was used to supply the numeric input parameters to the GoldSim model that is used for prediction of contaminant flow and contaminant concentrations (PolyMet 2015m, Table 1-1). That table, attached as Table 3, identifies critical GoldSim input parameters that are outputs from the mine site MODFLOW groundwater model.	WAT	S	O	8	MDNR et al. 2015c
Esteban Chiriboga	Despite the widespread use of MODFLOW outputs in the evaluation of the project site and developing the basis for the FEIS, there have been repeated attempts by PolyMet and the co-leads to claim that the MODFLOW model was intended only to look at pit inflow. That is simply not true. In a 2012 technical memo of the Water Modeling Data package of the SDEIS (SDEIS reference PolyMet 2013i), Barr Engineering stated: "The primary objectives of the models were to: ? Estimate the amount of groundwater inflow that can be expected to flow into the mine pits during operations and pit filling, and ? Evaluate groundwater flow conditions following pit closure." In Attachment B of the FEIS reference PolyMet 2015m, Barr stated that: "The primary objective of this study was to estimate the amount of groundwater expected to flow into the mine pits during operations and pit flooding, and to evaluate the groundwater flow conditions following pit closure." and presented model results on mine pit outflow: "Simulated groundwater flow rates for the long-term closure simulations are shown in Table 4-4." and "Table 4-4 Estimated Groundwater Inflow and Outflow Rates – Long-term Closure Conditions" In their October 12 memo (attached) the co-leads make yet another characterization of modeling purpose: "The stated purpose of the MODFLOW model is to predict pit inflows and characterize hydrogeologic conditions between the NorthMet mine pits and the Partridge River." While we don't disagree that these as some of the purposes to which MODFLOW was put, we believe that the many written statements by PolyMet and the co-leads and the many uses that the MODFLOW results were put to in writing the FEIS (documented in the previous paragraphs) most completely illustrate the true uses of the MODFLOW modeling in this project.	WAT	S	N	12	FEIS Section 5.2.2.2.1 identifies MODFLOW provided "estimates of hydraulic head distributions, groundwater flow/directions in the surficial aquifer and bedrock units, and groundwater releases to perennial streams (groundwater baseflow)...MODFLOW modeling results and site characterization data were used to delineate groundwater flowpaths at the Mine Site." Contrary to the comment, DNR asserts that the Final EIS listing is a reasonable outcome of satisfying Final SDD requirements for the groundwater flow model to predict pit inflows at various stages of pit development (i.e., year 1, year 5, year 10, year 20) and include operation, closure, and post-closure.
Esteban Chiriboga	Because of the dependence of the GoldSim modeling of contaminant transport on MODFLOW model outputs, it is essential that the MODFLOW outputs be valid. Because the MODFLOW closure models were incorrectly bounded with taconite pit water levels that were 300 feet in vertical error and the base models calibrated to atypically high taconite pit water levels, it is very unlikely that the MODFLOW model outputs are correct.	WAT	S	O	8	MDNR et al. 2015c.

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Esteban Chiriboga	The boundary conditions in the MODFLOW current conditions model and in the predictive closure model were far from correct. In particular, the predictive closure models, which were used to identify flow direction and quantity from the PolyMet pits, used boundary conditions that were over 300 feet in error. Sensitivity analysis of both the current conditions calibration model and the predictive closure model to taconite mine pit water levels should have been conducted.	WAT	S	N	12	Sensitivity runs of the Mine Site MODFLOW model predictions for pit inflows were conducted for the Final EIS; see pages 5-35 through 5-37. DNR has not assessed the potential quantity of water that might be associated with a potential northward groundwater flow in bedrock under Peter Mitchell Pit closure conditions, including sensitivity runs of the Mine Site MODFLOW model. Absent modifications to better account for the hydrogeology between the NorthMet and Northshore mine sites (especially the latter in closure), the results of using the Final EIS model to address the issue raised in the comment is unreliable for impact assessment. DNR acknowledges that absent changes in modeling assumptions in the EIS MODFLOW model that flow rates would be commensurate with rates associated with the Proposed Project condition. Depending on the natural downward flux from the surficial materials into bedrock, this rate of flow might be lessened. The rate would also lessen as the Northshore Mine pit lake fills to its outlet elevation of 1,500 ft amsl.
Esteban Chiriboga	The project mine site groundwater flow model (MODFLOW) was calibrated with multiple conditions that did not exist simultaneously, i.e. boundary conditions in the form of taconite pit water levels from 1996 and river baseflows from 1979-88. This means that the mine site model is not correctly configured and, therefore, unlikely to generate accurate predictions.	WAT	S	N	12	Co-lead Agencies' Response for GLIFWC Comments on Calibration of the Mine Site MODFLOW Model to Partridge River Groundwater Baseflows; MDNR, et. al., October 12, 2015.
Esteban Chiriboga	There is no consistent conceptual model of site hydrology. The conceptual model used for the basis of many of the conclusions in project reports and in the FEIS text is that the nearby taconite pits have little influence on the surrounding aquifer, regardless of whether they are full of water or pumped dry. This is a notion that was proposed early in the project and drove many of the data collection and EIS decisions. On the other hand, the mine site MODFLOW model, which incorporates historical and site-specific conductivity data on the bedrock formations and is used by the applicant to predict closure conditions, indicates that the nearby taconite pits have a profound impact on the surrounding aquifer.	WAT	S	N	12	There is no definitive means to address the issue raised in the comment because the EIS was not scoped to address how future activity at the Peter Mitchell Pit might influence the closure conditions at the NorthMet site. The modeling satisfies Final SDD Section 6.2, which required the groundwater flow model to predict inflows at various stages of pit development (i.e., year 1, year 5, year 10, year 20) and include operation, closure, and post-closure. DNR notes the Mine Site MODFLOW model reflects available information between the proposed NorthMet project site and the Northshore Peter Mitchell Mine pits. Even with improved data and analytical techniques, proximity alone to a taconite facility does not automatically result in commensurate effects to local hydrology. There is no evidence that the Partridge River, 100 Mile Swamp, or Argo and

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						Iron Lakes, have been measurably impacted by Northshore Mining activity to date; whether this would hold into the future is uncertain. Also see: Opinion Paper #2 Response to Tribal Comments Concerning Potential PolyMet Impacts to Wetlands and Streamflow October, 2009.
Esteban Chiriboga	the project MODFLOW model was configured and used by the applicant as a basis for contaminant transport predictions at closure. Given that it is mis-configured with grossly incorrect closure pit water levels, it cannot give reliable predictions of contaminant flowdirection or quantity.	WAT	S	O	10	MDNR et al. 2015c.
Esteban Chiriboga	The mine site groundwater models need to be reconfigured to contain realistic water levels in the P-M taconite pits, both for a "current conditions" model and a "closure conditions" model, not the 1996 water levels that were unusually high. The predictive MODFLOW modeling for the closure period must use the correct closure water elevations for the P-M pits which are 300 feet lower than the unusually high 1996 levels that are used for FEIS predictions. Sensitivity analysis and adaptive management cannot be substitutes for consistent and rational characterization of site hydrology.	WAT	S	N	12	Sensitivity runs of the Mine Site MODFLOW model predictions for pit inflows were conducted for the Final EIS; see pages 5-35 through 5-37. DNR asserts the information allows adequate consideration of factors related to the sizing and effectiveness of the proposed WWTF system consistent with the Final SDD. DNR has not assessed the potential quantity of water that might be associated with a potential northward groundwater flow in bedrock under Peter Mitchell Pit closure conditions. Although not assessed quantitatively, DNR has considered potential future operations at the Northshore Mine against information that is available. DNR acknowledges it cannot rule out that future operations at the Northshore Mine could induce northward groundwater bedrock flow from the NorthMet Mine Site. See Final EIS Section 6.2.2.3.1. This might happen if there is insufficient natural downward leakage into bedrock from the overlying wetlands and surficial materials between the proposed NorthMet Mine (in closure) and the Northshore Mine (in future operations and closure). If there is sufficient downward leakage, then there would be groundwater flow divide between the two mines where there is no continuous one-way flow between the facilities. If natural leakage is insufficient to maintain a groundwater flow divide between the two facilities, then it is possible a northward groundwater flowpath would be present. DNR asserts that it is possible to detect and prevent

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						any northward flowpath before any impacts are realized. Regarding detection of any northward flow, it is reasonable for the Final EIS to detail in Section 5.2.2.3.6 specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Regarding prevention of any northward flow, it is reasonable for the Final EIS to detail in Section 5.2.2.3.5 the types of known measures that could be applied if a potential for northward flow is detected. The possibility of northward flow between the proposed NorthMet Mine and Northshore Mine is speculative and is not reasonably foreseeable with current information. If the existence of a northward flow path was possible, it would be happening now. For the NorthMet project there is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When this might occur is not known, but it is most likely to occur after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. There would be ample opportunity to collect necessary data, and complete applicable environmental review and/or permitting prior to the development of a northward flowpath, including preparation of an EIS supplement if the conditions of Minnesota Rules, part 4410.3000, subpart 3 are met.
Shari Bachman	I know that many precautions and assurances have been put into place to guarantee that the Poly Met Mine will not pollute the water in the BWCA but that is all just on paper. The truth of the matter is the Poly Met group can NOT guarantee that there won't be a leak, spill or major catastrophe that would pollute the water and any risk of that puts many jobs and businesses on the line for failure.	PD	NS	X	1	
Shari Bachman	It is absolutely NOT ok to trade the pristine wilderness for the profit of a foreign company.	LAN	NS	X	1	
Lindsay Sovil	It is clear that this project will cause irreparable harm to Minnesota's waters from sulfide poisoning for hundreds of years, mainly to profit a foreign mining company. Can a price even be put on the clean water that we so take for granted in	GEN	NS	X	1	

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	northern Minnesota?					
Lindsay Sovil	Mining is not the key to Ely's long term economic success, and even if it were, the price to be paid is far far too high. What damage this project will do can never be undone.	SO	NS	X	1	
Margi Preus	I previously signed my name to the form letter, but I would like to write my own objection. It is unconscionable to think that we are ready to risk our most valuable resource by allowing sulfide mining in a major watershed of some of the cleanest, most pristine water on the planet. To risk our water for a few short term jobs is the height of short-sightedness. To think of the number of potential jobs LOST in the event of water contamination, not to mention loss of fish, waterfowl and wildlife, is to make the project appear to be the worst idea ever conceived.	GEN	NS	X	1	
Margi Preus	Who is going to oversee the toxic waste and mess that is made and left behind when the company inevitably dissolves or goes bankrupt or walks away? Who is going to clean up a catastrophe--if there even IS a way to clean it up? Who is going to be tending to the waste for the 500 years that it remains toxic? We have yet to hear answers to these most obvious questions. Until there are answers to these basic questions, there is no good reason to approve this project.	FIN	NS	X	1	
Margi Preus	And a final question: why are we on the brink of allowing a copper mine to open when "dozens of copper mines globally are cutting or curtailing production." (Duluth News Tribune, "Arizona Copper Mine Closes," Sat. Dec. 19, 2015. I request a specific response to my comments.	GEN	NS	X	1	
jdmalcolm@wildblue.net	To our knowledge every mine of this type has failed. Despite reassurances from the company, and advances in technology, we all know there can be no guarantees. The fact that the state is asking for huge sums of money for cleanup and a commitment from the company for generations to do this cleanup, tells me they expect leaks.	PD	NS	X	1	
jdmalcolm@wildblue.net	This is an unacceptable risk to take based on the number of permanent jobs that it may create.	SO	NS	X	1	
jdmalcolm@wildblue.net	In the past we have heard that most of the time these companies bring in their own employees to fill the good paying jobs leaving the bulk of the employees subject to "boom and bust" cycles. Also, it is only a matter of time and the ore is gone and so are the jobs. Witness what is happening in the iron ore mining right now. This is a short term economic boost for a region that needs a long term plan for the future.	SO	NS	X	1	
jdmalcolm@wildblue.net	If/when there is a major leak, their prospects for encouraging other businesses to locate in the area will be greatly diminished. The wealth of this area is in the unspoiled area that is hard to come by in this day and age. We must protect it and work to help the economic prospects for the people of the area to find a long term solution to the problem.	SO	NS	X	1	
Jon Ridge	I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal. Please do not allow mining to take place in the Superior National Forest so close to the water resources of the Boundary Waters and St Louis Watersheds. The risks are far too great and the FEIS does not prove that the water will be protected from future contamination. This violates both state	GEN	NS	X	1	

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	and federal water quality standards.					
Jon Ridge	The Prospecting Draft EIS fails to provide site-specific analysis of drilling impacts. This is a basic requirement for environmental review.	GEN	NS	X	1	
Jon Ridge	The Prospecting Draft EIS relies on insufficient analysis of water quality impacts, water consumption, and other critical issues.	WAT	NS	X	1	
Jon Ridge	The Prospecting Draft EIS fails to consider alternatives needed to protect the Superior National Forest and the adjacent Boundary Waters Canoe Area Wilderness, such as limits on the season of drilling and limits on the density of impacts on resources.	ALT	NS	X	1	
Jon Ridge	The Prospecting Draft EIS fails to evaluate cumulative impacts from drilling, road construction and mining on other lands, including State and County leases, within the project area.	CUM	S	O	3	FEIS Chapter 6
Jon Ridge	The Prospecting Draft EIS provides inadequate monitoring and unenforceable conditions. In addition, we wonder why multinational corporations from other countries are allowed to take the valuable resources out of our state and leave the mess for us to clean up. If we are to mine in MN, let the revenue remain here!	GEN	NS	X	1	
Jon Ridge	Please do not allow PolyMet to receive a permit for mining in the Superior National Forest.	GEN	NS	X	1	
Susan Beerhalter Soule	Here in Minnesota, lakes and water are a huge part of our heritage, our identity and our economy. The tourist and recreational dollars that stem from our beautiful lakes and wilderness are crucial to our governmental budget and the livelihoods of many.	SO	NS	X	1	
Susan Beerhalter Soule	The beauty and accessibility of nature here in Minnesota help attract vital and educated people to our state and to our top jobs and add to the health and well-being of our citizens.	LU	NS	X	1	
Susan Beerhalter Soule	I was shocked to read in the Star Tribune this past year that the lakes in the southern third of our state are polluted beyond redemption. Please don't spread this catastrophe to our beautiful and vital north woods.	NEPA	NS	X	1	
Susan Beerhalter Soule	The powers that be at Polymet themselves say that their mining activities will result in the necessity for on-going water/environmental treatment in perpetuity. Yes, they say that they will set up a mega-fund to cover these costs. But THINGS HAPPEN. Ask the people who trusted their pensions to see them through their retirements! Mismanagement, greed, the unforeseen, then: Gosh, we're sorry. No money to keep the water clean, the aquifer safe.	FIN	NS	X	1	
Susan Beerhalter	The number and duration of the jobs created do not begin to support the risk to our water supply, our economy and our beautiful natural environment from the Polymet project.	SO	NS	X	1	

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Soule						
Dr and Mrs Thomas G. Murn, Jr	The land in Minnesota belongs to the people of Minnesota. The Department of Natural Resources is not the "Department of Give our Resources Away" because the mining people need something from us and are being nice to us right now. If you cannot be stewards of one of the most pristine places in the United States get a different job. Work for the mines. If this land belonged to your family would you let the mining company do this? I don't think so. Monitoring for at least 500 years? My goodness is anything worth that? Why not have the DNR work to make tourism so big in the BWCA that everyone would love their jobs and spread joy to others? I am absolutely shocked that the state is not putting a stop to this lunacy. Wild Rice and salmon cannot survive this assault. What will the mining company say when everything is spoiled? Sorry. We don't have to pay for anything. Fool me once, shame on you fool me twice shame on me.	GEN	NS	X	1	
Dr and Mrs Thomas G. Murn, Jr	Sulfide mining has never been done in Minnesota, and is much more dangerous than traditional iron mining. In fact, there is no example of sulfide mining being operated successfully anywhere that did not pollute nearby groundwater, lakes, and streams. And independent studies show pollution of surrounding lakes, rivers, and streams has occurred in one hundred percent of sulfide mines.	GEN	NS	X	1	
Dr and Mrs Thomas G. Murn, Jr	Sulfide mining has always left untold cleanup costs during and after mining operations. But, in many cases, mining companies have gone bankrupt, underestimated costs, or struck back room deals with politicians to avoid paying the full costs. The mining companies' own documents show that even after a sulfide mining site is closed, the state will have to monitor and treat pollution at the site for hundreds of years in the future—at a cost to Minnesota taxpayers in hundreds of millions or even billions of dollars.	FIN	NS	X	1	
Julie Viken	The Polymet Mine will drain into the St Louis River which drains into Lake Superior. Lake Superior is the water source for many residents who live in MN, WI, MI and Canada. This water cannot be polluted with sulfide runoff.	WAT	NS	X	1	
Julie Viken	The pollution of the river in CO this past summer is a wide awakening of what kind of issues our precious clean waters of northern MN will turn into after sulfide mining is permitted.	WAT	NS	X	1	
Julie Viken	We have not had this kind of mining in MN but we are also one of the only states in the US to have a national treasure of wilderness area in the BWCAW. MN is the land of 10000 Lakes and we don't want to have them polluted so badly fish won't live in them any more, people cannot drink from their water anymore.	WAT	NS	X	1	
Julie Viken	This is going to affect generations of Minnesotans and anyone who lives near Lake Superior. This doesn't make sense now or ever in MN. Keep our waters pure! That is the job of the DNR.	WAT	NS	X	1	
Rod Fisher	I oppose the approval of the Polymet mine permits. The risk outweighs the benefits.	SO	NS	X	1	
Virginia Martin	I completely oppose mining in the north country. I have been in the area many times and made many trips into the Boundary Waters and nothing I have seen convinces me such mining won't be devastating to this beautiful, pristine wilderness.	GEN	NS	X	1	

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Walt and Marcie Moe	My main concern is that there will be inadequate testing done to ascertain the degree of water contamination from the mine runoff, the pits, the process, etc. Are there going to be wells drilled to check the water infiltrating below the surface? Are there baselines to be established for all rivers and streams that could be affected by the discharges? What agency will do the testing? Not Poly-Met I hope! Will the MPCA allow mining operation to continue if the standards are exceeded? And for how long? I believe they base their rules on Company revenue, people's employment wishes and then the Environment! I think this is wrong it should be the environment first!	WAT	NS	X	1	
Walt and Marcie Moe	Taxes for the Taconite Mines are based on tonnage. What are taxes the metals mined by Poly-Met to be based on? That should be in place before Poly-Met starts production!	O	NS	X	1	
Walt and Marcie Moe	We need clean water to live a healthy life! Have you looked at the cancer rate in the mining region?	WAT	NS	X	1	
Walt and Marcie Moe	I don't think any more precious metal mines should be allowed to start mining until we see what the first one (if allowed) produces in the way of contamination.	GEN	NS	X	1	
Steve Blexrud	After reviewing the available information, I strongly oppose the development of the Polymet mining operation in northeast Minnesota.	GEN	NS	X	1	
Ryan John Mallek	in my opinion the EIS was lacking in regards to impact on the local and regional health effects.	HU	NS	X	1	
Ryan John Mallek	if more time was spent on a EIS I would still be against the mine because it clearly states that water treatment will take place for a significant period of time. No mine should be granted a permit that would require any type of long term treatment of water.	PER	NS	X	1	
Ryan John Mallek	Loosing 9000 acres of national forest along with the creation of maybe 200 full time jobs for 20 years and millions in revenue for 500 years of pollution and water treatment. Not a economic win in my opinion.	SO	NS	X	1	
Ryan John Mallek	I'm a Duluth resident, born and raised in northeast Illinois and moved to this area for its excellent access to outdoors, specifically the BWCA and SNF. I actively hunt and fish and camp in the watershed of the new Poly Met mine and i'm extremely concerned about what this mine will do to affect the quality of food that could be polluted by new mining operations.	HU	NS	X	1	
Ryan John Mallek	Mercury concentrations are already high in the St.Louis river due to industrial pollution and I feel we need to mitigate anything that could increase the current levels beyond their already high limits.	MERC	NS	X	1	

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Stephen and Barbara Adams	Much as we would like to see increased employment opportunities for residents of northern Minnesota, we feel very strongly that the environmental threats posed by PolyMet's proposed sulfide mine far outweigh any benefits it might bring. The mine would create polluted water that would need to be captured and treated for 500 years or more. That polluted water could harm both the Boundary Waters and the St. Louis River watershed. We are concerned for the health of those drinking water from the affected areas – especially children – and for the future of wild rice harvesting and the livelihoods of people who depend on tourism and other non-mining industries. We are disturbed by the narrow scope of the Final Environmental Impact Statement, which fails to take into account the full impacts of opening a sulfide-mining district in the heart of Superior National Forest, and in the headwaters of both the Lake Superior and Rainy River watersheds. Also, there are not adequate plans for securing a damage deposit sufficient to protect taxpayers from being stuck with a massive cleanup bill. PolyMet's sulfide mine proposal simply is not worth the risk to Minnesota's clean water.	GEN	NS	X	1	
Paul W Swanstrom	What disturbs me most about polymet mines plans is that there is no end to The destruction it does with their entire operation. They can not return the land to the condition it was in before they started operations. What ever happened to the doctrine of Do No Harm?	GEN	NS	X	1	
Paul W Swanstrom	A few hundred jobs over the short time of mine operation can't possibly offset the enormous cost of trying to contain the pollution seeping into the environment for hundreds of years.	SO	NS	X	1	
Ann Reed	People having adequate employment is a real issue but let's be clear: if we destroy the water in Minnesota, poison it, make it uninhabitable to support fish and other wildlife, there will be no need for jobs. No one will want to live there. There will be no tax base. Tourism will be nothing. No one will be fishing, hunting, hiking.	SO	NS	X	1	
Brad Carlson	the feis was incomplete in its look at hydrological impacts. There are many variables it did not even consider regarding the geological conditions present that will affect where the toxic waste will flow.	WAT	NS	X	1	
Brad Carlson	the very fact that toxic waste runoff has to be considered in detail should alone be reason enough to cancel this project in our opinion. the facts all support a disaster in the making.	WAT	NS	X	1	
Brad Carlson	the pollution controls in minnesota are fine on the books but are not enforced nor are there even permits in place for most of the local operating mines! to say that the agencies involved will take care of this responsibly is a farce - they are bought and owned by the mining interests.	PER	NS	X	1	
Andy Johnson	Stop the proposed PolyMet NorthMet copper-nickel sulfide mine from becoming one of hundreds of tax payer Superfund clean up sites. Do the simple research and you will find out that the chances are very, very good that after PolyMet has used up all the resources in the area they will take their money and leave, and the site will have to be cleaned up by the expense of the taxpayers.	FIN	NS	X	1	
Donald Schreiner	I am writing along with my wife and daughter to oppose the establishment of the PolyMet mine in NE Minnesota and reject the Final EIS. I am a professional Fisheries Biologist that has worked for the MNDNR for 33 years and I have lived and worked in NE Minnesota for the past 26 years. I have worked exclusively in the Lake Superior watershed and know this resource and its attributes well. It is both my professional and personal opinion that the PolyMet mine is not compatible	GEN	NS	X	1	

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	with the future sustainability of water resources and public use of these resources in this area of the state.					
Donald Schreiner	The PolyMet Final EIS should be rejected as incomplete because it fails to accurately model water seepage from the tailings basin, some of which will flow north towards the Boundary Waters Wilderness, due to alteration of the Laurentian Divide from nearby taconite mining. The mine plan does not detail plans to protect the Boundary Waters from centuries of toxic drainage, instead, it assumes the planned clay-lined trench will collect 100% of groundwater seepage (Figure 3.2-28) which is patently impossible, and it requires only monitoring of groundwater flows leading north to the Boundary Waters (p 3-150, Section 3.2.3.3.4). This is insufficient and incomplete.	WAT	NS	X	1	No evidence is provided that supports the contention that water from the tailings basin would flow to the BWCAW.
Donald Schreiner	The PolyMet Final EIS should be rejected as incomplete because it fails to examine an important alternative which could greatly reduce the hazard of future tailings dam failure and environmental damage: dry stack storage of tailings. Instead, the FEIS rejects examining this alternative in depth, because seepage would be reduced, concentrating pollutants into the remaining waters, making it difficult to meet water quality standards. This implies that PolyMet's solution to pollution is dilution – clearly an unacceptable approach. (pp 3-156- 158.)	ALT	S	O	10	SDEIS Theme ALT 10
Donald Schreiner	The PolyMet Final EIS should be rejected as incomplete because it fails to detail future risks and costs that are necessary to determine financial assurances to protect our children from paying for the cleanup of this proposed mine.	FIN	S	O	3	SDEIS Theme FIN 03
Donald Schreiner	In addition to point three above, it is not clear how much funding will be set aside by PolyMet to address negative environmental issues as they arise. As I have written before, if this project does move forward agencies representing the citizens of the state must demand that PolyMet have the financial capacity to pay for any environmental issues as/should they arise. This is now the ethical price of doing business. The last thing we need in 50 - 500 years is a superfund site next to the BWCA! The negative legacy left by PolyMet should not have to be paid for by our children or grandchildren.	FIN	S	O	3	SDEIS Theme FIN 05
Dave Wennlund	I am AGAINST ALL COPPER-NICKEL MINING IN MINNESOTA!	GEN	NS	X	1	
RICHARD AND CAROL STAFFON	Approval of the PolyMet project will aggravate water quality problems, certainly in the St. Louis River watershed, and potentially in the Rainy River watershed. Sitting at the top of both of these watersheds, PolyMet will add higher levels of sulfates to the downstream waters. Sulfates in the Partridge and Embarrass rivers, and in the St. Louis River downstream from them already greatly exceed normal background levels because of drainage from taconite mines to the north. Much additional sulfate will be added to these watersheds as a result of the PolyMet project. Higher levels of sulfates in downstream waters will allow microbes to convert more of the available mercury to methylmercury, which is the bioaccumulating formulation that contaminates our fish, and humans eating those fish, boosting already unsafe levels of methylmercury contamination in these waters. The PolyMet project will also add more mercury to these river systems. Release of mercury sequestered in peat soils, increases in water level fluctuations, and airborne mercury released from the PolyMet mine and plant sites will all contribute to the already high levels of mercury in the system. The St. Louis River was listed for mercury impairment by the PCA in 1998. Since then little progress has been made to come up with a Total Maximum Daily Load (TMDL) plan to get the river delisted. By adding more mercury and sulfate to the river system, the	MERC	S	O	3	SDEIS Theme MERC 02

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	PolyMet project will make it even more difficult to accomplish this challenging goal to make the fish safer for people to eat. The FEIS does not answer the question of how the Minnesota Department of Natural Resources (DNR) and Minnesota Pollution Control Agency (PCA) can meet the goal of cleaning up the water in the St. Louis River, while at the same time adding more mercury and sulfate pollution to it.					
RICHARD AND CAROL STAFFON	On Dec. 6th, 2015 meteorologist Paul Douglas posted on his website that Minnesota has experience four 1000-year floods in the past eleven years. This is well beyond any predictive expectation. Duluth and surrounding areas experienced massive flooding in 2012. Since this and even lesser storms are not adequately modeled in the designs, one can only imagine the consequences of a 500 or 1000-year flood on the Iron Range. The collection and treatment facility would likely be overwhelmed, or dikes fail, releasing untreated toxic contaminants, including heavy metals, into the headwaters. The FEIS fails to model this changing climatic reality which increases the likelihood that mine runoff will expose the state's waters and citizens to unnecessary health risks into the distant future.	PD	S	O	3	SDEIS Theme PD 22
RICHARD AND CAROL STAFFON	Unfortunately, for decades the DNR and PCA have failed to enforce the sulfate standard of 10mg/liter that was in the law. Wild rice stands downstream of the iron mines declined or disappeared over time, apparently as a result of the sulfate pollution from iron mines, and co-opted by the disregard or inability of regulatory agencies to enforce the sulfate standard. The twenty-plus years of regulatory failure by DNR and PCA to address the renewal of expired mining permits for a number of mines that are not meeting water pollution standards, leaves the public really wondering and concerned about the effectiveness of the regulatory process for the mining industry.	WAT	NS	X	1	
RICHARD AND CAROL STAFFON	With PolyMet's FEIS, regulators appear to be ignoring yet another Minnesota law, Chapter 6132.3200 of the Nonferrous Metallic Mineral Mining Law - Closure and Post Closure Maintenance which states, "...the mining area shall be closed so that it ... is maintenance free". DNR appears ready to approve the FEIS mining plan knowing full well that it cannot meet the objective of this statute, that there is no ongoing maintenance once the mining operation is completed. The models knowingly referenced that ongoing water treatment would be necessary for hundreds of years after mining is completed. It appears to us that DNR would fail to uphold the letter of the law, and ignore their duty to protect the environment and safeguard the public's health by permitting the NorthMet mine with an indefinite maintenance time frame.	WAT	NS	X	1	

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RICHARD AND CAROL STAFFON	PolyMet’s FEIS modeled the issue of where the runoff from the mining operation would flow. This is a foundation upon which this plan is built. We find it troubling that outside scientists from the Great Lakes Indian Fish and Wildlife Commission (GLIFWC) have questioned the “modeling assumptions” provided by DNR and used by PolyMet’s engineering firm, Barr Engineering, a firm that could gain substantial economic benefits by the mine’s approval and construction. The GLIFWC results showed that most of the runoff would run into the St. Louis, but some could also flow into the Rainy River watershed, where it could impact the nearby Boundary Waters Canoe Area Wilderness and possibly even downstream to Voyageurs National Park. It is our understanding that DNR rejected the request for an independent third party to review the findings, but has rerun the model and now concurs with the GLIFWC findings. The FEIS proposes to deal with this issue through adaptive management. But again, as described above, we are concerned about the ability of regulatory agencies to successfully enforce permit requirements or of the mining industry to implement them, especially when significant costs are involved to fix the problem. Air and water quality violations, large fines, and costly fixes have been frequent and persistent with our modern taconite industry, yet pollution problems continue today.	WAT	S	O	3	SDEIS Theme WR 086
RICHARD AND CAROL STAFFON	The PolyMet FEIS in page 119 (sections 3.2.2.3.10 Engineered Water Controls) says, “The Plant Site would include water management features designed to control water potentially affected by sulfides and metal leachates from tailings and hydrometallurgical residue.” But in reading through the details of this plan there are critical assumptions we question, including that the company will successfully capture 90+% of the surface water and 100% of the groundwater (pg 154). These seem unrealistic. Because of this assumption, the plan does not recommend the use of a geo membrane to reduce infiltration, nor is there a double liner with monitoring and leachate collection between liners, a standard practice for modern landfills, which is what this essentially is. There is also an assumption that there is no water flow through the fragmented bedrock. Anyone familiar with the Canadian Shield certainly understands that the rock has fractures. And if it doesn’t have multiple fractures before mining begins, the initiation of mine blasting is likely to induce some fractures within the area. Actual empirical data on rock permeability are needed for scientific conclusions.	WAT	S	O	3	SDEIS Theme WR 018
RICHARD AND CAROL STAFFON	As mentioned elsewhere in our comments, unexpected climatic changes are leading to increased incidences of severe rainfall events. On page 120, the FEIS makes an assumption that, “An emergency overflow channel would be constructed as a backup means of controlling pond elevation, but discharge from the emergency overflow to the environment is not expected. The emergency overflow would be provided for protection of the dams in the rare event that freeboard within the Tailings Basin is not sufficient to contain all storm water.” The fact that the overflow will be provided is important, but this should not be the sole protection in place to prevent a Mount Polley-type dam breach. With toxic heavy metal leachate in the tailings pond water and sediment, every effort to safeguard against a breach should be considered responsible management.	ALT	S	O	3	SDEIS Theme ALT 11
RICHARD AND CAROL STAFFON	The Mount Polley disaster provides important new insight into this FEIS, since the technologies used at Mount Polley, and those planned by PolyMet are similar. One of the recommendations from the Mount Polley Review Commission was to utilize a dry stack system for tailings (see pg. 162, 3.2.3.5 Identification of New Alternatives). However, the FEIS states, “No reasonable alternatives were identified that would potentially offer substantial environmental benefits compared to the NorthMet Project Proposed Action.” We believe the FEIS has missed an opportunity to not only improve environmental protections, but also reduce long-term risks to the lives of people living near the tailings basins. PolyMet and the regulatory	ALT	S	O	3	SDEIS Theme ALT 10

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	agencies should thoroughly study and consider implementing the dry stack technology.					
RICHARD AND CAROL STAFFON	Finally, we have grave concerns about the DNR solution in the FEIS to a number of unanswered, unresolved technical questions, that they will be solved through “adaptive management”. While it is possible some issues can be resolved by technological advances and innovation, it is also likely experts would encounter problems for which there is no practicable solution.	O	NS	X	1	
RICHARD AND CAROL STAFFON	Because this is a low-grade ore deposit, the financial return to PolyMet will be marginal even with high metal prices. With low prices, like those we are currently experiencing, there will be a strong economic incentive to shave corners wherever possible. This could negatively affect environmental protections, mine safety and staffing levels, and lead to the familiar boom-bust cycle many mining operations and communities across the globe experience. When the State scrambles to help miners harmed by the iron/steel bust cycle, there is added incentive at the legislative and administrative levels to help the miners and company at the expense of the taxpayers and the environment. Marginal strategies are often employed to make the mining operation profitable again.	O	NS	X	1	
RICHARD AND CAROL STAFFON	A major issue for us is the lack of complete information in the FEIS regarding the ultimate wetlands impacts. They are not possible to determine, given the uncertainties as to exactly how the NorthMet mine will develop, in particular with regard to the indirect wetland impacts. Therefore the FEIS should include some estimate of indirect impacts and how they would be mitigated. To leave this significant issue as a completely open question is unacceptable.	WET	S	O	3	SDEIS Theme WET 01
RICHARD AND CAROL STAFFON	There is also concern over where the wetland mitigation will take place, since most of the mitigation occurs outside the watershed. The FEIS places less than a third (508.2 acres) of the mitigation for direct impacts in the St. Louis River watershed, and the rest (1094.5 acres) in the Mississippi River watershed. And there will be almost no mitigation in the headwaters of the Embarrass and Partridge Rivers, where all the wetland impacts occur. Additionally, there is no mention in the FEIS of if, or where, the indirect impacts and mitigation efforts would occur on potentially several thousand acres (6,568.8 to 7,694.2 acres depending on the assessment method used). Even if only 10% of these wetlands are indirectly impacted, as much as 770 acres of mitigation will still need to be found. Because it is so difficult to find acceptable mitigation sites, it is highly likely that mitigation for any indirect impacts will also be done outside of the watershed.	WET	S	O	3	SDEIS Theme WET 03
RICHARD AND CAROL STAFFON	This loss of wetland function will be a permanent impact to the St. Louis River watershed and no amount of mitigation elsewhere in the state will correct the problem. This impact also appears to be a violation of the federal Weeks Act, under which these lands were originally acquired by the federal government. The Weeks act was passed into law to protect the headwaters of our nation’s navigable rivers.	LAN	S	O	3	SDEIS Theme LAN 02

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RICHARD AND CAROL STAFFON	The FEIS also fails to recognize that even though the Superior National Forest does not lose wetland acreage, as a result of the land exchange, statewide there will be at least 900 acres of high quality, natural wetlands lost, and possibly much more. Over 50% of these are forested and open bog wetlands, with functions on the landscape that are very difficult to replace and mitigate.	WET	S	O	3	SDEIS Theme WET 14
RICHARD AND CAROL STAFFON	In our comments on the SDEIS, we raised concern over the permanent loss of 1,719 acres of habitat designated by DNR as having High Biological Diversity. These lands are within the 3,908.3 acres of forest and wetland area directly impacted by this project including some threatened plant communities, and endangered, threatened or, special concern plant and animal species. The FEIS document in addressing this issue only says that the land will be restored to a stable, vegetated condition after mining. This is equivalent to saying that a duck marsh can be restored by building a swimming pool. The two are not the same, and the environment and the future citizens of the state will be the poorer as a result. We think the FEIS has undervalued the long-term benefits these lands provide to the citizens of Minnesota when compared with the short-term benefits of a 20 year copper-nickel mine.	VEG	S	O	3	SDEIS Theme VEG 02
RICHARD AND CAROL STAFFON	A major shortcoming of this FEIS process is that Minnesota has not taken the time to step back and assess the overall impacts that copper-nickel mining could have on our lands and water, or to identify those special places in Minnesota where the natural resource values are so significant that mining should never be considered there. The value of the ecosystem services provided by these lands should be part of the equation in deciding whether or not to mine them, what type of mining would best preserve these services, and whether or not a land exchange can replace them.	O	NS	X	1	
RICHARD AND CAROL STAFFON	The people of Minnesota deserve a cumulative environmental impact assessment to determine the full environmental cost associated with existing mining and any future impacts from proposed or potential mining operations across northern Minnesota.	CUM	S	O	3	SDEIS Theme CU 04
RICHARD AND CAROL STAFFON	This project carries with it financial baggage unlike anything ever proposed by the mining industry in the state. The plan modeled the need to monitor and treat runoff from the mine for 200 years and the tailings basin for 500 years. These time frames are unprecedented. It is unclear to us how the State can insure that its citizens are free of financial liability for such an extended period. After all, our State has only been in existence for 157 years and this cleanup effort could last for three times that long, or longer.	FIN	S	O	3	SDEIS Theme FIN 06
RICHARD AND CAROL STAFFON	A significant deficiency of the PolyMet mine project is the need to provide a very large financial assurance package to protect Minnesota's taxpayers for such a long period of time. We believe that the State should acquire a cash bond in the neighborhood of \$1B, to monitor and remediate uncovered environmental damages. The State should invest this bond and allow it to grow to provide enough income to cover clean up costs for when the mining company goes out of business or defaults.	FIN	S	O	3	SDEIS Theme FIN 07

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RICHARD AND CAROL STAFFON	The State should also ensure that all corporate interests in this project are held equally accountable. Meaning, the use of a “shell corporation” should not be allowed in an effort to protect the parent company and its subsidiaries, partners, and investors. All of these should be held as responsible parties, with their assets used for any remediation, prior to the State using its financial assurance bond.	FIN	S	O	3	SDEIS Theme FIN 02
RICHARD AND CAROL STAFFON	The fact that a financial assurance plan was not included in the FEIS is a glaring deficiency in our view. The public has the right to know what the financial assurance package entails, and the risk involved, before the project is permitted. This needs to be included in the FEIS which is supposed to include economic, as well as social and environmental impacts.	FIN	S	O	3	SDEIS Theme FIN 13
RICHARD AND CAROL STAFFON	Also concerning is the retention of a law firm with strong ties to the mining industry. No matter how well intended, this decision has colored the perspective of the public and has cast doubt on whether the “blind eye of justice” will be served in this case. This lack of independence and transparency raises a question about the resolve of the State to adequately represent the best interest of its citizens and protect the environment.	FIN	S	O	3	SDEIS Theme FIN 09
RICHARD AND CAROL STAFFON	It is our position that the contention of the United States is correct in its assertion that the title and statute does not permit surface or open pit mining. If PolyMet wishes to challenge this through the court system, it is their right. But the USFS should not permit headwaters lands acquired under the Weeks Act, a law originally codified to protect the nation’s headwaters from pollution and destruction, including being forever altered by an open pit mine. If the USFS is correct in their interpretation of the law, the mining company may not damage USFS surface rights. PolyMet could only proceed with an underground mine. If PolyMet finds this to be financially unattractive, then the plan to mine should be postponed until such time as the demand and value for the minerals is sufficiently high that it can be done without sacrificing the surface rights of the USFS. These minerals aren’t going anywhere, so waiting for increased demand, higher prices and new technologies to make this project successful is not too much to ask for the preservation of Minnesota’s environment. We do not believe an exchange is in the best interest of the citizens, and it should not go forward. This would preserve the intended protections originally found in the Weeks Act, allows the USFS to continue to manage the surface estate for the benefits of the citizens, and still retains the option for suitable underground mining in the future.	LAN	S	O	3	SDEIS Theme LAN 02
RICHARD AND CAROL STAFFON	We also have concerns and questions about the amount and value of aggregate material potentially found on the exchange parcels, who will own them after the land exchange is done, and whether or not they could be mined. There also are questions about some “timber reservations” found in the abstracts. There doesn’t seem to be any discussion addressing these issues in the FEIS. We believe these are valid concerns that should be addressed in the FEIS.	LAN	S	O	2	SDEIS Theme LAN 04

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RICHARD AND CAROL STAFFON	The land exchange proposed by the parties is much larger than the NorthMet Mine footprint, which seems larger than necessary. The FEIS states, "Under this alternative, the federal government would have conveyed only the federal land (that is 2,719 of the 3,015 acres) that would actually be used for the NorthMet Project Proposed Action." There is no suitable explanation for this difference. Instead, the FEIS says, "Environmental assessment of the NorthMet Project Proposed Action identified the potential for air quality effects at the Mine Site boundary." (i.e. Air quality regulations are enforced only at the property boundary.) "A larger land exchange area would mitigate potential air quality issues; consequently, this alternative was eliminated from further consideration because it would not provide an adequate buffer." The fact that the FEIS rejects shrinking the land exchange to only the lands necessary for the project, and rejects saving 3 square miles of the "100 mile swamp" simply because, if PolyMet owns the land they don't have to address their own air pollution, and the pollution will be diluted by a bigger ownership, seems unacceptable to us. The State should not accept this as a suitable mitigation strategy for the impacts caused by the mine's air quality issues, and should instead seek alternative mitigation strategies to control the air pollution, while at the same time preserving three square miles of wild, undeveloped land (See page 183, Section 3.3.3.3.4).	ALT	S	O	2	SDEIS Theme ALT 23
Jim Wagner	I am writing to tell you that you should not support the PolyMet mine development. I go the Boundary Waters and Ely area every year or so. It is a wonderful area full of unmatched beauty. This area and the resulting tourism should be preserved at all cost. I worry about the long-term effects of mining on the area's watershed for many years to come. Please say no to this development. Keep mining out of this area in Minnesota.	GEN	NS	X	1	
Laura Morton	We need to move beyond destructive industries that treat the earth's resources as commodities to be exploited and that leave poison, illness and devastation in their wake.	GEN	NS	X	1	
Ken Fritsch	The North Met EIS is inadequate as it does not address Mercury Methylation increases down stream. The Mercury model does not take into account increases in the methylation variables of sulfate reducing bacteria, acidity, turbidity and Dissolved organic Carbon.	MERC	S	O	2	SDEIS Themes PER 11, WET 11, WR 160, WR 197
Rev. Elton W. Brown	Thanks for extending the Comment Period. However, the massive amount of technical material in the PolyMet mining proposal remains more than my brain and time can handle. I attach below my original comments, because as far as I can see, this third version of the EIS still does not adequately address my concerns. The truly difficult issues, it seems to me, are being ignored, glossed over, or postponed. My fear is that, once the mining permits are issued, it will be too late to press the corporation on matters such as adequate Financial Assurance or production taxes; by then they will use the promise of imminent jobs as leverage to get their way. All this is crucial, because -- as we have been told by mine officials and politicians -- PolyMet is the "snowplow" paving the way for the eventual approval of Twin Metals and other mine projects. Rep. Rick Nolan hopes to expedite PolyMet's permitting by assuring us with this promise: "Make no mistake - the monitoring and enforcement process will be vigorous" -- and yet I see no serious effort to increase the funding for regulatory agencies nor any assurance that the Clean Water Act will be enforced with mine shutdowns and meaningful financial penalties rather than by tolerating violations and issuing variances. In addition, there is a very important new matter that is not considered in this FEIS, namely, the recent international climate change agreement. The carbon footprint of copper/nickel mining, including its sources of energy, will be enormous, flying in the face of our nation's commitment to reduce greenhouse	GEN	NS	X	1	

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	gasses. The sulfide-mine industry in NE MN should at the very least be put on hold until these critical issues can be resolved and until the mining technology has improved to minimize the very real risks of environmental degradation.					
Rev. Elton W. Brown	The Minnesota Environmental Rights Act states that economic considerations alone cannot justify the destruction of our precious natural resources. Clearly the PolyMet plan will result in environmental destruction and degradation (loss of valuable wetlands, loss of an important wildlife corridor, the huge amount of electrical energy needed, and the seemingly-inevitable long-term leakage of heavy metals and toxic water).	NEPA	S	O	2	SDEIS Comment #696. SDEIS Theme NEPA 09
Rev. Elton W. Brown	Where are the company's assurances of wage levels and benefits? Should there not be a realistic analysis of how many jobs will be offered to Iron Rangers (rather than commuters who are apt to spend most of their income elsewhere)? Further, is there any way to hold PolyMet (and its parent corporation) legally obliged to fulfill its promised local hires and wage levels?	SO	S	O	2	SDEIS Comment #698. SDEIS Theme SO 06
Rev. Elton W. Brown	If we permit this industry for the benefit not of the corporation but of the people of Minnesota, should we not raise the meager percent of taxes they will return to the state? An investigative journalism article in the Ely Timberjay (Jan. 17, 2014) reveals that local tax revenues generated by area taconite mines have been falling behind inflation, even as taconite prices have soared. It makes no sense to sell off these world-class non-renewable resources so cheaply.	SO	S	O	2	SDEIS Comment #702. SDEIS Theme SO 04
Rev. Elton W. Brown	Will PolyMet be willing to set aside enough money to completely pay for the monitoring of containment barriers, the quick repair of leaks caused, say, by some unexpected flood or earthquake of the century, the maintenance (and eventual replacement) of reverse osmosis installations, etc?	FIN	S	O	2	SDEIS Comment #704. Theme FIN 05, FIN 11
Rev. Elton W. Brown	Should not the public be told now how this huge sum of money will be paid and held safely in escrow for future maintenance and clean-up? Why is the SDEIS so vague on this critical and thorny issue? Any short-term financial benefits to Minnesotans will be more than negated in the long run if clean-up costs fall yet again on taxpayers.	FIN	S	O	2	SDEIS Comment #705. Theme FIN 01, FIN 10
Rev. Elton W. Brown	I also wonder if there is a way to hold the parent corporation legally responsible for future clean-up costs once the PolyMet subsidiary declares bankruptcy or simply dissolves when the North Met project is no longer profitable?	FIN	S	O	2	SDEIS Comment #707. Theme FIN 01
Rev. Elton W. Brown	The PolyMet PDEIS is inadequate in its failure to include an analysis of the costs of this mining proposal to the local economy. Is there a realistic estimate of lost income from tourism, fishing and hunting licenses, etc, should a large hunk of the Superior National Forest be lost to heavy industry?	SO	S	O	2	SDEIS Comment #708. Theme SO 02
Rev. Elton	Also, what protections and compensations are in place for the well water and air quality of the rural Babbitt and Embarrass homes which are just a few miles north of the project? Will the mining corporation have the requirement and the assets to	SO	S	O	2	SDEIS Comment #709. Theme SO 03

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W. Brown	purchase private properties whose value and livability are compromised by the PolyMet operations?					
Rev. Elton W. Brown	Does the SDEIS adequately disclose how much fuel will be burned by the huge shovels, trucks, and machinery used in the extraction, crushing, and transportation systems? Are the emissions of these vehicles added into assessment of the impact of the project to our air quality and haze? Also, in the light of the terrible recent chemical spill that has poisoned W. Virginia water, does the SDEIS include adequate safeguards for the transportation and storage of gas and oil (as well as any other toxic agents used in the mining process)?	AIR	S	O	2	SDEIS Comment 710. SDEIS Theme AIR 10
Rev. Elton W. Brown	Similarly, does this SDEIS adequately factor in the extra emissions put into our atmosphere by the power plants which must produce the huge electrical energy demand of the project?	AIR	S	O	2	SDEIS Comment 711. Theme Air 02
Rev. Elton W. Brown	Given that many children on the North Shore already have higher than average mercury levels, how can we allow the PolyMet plan to be so vague on the amount of mercury they will be adding to the environment?	SO	S	O	2	SDEIS Comment #714. SDEIS Theme SO 01
Rev. Elton W. Brown	Given the recent revelation that the Partridge River actually carries a much larger average flow than the numbers used in the SDEIS modeling, should not the company at the very least redo its environmental impact predictions by using more accurate data?	WAT	S	O	2	SDEIS Comment #716. SDEIS Theme WR 003
Rev. Elton W. Brown	should not the SDEIS include more details on what will happen when natural water levels are high? Specifically, when the mine experiences torrential rains (such as the recent flood that washed out bridges and undermined roads in Duluth), can we be assured that the containment dikes will hold, that all mining operations will cease until such time as the flood waters in the Partridge River have safely receded, in short, that PolyMet has a foolproof plan to avoid all unwanted discharges during the ever-more-frequent "storms of the century"?	WAT	S	O	2	SDEIS Comment #718. SDEIS Themes WR 057, WR 077, WR 180, WR 193
Rev. Elton W. Brown	This huge new kind of mining in Minnesota will require more site inspections and testing, by the DNR and other regulatory agencies. In this time when many politicians want to trim government taxation and spending, what assurances are in place to guarantee that budgets for timely monitoring will not be lowered but rather be raised to cover adequately the increased need of government regulation?	PER	S	O	2	SDEIS Comment 719, 1903. Theme PER 03
Rev. Elton W. Brown	What assurances do we citizens have that, should violations occur during the NorthMet project, the regulatory agencies will act quickly to shut down the mine until the problems are fixed (rather than issuing variances to allow the violations to continue)?	PER	S	O	2	SDEIS Comment #720, #1904. SDEIS Theme PER 03, PER 06
Rev. Elton W. Brown	in the long run the increasing noise, traffic, haze, and escaping toxins will make this area less attractive, leading to a loss of population. Baby Boomers who are thinking of moving and building here will look elsewhere, and even many of those who come here for the mining jobs will move on once the mine closes. Economic and population gains due to copper/nickel mining will be short-lived at best. How is it in our self-interest to put our growing diverse NE Minnesota economy at risk for the sake of the boom-and-bust extraction of non-renewable natural resources?	PER	S	O	2	SDEIS Comment #723. SDEIS Theme SO 01
Rev. Elton	As a very concerned property owner and tax payer of NE Minnesota, I ask you to not risk citizens' long-term health and	PER	S	O	2	SDEIS Comment #1905. SDEIS Theme SO 01

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W. Brown	investments for the sake of uncertain short-term financial gains. Please reject the PolyMet SDEIS.					
Zoua Her	Thank you Gov. Mark Dayton and Decision Makers for reading and considering my comments in opposition to the PolyMet Sulfide Mine. I have spent several hours learning about the issues, pros and cons around the PolyMet Sulfide Mine proposal and how metal mining companies have had a devastating legacy in how they have left other states like New Mexico, Arizona, Montana, South Dakota and Colorado. None of these states have been left cleaner, better or more prosperous because of metal mining passing and permitted in their states. With the same kind of tactics coming into our state, I fear for our people, the futures of our waters, wildlife and ecosystem which we love, depend on and are well known for. I care about the nature and beauty of what we have here. I am an Environmental Educator, and on behalf of all my students who love animals, nature and the wild outdoors and who are still discovering their own love for Nature, let me stand on their behalf too in this letter as the only one who is old enough to more fully understand the issues and make a public comment. I know that in 20 years when they are older, they will thank me and you for standing against the PolyMet Sulfide mine.	GEN	NS	X	1	
Joel J. Olander	It is apparent the environmental risks outweigh any economic benefit to Minnesota.	SO	NS	X	1	
Joel J. Olander	This is unproven technology and has not been successful in any other mine project.	PD	NS	X	1	
Joel J. Olander	It could take up to 500 years before the risks to our water are resolved.	PD	NS	X	1	
Tim Gihring	The FEIS analyzing the potential impact of an open-pit sulfide mine in the Superior National Forest has resulted in a document that is thick but not exhaustive.	GEN	NS	X	1	
Tim Gihring	The analysis does not appear to take into account recent failures of similar open-pit mine environmental controls, including the August 2014 collapse of the tailings basin at Mount Polley in British Columbia. This is the largest mining waste spill in Canadian history, and engineering analysis of the failure suggests that dry rather than wet basins would have made a difference — but neither PolyMet nor the DNR, in the FEIS, appear to have considered these lessons.	GT	S	O	3	SDEIS Theme GT 01
Tim Gihring	The FEIS concludes that water-treatment controls would need to be in place definitely but does not further analyze how this will be possible, punting some of this analysis to the permitting process. Unfortunately, this undercuts the entire analysis, let alone the statement that "the project as proposed meets state standards." There is a great deal we don't know and very good reasons we should find out: No business, after all, has existed indefinitely, or even for very long, particularly not mining companies. The greatest liability of the project, its indefinite need for water treatment, is among the least analyzed aspects of the project in the FEIS.	WAT	NS	X	1	
Tim Gihring	The DNR has suggested that it should be viewed as the independent, third-party evaluator of the project. This is fair enough, as far as it goes. But it doesn't go very far, apparently, since other independent analysis has been given short shrift, including the Great Lakes Indian Fish and Wildlife Commission's finding that water from PolyMet would indeed flow north into the	WAT	S	O	8	MDNR et al. 2015c

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	Rainy River watershed and in greater volumes than PolyMet claims. Why hasn't all analysis, competing conclusions or not, been reviewed and evaluated and explicated in the FEIS?					
Tim Gihring	Finally, the FEIS does not consider precedent that would be established by the project, which would be the first of its kind in Minnesota but almost certainly not the last if the project goes forward. This is not PolyMet's responsibility, of course, but it should be the DNR's. There are cumulative impacts, multiplying the volume of run-off and water-treatment needs, that should be considered.	PER	NS	X	1	
Liz Dahl	I oppose the PolyMet NorthMet copper-nickel sulfide mine. As a retired physician, farmer, land owner and tax payer I am appalled that our leaders are even considering a project that would inevitably destroy our natural resources including the BWCA, poison our drinking water, lower property values, damage our economy by eliminating tourism all for a few short term jobs in the "boom and then bust" mining industry. What kind of a legacy will the DNR, Army Corps of Engineers and US Forest leave for us? The answer is a super fund clean up site.	GEN	NS	X	1	
Liz Dahl	The FEIS water model is flawed in that it significantly underestimates the amount of untreated water that will escape and the direction it will flow.	WAT	NS	X	1	
Liz Dahl	Sulfide mining has never been done without wreaking environmental havoc. A stark example is the Mount Polly Mine Disaster in B.C. Canada.	GT	NS	X	1	
Liz Dahl	The hiring of the D.C. law firm Crowell and Moring which is heavily involved in the mining industry is unethical in that it has tipped the state's hand in favor of the mining interests. The conflict of interest that firm is ignoring is absolutely appalling to reasonable people.	NEPA	NS	X	1	
Liz Dahl	Can't we develop clean industry in Minnesota to create lasting jobs while protecting our land and water?	SO	NS	X	1	
Josh Gregorich	I am pleading with you for the sake of our children's, children's children and Minnesota to stop Polymet!	GEN	NS	X	1	
Josh Gregorich	I would like to ask you, is approximately 25 years of minerals and jobs (for a few hundred people) worth the risk of decades or centuries of water treatment and/or acid mine drainage into our ecosystem? I think not.	SO	NS	X	1	
Josh Gregorich	What do the people of Minnesota and the rest of the United States have to lose if any engineering control fails? This is a risk too great and the stakes too high. This risk is not only the surrounding and nearby ecosystem and people who reside there, but also the greatest fresh water lake in the world; Lake Superior.	WAT	NS	X	1	
Holly Buchanan	I share the informed opinion of thousands of others vehemently opposed to this project that its impacts will cause serious and lasting environmental damage for very negligible benefit to the people of Minnesota.	GEN	NS	X	1	
Holly Buchanan	Rather, the risk and burden fall to the people of Minnesota while the profits will accrue to a foreign corporation.	FIN	NS	X	1	

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Holly Buchanan	There is no amount of safety measures that can prevent any number of horrendous accidents from happening. This project amounts to the Minnesota equivalent of the Alberta tar sands oil fields or mountain top removal in Appalachia both of which have proven an ecological disaster and atrocity against the people living in the midst of them.	PD	NS	X	1	
Holly Buchanan	We can live without the minerals which would be extracted at enormous human and environmental cost in one of the last remaining wilderness areas of the United States.	NEPA	NS	X	1	
Charles Zeugner	I believe that the EIS is insufficient and inaccurate because it overstates results of modeling without accounting for disputable inputs, overstates the ability of the proposer to remediate without accounting for the economic viability of the proposer, and other issues.	GEN	NS	X	1	
Charles Zeugner	issue, the EIS make statements that discharges will be within acceptable levels and that environmental damage will be minimal. However, modeling is probabilistic and models can not make definite claims. They can only be used to estimate a range of potential outcomes. In addition, the models can only be as good as the inputs and underlying assumptions. The input data has been questioned, and the assumptions include dubious assertions such as water flowing up hill.	NEPA	NS	X	1	
Charles Zeugner	the proposer claims that environmental harm will be mitigated during and at project completion. Given that the current mine location has unremediated impacts, this claim sounds dubious. Further, neither this mining company, nor its major financial backer are adequately capitalized. Given the history of mining companies walking away from their projects, it is difficult to see how this will not occur in this case.	PD	NS	X	1	
Charles Zeugner	it is worthwhile to question choosing sulfide mining and expected environmental damage over clean water and a thriving tourism industry.	SO	NS	X	1	
T. Chandler	One of the glaring problems is omission of accurate, recent groundwater elevation data. To rely on 10 year old data is not only ridiculous, it's unethical. No ethical scientist or engineer would stand by an "estimated" groundwater contour map and no ethical company would not spend the money to gather real, current data. With all the exploratory drilling, where are the actual groundwater data?	WAT	S	O	2	FEIS Theme WR 003, WR 004
Christopher Garza	I think that PolyMet's mining plan provides too many risks to the ecosystems and the organisms that are dependent on it. I would be remiss if I did not try to protect it so that others could share some of the same kinds of experiences that I had during my summer in the BWCAW. I would expect that the Forest Service would do what is right for land that they are supposed to manage and protect instead of putting it in danger.	GEN	NS	X	1	
McCabe Susan	If we think about the amount of fresh water on this planet (very little) and the number of people who need it, we would never do anything to pollute any of it, especially in a sensitive area that runs into Lake Superior.	WAT	NS	X	1	
McCabe Susan	The worst part would be taxpayers having to pick up the continued clean up (forever) should the company go bankrupt. Is this worth the risk? For what? A company to make money?	FIN	NS	X	1	

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Patricia Coppo	It is impossible to guarantee that the PolyMet mining operation will never have an accident that would result in catastrophic damage to an environmentally sensitive water shed.	PD	NS	X	1	
Patricia Coppo	This is our last opportunity to halt an operation that will provide a small number of potentially temporary jobs but risk irreparable damage to a precious resource enjoyed by many.	SO	NS	X	1	
b4holden@gmail.com	The proposed mine is too close to the bwca area to even think about allowing a permit.	WILD	NS	X	1	
b4holden@gmail.com	Will the Glencore company bank the hundreds of millions of dollars of security?	FIN	NS	X	1	
b4holden@gmail.com	Copper nickel mines around the world have an abysmal history of leaving destructive pollution behind. !	PD	NS	X	1	
b4holden@gmail.com	Demand the companies prove their ability to have a "clean" mine somewhere else before they start taking sulfide rock out of the ground near the bwca.	NEPA	NS	X	1	
Deborah Huskins	The Final Environmental Impact Statement (FEIS) is inadequate in many respects. I will list only several of the many topics on which the analysis presented in the FEIS is inadequate. Given the virtually permanent and predictably devastating consequences of "getting it wrong," basing decisions on inadequate analysis or foundation is foolhardy. The DNR, US Army Corps of Engineers and the US Forest Service should decide that no amount of analysis can adequately protect the environment and the people of Minnesota from the likelihood of acid mine drainage from the NorthMet Mining Project (hereafter termed "Polymet"), and reject the project entirely. At the very least, these agencies should insist on further analysis by independent experts, not those employed by or paid by Polymet.	MEPA	NS	X	1	
Deborah Huskins	the FEIS does not respond fully to many concerns and objections raised by commenters in earlier stages of the environmental review process. In my comments below, I have pointed out several topics on which this occurs.	MEPA	NS	X	1	
Deborah Huskins	I also would like to comment on the Fact Sheets. While they are helpful in summarizing information regarding their respective subjects, they read like marketing materials prepared by Polymet. They assume that all actions implemented will work as planned, no unforeseen natural or man-made disasters will happen that cause the assumptions to be wrong. They assume that Polymet "would do" everything it says it will.	O	NS	X	1	
Deborah Huskins	The FEIS is inadequate because it fails to fully acknowledge the risks of pollution to both surface water and ground water of acid mine drainage from Polymet. The impacts of methylmercury and asbestos-like particles, as well as heavy metals on humans, on wild rice, and on the fish and other flora and fauna in the watershed are minimized by the FEIS. Particularly, the likelihood of increased mercury contamination and its effects on human health is not adequately addressed.	WAT	NS	X	1	
Deborah	The FEIS does not adequately respond to the comments submitted by respected medical professionals and associations of	MEPA	S	N	2	SDEIS COOP Response #19676

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Huskins	medical personnel. Nor does it adequately respond to the Tribal agencies' comments and the concerns they raise.					
Deborah Huskins	Three state agencies that recently backed down on their request for much more rigorous health impact analysis of the entire project offer unpersuasive rationales, apparently bowing to political pressure. This is dangerous. If Polymet proceeds and these pollutants enter the watershed, there is no way to "undo" the damage. There is no "rewind", and the damage will have been done. The cumulative effects of these pollutants over time can be even more damaging.	HU	NS	X	1	
Deborah Huskins	The FEIS states that, throughout the duration of the project, measures would be taken to eliminate or reduce the effects on the environment. Mercury contamination can be generated by other sources far away, including activities even thousands of miles away. Increases from these other sources should be anticipated as reasonably foreseeable. Polymet's proposed measures should be evaluated not in isolation, but assuming that they should be sufficient to counteract the effects of the totality of mercury contamination.	MERC	S	N	8	SDEIS Themes AQ 28, MERC 09
Deborah Huskins	There are a number of ways in which contaminated water can seep--or flow, if retainment measures fail--into the surrounding surface and/or ground water. Polymet asserts that the dirt and clay trench around portions of the tailings pile(s) will be adequate to capture virtually all of the contaminated water seepage produced over the period of operations. This strains credulity as well as the experience in other mines, as commenters have pointed out. There are fractures underneath areas in which tailings will be stored. Linings of basins will not last for as long as the potential for contaminated water seepage—500 years or longer. Many commenters raised concerns about these conditions and Polymet's overly optimistic predictions; the FEIS does not adequately address these concerns.	WAT	S	O	3	SDEIS Theme WR 019
Deborah Huskins	The FEIS asserts that financial assurance, protecting Minnesotans from having to pay the costs of maintaining water treatment, conducting clean-up and remediating damage (if that is even possible), will be adequate. It also states that financial assurance provided by Polymet would ensure (the FEIS's word) that environmental management, including planned water treatment, would continue for "as long as needed." How can that be, when the costs are not known, and the duration of the need to continue water treatment is not known? It could be well beyond 500 years. Financial assurance must be sufficient to continue mechanical water treatment indefinitely.	FIN	S	O	8	SDEIS Theme FIN 06
Deborah Huskins	Full examination of the financial assurance needed from Polymet should be undertaken at this stage, not at a later stage of the permitting process. And, "planned water treatment" may not be sufficient—it certainly is conceivable that environmental standards might change, or that the "planned water treatment" turns out not to be adequate.	NEPA	S	O	8	SDEIS Theme FIN 03
Deborah Huskins	The proposed exchange of land with the Superior National Forest is not an even exchange, and will not produce an equivalent amount of high quality wetlands in other locations. 913 acres of currently high quality wetlands will be directly affected and permanently damaged. Reclamation after the damage has been done will not restore the wetlands to what they are now, before the damage occurs.	WET	NS	X	1	

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Deborah Huskins	The possibility of northward flow of contaminated water toward Birch Lake and the watershed of the Boundary Waters Canoe Area Wilderness has been raised, and the solution offered is that the water flow will be "monitored." If monitoring finds that northward flow is happening, how quickly can sufficient measures be in place to stop it? Will the monitoring be continuous? And for how many years? Who will do the monitoring, and will there be adequate funding to make sure the monitoring is as effective as possible for as long as is needed? How long is that? Contingency measures should be in place to stop any northward flow before it happens.	WET	S	O	8	MDNR et al. 2015c.
Deborah Huskins	The mine site groundwater models need to be reconfigured to contain realistic water levels in the P-M taconite pits, both for a "current conditions" model and a "closure conditions" model, not the 1996 water levels that were unusually high. The predictive MODFLOW modeling for the closure period must use the correct closure water elevations for the P-M pits which are 300 feet lower than the unusually high 1996 levels that are used for FEIS predictions. Sensitivity analysis and adaptive management cannot be substitutes for consistent and rational characterization of site hydrology	WAT	S	N	12	Sensitivity runs of the Mine Site MODFLOW model predictions for pit inflows were conducted for the Final EIS; see pages 5-35 through 5-37. DNR asserts that the information allows adequate consideration of factors related to the sizing and effectiveness of the proposed WWTF system consistent with the Final SDD. DNR has not assessed the potential quantity of water that might be associated with a potential northward groundwater flow in bedrock under Peter Mitchell Pit closure conditions. Although not assessed quantitatively, DNR has considered potential future operations at the Northshore Mine against information that is available. DNR acknowledges it cannot rule out that future operations at the Northshore Mine could induce northward groundwater bedrock flow from the NorthMet Mine Site. See Final EIS Section 6.2.2.3.1. This might happen if there is insufficient natural downward leakage into bedrock from the overlying wetlands and surficial materials between the proposed NorthMet Mine (in closure) and the Northshore Mine (in future operations and closure. If there is sufficient downward leakage, then there would be groundwater flow divide between the two mines where there is no continuous one-way flow between the facilities. If natural leakage is insufficient to maintain a groundwater flow divide between the two facilities, then it is possible a northward groundwater flowpath would be present. DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Regarding detection of any northward flow, it is reasonable for the Final EIS to detail in Section 5.2.2.3.6 specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of

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						the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Regarding prevention of any northward flow, it is reasonable for the Final EIS to detail in Section 5.2.2.3.5 the types of known measures that could be applied if a potential for northward flow is detected. The possibility of northward flow between the proposed NorthMet Mine and Northshore Mine is speculative and is not reasonably foreseeable with current information. If there were a potential for a northward flow path it would be happening at present. For the NorthMet project there is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When this might occur is not known, but it is most likely to occur after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. There would be ample opportunity to collect necessary data, and complete applicable environmental review and/or permitting prior to the development of a northward flowpath, including preparation of an EIS supplement if the conditions of Minnesota Rules, part 4410.3000, subpart 3 are met.
Deborah Huskins	The analysis uses our existing climate to estimate the impacts of precipitation. This is inadequate. The effects of climate change 50 years, and 100 years, etc., from now could change precipitation patterns dramatically or cause calamitous weather events. Polymet's proposed measures to prevent discharge of, and to treat, contaminated water could be compromised. The question "what if" should be asked and various potential scenarios developed, then measures adequate to address the possibilities of environmental damage in those circumstances should be developed.	WAT	S	O	8	SDEIS Theme WR 077
Deborah Huskins	The FEIS analysis relies too much on Polymet and its paid consultants. Independent verification of the modeling, analysis, and verifications should be undertaken.	WAT	NS	X	1	
Deborah Huskins	In addition, the diligent, independent regulatory oversight needed from our federal and state agencies must be ensured. Too often, we have experienced state agencies not able to fulfil their oversight responsibilities, for various reasons (lack of adequate resources, political pressure, press of other priorities, etc.), We also have seen a history of waivers or variances granted, avoidance of sanctions, and unwillingness to hold polluters to obey the law. The environment threatened by Polymet is too precious to risk anything less than full, diligent, attentive monitoring and follow-through by the agencies responsible.	PER	NS	X	1	

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Deborah Huskins	Polymet proponents point to the jobs that will be created by the project. These jobs will not materialize all at one time, nor will they all last for 20 years, the expected years of operation of the mine. Risking the thousands of jobs in parts of the economy that are not subject to a “boom-bust cycle”, including but not limited to those tied to hunting, fishing, wilderness exploration, for a few years of here-and-then-gone jobs is foolhardy. The economic benefits of a Polymet operation should be compared to the economic benefits to the rest of the economy of NOT proceeding with Polymet. This comparison should not only assume a successful operation and favorable market, it should also be done assuming that Polymet is floundering, the market for the copper, nickel, and other minerals is tanking, and the acid mine drainage is damaging the environment—if the environment that the other sectors of the economy depend on is damaged, the economic effects will be stark and long-lasting. Moreover, there is no assurance that the market will sustain operations for 20 years. We should learn from the current crisis in ferrous mining and the layoffs of hundreds of people on the Iron Range. Why should we create yet another industry that is subject to such widely fluctuating market conditions, with the severe economic hardships that result, and that themselves result in further social impacts?	SO	S	O	6	SDEIS Theme SO 04
Deborah Huskins	I hope that the DNR, USFS, and USACE will give careful consideration to comments of caution and concern. As I said above, the damage cannot be undone, once it occurs. The Northern Minnesota environment that could be impacted is too precious to risk.	GEN	NS	X	1	
Michelle Lechner-riehle	Mines in Colorado and other states where mining was common are still toxic. Recently toxic waste was released into a stream in Colorado, sending a green stew with heavy metals into water used by many communities downstream. I hope we will learn from past mistakes rather than repeating them endlessly until our planet is no longer habitable.	GEN	NS	X	1	
David Reisenweb er	I’ve lived through one 200-year and two five-hundred year precipitation events within a twenty-year period. The results of these events are impossible to prepare for or to remedy. I see no mention of such things in the FEIS, nor do I see any attempt to deal with them. The results of these numerous failures have been catastrophic. When they occur, they will be “permitted” disasters, not natural disasters. They will do immeasurable harm to the water resources and to the economic wealth of northeastern Minnesota. Do not approve sulfide mining, which would destroy the vital resources that make this area unique and poised for sustainable growth.	WAT	S	O	6	SDEIS COOP Response #17903
David Reisenweb er	Sulfide mines in Minnesota would be used as a supply of last resort, because lower cost areas will always be mined first. Technological advances and ever-larger machinery will continue to eliminate job opportunities in mining. Sulfide mining in our high-cost, water-rich area will only bring more promised booms and certain busts in our unique region, where we should be capitalizing on our natural resources, not destroying them. Reject the PolyMet NorthMet Project.	WAT	S	O	6	FEIS Section 5.2.10
dennis hatleli	the greatest threat posed by sulfide mining is AMD (Acid Mine Drainage) which can persist in the environment for hundreds if not thousands of years during which it will continue to poison water resources. AMD occurs as mountains of sulfide-bearing waste rock created in the mining process are accidentally exposed to air and water. The EIS describes no foolproof technique for preventing this exposure nor does it name any technology that has ever been developed to stop this process once it has begun. Furthermore no example is given of any sulfide mine that has ever succeeded in preventing this from occurring.	WAT	NS	X	1	

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Kevin Heaslip	This paper is an attempt to comment on the proposed copper-nickel strip mine and accompanying land exchange in Northern Minnesota. The task of reading 3500 pages and then annotating this tome may result in an incomplete analysis. I need additional time to study the FEIS. Such an important issue cannot be rushed; if public comment is truly desired, then more time is necessary.	GEN	NS	X	1	
Kevin Heaslip	Water is a vital resource, and the high quality water in the Rainy River watershed and Lake Superior watershed is even more valuable than copper, nickel and other metals. Sulfide mining has never been safely done. The proposed PolyMet mine would expose a massive amount of tailings and waste rock to the elements. Acid mine drainage and heavy metal pollution will have to be monitored for centuries. Risking high quality water for short-term economic gain is a poor trade.	WAT	NS	X	1	
Kevin Heaslip	PolyMet wants to strip mine instead of mining underground. PolyMet intends to use a wet tailings basin and not the safer dry stack tailing filtering process. PolyMet claims it will monitor the tailings basin and treat affected water for hundreds of years. While PolyMet says that reverse osmosis will effectively treat tainted water, reverse osmosis has never been attempted on such a huge scale; reverse osmosis may well be too expensive to use. PolyMet has not given financial assurance to cover centuries of tailings basin containment.	FIN	S	O	6	SDEIS Theme WR 143
Kevin Heaslip	The proposed land exchange of 6500 acres of Superior National Forest land is not in the public interest. The land was initially purchased for watershed protection. Changing public ownership to private ownership would result in a loss of Federal protection. The U.S. Forest Service is obligated to protect the great worth of the Superior National Forest.	LAN	S	O	2	SDEIS Themes LAN 01, LAN 02
Kevin Heaslip	Wetland losses on this large mining undertaking would be significant. The Army Corps of Engineers is the land steward, and should protect the Superior National Forest ecosystem.	WET	NS	X	1	
Kevin Heaslip	The FEIS does not speak to the degradation and loss of water resources. Allowing high quality water to be degraded is not in the public's interest.	WAT	NS	X	1	
Gail C. Roberts	The Final Environmental Impact Statement (FEIS) for the PolyMet/NorthMet Project and Land Exchange does not meet adequacy standards and should not be approved.	MEPA	NS	X	1	
Gail C. Roberts	There still remain significant issues associated with FEIS and all alternatives were not examined fully.	ALT	NS	X	1	
Gail C. Roberts	1. It is stated in the FEIS that the underground mining alternative was ruled out because PolyMet could not afford the cost of developing an underground mine. It appears that rather than incurring the cost of an underground mine, PolyMet and associates are being allowed to claim they can provide high remediation costs in perpetuity rather than investing money in developing a mining project that would have reduced environmental impact in the first place. Long-term monitoring and remediation require considerable financial assurance for the State of Minnesota and likely an amount beyond the resources and capabilities of PolyMet and associates to provide. The untapped mineral resources of Minnesota should remain intact until such time as more well-tested methods of mining and containment of acid-mine waste are available. During that time market forces may change so that underground mining of the known mineral deposits will become economically feasible	PER	NS	X	1	

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	and be safer for the environment in the long run.					
Gail C. Roberts	Modeling in the FEIS is based on sparse data, and on unrealistic and unverified assumptions. Much of the modeling is based on insufficient amounts of data (e.g., insufficient number of monitoring wells for ground-water), and failure to use all of the available data for the stream flow (as pointed out by GLIFWIC). Other parts of the modeling are based on unrealistic and unverified assumptions related to the theoretical and untested nature of the project design. Research and development should occur before the project begins rather than relying on monitoring systems after mining starts (with all the potential risks) to confirm modeled predictions.	MEPA	S	O	7	SDEIS Theme WR 071
Gail C. Roberts	Despite more discussion about Financial Assurance in the FEIS than was provided in the SDEIS (Section 3.2.2.4), there still is the lack of specific financial information about the financial resources of PolyMet and associates (e.g., Glencore), and no detailed risk/benefit analysis from a state perspective. Citing the reference to statute and rules that “financial assurance criteria require that funds must not be dischargeable through bankruptcy and are fully binding and enforceable under state and federal law” makes no sense if the corporations do not have sound financial resources adequate to provide financial assurance of the quality specified in the quoted rule. Financial assurance must be provided up front. This issue is basic to the adequacy of the FEIS and needs to be addressed at a stage before the permitting process.	FIN	S	O	8	SDEIS Theme FIN 02
Gail C. Roberts	CR01 – This thematic response is not pertinent to the substance of the issues that I raised in my comments (18052, 18512, 18531, 18537). Using key words such as “Native American” or “Treaty Rights” does not address the underlying issue or concern which was acid mine drainage in three of the four comments. Relying on a computerized, content analysis method of responding to comments results in overly-generalized responses rather than specific responses to comments.	MEPA	S	N	2	SDEIS Themes WR 025, MERC 08, AQ 08
Gail C. Roberts	FIN01, FIN08, FIN10, FIN14 – The explanation of financial assurance given in Section 3.2.2.4 of FEIS is not adequate in addressing the substantive concerns that were raised (18062, 18601,18603,18604). If PolyMet and its corporate sponsors and investors do not have sufficient financial resources to even explore the underground mining alternative, how are they going to have sufficient financial resources to provide financial assurance to the state for indefinite, long-term environmental monitoring, remediation and reclamation?	MEPA	S	O	2	SDEIS Theme FIN 02
Gail C. Roberts	HU01 – A large number of health experts (including the Minnesota Commissioner of Health) called for a comprehensive Health Impact Assessment (HIA) that should have been conducted as part of the FEIS. Deciding that the environmental review process had already started and that conducting a HIA would lead to delays is NOT the way to reassure people that protection of human health for current and future generations is a priority.	HU	S	O	8	SDEIS Theme HU 01
Gail C. Roberts	LAN03, LU06 – The wetland quality of the dispersed parcels of land is not comparable in quality to the wetlands that would be lost. The thematic responses do not discuss the negative impact on the St. Louis River Watershed, given that most of the	WET	S	O	8	SDEIS Themes WET 07, WET 15

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	lands proposed for replacement are in different watersheds.					
Gail C. Roberts	NEPA14 – The thematic response (with details in NEPA09) to the underlying concern in my comments (18064 – PolyMet has yet to provide a scientifically-valid plan to mitigate the disastrous long-term environmental effects of their proposed sulfide mining project) does not address the scientific validity of the plan. Specifically, the unsupported assumption that all mitigation measures will perform perfectly in perpetuity is not realistic. Claiming that these issues and concerns will be addressed during the permitting process is not an adequate response.	NEPA	S	O	8	SDEIS Theme FIN 08. PolyMet 2015d
Gail C. Roberts	PD01, PD10 – Although some changes were made in the proposed plan from the SDEIS to the FEIS, the design is largely theoretical and unproven in actual mining operations.	PD	NS	X	1	
Gail C. Roberts	SO01 and SO02 – The thematic responses to my comments about economic impacts (18040, 18060, 18598, 18599) address only a “best case scenario” and assume that mitigation measures are going to work perfectly all of the time. The long-term impact on the BWCA if contaminated water enters an aquifer flowing north (as in the recent GLIFWIC analysis of water flow) and the subsequent socio-economic impact on tourism and recreation can not be easily dismissed and should be studied further.	PER	S	N	11	DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected.
Gail C. Roberts	VEG01,WI01, WI02, WI03, WI10 – The importance of the mine site and tailing basin areas as part of a significant wildlife corridor has not been adequately addressed and mitigation measures have not been proposed. The underground mining alternative was not fully examined to determine if the effect on wildlife and eco-systems could be lessened.	ALT	S	N	8	MDNR et al. 2013a. Final EIS Section 6.2.5.4.2 addresses potential cumulative effects to wildlife corridors. Project-related impacts would principally be noise and disturbance effects. SDEIS Theme ALT 01
Gail C. Roberts	WILD01 – The thematic reponse to my comment (18041) is not adequate to address the concerns that have been raised related to the loss of 6,700 acres of public land in the Superior National Forest. The unintended consequences of environmental degradation of the BWCA due to likely northward flow of some contaminated water from the mine site and tailings basin have not been addressed (See GLIFWIC analysis of water flow).	WET	S	N	8	MDNR et al. 2015c. DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected.
Gail C. Roberts	WR059 – The thematic response to my comment (18523) refers to details about the GoldSim model. Output from the MODFLOW modeling is used as input for the GoldSim model. Since the MODFLOW modeling is based on a number of	WAT	S	O	8	SDEIS Theme WR 018

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	unverified assumptions about the theoretical, but untested, design of the tailings basic seepage capture system, the results of GoldSim model are suspect and unverifiable.					
Gail C. Roberts	WR107, WR108, WR 111, WR141 – The acknowledgement in the FEIS that the bedrock under the mine pit and tailings basin is cracked and somewhat porous leads to further concern about the potential leakage and contamination of the groundwater (and possibly drinking water) in areas to the north of the mine site. Stating that “If it is predicted that water via bedrock would flow north from the Mine Site, mitigation would be implemented to prevent this from occurring” (page A-623) is not an adequate response. The mitigation measures must be specified in advance for this scenario, which has such serious consequences for water quality and human health.	WAT	S	O	8	SDEIS Theme WR 019
Gail C. Roberts	The FEIS is not adequate for the following reasons: • The scattered parcels of land being proposed as a land exchange are not an adequate replacement for the high-quality wetlands and habitat that would be lost. • The impact of the proposed PolyMet project on fish and wildlife populations is considerable and provisions for protection of this valuable natural resource are not adequate. • The ability of the Department of Natural Resources to ensure environmental integrity for significant parts of northeast Minnesota and to see that the area is returned to its natural state after mining would be seriously compromised if this project goes forward. • A foreign corporation should not be allowed to extract Minnesota’s natural resources on public lands for private profit and then leave Minnesota taxpayers with the pollution, waste, and long-term expense of reclamation and cleanup. • Minnesota’s existing financial assurance statutes are not sufficient to protect taxpayers and citizens of the state from this type of mining. • A Health Impact Assessment (HIA) should have been conducted on a project of this magnitude with such serious long-term health effects. • It is morally and ethically irresponsible for state agencies charged with protecting Minnesota’s natural resources to allow a project with such potentially deleterious effects on future generations to be permitted. The Minnesota Department of Natural Resources is charged with the protection of the state’s resources for all the inhabitants of the state. The Federal Agencies involved have responsibilities for managing our national forests, wetlands, and water resources. The short-term financial gain of a mining company and foreign corporation should not trump the long-term stake that all of us have in protecting our natural resources for future generations.	GEN	NS	X	1	
Aaron Poznanovic	Recent research has shown that PolyMet’s water flow analysis is flawed and is indeed likely to flow toward the Boundary Waters Canoe Area Wilderness.	WAT	NS	X	1	
Scott William Mills	It fails to accurately predict total volumes and direction of flow of untreated water, both during and after operations. Liners and existing LTV tailings pond are assumed to function as predicted with new tailings impoundment over it. Surface water levels predicted in the EIS are in doubt.	WAT	S	O	2	SDEIS Theme WR 056
Scott William Mills	It fails to accurately assess the stability of wet stacking tailings both during and after operations. Current mining technology failed at the Mount Poly site in Canada with a tailings collapse.	GT	S	O	2	SDEIS Theme GT 01
Scott William	It fails to accurately assess creation of methyl mercury and the inclusion of heavy metals in downstream water systems,	WAT	S	O	2	SDEIS Themes WR 160, WR 197

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Mills	both North and South of the mine site.					
Scott William Mills	It fails to evaluate the impact to state finances for an acknowledged indefinite future of continued treatment of runoff water.	FIN	NS	X	1	
Scott William Mills	5) Given items 1,2 and 3, the loss of ecological resources was not adequately assessed.	GEN	NS	X	1	
Scott William Mills	Given items 1,2 and 3, the risk to human health was not adequately assessed.	HU	NS	X	1	
Henry V. Mott	While I understand the desire to provide needed metals obtained through this project for use by our society and the desire to provide jobs for individuals in Minnesota's Iron Range, I find that the measures planned to protect the sensitive environment within which the mine site is situated will fall short. I strongly caution that if this project is allowed to go forth as planned, Minnesota will join the ranks of the many states in the Western Intermountain and Appalachian regions of the U.S. that currently must deal with one or more acid rock drainage superfund sites.	GEN	NS	X	1	
Henry V. Mott	PolyMet's geochemical modeling suggests that after a period of some 200 or so years, the water in the pit might be of quality to allow for discharge without treatment. While I am not privy to the details of PolyMet's modeling efforts, I do fully understand the combination of limnological and hydrogeochemical processes involved in converting sulfide in exposed rock to sulfate and acid. The state of quantitative understanding of the sulfate producing process in deep water bodies is in its infancy. These predictions are nothing more than educated wild guesses. Basing a vital "here and now" decision, to allow the west pit to fill and behave entirely on its own volition, on the model prediction that west pit water quality would improve significantly over the next five centuries seems overly optimistic. The west pit, like all deep lakes in the northern U.S., would be dimictic. Each fall prior to freeze over the strong summer thermocline would disappear, and then in the spring, subsequent to ice-out, the weak winter thermocline would disappear. In the absence of the thermocline the combination of convective mixing due to thermal gradients and advective mixing due to wind action would lead to a brief condition wherein the pit would be completely mixed. Oxygen from the atmosphere would saturate water at the surface and that oxygen-saturated water would then be mixed throughout the water column, replenishing hypolimnetic saturation deficits brought about by microbial activity during isolation of the hypolimnion from the atmosphere by the thermocline. As a consequence, twice per year, each and every year, the depths of the west pit would be replenished with oxygen, providing the terminal electron acceptor for the electrons obtained by microbes from sulfide for their metabolic processes resulting in conversion of sulfide to sulfate and acid. As sulfides are leached from the geologic formations, the formations themselves would deteriorate at the solid-water interface, exposing additional fresh sulfide minerals to the microbial populations responsible for the acid-production process. This process would continue as long as the lake exists. The character of the ARD filling this pit can be exemplified by the ARD filling Montana's Berkely pit. What's in store for this sensitive Northern Minnesota ecosystem is hypolimnetic water with pH ~2.5, specific conductance of ~8600 microSiemens	FIN	S	O	8	SDEIS Themes FIN 04, FIN 06

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	<p>and redox potential of ~630 mV; epilimnetic water with pH ~2.5, specific conductance of 7900 microSiemens and redox potential of ~670 mV; and, overall, water with copper and zinc concentrations between 150 and 200 and between 500 and 600 mg/L, respectively (http://www.mbmgt.mtech.edu/env/env-berkeley.asp, accessed 12/19/2015). The combination of redox potential and pH define a condition for which electron acceptors more thermodynamically preferred than sulfate would be present and for which sulfide, if present and accessible by the microbial population, would be a major electron donor. As long as the electron acceptors are present and as long as the sulfide is accessible, the acidification process would continue. The character of the ARD in Montana's Berkely pit is entirely consistent with the set of cyclic limnologic processes described in the previous paragraph. This pit lake exists, it is a major problem in Montana, and the US EPA and the State of Montana have no really good plan as to how to deal with the pit waters when it fills and begins to overflow. This situation is what would be in store for Minnesota if PolyMet's west pit is left open and allowed to fill and then overflow. The only measure standing between this acid generating situation and Minnesota's sensitive water resources is PolyMet's assurances that they would be around to fund and operate a treatment plant as long as is necessary. The mining industry has a strong track record for folding up holding companies and disappearing as soon as all the profits have been made. A simple filing of a Chapter 11 bankruptcy would transfer the responsibility to taxpayers of the State of Minnesota. Mining the sulfide-laden ore and leaving this pit open would be an environmental travesty committed right under the noses of the government whose responsibility is to be stewards for the environmental resources of the State of Minnesota.</p>					
Henry V. Mott	<p>Category 1 waste rock is segregated from category 2-4 waste rock based on perceived reactivity, with category 1 being the lowest reactivity category. Key to this discussion is that category 1 waste rock could be and likely is reactive (Johnson, 2014). Certainly, the process of segregating the various categories of waste rock is not perfect. Segregation is based on a few tests and extrapolation of the results of those tests to define general locations within the geologic formations in which rock would be predicted to exhibit the various reactivities. Truly accurate categorization requires extensive testing, hardly feasible, of excavated samples at the time excavation and stockpiling occurs. Then, certainly, the category 1 waste rock pile could contain pockets of waste rock that are moderately to even highly reactive. Once acid production would begin in these "hot spots", additional acid production would be kick started in waste rock that is of lower sulfide content. Translation: there could (and undoubtedly would) be significant quantities of exposed sulfide bearing rock in the category 1 waste rock stockpile that would catalyze acid production throughout the entire pile over the course of the storage period planned to last forever.</p>	WAT	S	O	8	SDEIS Theme WR 134
Henry V. Mott	<p>Although PolyMet's plans have been upgraded to improve the isolation of the waste rock pile from infiltrating water and to collect leachate produced by water entering the pile, the solution is still based on a "business as usual" approach of leaving the mining mess strewn over the surface of the Earth. The geomembrane cap is intended to isolate the waste rock from the environment in perpetuity. This geomembrane liner is similar in materials and configuration to a roofing membrane that is used to isolate the contents of a building from rain and snow.</p>	WAT	S	N	8	PolyMet 2015d Section 3.2.2

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Henry V. Mott	While the environment beneath the soil cover would be more protective of the geomembrane than the mineral cover over a typical membrane roof system, root penetrations, the actions of burrowing animals and insects, freeze-thaw cycles, differential consolidation of the waste rock itself, microbial attacks on the organic materials of the membrane and numerous other processes un-thought of at this writing would over time compromise the geomembrane. PolyMet's plan calls for twice yearly monitoring of vegetative cover protecting the cap to ensure woody growth does not occur – will PolyMet be around to do this in perpetuity? I think not. The isolation system will eventually fail and precipitation and oxygen will enter the waste rock pile. Sulfide will be converted to sulfate and toxic, acidic leachate will be produced. The net effect of isolation of this waste rock pile with a geomembrane will simply be to delay the inevitable production of acidity within the pile for decades, perhaps even a century or more. Then when the geomembrane does fail, long after PolyMet is no more, Minnesota's water resources will be adversely impacted by the acid oozing from this waste rock pile.	WAT	S	O	8	PolyMet 2015d pg. 9; SDEIS Themes FIN 04, FIN 06
Henry V. Mott	PolyMet's proposed system to deal with this inevitable production of leachate - hydraulic isolation and capture for mechanical/passive treatment - relies upon the same, likely "here today and gone tomorrow", water treatment system that is proposed to protect the environment from the acidic west pit water. The term "industry standard" is used in responses to queries by cooperating agencies to describe this set of waste rock pile reclamation measures. Here, industry standard simply means a small improvement over "business as usual" which is to excavate materials, scatter them on the Earth's surface and leave them there with protections only as adequate as required to get through the active and near-term post mining periods. Mining's "business as usual" practices have historically and universally resulted in severe environmental problems everywhere the mining industry has unearthed sulfide-bearing geologic formations. This waste rock pile should not be left (in any way, shape or form) strewn upon the surface of the Earth.	PD	NS	X	1	
Henry V. Mott	PolyMet proposes to use the existing tailings impoundment created from the mining and processing of iron ores for the final disposal of its sulfide-bearing ore tailings. The reasoning set forth is that the Earth is already spoiled by this impoundment and further use, as a repository for the far-more-reactive sulfidebearing tailings simply makes sense. Here the distinction must be made that taconite tailings are virtually non-reactive, containing little if any sulfide ARD-producing or other toxics-producing mineral. The existing tailings impoundment is largely only an eyesore. Conversely, the tailings from the processing of PolyMet's sulfide ores will potentially (and very likely) be far more reactive, containing large quantities of metals. The differences between the existing taconite tailings and the proposed sulfide ore tailings are like night and day, perhaps on the order of the chemical difference between sodium bicarbonate and sulfuric acid.	WAT	NS	X	1	
Henry V. Mott	PolyMet's plans include attempts to isolate the tailings from atmospheric oxygen by amending the cover with bentonite. Perhaps PolyMet's engineers are not completely familiar with the specific properties of bentonite. Saturated bentonite (the mineral montmorillonite, most often in the sodium form) gels hold intercalated water within a layered-silicate structure. Hydrated cations and (their associated water of hydration) are held near the silicon-oxygen layers by negative charges arising from isomorphic substitution of iron (II) and magnesium for aluminum (III) in the octahedrally-coordinated inner (sandwiched between two silicon-oxygen layers) layer of the mineral. Water also bonds with the negatively charged layered structure. The immobilization of water by this bentonite gel is largely responsible for the ability of bentonite-amended soils to retard through-migration of water. The actual overall porosity of such mixtures is near that of the native soil. However, when unsaturated, the bentonite no longer retains its continuous gel properties. Then, the ability of the bentonite-amended	WAT	S	N	8	See Thematic Response WR 060-2. See PolyMet 2015d, Section 5.2.2.

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	soil to retard through-migration of gases is no better than that of the native soil. Thus, unless bentonite-modified soils are maintained in a fully-saturated state, there is no real advantage to bentonite amendment for improving transport resistance to gases. Thus, PolyMet's proposed use of bentonite as a means to isolate the contents of the tailings impoundment from oxygen will be ineffectual. Consequently, oxygen, as a terminal electron acceptor for the sulfide to sulfate conversion process, will be present in the tailings impoundment. Infiltrating precipitation will contact the contents of the tailings impoundment and produce toxic ARD leachate.					
Henry V. Mott	PolyMet's examinations of the leaching character of tailings relies upon average values of final sulfide content of tailings to make predictions of acid leaching character (RS54/RS46, 2007). Neither the ore processed for metals recovery nor the processing itself will be totally consistent so there will be perhaps large variations in the sulfide content of the tailings. PolyMet's plan is for the taconite tailings to be a sink for acidity that might form during the mining and post-closure period. Modeling reported in RS54/RS46 is at best a scientific best guess for the behavior of the overall system.	WAT	S	N	8	The GoldSim model utilized 216-413 weeks data from 22 PolyMet tailings humidity cells (7 fine, 14 coarse) from pilot plant runs with %S from 0.06 to 0.14 (PolyMet 2015q, Large Table 4). From these humidity cells, a sulfate release rate distribution was determined for both fine and coarse tailings (PolyMet 2015q, Large Tables 16-17). Although the current mine plan does target the average sulfur content of the tailings to be approximately 0.12 after processing, the GoldSim model does still account for variability with a distribution in sulfate release for both the fine and coarse tailings.
Henry V. Mott	PolyMet's plans include a system for capture of leachate from this tailings impoundment and for treatment of that leachate by the aforementioned mechanical eventually yielding to a "yet to be defined" passive treatment system. Plans call for this tailings impoundment to exist in perpetuity, which is certainly more of the same "business as usual" approach to mining wherein the tailings will simply be strewn over the Earth and left with a protective system that may or may not assimilate acid production. The emergency treatment – the water treatment facility will provide protection only as long as PolyMet has the financial will to operate and maintain it.	FIN	S	O	8	SDEIS Themes FIN 04, FIN 06
Henry V. Mott	In the spirit of "leave no trace" PolyMet should be required to investigate incorporation of its sulfide tailings into the east/central pit backfill or perhaps the west pit backfill. Sulfide-rich conditions therein will provide absolute control on the mobility of metals that might otherwise leach from the tailings pile over the next several centuries. Long-term protection that is as risk-free as possible should be afforded Minnesota's sensitive northern watersheds.	ALT	NS	X	1	
Henry V. Mott	PolyMet plans to "isolate" the hydrometallurgical wastes from the environment using a 40 mil LDPE liner to prevent intrusion of rainwater and a double LDPE (80 mil and 60 mil) liner to prevent migration of leachate from the wastes into the subsurface below. Leachate formed would be collected and routed to the mechanical/passive treatment system discussed above. As with the class 1 waste rock pile, the cap would require annual maintenance to prevent woody growth and to ensure the cap remains vegetated. Of course, this liner would be subject to the same sets of environmental process as the waste rock cap. Again, PolyMet wants to assure us that this liner will isolate the contents of the hydrometallurgical waste repository from the environment in perpetuity. The same building roof argument applies here as for the waste rock pile. Eventually the cap will fail and the leachate collection system will collect leachate which will need to be treated by the	FIN	S	O	8	SDEIS Themes FIN 04, FIN 06

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	water treatment system, given PolyMet has the financial will to maintain and staff the plant.					
Henry V. Mott	As with the tailings, these hydrometallurgical wastes, containing large quantities of potentially toxic metals (RS33/RS65, 2007), belong isolated in pit backfill where the predominant form of sulfur will be sulfide. The sulfides of most metals (certainly those of interest here) are so insoluble that in the presence of sulfide, the aqueous concentration of the metal ion is on the order of a few molecular units per liter of water (i.e., ~10-23 molar, or, for example, in the case of copper, ~10-19 mg/L). Incorporation of these hydrometallurgical wastes into pit backfill, in the presence of an organic electron donor and sulfide minerals and with fully-saturated conditions supporting isolation by bentonite modified soils would be a very close approximation of the degree to which they are currently isolated from atmospheric oxygen in their native state.	ALT	NS	X	1	
Henry V. Mott	Leaving hydrometallurgical wastes in the system proposed by PolyMet would all but ensure a future environmental problem.	WAT	NS	X	1	
Henry V. Mott	Certainly the technology exists to treat virtually any water, no matter how contaminated, to a level suitable for discharge to surface waters or even for consumption by humans. As contaminant levels become higher and treatment objectives become more stringent, costs increase, often exponentially. PolyMet has in its proposal suggested that reverse osmosis (RO) would be a technology of choice for treatment of pit overflow water and leachates from the waste rock pile, tailings impoundment and hydrometallurgical waste repository. Water treatment using reverse osmosis requires significant pretreatment of water otherwise RO membranes fail miserably. By and large this treatment process will require a highly sophisticated operational staff and significant financial resources for materials, supplies and plant maintenance. This is all fine and well as long as PolyMet maintains the financial will to operate the plant, which, based on PolyMet's own predictions, will likely be needed for centuries into the future. Unfortunately, historically, the mining industry is rife with examples of mining companies that have gone "belly up" at the prospect of dealing with the messes they've made. One need only to do a quick internet search to inform oneself of many key instances – Brohm Mining in South Dakota, Galactic Resources in Colorado, and Pegasus Gold in Montana are three recent infamous cases. PolyMet itself is a subsidiary corporation that has been formed specifically for this project, in part to limit the liability of the parent companies and associated investors from financial risks associated with the potential failure of the project. Belief that PolyMet will be around and will have the financial will to operate this treatment system long after the profits from the mining operation have been realized and banked by CEOs, top managers, and investors is akin to adult belief in the Easter Bunny and Tooth Fairy. Approval of this project based on a closure strategy relying on long-term treatment of pit water and leachate will commit the State of Minnesota and its people to the very costly cleanup of this mess that PolyMet intends to make in the interests of large monetary profits for a select few and ephemeral jobs for a few more.	FIN	S	O	8	SDEIS Themes FIN 04, FIN 06

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Henry V. Mott	<p>I have reviewed the numerous technically based comments brought forth by cooperating agencies. Many of these mention the very points I've made above. By and large, PolyMet's responses provide lip service, refer to "industry standards" or claim conformance with existing Minnesota regulations. Given that Minnesota has not yet experienced the pain associated with sulfide mining, few regulations have been developed directly pertaining to such operations. If this mining proposal is allowed to go forward with the fully inadequate provisions for post-closure environmental protection, certainly Minnesota will have opportunity to observe firsthand the adverse effects of sulfide mining upon sensitive watersheds – because an important Minnesota watershed, in the absence of significant input of Minnesota's financial resources, will become severely adversely impacted. Would it not be prudent to learn from the experiences of others? These tough questions posed by cooperating agencies are based on the experience of others. PolyMet needs to address these questions with technical responses backed up by some prudent alterations in its post-mining closure plan.</p>	GEN	NS	X	1	
Henry V. Mott	<p>Let's consider the policy for use of Minnesota's Boundary Waters wilderness area. The theory behind sustained use of this wonderful resource is that of "leave no trace." If you bring it in – carry it out. If we examine the negative effects of sulfide mining in other states and in other countries, what we find is that if sulfide minerals are left by mining operations in a condition where contact with the environment is allowed, big-time problems occur. Invariably it is we the people who then must deal with the ramifications of these problems. In order to render the mining industry to be environmentally sustainable, we the people, through those we entrust with the general welfare, must hold the mining industry to a "leave no trace" standard. I call on Governor Dayton and his upper management team to be stewards of our environment not for the short-term monetary profits of a few but for the benefit of Minnesota's posterity now and for many future generations. Let me describe one specific example of how not to proceed. The Brohm mine at the now established Gilt Edge superfund site was approved in 1987 by the SD board of Minerals and Environment as supported by the SD Department of Environment and Natural Resources on Governor George Mickelson's watch, in the face of solid scientific evidence that mining sulfide ore using Brohm's plan would lead to a huge environmental problem. Ten or so years into the mining operation, the environmental problems had materialized and in the face of the financial consequences, Brohm Mining, Inc. (the company incorporated to protect the parent company and investors from financial risks) declared bankruptcy. South Dakota could not afford to treat the contaminated water from the mine site let alone do the cleanup, so Bill Janklow (to the applause of those who'd profited from the mining operation) passed the problem to the EPA. The problem is now the Gilt Edge superfund site and the costs to "we the people" of the remediation of the problem will likely exceed the value of the gold recovered by the entire mining operation. Let's not have a Berkely Pit or a Gilt Edge site in Minnesota. I have no arguments whatsoever with the environmental provision proposed during the active mining period. I believe that with significant oversight from the Minnesota Pollution Control Agency as supported by the Minnesota Department of Natural Resources, environmental measures put in place during active mining will adequately protect the sensitive watershed within which the PolyMet site is situated. Conversely, I know that if allowed to proceed based on the currently-proposed closure/reclamation plan the PolyMet mine will be a legacy problem. I call on Governor Dayton and Minnesota's environmental stewards to hold PolyMet to a closure/reclamation plan that leaves no sulfide bearing rock, tailings or hydrometallurgical wastes on the Earth's surface for ultimate eventual contact with atmospheric oxygen and ultimate distribution of produced toxics to Minnesota's waters by natural hydrologic processes. Governor Dayton and his team of high-level managers within the DNR and MPCA should individually and collectively look out for Minnesota's resources as they would look out for their own children, perhaps holding Minnesota's environment as closely to their hearts as they</p>	GEN	NS	X	1	

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	might hold an only child. We have but one environment and no risk should be considered reasonable for that environment that would not be deemed appropriate for a child. The following quote exemplifies the to-date dealings of states and the fed with mining companies: "Insanity: doing the same thing over and over again and expecting different results." Albert Einstein. How would allowing the spoiling of another of the Earth's sensitive ecosystems in the name of corporate profits not be "insane"?					
Sarah Poznanovic	A major deficiency in the PolyMet FEIS is the lack of cumulative analysis that would take into account the impacts of opening a sulfide-mining district in the Superior National Forest, and in the headwaters of both the Lake Superior and Rainy River watersheds. The pollution potentials of a sulfide mine district, exuding acid mine drainage (AMD) and toxic heavy metals into two watersheds, is not adequately addressed.	WAT	S	O	8	SDEIS Theme WR 111
Sarah Poznanovic	A second major deficiency in the PolyMet FEIS is that cumulative health risks to downstream communities, including Duluth, Superior and Fond du Lac, are excluded. These risks include contaminated drinking water, mercury in fish, and release of asbestos-like particles. Issues concerning loss of fish and wild rice as local food are also not addressed.	HU	S	O	8	SDEIS COOP Response # 19676. SDEIS Themes HU 02, VEG 04, WR 042, WR 156, WR 157
Sarah Poznanovic	A third major deficiency in the PolyMet FEIS involves discrepancies in groundwater modeling. Elanne Palcich from the MinnPost states that "The Great Lakes Indian Fish and Wildlife Commission (GLIFWC) found major discrepancies in groundwater modeling. GLIFWC used the same modeling program as that used by Barr Engineering for PolyMet. But GLIFWC found that, upon closure, water from PolyMet would flow north into the Rainy River watershed.	WAT	S	O	8	SDEIS Theme WR 080
Sarah Poznanovic	The DNR also glosses over modeling that shows the proposed plant site would need to be treated for pollutants for at least 500 years. If the DNR were to follow Minnesota state law (Chapter 6132.3200 Closure and Postclosure Maintenance: "the mining area shall be closed so that it ... is maintenance free") PolyMet would not be permitted."	PER	S	O	8	SDEIS Theme PER 04
Sarah Poznanovic	Finally, also reported by Elanne Palcich, "Tailings basin stability is also marginalized in the FEIS. Collapse of the tailings basin at British Columbia's Mount Polley gold and copper mine in August of 2014 is the largest mining waste spill in Canada's history. While analyzing the disaster, engineers made the case for the use of dry stacking of tailings, rather than wet basins. Because of high costs, PolyMet refuses to consider this alternative, and the DNR concurs."	GT	NS	X	1	
Sarah Poznanovic	I request an extension of the PolyMet comment and objection periods. The 30 day period is insufficient to review over 3,500 pages of documents, which limits public input.	NEPA	S	N	5	The FEIS comment period was consistent with NEPA regulations and was extended one week.

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Gary Kohls	In the wake of the Mount Polley tailings dam failure in British Columbia one year ago, Lindsay Newland Bowker, Director of Bowker Associates, Science & Research In The Public Interest and David Chambers, Ph.D., a mining technical specialist, co-authored the report whose primary findings include: The rate of serious tailings dam failures is increasing. Half (33 of 67) of serious tailings dam failures in the last 70 years occurred in the 20 years between 1990 and 2009. The increasing rate of tailings dam failures is propelled by, not in spite of, modern mining practices. The increasing rate of tailings dam failures is directly related to the increasing number of TSFs (Tailings Storage Failures) larger than 5 million cubic meter capacity necessitated to allow the economic extraction of lower grades of ore. 11 catastrophic failures are predicted globally from 2010 to 2019. Predicted total cost of these 11 failures is approximately \$6 billion. The average cost of these catastrophic tailings dam failures is \$543 million. Regulator attempts to recoup cleanup costs from mining operators reveal — through court records and other official documents — dollar totals for cleanup and recovery. Mining companies cannot afford, and cannot secure insurance to cover, the costs of catastrophic failures: Losses, both economic and ecological, are in large part either permanent and non-recoverable, or recovery — to the extent physically possible — are funded by public monies.	GT	S	O	8	SDEIS Themes GT 01, FIN 08
Ron Brodigan	PolyMet is not modifying the proposed project to limit its likely air, water or soil pollution.	PD	NS	X	1	
Ron Brodigan	There is no discussion in the FEIS of an alternative to trying to hold all of the liquid waste behind an earthen dam, e.g., “dry-stacking” of the tailings.	ALT	S	O	10	SDEIS Theme ALT 10
Ron Brodigan	There is no serious discussion of an alternative underground mine.	ALT	S	O	10	Foth 2012
Ron Brodigan	There is presently and for quite some time pollution from the former LTV taconite mine – into Birch Lake and other lands and waterways.	WAT	NS	X	1	
Ron Brodigan	Scientific modeling in the FEIS is seriously deficient.	GEN	NS	X	1	
Ron Brodigan	It should be demonstrated that there are compliance schedules for abating existing and future water and soil pollution.	PER	NS	X	1	
Ron Brodigan	A financial review, yet to be done, should be rigorous, done by a qualified, disinterested third party, and should show how the probable owners of the mine, Glencore Xtrada PLC, can be held financially responsible for perpetual pollution damage even though it is owned in a foreign country.	FIN	S	O	3	SDEIS Theme FIN 03
Ron Brodigan	Health professionals have insisted on an assessment of human health effects downstream of the proposed mine, before any mining takes place. MNDNR, in its zeal to hurry up the project review, says it’s not necessary. MNDNR has been inappropriately tied to PolyMet and Glencore in this entire series of environmental reviews of the last ten years.	HU	S	O	3	SDEIS Theme HU 01

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Ron Brodigan	As to the land exchange proposed to USFS in which small, scattered bits of forest land in other parts of NE Minnesota would be traded for sensitive wetlands adjacent to and part of the proposed mine location, this is a bad deal for the public and neither achieves nor furthers any public purpose, as such a trade would normally do. It benefits only a foreign corporation and their "Junior Partner", PolyMet.	LAN	S	O	3	SDEIS Theme LAN 03
Ron Brodigan	My family owns two businesses and a homestead only ten miles east of the proposed mine. We are separated from it entirely by bogs and wetlands – known as the 100 Mile Swamp. Our ground water is categorically threatened by the prospect of a metallic minerals mine and accompanying industrial area, not to mention our air quality.	WAT	NS	X	1	
Ron Brodigan	This mining project will affect both the Lake Superior Watershed (via St. Louis River and other waterways) and the Rainy River/Lake of the Woods Watershed (via Kawishiwi River and other streams and lakes of the BWCAW. This is not made clear in the FEIS and neither is the inescapable fact that pollution of these important watersheds, once it occurs, can never be undone or rectified.	WAT	S	O	3	FEIS pg. 6-40
Jeffrey Morrison	While the mine would bring economic activity to northern Minnesota, the environmental impact is too high.	SO	NS	X	1	
Jeffrey Morrison	Sulfide mining has a terrible history in many states. I have not seen any evidence that the waste produced by this type of activity can be handled or treated safely over a long period of time. Sooner or later there will be a spill.	PD	NS	X	1	
Pat Hawkinson	How can the direction of the water flow matter? It's okay if any polluted water flows south to Lake Superior instead of north?	WAT	NS	X	1	
Pat Hawkinson	10% of polluted water will escape untreated, which of course is an optimistic prediction to begin with. Seems like a small percentage, but to an average Joe like me, seems like a heluva lot when you are talking about millions of gallons as a whole.	WAT	NS	X	1	
Pat Hawkinson	Residential water treatment companies can't even get the non-toxic iron and tannins out of my well water on a reliable consistent basis. Why should I trust Polymet with millions of gallons of far more toxic process water annually in a real world setting? Because they tested it in a downtown Virginia warehouse?	WAT	NS	X	1	
Pat Hawkinson	Why is it okay for Polymet to acquire such a huge buffer of land? It's obviously only so that they can meet groundwater quality standards at the property boundaries, but not within their own property boundary, as the flawed state law allows.	LAN	NS	X	1	
Pat Hawkinson	How can an accurate financial assurance estimate possibly be made for indefinite water treatment? "Adaptive management" I suppose. In other words, "We'll play it by ear".	FIN	NS	X	1	
Pat Hawkinson	What consideration has been made to the cause of the even more recent disaster in Brazil? I realize this isn't South America, but it would be nice to have some scientific explanation of why that could never happen here.	NEPA	NS	X	1	
Pat Hawkinson	What consideration has been made to the greater weather volatility being caused by climate change, which will only get worse with time? More floods and other severe weather could affect hydrology in the future.	AIR	NS	X	1	

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Pat Hawkinson	Will this mine have a community watchdog group, funded by the company seeking to mine, like the underground Michigan mine visited in your boss's "due diligence"? Seems fair considering how much more massive the scale of this less similar open pit mine, and the water intensive environment, is in this case.	PER	NS	X	1	
Pat Hawkinson	To me, the need for a lengthy 10 year 3,500 page environmental review suggests nothing more than the extreme risk inherent in this type of mining, otherwise it would have been permitted years ago.	NEPA	NS	X	1	
Pat Hawkinson	Even so, if the region cannot survive without mining, it's inevitably, economically doomed at some point. Minerals do not grow back. The most water rich U.S. state's fresh water comes before the far more risky, unproven, foreign owned, copper\$/nickel\$/.....sulfide* industry.	SO	NS	X	1	
John Wild	To knowingly put hazardous waste that will last for decades and longer in an environmentally sensitive area is foolhardy.	GEN	NS	X	1	
John Wild	It is not realistic to expect a for profit transnational mining company to care much about Minnesota's environment when their first priority is to make money. Mining companies are notorious for leaving behind big messes for the public to deal with, often for years. Will this company even be around in the future? Will the resources be available to deal with the inevitable disaster to come?	FIN	NS	X	1	
John Wild	A few temporary jobs are not enough to offset the risks of this venture which include the damage to the 6650 acres and industrial pollution from ongoing operations.	SO	NS	X	1	
John Wild	Do we want to take a chance that this mining will be profitable some time in the future? Low commodity prices right now would indicate that this is not a good time to start mining operations of this magnitude. When the need arises, then consider mining without using a wet process to concentrate the minerals, when we have better technology.	NEPA	S	O	10	SDEIS Theme NEPA 03
W. Charles Huskins	Nonetheless, based on careful review, I have concluded the assessment of the environment impacts of the project as they relate to human health is inadequate for the following reasons.	GEN	NS	X	1	
W. Charles Huskins	Please note that my comments, as listed below, were previously made in response to the Supplemental Draft Environmental Impact Statement (SDEIS) in 2014. I find no record, either in the text of the FEIS or in Appendix A, Response to Comments on the DEIS for the NorthMet Mining Project and SDEISA for the NorthMet Mining Project and Land Exchange (specifically Section A.5.11), that these critiques have been addressed.	MEPA	S	N	5	Human Health Theme Responses App A.
W. Charles Huskins	Comment 1: The FEIS provides an extremely limited assessment of the impact of the project on human health. In a document over 3500 pages in length, the FEIS devotes only 5 pages (7-13 to 7-18) to a summary of the impact of the project on human health. The impact of the project on human health is particularly important because the FEIS acknowledges that the baseline community health in Lake and St. Louis counties is already "poor relative to other counties in Minnesota" (Page 7-14).	HU	NS	X	1	

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W. Charles Huskins	<p>Comment 2: The FEIS does not fully acknowledge vulnerable human populations affected by the environmental impacts of the project. The FEIS acknowledges children as an important component of the human population affected by the project (EO 13045 Protection of Children from Environmental Health Risks and Safety Risks, 1997, Page 5-590). In addition, the FEIS states “Children (individuals under 18 years of age) comprise nearly 29 percent of the study area population, compared to 24 percent for the state” (Page 5-590). However, the FEIS does not acknowledge pregnant women or their unborn fetuses are a vulnerable population with respect to methylmercury exposure. In fact, in a document over 3500 pages in length, the FEIS does not even mention pregnant women or fetuses. The only mention of issues related to the health of pregnant women occurs in Attachment 3, which describes the Tribal Collaborative Agencies Cumulative Effects Analysis. In addition, because mercury accumulates and persists in the human body, all women with childbearing potential (not just pregnant women) should be considered a vulnerable population. This is a major omission because developing fetuses are highly susceptible to neurotoxicity caused by exposure to methylmercury. In addition, the SDEIS does not acknowledge that elderly adults are another vulnerable population with respect to methylmercury exposure. Persons >65 years of age represent a fifth of the populations Lake and St. Louis counties and the FEIS states that the study communities have “more senior citizens (age 65 or older) than the state as a whole” (Page 4-372). Yet, the FEIS does not even mention health risks for elderly persons. This is a major omission because elderly persons may be at increased risk to the effects of methylmercury due to reduced metabolism of toxic compounds, neurologic co-morbidities, a higher pre-existing load of mercury in their bodies, and increased consumption of contaminated fish.</p>	HU	S	N	6	SDEIS Theme HU 02
W. Charles Huskins	<p>Comment 3: The FEIS does not adequately address the impact of methylmercury exposure on human health, particularly the health of vulnerable populations. The FEIS acknowledges that methylmercury has serious adverse effects on human health, including neurotoxicity. The FEIS assessment of the impact of increased exposure to methylmercury on human health is inadequate for the following reasons. A. As noted in Comment 2, the FEIS does not even mention sizable proportions of the population that may be particularly vulnerable to methylmercury exposure. As a consequence, the FEIS does not address the impacts of methylmercury exposure on high-risk populations (e.g., children, pregnant women and fetuses, the elderly), which are likely to differ from the impact on the population as a whole. B. The FEIS uses the “Hazard Quotient”, which is “the ratio of the mercury concentration in fish to a health-based target of 0.2 ppm” (Page 6-86) to quantify the potential impact of the exposure to methylmercury on human health. The FEIS states “a Hazard Quotient greater than 1 exceeds the health-based target” (Page 6-86). However, the FEIS does not provide evidence that the Hazard Quotient is an accurate measure of the effect of exposure to methylmercury on human health. Moreover, it does not state whether a Hazard Quotient threshold of 1 is applicable to all segments of the population, particularly vulnerable populations (see Comment 3.A). C. The FEIS estimates the “maximum incremental cumulative Hazard Quotient from the two projects over existing fish mercury concentrations is 0.08 for recreational anglers, 0.61 for subsistence/tribal anglers, and 0.54 for subsistence fishers.” The FEIS further states that the “NorthMet Project Proposed Action contributes approximately 59 to 92 percent of the incremental cumulative Hazard Quotient.” (Page 6-86).” Accepting the premise that a Health Quotient greater than 1 exceeds the health-based target (see Comment 3.B), a mere two-fold increase in this estimate would indicate that the project will have a substantial effect on the health of humans who are subsistence or tribal anglers. Moreover, this is likely to be a significant underestimate of the risk to large portions of the population—that is, the vulnerable populations identified previously (see Comments 2, 3.A, and 3.B).</p>	HU	S	N	8	SDEIS Themes AQ 03, HU 02

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W. Charles Huskins	To address my comments above, I recommend the parties involved in the development of the FEIS take the following actions and revise the FEIS accordingly. 1. Acknowledge all of the vulnerable populations affected by the project and include an assessment of the impact of the project on the health of these high-risk segments of the population or acknowledge that the effects are unknown (see Comments 2, 3.B, and 3.C). 2. Given that existing levels of mercury contamination of water resources and fish are above acceptable levels, acknowledge that incremental increases in sulfate or mercury concentrations of water resources represent adverse impacts of the project. 3. Provide evidence that the Hazard Quotient is a precise and accurate assessment of the impact of methylmercury exposure on human health, including vulnerable populations (see Comments 2, 3.B, and 3.C). If this cannot be done, use other methods for estimating the impact of methylmercury exposure on human health or acknowledge that the risk is unknown. 4. Perform and report the findings of a Human Health Impact Assessment.	HU	S	O	8	SDEIS Theme HU 01
John Helland	I do not think our great state, which highly values our supreme natural resources, should permit a company that has never opened or operated a mine to proceed with copper sulfide mining that not only is a potential threat to two worldwide iconic water bodies, but also is a toxic threat to the health of Minnesota citizens	PER	NS	X	1	
Rhoda Liebo	It is beyond belief for me that the group of people that are managing the groundwater and other resources of our state(DNR), have got this so wrong and yet are supposedly preventing harm and pollution from occurring As you are well aware, the land in northern Minnesota is part of a large system of interlocking lakes. These lakes and streams provide shelter and homes for many fish and,birds and other mammal's, It is with extreme certainty that I realize that there will be a hundred years of pain and pollution in our treasured lands.	WAT	NS	X	1	
Rhoda Liebo	Every other similar mine has led to dreadful, long acting poisons released into the environment, and the release of very toxic heavy metals. The neighbors are left holding the bag.	PD	NS	X	1	
Rhoda Liebo	It is short term greed that fires up the locals to support the dream of new jobs and industry in Ely. Not gonna happen.	SO	NS	X	1	
Rhoda Liebo	And all the locals that support the notion of a safe mine would definitely miss the fish and game that would be killed by these mines.	GEN	NS	X	1	
Rhoda Liebo	Only bad science has be delineated in the reports, submitted during the EIS stage. They are not impartial and a third party with knowledge, would be to a good counter point to this terrible idea. I did review the EIS and have read much of it and realize it is faulty and lacks credibility. A third party, impartial science team shoud evaluate the plans to see if they agree with the findings.	PER	NS	X	1	
Jacob Crawford	So, I ask you today, how are we protecting this food source - and subsequently these birds - by allowing toxic sulfide mining that, by PolyMet's own admission, will pollute the Lake Superior and St. Louis River watersheds with toxic waste for centuries to come?	WI	NS	X	1	
Jacob	To date, there has not been an independent assessment of the human health risks from contamination of fish with methylmercury produced by PolyMet's proposed copper-nickel mine project. That fact alone should render this EIS	HU	S	O	2	SDEIS Theme HU 01

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Crawford	inadequate.					
Kristofer D. Whelan	Our shortsightedness and greed will be our undoing. That which lies above ground is far more valuable to our state than that which lies underneath.	GEN	NS	X	1	
Jason H. Kuehn	The funding for necessary water treatment over the next several centuries is uncertain and inadequate, as would be the funding for the reclamation and cleanup after a potential mishap.	FIN	NS	X	1	
Jason H. Kuehn	Strictly from a scientific and economic standpoint, the Northmet operation as proposed by PolyMet and Glencore is not to be of any significant benefit for the populations of Northern Minnesota and may indeed prove to be quite adverse to those living downstream of the mine site.	GEN	NS	X	1	
Jason H. Kuehn	The substantial health and environmental risks involved in this venture significantly outweigh any marginal benefit that would be gained	SO	NS	X	1	
Janet Nye	We all need fresh and unpolluted water to drink, and in view of that we need an economy based on things other than those obtained by invasive, polluting methods.	SO	NS	X	1	
Janet Nye	There are other jobs in areas that would actually benefit the environment. These need to be recognized and made available for the many people who are out of work.	SO	NS	X	1	
Sandy Sterle	I am writing because I am dismayed that the Minnesota DNR continues to push a mining project, which would create ongoing heavy metal and sulfate pollution in the St. Louis Watershed and groundwater flowing north towards the BWCA.	WAT	NS	X	1	
Sandy Sterle	There are no non-ferrous mines in a water environment, which have not polluted.	PD	NS	X	1	
Sandy Sterle	The FEIS needs to have its predictions of the mine plan tested by an independent third party and the groundwater modeling discrepancies need to be resolved by acknowledging the full extent of where water pollution could flow. The recent sulfide mining spills at Mount Polley and the Animas River should give our state agencies pause to clarify the tailings basin stability. We were given the benefit of this foresight, that is why the FEIS needs to include an independent review rather than depending on wording like "adaptive management" to mask these issues, because both our health and a sustainable tourism and recreation economy depends on clean lakes and water.	NEPA	NS	X	1	
Sandy Sterle	This proposed mining project does not meet the Minnesota Rules (6132.3200) which states when a proposed mine is closed that it is to be left clean and maintenance free. It cannot be ignored that the proposed mine would create a need of at least 200-500 years to finance testing and maintenance of water quality. This should be highlighted in the FEIS and not glossed over. A significant reason for this rule is to stop a mining company from avoiding their financial responsibility to clean up the site. The ideal way to apply this rule is to not permit seepage of polluted water and the site must be cleaned up during operations, so most of the cost of cleanup is applied as an expense against yearly profits. To require them to store the tailings in dry form is a step in this direction or what about turning the tailings back into stable rock? Just because PolyMet	FIN	S	O	2	COOP Response 3111; SDEIS Theme PER 04

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	finds this too expensive is not a reason to let them off the hook.					
Sandy Sterle	The land exchange is a net loss of wetlands for the St. Louis River Watershed. The function of the 900+ acres of wetlands on the proposed mining site will be lost forever. The FEIS needs to quantify the level of indirect impacts that will occur to over 7,000 acres of wetlands and where these impacts will be mitigated.	WET	S	O	2	SDEIS Theme WET 14
Sandy Sterle	The mining industry is notorious for avoiding liability after taking financial gains. Unfortunately, the FEIS does not address financial assurance that would apply to mine spills, or pollution after closure. This is a significant missing piece to protect Minnesota taxpayers.	FIN	NS	X	1	
Sandy Sterle	FEIS needs to include a rigorous health risk assessment as the Governor requested. This needs to be transparent and not just scattered throughout the document.	HU	NS	X	1	
Sandy Sterle	Unfortunately, mining has a long history of boom and bust of the local economy. Glencore, the largest shareholder has recently dropped its dividend, which means to the financial community that the company is in "survival mode". The FEIS needs to include in the analysis of financial viability for PolyMet from the effects of the market for copper having dropped 27% in 2015 to a six-year low.	SO	S	O	3	FEIS Section 5.2.10
Sandy Sterle	And, this project opens the door for other proposed mines, so the FEIS needs to include the cumulative impacts resulting in opening up a copper-nickel mining industry in Northern Minnesota.	CUM	NS	X	1	
Sandy Sterle	I am concerned with a conflict of interest by DNR's Lands and Minerals mission to promote mining, yet being significantly involved in this FEIS. With that in mind then, it will be especially key for this document to be transparent and objective by not just promoting benefits of PolyMet, and also clarifying the consequences to our water quality and environment of a new mining industry. This is a significant project, which could change the quality of Minnesota's north woods and lakes. It is more important to do it right than to get it done.	NEPA	S	O	2	SDEIS Theme NEPA 18; FEIS Chapter 1
Maya Batres	The Nature Conservancy ("Conservancy") finds that the Final Environmental Impact Statement ("FEIS") for the proposed NorthMet Project ("Proposed Project") is inadequate in important respects, key information is missing or incomplete and that additional analysis is needed to enable informed decisions.	MEPA	NS	X	1	
Maya Batres	Upon application of these three requirements to the FEIS for the Proposed Project, the document fails to meet the first two. First, the FEIS is not responsive to substantive comments submitted during the public comment period on the Supplemental Draft Environmental Impact Statement ("SDEIS") as required in number 2 above. The Conservancy's comments described concerns and recommended remedies that should be included in the FEIS. However, many of the concerns were dismissed with no relevant explanation leaving gaps in the analysis necessary to evaluate the environmental consequences of alternatives. This lack of meaningful response results in the FEIS repeating many of the failures of the SDEIS.	MEPA	S	N	5	MEPA does not require that an RGU modify the EIS or its supporting analyses as requested in public comments. All comments have been considered and responded to. The Co-lead Agencies responded to comments within themes due to the number and length of comments.

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Maya Batres	By failing to respond to the request for additional analysis and alternatives, the FEIS also fails to "address the potentially significant issues and alternatives raised in scoping" as required in the first requirement above. ² The initial comments of the Conservancy discussed the need for a range of alternatives, but the FEIS continues to dismiss the need for anything more than a "no action" alternative and a token land exchange alternative. Alternatives exist that would mitigate some of the environmental impacts of the project including an alternative to exchange lands of higher ecological value, an underground mine alternative that avoids the most serious impacts to lands of high biodiversity significance, and a range of wetlands mitigation that includes a greater proportion of in-watershed restoration and preservation. Instead, the public is presented with a single mine and mitigation plan that essentially amounts to a "take it or leave it" proposal. Each of these inadequacies also results in failure to meet the requirements of the National Environmental Policy Act ("NEPA"). ^{3 1}	NEPA	S	O	8	DNR notes the NorthMet Mining Project proposed action has evolved over the course of the EIS. This is appropriate and is consistent with Minnesota Rules, part 4410.2300, item G, that requires the EIS to consider alternatives incorporating reasonable mitigation measures identified through comments received during the comment period. Examples of mitigative measures identified in public comments that have been incorporated into the proposed action alternative are found in Final EIS Section 3.2.3.3.4, which identifies the following project features: <ul style="list-style-type: none"> • Relocating the Coal Ash Landfill from its current location on the east side of Tailings Basin Cell 1E to the Hydrometallurgical Residue Facility, or other approved facility. • Extending the Tailings Basin containment system to a portion of the east side of Tailings Basin Cell 1E to collect potential seepage in this area. • Modifying the stream augmentation plan such that only treated water would be discharged to the two Embarrass River tributaries (Trimble Creek and Unnamed Creek) and Second Creek. • Refurbishment of existing rail cars to reduce potential for ore spillage. Similarly, the development of the Agencies Draft Alternative, features of which were eventually adopted as the Proposed Project, reflected consideration of public comments on the Draft EIS, especially the comments submitted by USEPA.
Maya Batres	The FEIS analysis of the Land Exchange fails both of the first two requirements since it does not present alternatives that address the issues of critical habitat loss and loss of ecosystem services and it fails to respond to comments seeking an alternative which fully compensates for loss of such habitat;	ALT	S	N	5	The Land Exchange evaluated three alternatives, one of which results in no critical habitat loss. Evaluating ecosystem services is outside the scope of this EIS. MEPA does not require that an RGU modify the EIS or its supporting analyses as requested in public comments. All comments have been considered and responded to.
Maya Batres	The FEIS analysis of wetlands and mitigation fails the first requirement since it does not propose meaningful mitigation alternatives that adequately compensate for losses and satisfy the federal mitigation rules;	WET	S	O	8	See FEIS Section 5.2.3.3. The USACE will determine if CWA 404 rules are satisfied during its permit review process

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Maya Batres	The FEIS fails both of the first two requirements since it has not substantively responded to the comments establishing the need for an Ecological Risk Assessment as an essential element of environmental review;	WI	S	O	6	Neither NEPA nor MEPA implemented through Environmental Quality Board Rules requires the evaluation of worst-case or failure event scenarios. By not explicitly considering these scenarios, the Co-lead Agencies are adhering to these regulations (WR 202). The potential effects of hypothetical failure scenarios have not been assessed in this FEIS, as the risk of failure is mitigated through application of design and safety requirements including adaptive management procedures (GT 15). In addition, MDNR has the authority to require remedial action for unforeseen effects or events (FIN 12). The Nature Conservancy (represented by Maya Batres) did not request an Ecological Risk Assessment (ERA) in its comment letter on the SDEIS. While a response that explicitly addresses a request for an ERA is not provided in the FEIS, the FEIS adequately describes risks and potential impacts to the environment and in particular, the responses to comment themes GT 15, FIN 12, and WR 202 address potential failures.
Maya Batres	The FEIS fails both of the first two requirements since it has not developed and thoroughly discussed an adequate financial assurance package which is a key to assessing the environmental consequences, and it has not substantively responded to comments establishing the need for financial assurance that will ensure that the public is not burdened with the costs of perpetual operation, maintenance, and monitoring of the project site.	FIN	S	O	6	SDEIS Theme FIN 11
Maya Batres	This project, if permitted, will impact Minnesota's environment for centuries in ways that are not fully described in the FEIS. Without additional analysis and a full opportunity for public comment, the FEIS should be determined inadequate under state and federal law.	GEN	NS	X	1	
Maya Batres	The FEIS acknowledges that the proposed Land Exchange ⁴ would result in a significant loss of mature upland conifer forest, forest in long rotation classification, and three native plant communities that are either imperiled or at risk of extirpation. Despite the Conservancy's previous comments urging the proposed Land Exchange to expand the portfolio of non-federal tracts to be acquired to address these environmental losses, no Land Exchange alternatives have been added. Under the proposed Land Exchange, upland conifer forest would decrease by at least 1, 172.5 acres, and forest land in older growth stages (US Forest Service category "General Forest - Longer Rotation") would decrease by 5,662 acres. This result is directly contrary to the United States Forest Service ("USFS") goals for the Superior National Forest of restoring long-lived conifer species and maintaining and increasing older forest growth stages. ⁶ Three at risk native plant communities occur within the federal lands: jack pine-black spruce woodland, white pined pine forest, and rich black spruce swamp. The jack pine-black spruce woodland makes up a large proportion of the 1, 172.5 acres of upland conifer forest on federal lands, and much of this occurs in large (> 100 acres) intact patches. A complex of large patches of rare plant communities such as jack pine-black spruce woodland provide critical habitat for conifer dependent species. It is generally accepted that the proportion of such	ALT	S	N	8	The Land Exchange evaluated a range of alternatives, one of which, the No Action Alternative, results in no critical habitat loss. The two other alternatives evaluated disclose a range of potential impacts if the Proposed Action were to be approved. This alternatives analysis satisfies environmental review requirements. FEIS 5.3.4, Appendix D.

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	<p>large forest patches has declined dramatically in the past century resulting in a loss of critical habitat.7 In the Laurentian Uplands Subsection, 35 birds that are Species of Greatest Conservation Need (SGCN) and are associated with upland conifer habitats. Increasing the area of rare native plant communities is stated as a desired vegetation condition for the Superior National Forest. 8 The FEIS acknowledges these losses but fails to develop or address an alternative that will compensate the federal estate. The habitats lost are critical, rare, and difficult to replace, home to a number of SGCN species, and important to the Superior National Forest vegetation objectives.9 Therefore, the FEIS fails to discuss an alternative with appropriate mitigation measures for these losses, does not respond to substantive comments asking for compensation for the loss and should be found inadequate.</p>					
Maya Batres	<p>The Land Exchange described in the FEIS fails to compensate for the loss of ecosystem services, including loss of carbon storage contributing to climate change, as required by United States Forest Service Planning Rules and a Presidential Memorandum. The proposed Land Exchange will result in a significant loss of ecosystem services associated with a large intact wetland-upland complex. Services lost include carbon storage and watershed and habitat function. However, these services are not considered in the FEIS. The failure to account for ecosystem services is not compliant with the 2012 USFS Planning Rule and as recently directed by Presidential Memorandum. It is also not responsive to the Conservancy's substantive comments about the loss of peatland systems and key ecosystem services. Under the proposed Land Exchange there will be a loss of 2,163 acres of northern peatlands from the federal estate of which 1,961 acres are conifer bog and 202 acres are open bog. Northern peatlands have the highest carbon density of any ecosystem and thus retaining intact peatlands is critical in this era of climate change. Carbon storage is one of the many important ecosystem services provided by wetland systems, peatlands in particular. Therefore, loss to the federal estate of 2, 163 acres of peatlands represents a significant decrease in a key ecosystem service that is not accounted for in the Land Exchange. The FEIS states that 83% of the impacts to conifer bogs would be mitigated through offsite restoration projects. This figure does not take into consideration the substantial uncertainty in the success rate of peatland restoration or the losses during the time lag before restoration is complete. Further, the FEIS presents an optimistic view of the likely success of peatland restoration, when in reality there is little evidence of long-term success in restoring functioning ecosystems with peat accumulation. The FEIS does present methods that show promise for successful restoration including hydrologic restoration and reintroducing Sphagnum moss species. However, it will likely require 20-30 years just to determine whether peat accumulation is occurring. Since peat accumulates very slowly at rates of 0.5-1 mm/year, compensating for carbon lost on the project site may require several centuries. Longer term monitoring is needed to determine if restoration projects can lead to functioning peatlands that provide the same ecosystem services as natural systems. 14 Even if these efforts at peatland restoration were successful, the carbon lost through direct impacts at the project site would not be replaced during the lifetime of the mine due to the slow accumulation of organic matter in peatland systems. As a result, the FEIS is inadequate for its failure to address the loss of peatland systems and the key ecosystem service of carbon storage provided by the peatlands in the proposed Land Exchange, and its failure to develop an alternative with appropriate mitigation which fully compensates for the loss of these ecosystem services. II. Summary of Necessary Action on the Land Exchange. 1. The FEIS</p>	O	S	N	8	<p>The FEIS responds to The Nature Conservancy's comments regarding impacts to peatlands in the responses to SDEIS Themes VEG 02, VEG 03, VEG 05, WET 01, WET 03, WET 04.</p>

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	<p>should include an alternative providing additional land in the Land Exchange to compensate for critical habitat losses to the Superior National Forest, including mature upland conifer forest, forest in long rotation classification , and imperiled and at-risk native plant communities. 2. The FEIS should accurately describe the loss of ecosystem services provided by peatlands including carbon storage and watershed and habitat function. 3. The FEIS should include a Land Exchange alternative that fully compensate for the loss of ecosystem services, especially carbon storage.</p>					
Maya Batres	<p>The FEIS is inadequate because its analysis of wetlands and mitigation does not propose meaningful mitigation alternatives that sufficiently compensate for losses and satisfy the Federal Mitigation Rule. A. Direct wetland loss from the Proposed Action is a substantial and serious environmental impact and occurs disproportionately among wetlands designated as high quality and difficult to replace. As documented in the FEIS, at least 913 acres of wetlands will be directly affected and permanently lost, representing nearly 60% of all wetlands in the project area. If approved, the wetland loss would be one of the largest permitted losses in Minnesota history. Of the impacted acres, 59% of the wetlands are lowland conifer and bog type wetlands that are highly sensitive; provide critical habitat for declining and iconic species such as moose, Species of Greatest Conservation Need ("SGCN") such as Connecticut warblers, boreal chickadees, rusty blackbirds, olive-sided flycatchers, disa alpine and bog copper butterflies, and northern bog lemmings; and provide many other important functions for water, wildlife and ecosystems. Of the nearly 760 acres of wetlands that will be destroyed at the mine site, 92% of these are identified in the FEIS as "High Quality" and are mapped by the state as areas of High Biodiversity Significance. From the perspective of the Conservancy, this loss of wetlands represents a serious and extensive impact to the state's natural resources. 16 In our previous comments on the SDEIS and reiterated in Section 1 above, the Conservancy emphasized that lowland conifer and bog wetlands are difficult to replace, and that restoration of degraded wetlands like these have a poor track record of success. Indeed, bogs and fens are specifically identified in federal regulations as "difficult to replace resources," warranting special consideration in wetland mitigation. While the FEIS highlights new techniques for potentially improving the success of restoration and has incorporated some of these techniques into mitigation plans, their actual track record of success for these techniques is still lacking. This uncertainty as to whether the substantial and serious environmental impacts to wetlands can be mitigated warrants greater caution, skepticism of optimistic claims of success, and both regulatory and financial safety nets for wetland mitigation.</p>	WET	S	N	11	Application of appropriate federal regulations relative to mitigation occur during the 404 permitting process.

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Maya Batres	<p>A U.S. Army Corps of Engineers ("Corps") regulatory requirement, reinforced by a recent Presidential Memorandum, states "[f]or difficult-to-replace resources (e.g., bogs, fens, springs, streams, Atlantic white cedar swamps), if further avoidance and minimization is not practicable, the required compensation should be provided, if practicable, through in-kind rehabilitation, enhancement, or preservation since there is greater certainty that these methods of compensation will successfully offset permitted impacts." The FEIS focuses solely on in-kind rehabilitation, the most uncertain, and historically least successful, of the three allowable approaches. Similar to an investment portfolio, where risk is spread among different kinds of financial instruments, a successful "mitigation portfolio" should include a range of actions. The portfolio should include a mix of sites and approaches, ranging from relatively risky wetland rehabilitation to lower risk preservation of unprotected wetlands. For these kinds of wetlands, it is important to recognize that mitigation is not likely to restore all lost functions and that restoring wetland functions of any kind will take considerable time. Thus additional regulatory and financial safeguards are needed in the event that one or more mitigation site does not or cannot attain success criteria. Although the FEIS commits to a 2:1 replacement ratio for a relatively small acreage (7 .6 acres) of directly impacted, open bog wetlands, the 1.58:1 replacement ratio identified for the much greater acreage (537.6 acres) of lowland conifer/forested bog wetlands is inadequate compensation for such sensitive and difficult to replace wetlands. The replacement ratio could and should be greater. The St. Paul District of the Corps' policy on mitigation provides for a case-by-case determination of compensation ratios for impacted wetlands that are difficult to replace or wetlands that provide an "exceptional level of functions". Arguably, the impacted wetlands for the proposed action fit into this category, as noted in Section 1 of our comments, and therefore, gives the District Engineer discretion to determine the compensation ratio with no specified maximum. State law also provides a similar authority if proposed actions will permanently and adversely affect wetlands that contain rare natural communities or sites mapped as Outstanding or High Biodiversity. When the success of mitigation is uncertain, as is the case here, and the affected wetlands are rare, difficult-to-replace or provide exceptional values, both the state and the Corps have the authority to require financial assurance, separate from that needed for mine construction, operation, closure and reclamation. The Corps' policy allows the agency to require financial assurance to ensure that compensatory mitigation is successfully implemented and permit conditions are satisfied in the event of unforeseen circumstances. Minnesota statute also allows financial assurance for wetland mitigation. The FEIS is silent as to the amount of financial assurance needed for mitigation and not responsive to previous comments on this issue by the Conservancy and others. Given the uncertainty of restoration success, the Conservancy reiterates its previous comments that financial assurance for mitigation should be set forth in the FEIS. The Corps' own guidance states that "the District Engineer shall require sufficient financial assurances to ensure a high level of confidence that the mitigation project will be successfully completed, in accordance with applicable performance standards," and notes that such assurance is needed, among other things: a. To correct or replace unsuccessful mitigation if [the] responsible party is unwilling/unable to do so; b. To allow permit issuance using permittee-responsible mitigation prior to successful mitigation implementation. The same guidance also recommends that financial assurance amounts for mitigation be sufficient to cover the full costs (including land costs) to complete the work and meet all applicable performance standards at an alternate site by a third party. An example of this would be to set aside in an appropriate financial vehicle the total cost of purchasing credits in an established mitigation bank in the same service area.²⁷ In light of the fact that the directly affected wetlands are of high biodiversity significance, provide exceptional levels of functions, are difficult to replace, and will be permanently destroyed, the FEIS must place greater emphasis on avoiding and minimizing impacts to high quality wetlands, make a commitment to</p>	WET	S	O	11	Final mitigation ratios will be determined prior to the USACE ROD.

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	a higher replacement ratio, and provide separate financial assurance to cover the costs of this long-term and highly uncertain wetlands mitigation.					
Maya Batres	<p>In the FEIS, three mitigation sites are proposed, two in the Mississippi River basin outside of the impacted watershed and one in the St. Louis River watershed nearly 50 miles from the Proposed Project area. Approximately 70% .of the total proposed mitigation acres are located outside the impacted watershed, representing a net loss of wetlands and their functions from the St. Louis River watershed, which has already lost 15% of its historic wetlands. 28 The proposed mitigation sites are presented in the FEIS as a fait accompli, long ago selected and decided, with no alternatives provided for public review and comment. The FEIS admits that these sites were selected using criteria developed prior to the 2008 Federal Mitigation Rule, 29 which strongly encourages the use of a watershed approach for site selection. Given the length of time it took to develop the SDEIS, which was released almost six years after the 2008 rule, there was plenty of time to develop a watershed approach to site selection. In addition to a watershed approach, Corps' regulations also require specific consideration of in-watershed mitigation options as a priority for mitigation. However, the FEIS ignored these long standing principles for in-watershed mitigation and the newer watershed approach rule and moved forward with the previously determined mitigation sites without public review and comment. The Conservancy provided detailed comments on wetland mitigation in the SDEIS and called for greater emphasis on in-kind, in-watershed wetland restoration, enhancement and preservation. The proposed wetland mitigation in the FEIS is essentially unchanged from that in the SDEIS. We continue to express concern about locking into years-old mitigation solutions identified and developed in a prior era of wetland mitigation policy, and we encourage sufficient financial and operational flexibility in the FEIS to make use of improved in-watershed options as they emerge, including the purchase of mitigation bank credits. Based on the failure of the FEIS to respond to these comments, the FEIS is inadequate and must address our concerns about the wetland mitigation favoring out-of-watershed replacement, focusing on sites selected under a long out-of-date policy, and providing no meaningful alternatives for public review and comment.</p>	WET	S	N	8	A final decision on wetland mitigation including ratios will be made during the 404 permitting process. The FEIS is not inadequate because it does not resolve what USACE permitting conditions are.

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Maya Batres	<p>In the FEIS, there is no commitment to advance mitigation for indirect impacts to wetlands. Instead, it proposes monitoring changes in hydrology, vegetation and other indicators for the wetlands in places where indirect impacts are expected to occur. Although it acknowledges that mitigation may be required, no mitigation plans will be developed until after impacts are detected. Using a monitoring approach to determine whether mitigation is needed is insufficient for several reasons. First, the kinds of indirect impacts identified in the FEIS, especially those caused by groundwater drawdown, are reasonably foreseeable and permanent: the technical literature from across the U.S. leaves little doubt that such impacts are not only possible, but likely. Second, wetland monitoring programs established for regulatory purposes have a poor track record of being able to detect impacts before they occur. In many instances, such monitoring programs have been insensitive to impacts even after they started to occur, leading to uncertainty and dispute about the cause of the impacts until damage is already severe or irreversible. Finally, allowing impacts to occur before requiring mitigation contradicts the Corps' governing mitigation principles that "[i]mplementation of the compensatory mitigation project shall be, to the maximum extent practicable, in advance of or concurrent with the activity causing the authorized impacts." This situation may result in a loss of wetland function during the time between detecting impacts and mitigating for them, a contradiction to the no-net-loss policy that governs mitigation under both state and federal law. The FEIS is inadequate due to its failure to respond to concerns about the lack of advance mitigation for foreseeable, permanent indirect impacts to wetlands. These indirect impacts will have an effect on an estimated 6,500 to 7,700 additional acres, acreage over and above the 913 acres directly impacted and previously addressed in these comments. While the FEIS does commit to advance mitigation for 26.9 acres of impacts from wetland fragmentation, this still leaves a substantial amount of impacted acreage uncompensated. By not providing mitigation until impacts are detected, there is a high likelihood that a temporal loss of wetland function could occur.</p> <p>II. Summary of Necessary Action on Wetlands and Mitigation.</p> <ol style="list-style-type: none"> 1. Meaningful alternatives should be developed for mitigating wetland impacts that include different combinations of in-kind restoration, enhancement and preservation, and alternative options for mitigation sites that satisfy the selection criteria set forth in the Federal Mitigation Rule including permanent protection of wetlands within the St. Louis River watershed. 2. Mitigation for all direct and indirect impacts to all bog, fen and lowland conifer wetland types should be developed using replacement ratios of at least 2: 1. 3. Financial assurance estimates for mitigation of direct and indirect wetland impacts should be developed and financial assurance should be required in an amount sufficient to cover full costs to complete the work and meet all applicable performance standards at alternative sites by a third party. 4. An explicit commitment should be made and plans should be developed for advance mitigation of all reasonably foreseeable indirect impacts to wetlands identified in the FEIS. 5. As part of the EIS process, the agencies should solicit and consider public comment on mitigation alternatives and plans, including those for indirect impacts, and on financial assurance for ensuring success of mitigation for direct and indirect impacts. 	WET	S	O	11	SDEIS Theme COE 02

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Maya Batres	<p>The FEIS is inadequate because it fails to substantively respond to comments establishing the need for the inclusion of an Ecological Risk Assessment. A. Sound engineering practice requires a risk assessment as an essential element of project design. The American Society of Civil Engineers (ASCE) asserts that "effective risk characterization and management is fundamental to engineering."35 The ASCE makes a point of distinguishing between risk assessment, which is used to characterize risks (both likely and unlikely); risk analysis, which ranks the relative risks of a specific system; and risk management, which is an approach for weighing and mitigating risks. 36 The FEIS does not include a risk assessment or risk analysis. Rather, the FEIS references the Adaptive Water Management Plan (AWMP) for its discussion of risk. The AWMP, while ostensibly a tool for risk management, does not include nor address the fundamental need for characterizing the risks it purports to manage. To be effective, risk management should come only after a thorough risk assessment and risk analysis have been completed. The failure to include a risk assessment in the FEIS denies decisionmakers and the public vital information necessary to evaluate the potential environmental consequences of this project. For a project whose environmental impacts will extend centuries beyond its projected twenty-year operational phase, ignoring this step could result in serious environmental consequences that are not characterized or evaluated in the FEIS.) The FEIS acknowledges that the proposed mine will produce pollution that could potentially impact water quality for centuries. In response to this environmental threat, the FEIS anticipates near-perpetual operation of the tailings dam and water containment, collection, and treatment systems. Given the expected centuries of operation, there is a substantial risk that one or more of these engineered systems will fail due to natural causes; equipment malfunction, breakage, or age; human error; or lack of funds for maintenance and repair. In light of this risk, the Conservancy and others have urged the agencies to provide a risk assessment of the project in the FEIS. Such a risk assessment would include the probability and environmental consequences of potential failures for each of the following aspects during all phases of the project: the mine site, plant site, transportation corridor, tailings basins, stockpiles, and water containment and treatment systems (hereinafter referred to as "Ecological Risk Assessment"). 8. An Ecological Risk Assessment is an essential and feasible element of the FEIS. As discussed above, a risk assessment is considered a fundamental engineering practice. The ASCE has noted that it is important, "to adequately address risk in how systems are planned and designed and how consequences are managed", and "urges government agencies and private entities at all levels to incorporate risk management in all decision-making processes."37 The ASCE goes on to say that "risk management practices must be clearly communicated to the public" including encouraging and facilitating public participation in review of risk assessment procedures. 38 The United States Environmental Protection Agency's (USEPA) Bristol Bay Assessment demonstrates the feasibility of producing an Ecological Risk Assessment for a large, complex open pit mine at a level of detail sufficient for inclusion in an EIS.39 The assessment, which the USEPA prepared recently for the proposed copper mine in Bristol Bay, Alaska, uses historical evidence to assess the probability of failure over time for the engineered systems commonly found at mines40 and the expected environmental consequences of such failures. In addition to using historic evidence, the assessment also considers future risks from current mines that are designed using state-of-the-practice engineering.41 Because the Proposed Project relies on these same types of engineered systems to protect surface and groundwater quality, the Conservancy and others have called for the inclusion of a similar Ecological Risk Assessment here. By including an assessment in the FEIS, the public would then be afforded the opportunity to review and comment on how risk and environmental consequences compare among alternatives. It would be straightforward to update and adapt the EPA's Bristol Bay analysis, apply it to the Proposed Project, and then use it to determine the consequences and costs of potential system failures. However, the FEIS does not</p>	O	S	O	8	An ERA was considered and not screened into the EIS. The FEIS adequately describes the risk to the environment. The FEIS is complete.

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	<p>include a risk assessment of any kind and implies that the engineered environmental safeguards will flawlessly perform in perpetuity. This implicit use of a "best case" scenario . . . 'skews' the data toward fewer environmental impacts and thus impedes a 'full and fair discussion of the potential effects of the project.'⁴² To avoid such an unwarranted skewing of the analysis, the FEIS should include an Ecological Risk Assessment to inform the agencies and the public about the long term environmental consequences of the mine.⁴³ In the response to comments asking for a risk assessment, the FEIS dismisses the request and merely responds that "[n]either NEPA nor MEPA. . . requires the evaluation of worst-case or failure event scenarios."⁴⁴ This answer is non-responsive: commenters were not asking for a "worst case analysis", but a realistic risk assessment that could "generate information and discussion. of those consequences of greatest concern to the public and greatest relevance to the agency decision . . . rather than overemphasizing speculative harms."⁴⁵</p>					
Maya Batres	<p>Environmental regulations support the inclusion of an Ecological Risk Assessment as an essential element of determining the environmental consequences of the Proposed Action. Environmental regulations support including a risk assessment in the FEIS. A fundamental requirement of any environmental impact statement is to "rigorously explore and objectively evaluate" the environmental consequences of the proposed action, including its direct and indirect effects.⁴⁶ Indirect effects are those which are caused by the Proposed Action and are later in time or farther removed in distance, but are still reasonably foreseeable. ⁴⁷ Reasonably foreseeable effects include not only those effects where there is a significant risk of their occurrence⁴⁸ but also those "impacts which have catastrophic consequences, even if their probability of occurrence is low." Over the centuries during which the engineered systems at NorthMet must operate, it is "reasonably foreseeable" that the systems will fail and pose significant adverse consequences to surface and groundwater quality. As documented in the Bristol Bay Assessment, failures of water collection, transport, and treatment systems are fairly common occurrences at mines during their operation and post-closure periods, and become ever more likely the longer they are required to perform. The Bristol Bay Assessment also finds that while tailings basin failures may have a low probability of occurrence, a tailings basin failure could result in a greatly degraded habitat for decades. The catastrophic failure of the tailings dam at the Mt. Polley Mine in 2014 is a recent example of a low-probability, high consequence failure that could have been prepared for if risks had been adequately characterized and then mitigated as part of the planning, design, and environmental review process. ⁵¹ Both the Bristol Bay Assessment and Mt. Polley case show the need to fully assess the risks associated with mining because the potential failures of the engineered systems and their environmental consequences are "reasonably foreseeable" and therefore must be rigorously analyzed in the FEIS. Federal regulations require that "[i]f the incomplete information relevant to a reasonably foreseeable significant impact is essential to a reasoned choice among alternatives and the overall costs of obtaining it are not exorbitant, the agency shall include the information in the environmental impact statement."⁵² Here, a risk assessment is essential to a reasoned choice among alternatives since it provides important information about the likelihood and size of "reasonably foreseeable" impacts to surface waters and groundwater over the centuries-long duration of the Proposed Action. ⁵³ Moreover, development of a risk assessment is reasonably obtainable and neither exorbitantly nor excessively costly because the time and money has already been spent developing data and an assessment for Bristol Bay that is readily-</p>	O	S	O	8	An ERA was considered and not screened into the EIS. The FEIS adequately describes the risk to the environment. The FEIS is complete.

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	<p>adaptable for use here. Due to the un-assessed risks posed by the Proposed Action-both the common risks of failure of the water collection, transport, and treatment system and the catastrophic risk of a tailings dam failure a rigorous Environmental Risk Assessment should be included in the FEIS and an opportunity for public comment on the assessment should be provided.</p>					
Maya Batres	<p>An Adaptive Water Management Plan does not compensate for the lack of an Ecological Risk Assessment. As an alternative to an Ecological Risk Assessment, the FEIS claims that the NorthMet Project Adaptive Water Management Plan (AWMP)⁵⁵ is sufficient to address future negative impacts on water quality. However, the AWMP is largely a plan describing engineering monitoring and controls that will be in place to detect and manage the environmental impacts to water quality as they arise; i.e. a risk management approach, not a risk assessment. Also, there is nothing in the AWMP to address the severe consequences of a tailings dam failure. In effect, the AWMP proposes how one might respond to a failure, rather than informing decision-makers and the public of the nature of all risks in advance of approving the project. Asserting that problems will be detected and addressed as they arise is no substitute for a rigorous, transparent Ecological Risk Assessment of systems that could fail and the consequences that would follow. Relying on risk management procedures alone, rather than accurately characterizing risks and consequences is similar to the situation that occurred at the Mt. Polley Mine. There, the independent review panel investigating the disaster wrote that "[mitigating risk of tailings basin failure] was contingent on consistently flawless execution in planning, in subsurface investigation, in analysis and design, in construction quality, in operational diligence, in monitoring, in regulatory actions, and in risk management at every level. All of these activities are subject to human error."⁵⁶ Without an assessment of the probability and consequences of risks associated with the potential human and natural causes of engineered systems failures, the FEIS similarly assumes a flawless performance of these engineered systems over centuries and thus fails to provide a reasoned evaluation of the environmental consequences of the proposed mine. II. Summary of Necessary Action on Risk Assessment 1. The FEIS should include a thorough Ecological Risk Assessment adapting the approach used by the USEPA for Bristol Bay to characterize risks of failure and their environmental consequences.</p>	O	S	O	8	<p>An ERA was considered and not screened into the EIS. The FEIS adequately describes the risk to the environment. The FEIS is complete.</p>
Maya Batres	<p>The FEIS is inadequate because it does not thoroughly develop and examine the size or mechanism for financial assurances and does not substantively respond to comments establishing the need for the inclusion of financial assurance in the FEIS. A. The FEIS fails to provide thorough documentation of the cost estimates underlying the financial assurance and to provide an opportunity for public comment. Serious risks to the environment are associated with the reclamation, closure, and the perpetual operation and maintenance of treatment systems and engineered structures. To minimize the risk that there will be inadequate funds to protect environmental resources in perpetuity, it is critical to develop robust financial assurances and for them to be carefully scrutinized by state and federal agencies and the public. It is well documented that mines frequently fail, go bankrupt and are abandoned. As a result of this financial failure risk, the probability of hazardous substance releases and the severity of the consequences associated with such releases, mines are the highest priority category for development of financial assurances under the Superfund program. ⁵⁸ The financial risk of mine failure is not merely a documented historical fact but remains an issue today, as underscored by the recent financial reports about Glencore, a major financial backer of Proposed Project. Low copper prices and extremely high debt loads have caused a</p>	FIN	S	O	8	<p>See SDEIS Theme FIN 03. The EIS appropriately discloses financial assurance requirements should the project be permitted.</p> <p>The State of Minnesota rules governing the Permit to Mine permit process require a comment period when additional details on financial assurance would be disclosed to the public for review.</p>

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	<p>huge fall in the market value of Glencore's stock and triggered renewed concern about its ability to sustain its financial commitments. As the USEPA has noted with respect to the NEPA reviews of proposed mines, "the amount and viability of financial assurances are critical factors in determining the effectiveness of reclamation and closure activities and, therefore, the significance of environmental impacts. This is particularly important when long-term water management and treatment will be needed." Thus, as with an Ecological Risk Assessment, it is essential that the FEIS thoroughly develop and examine a financial assurance package in order to realistically assess the environmental consequences of the proposed mine during its operation, closure and reclamation, and post-closure periods. In response to the Conservancy's detailed comments on financial assurances, the FEIS simply states that a thorough analysis of financial assurance is not possible due to a lack of detailed engineering plans and that such plans will be provided during the permit to mine process (i.e., after the completion of the EIS process). The response is contradictory: the engineering plans for the Proposed Action are put forth as sufficiently developed for the FEIS to analyze environmental consequences while lacking the detail to allow analysis of the expenses associated with these consequences. At least equally important, the development of this information would be relatively straightforward and not excessively or exorbitantly costly. According to press reports, the applicant is prepared to file its application for the permit to mine, along with its detailed engineering plans, in February or as soon as the state EIS process is complete. Additionally, if the reason for excluding financial assurance were based on the exorbitant cost or lack of information, the FEIS should have claimed the exception from providing such information as provided for under federal law. Therefore, the purported lack of detailed plans at this time is hollow and non-responsive to comments. The FEIS has not developed any additional information, analysis, or justification for the cursory financial assurance estimate prepared by the applicant's consultant in 2013. The general summary of costs, cited in Foth 2013, provides scant information on the amount necessary for protection of the environment and the public. Foth 2013 provides no explanation of how these general costs were derived, no description for the amount of individual cost components, and no discussion about the appropriate size of the contingency for the perpetual operation and maintenance activity of the proposed action.⁶⁴ Instead, the FEIS indicates that any additional information on financial assurances will be developed during the permit-to-mine process, which is not anticipated until after the conclusion of the FEIS process. When this critical information is developed, the adequacy of the FEIS will have been determined and the public will not have an opportunity to comment on this project's impact on public resources.⁶⁵ In effect, the FEIS will deny the public a meaningful opportunity to comment on this critical element of the Proposed Project and its impact on the environment, contrary to the principles of NEPA and the Minnesota Environmental Policy Act.⁶⁶ For these reasons, the EIS document should provide detailed financial assurance information, assess its impacts on environmental resources, and make that information and analysis available for public comment.</p>					

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Maya Batres	<p>8. The FEIS fails to provide a detailed risk assessment - a necessary component when developing a financial assurance plan. As discussed in Section 3, the FEIS fails to include an Ecological Risk Assessment, a vital factor in developing a contingency amount for an adequate financial assurance package. The FEIS simply dismisses the need for such an assessment and the applicability of a similar assessment to the one for the proposed Pebble Mine in Bristol Bay, Alaska.⁶⁷ The FEIS claims that "the referenced document does not address any specific mining proposal and thus cannot appropriately be applied to the North Met Project Proposed Action."⁶⁸ This dismissal is nonresponsive to the Conservancy's and others' comments: the fact that there was no specific mining proposal at Bristol Bay has no bearing on the direct relevance of such an assessment to the Proposed Action. If anything, the fact that a risk assessment could be performed in the absence of an EIS or permit application at Bristol Bay, should make it easier, more relevant, and more practical to perform a similar assessment on this developed Proposed Project, especially if it will aid in the development of a complete financial assurance plan.⁶⁹ Equally important, this dismissal ignores the basic point of the comment. For projects with extremely long or perpetual timeframes for operation and maintenance, it is critical to perform an Ecological Risk Assessment in order to realistically estimate the size of the contingency which must be covered by the financial assurance. The EPA Bristol Bay analysis provides an example and recent data on the frequency and types of mine failures, which is exactly the kind of analysis needed here where the operation, maintenance and monitoring of engineered systems may be required in perpetuity. This analysis and data is not only reasonably obtainable and not excessively costly, it is available, current, and easily adapted to this situation. Under such circumstances, it is critical and feasible for the FEIS to include an Ecological Risk Assessment for this project to ensure a finished financial assurance package capable of covering the cost of a potential system failure.</p>	O	S	O	8	An ERA was considered and not screened into the EIS. The FEIS adequately describes the risk to the environment. The FEIS is complete.
Maya Batres	<p>The FEIS fails to provide a mechanism of financial assurance that will remain effective and fully payable in perpetuity. As advocated in previous comments on the SDEIS, 90% or more of the financial assurance should be in the form of a fully-funded trust fund, particularly for long term operation, maintenance and monitoring of the site, including the tailings basin and water treatment systems. The FEIS did not substantively respond to these comments and simply reiterated the types of mechanisms which might be available for projects with shorter operation and maintenance periods. Neither did it identify or justify the specific mechanism to be used here either for short term or long term activities. The FEIS thus failed to adequately respond to the assertion in previous comments that all of the third party mechanisms for financial assurance (e.g., surety bond, letter of credit, insurance, parent guarantee) will not be sufficient to cover long-term operation, maintenance and monitoring in the event of PolyMet's insolvency. As noted in an analysis of financial assurances for mine reclamation and closure, "[w]here closure costs are long term (in many water treatment situations, costs are "in perpetuity"), forms of cash such as trust funds are the only practical way to provide a financial guarantee."⁷⁰ Most of the non-trust fund/third party mechanisms referenced in the FEIS typically have tailored terms which specify when payment under the mechanism is required, and would be unsuitable as financial assurance for the Proposed Project due to the likelihood of disputes and litigation with the third party over the applicability of these terms. Moreover, many of these mechanisms are written on an annual or short term basis with the possibility of cancellation and the need for renewal. If PolyMet or its successors finds itself under financial pressure it is unlikely that a third party provider would renew the mechanism because of the high likelihood of a substantial loss. Given the FEIS's failure to adopt the fully-funded trust fund as the primary mechanism for financial assurance of long term activities, the FEIS provides inadequate financial assurance for the project, for perpetual maintenance after closure and for the environment in perpetuity. II. Summary of Necessary Action on Financial Assurance The FEIS should complete this analysis and provide a detailed financial assurance package</p>	FIN	S	O	8	The FEIS is not required to disclose details on financial assurance under MEPA or NEPA. The details for financial assurance will be developed through the permitting process and disclosed to the public for their review and comment.

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	<p>which includes, at a minimum, the following : 1. The FEIS should provide a thorough documentation of the direct and indirect costs of reclamation and perpetual operation, maintenance, and monitoring. The documentation should identify each individual component of cost; disclose the assumptions and sources utilized in deriving each individual component; and include a contingency amount for unanticipated costs. 2. The FEIS should use an Ecological Risk Assessment as a basis for determining critical elements of financial assurance, for calculating the amounts needed for an adequate contingency, and for determining the appropriate assurance mechanism. 3. The FEIS should provide financial assurances that will remain effective and fully payable in perpetuity, the majority of which should be a fully-funded trust fund. 4. As part of the EIS process, the agencies should solicit and consider public comment on the amount and mechanisms of financial assurance. In conclusion, the FEIS fails to meet the requirements under Minnesota Rules for determining adequacy as well as the requirements of NEPA and in its current form should be determined inadequate.</p>					
Margaret M Kielty	<p>Please do not approve the Poly met mine for northern Minnesota. It will devastate the environment and pollute the water. These are priceless! We need clean water more that ore!! the land is for all the people</p>	WAT	NS	X	1	
Frank Ongaro	<p>First, the Department of Natural Resources (DNR), the U.S. Army Corps of Engineers and the U. S. Forest Service put forth an exceptional amount of dedication and due diligence in reviewing and analyzing the FEIS. The review and analysis was accomplished in a thoughtful, deliberate and thorough process involving many stakeholders, including members of the public, the business community and state, local and federal governmental units. The FEIS analyzed the required topics identified in the original scoping documents, as well as other topics that were identified in both the public comment period and environmental review process.</p>	MEPA	NS	X	1	
Frank Ongaro	<p>Second, air and water quantity, and potential human health effects of the proposed project were all identified and analyzed in the FEIS. The project's water modeling, which was fully updated for the Final EIS, shows that PolyMet's treatment and mitigation plans will prevent acid mine drainage and meet all water quality standards. Specific attention was paid to the human health impacts of the project. The addition of the new section that concisely analyzed the human health impacts and addressed concerns raised by the Department of Health and others during the public comment period are a positive contribution to the report. The final analysis ultimately identified no adverse health risks. Water quality modeling and monitoring information at the mine and plant sites that also included mitigation and analysis of the potential for northward flow of groundwater are also supplements to the FEIS that addressed many concerns in the comment process. The final analysis shows that all of the concerns regarding these topics and others were more than adequately addressed in modeling and analytical discussions.</p>	MEPA	NS	X	1	

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Frank Ongaro	Third, during the public comment period over 58,000 comments were received through three well publicized and well attended public meetings and various other public comment opportunities. The DNR, the U. S. Army Corps of Engineers and the U. S. Forest Service did a tremendous job of categorizing all the comments, analyzing them and responding to all comments, and incorporating them into the FEIS when necessary. The co-lead agencies should be commended for providing more than adequate opportunities for the public to comment, listening to and analyzing those comments and incorporating them into the final environmental review document.	NEPA	NS	X	1	
Frank Ongaro	Finally, in conclusion, The Final EIS for the NorthMet Mine is far beyond "adequate." It takes a careful and comprehensive look at the project from every angle. The FEIS addresses all of the topics that were identified in the scoping process, addresses the public comments that were offered and follows the very detailed environmental review process set forth in Minnesota state statute and rule as well as Federal law, and therefore, should be deemed adequate.	NEPA	NS	X	1	
Steven Ring	I find that the Final EIS has several deficiencies that indicate that the design of this mine and mill will not satisfactorily protect Minnesota's environment.	PD	NS	X	1	
Steven Ring	Direction of flow of ground--water: there is no evaluation of the impact on the environment from possible large ground--water flows in a northerly direction from one of the pits. We are just provided with "we will monitor and adapt". We, the public, have been monitoring and adapting on the Dunka Pit's drainage for many years without solving the issue. The implications of the GLIFWC modeling suggest there could be millions of gallons per day flowing north. Where is the description of potential impacts? Where is the clear description of the technology and actions that will be taken?	WAT	S	N	8	MDNR et al. 2015c; DNR disagrees with GLIFWC's application of the EIS Mine Site MODFLOW model because that agency modified the model outside its intended purpose as defined in Final SDD Section 6.2. The Final SDD required the groundwater flow model to predict pit inflows at various stages of pit development (i.e., year 1, year 5, year 10, year 20) and include operation, closure, and post-closure. The model satisfies this condition of the final scoping decision. GLIFWC changed the EIS Mine Site MODFLOW model to include future mining activity at the NorthShore Mine Peter Mitchell Pits, which is outside the scope of the EIS. If the EIS scope were defined to assess of how future activity at the Peter Mitchell Pit might influence the closure conditions at the NorthMet site, then additional data would be required north of the Mine Site on which to refine the EIS Mine Site MODFLOW model for : 1) vertical hydraulic conductivity for wetlands and surficial deposits; 2) horizontal hydraulic conductivities in bedrock (e.g., Virginia Formation; BIF); 3) variability of hydraulic conductivities within the bedrock units, and 4) the hydrologic significance of 100 Mile Swamp in providing a source of water for downward leakage. Each of these refinements is important to quantitatively assess the likelihood and potential magnitude of a northward bedrock flowpath. Modeling would also have to reconcile uncertainty

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						<p>regarding the sequence and timing of future Northshore mining operations, including the depth of pit excavations and development of pit lakes relative to NorthMet-related pit conditions during operations and closure. Absent these changes, the results of GLIFWC's modeling is unreliable for impact assessment. Although not identified as an issue for assessment in the EIS, DNR considered potential future operations at the Northshore Mine against information that is available. The agency acknowledges it cannot rule out that future operations at the Northshore Mine could induce northward groundwater bedrock flow from the NorthMet Mine Site. See Final EIS Section 6.2.2.3.1. This might happen if there is insufficient natural downward leakage into bedrock from the overlying wetlands and surficial materials between the proposed NorthMet Mine (in closure) and the Northshore Mine (in future operations and closure. If there is sufficient downward leakage, then there would be groundwater flow divide between the two mines where there is no continuous one-way flow between the facilities. If natural leakage is insufficient to maintain a groundwater flow divide between the two facilities, then it is possible a northward groundwater flowpath would be present. DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected. The possibility of northward flow between the proposed NorthMet Mine and Northshore Mine is speculative and is not reasonably foreseeable with current information. There is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed</p>

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						NorthMet pits. When this might occur is not known, but it is most likely to occur after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. There would be ample opportunity to collect necessary data, and complete applicable environmental review and/or permitting prior to the development of a northward flowpath, including preparation of an EIS supplement if the conditions of Minnesota Rules, part 4410.3000, subpart 3 are met.
Steven Ring	Mine pit water must be treated forever: It is truly incredible that an EIS for a proposed mine could be considered “adequate” with a design that will require treating water for an unknown amount of time (> 100 years). It is time to acknowledge that the technology to mine these minerals safely is not represented by the NorthMet project plan.	PD	NS	X	1	
Steven Ring	Financial assurances: I realize that financial assurances are not necessarily part of the FEIS, but they actually are directly pertinent to the capability of the proposed mine to meet environmental requirements. If a ridiculously expensive design were proposed to meet water quality standards for a mine, the permitting agencies would realize it and reject the design as impractical. Yet, those agencies seem to be willing to consider a design and plan that is similarly ridiculous. The unknown, but lifetimes long requirement for treatment is fraught with exceptional financial risk. Financial risk leads to environmental risk due to inability to continue treating the water or maintain the facility. Recent history has several examples of mining companies declaring bankruptcy and leaving taxpayer to pick up the costs. What are the chances of this happening in a 500--year treatment project? Please recognize that this plan is unworkable and this FEIS is inadequate and unacceptable.	FIN	S	O	8	SDEIS Theme FIN 06
Steven Ring	4) Cumulative effects: I know that you are constrained to evaluate cumulative impacts based only on projects that are well developed. However, this project is taking place in a region with many similar mineral deposits and a high likelihood that some will be developed. Sulfide ore mining is inherently much more risky to the environment than hematite or taconite mining. As such, design failure can have a much larger impact. Therefore, the design of the mine, processing facility and tailings basin should be required to meet a much higher standard than iron oxide mining. In addition, if the risk of failure at one sulfide mine is X, the risk of failure at five mines would be 5X.	PD	NS	X	1	

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	<p>Because of the catastrophic nature of possible sulfide mining failures, the design requirements for sulfide mining must be extremely high. This, first mine in the region, must meet those extremely high requirements. Unfortunately, I see no discussion of these requirements in the FEIS, and lots of discussion in the press of potential design weaknesses.</p>					
Steven Ring	<p>Conclusion: There are many innovative approaches in the proposed design for the NorthMet project. Clearly, they have attempted to come up with a plan to mine sulfide minerals in a water--rich region of the earth that would extract the minerals and preserve the environment. However, it has become clear that they have not succeeded. The ore is so lean that massive amounts must be mined exposing large pits and lots of rock with sulfide metal exposures. The need to treat water for centuries is a significant design failure; it is likely to be impossible. The complexities of the flow of water off the site must be addressed. It is another design failure. Protecting the environment while sulfide mining in an area with large amounts of water is known to be extremely difficult – maybe, it has never been done. Several studies of how well mining operation met their water quality prediction have been completed. The results are daunting. Here is a comment on that from the Minesite Drainage Assessment Group (MDAG). (They are also quoted on a different topic in section 5.2.2 of the SDEIS): “Maest et al. (2006a and 2006b) and Kuipers et al. (2006) compiled comparisons of (a) predicted drainage chemistries before mining to (b) measured drainage chemistries after mining started. They found: -- Three--quarters (75%) of mining case studies with close proximities to waters underestimated (underpredicted) drainage chemistry and thus the downstream environmental effects. This was often due to overestimation of the effectiveness of mitigation measures. “ This is a company that has never run a mine, and thus there is no history with which to judge its capabilities. The agencies are exhibiting extreme credulity to expect that the plan for this project will meet its goals and protect Minnesota’s environment. No design or plan for something this complex is perfect, but the idea that we can “adapt” or “improvise” when some very predictable problems occur that were not considered in the FEIS is unacceptable. These situations are likely to compromise water quality or other resources. Please consider that the design of this project is flawed. We are not producing widgets in a manufacturing plant. This mine will operate in the natural environment with water, sun, snow, ice and storms. It is incredibly risky to accept this EIS as being adequate to actually protect those resources. As it stands, the FEIS leaves far too many unanswered questions, and evaluates far too few “what if” scenarios that have a probability of arising. Those minerals should be left in the ground until a company with a proven track record and a proven design and plan can extract them safely.</p>	GEN	NS	X	1	

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Susan Lynn	<p>I writing to call attention to your primary responsibility as elected leaders that you hold in trust the common property shared by the people of Minnesota. It is your duty to use scientific information to disallow pollution, resource destruction, chemical introduction and other harm to our resources. You cannot allow risk to be taken unless and until conclusive proof exists that such practices will not pose harm. Sulfide mining carries tremendous risk to the water and to the people of our state and the continent. The risk is well documented. Those who are in control of the corporations you are speaking with today are such people as Tony Hayward upon who's watch the gulf was harmed profoundly by Deep Water Horizon. You are allowing corporations like Antofogasta and Glencore with histories of grave pollution and abuse, of workers, to set up camp in Minnesota to the detriment of the people. While this will put money in the pockets of lawyers and a small host of other people, the people this will take money from will have scant share in the profits and would not want it at the real cost it comes at. We citizens quite literally allow you to take food from people's mouths by permitting mining companies to leak, ooze, pour or gush sulfide and other chemicals into the water. Sulfide interacts with mercury to produce methylmercury, the kind that lingers in the body, literally indefinitely, and harms babies in their mother's womb. Mercury is a byproduct of mining. Mercury harms neurological development. Presently 1 in 10 babies born on the North Shore of Lake Superior have abnormally high levels of mercury in their bodies at birth. The St Louis River has such high levels of mercury at present that no plan can be formulated to remove it, and make the fish safe to eat. The levels of mercury in the fish are such that those in our state who seek to sustain their lives eating the fish cannot do so. Half a billion dollars have been spent of the people's tax money to clean the waste that mining has heftily contributed to in the St Louis River, and still it remains polluted beyond health. It is further endangered now by plans for sulfide mining in the Duluth Complex which stretches from north of Ely to south of Aitkin. We have treaties with tribes that we must honor, that grant them the right to hunt and to fish. If we render the fish inedible we dishonor and eviscerate that treaty. We would like to protect fishing, wild rice harvesting and farming for all citizens of Minnesota and surrounding areas of the Midwest. I ask you to honor the responsibility you have to the people now and in the future. We are being put at risk by decisions to allow risk to our water from Sulfide Mining in the Northeast of Minnesota. Lake Superior holds 1/10th of the nation's fresh surface water and every person on the continent has a right to that water. It is not something the people can allow you, as the trustees of our lands and water and air, to permit it to be destroyed. We ask that until such time as there is a means to extract the disseminated body of minerals without risk to the water; that you not allow it. Please, uphold your duty to the people to hold their lands in safe trust, with the gravity due, to that duty.</p>	GEN	NS	X	1	
Tara Widner	<p>The rivers nearest the proposed mine, the Partridge and Embarrass Rivers, are wild rice waters that will likely be damaged by sulfide runoff from the proposed PolyMet mine.</p>	WAT	NS	X	1	
Tara Widner	<p>By PolyMet's own admission, the water used at its proposed mine will require 500 years of perpetual treatment—leaving a toxic legacy to our children and theirs. To put that treatment time frame into perspective, 500 years ago there were no European settlements in what is now the United States and Canada. The oldest company in North America, the Hudson Bay Company was incorporated in 1670—345 years ago. History shows that there is no amount of corporate stability that can guarantee a 500 year promissory note.</p>	FIN	NS	X	1	

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Tara Widner	PolyMet has provided no statement on the potential public health impact to the people who live and work in the region. Northeastern Minnesota has long been known for exceptionally high rates of mesothelioma—a cancer found mostly in people who live and work around asbestos. Data show that there are ‘asbestos-like fibers’ in the rock of the eastern Iron Range where PolyMet wants to put its mine. It was almost 50 years ago that Duluth area residents began trying to hold another mining company, Reserve Mining, accountable for damage caused by the tailings waste rock Reserve Mining dumped into Lake Superior for decades. Reserve’s cadre of attorneys worked relentlessly to distance the company from those damages. On April 24, 1982 the New York Times reported “...after more than 12 years of litigation in six courts, Federal District Judge Donald Alsop dismissed the suit against the Reserve Mining Company on Friday. He approved a settlement in which the company agreed to pay the cost of filtering drinking water affected by nearly a quarter of a century of dumping asbestos-laden mining wastes into Lake Superior. The company denies that there is any health hazard.” The Minnesota Department of Natural Resources has both scientific and historical evident demonstrating the potential negative impact of the proposed PolyMet Min. It seems reckless at best to ignore this evidence.	HU	S	O	8	SDEIS Theme HU 01
Tara Widner	Further, while the PolyMet enterprise may be expected to ignore the federal treaties guaranteeing the Ojibwe people’s rights to use and enjoy the area where it would locate its mine, the State of Minnesota must still observe and honor those usufructuary treaty rights.	CR	NS	X	1	
Tara Widner	On Balance, the entire PolyMet proposal with its seductive promises of short-term economic gain and its token regard for probable long-term cost, seems like a work of fiction. The proposal minimizes current and future public health risks to the people who live and work in Northeastern Minnesota, skates over the scope of the long-term environmental damage that the mine is likely to cause, ignores the treaty rights of native people, and makes 500 year promises that it is unlikely to be able to keep.	GEN	NS	X	1	
Tara Widner	The PolyMet proposal also would appear to violate the spirit, if not the letter of, the Clean Water, Land and Legacy Amendment (Legacy Amendment) to the Minnesota Constitution that was approved by the state’s voters in 2008. The Legacy Amendment was designed to: protect drinking water sources; to protect, enhance, and restore wetlands, prairies, forests, and fish, game and wildlife habitat; to preserve arts and cultural heritage; to support parks and trails; and to protect, enhance and restore lakes, rivers, streams, and groundwater.”	PER	NS	X	1	
Tara Widner	In a nation where mining companies have used ‘strategic’ bankruptcies to avoid meeting contractual obligations to worker, retirees and creditors alike, PolyMet’s promises to protect Minnesota’s legacy of clean water and land ring hollow.	FIN	NS	X	1	
Tara Widner	I urge you to remember that part of Minnesota that is being offered up as an ecological sacrifice is sacred to the Ojibwe and a treasure to all Minnesotans. Reject this FEIS.	CR	NS	X	1	
Jennifer Hengelfelt	I fully understand the above issues and personally ask that they are addressed fully, legally and ethically, without being swayed by lobbyists representing the industry.	NEPA	NS	X	1	
Jennifer Hengelfelt	I ask that there is better disclosure as to how polluted air, water and loss of wilderness qualities will impact the sustainable local economy.	SO	NS	X	1	

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Jennifer Hengelfelt	I ask that we have a full disclosure of the risks to the economy and public health over time as polluted waters continue to leach over hundreds of years from a closed mine site	HU	NS	X	1	
Jennifer Hengelfelt	I insist that we fully understand the risks of catastrophic weather influences on the flowage from tailing ponds.	GT	NS	X	1	
C.A.Arneson	Ironically, since sulfate had nothing to do with current shutdowns, the Natural Resources Research Institute (NRRI) 2014 Semi-Annual Report stated, "A new, low-cost sulfate remediation technology is needed immediately to avoid the potential shut-down of taconite operations in the State of Minnesota. The Minnesota Iron Range Resources and Rehabilitation Board (IRRRB) is offering \$125,000 in matching funds to NRRI to create this project, along with in-kind support from both Cliffs Natural Resources (NR) and PolyMet Mining." Excuse me? PolyMet already claims reverse osmosis works like a charm. The taconite industry ought to be well on its way to cleaning up its mess by now. But then, Minntac claims there is "no way to treat" its toxic waste from reverse osmosis. https://www.minnpost.com/environment/2015/05/despite-pressure-lower-Minntac-sulfate-emissions-status-quo-could-last-awhile	WAT	NS	X	1	
C.A.Arneson	Methyl mercury was to be monitored during the second phase of NRRI's pilot study, which reportedly began July 2014 and was to end mid-summer 2015; either methyl mercury has not been monitored, or results are negative enough to put NRRI's funding in jeopardy. Funding authorized by the Minnesota Legislature, representing the public. Yet, now there will be no methyl mercury numbers released to the public until 2016. Not until after PolyMet's Final Environmental Impact Statement is released. Coincidence? Meanwhile our Legislature voted to roll back environmental regulations, gut agency oversight, and eliminate public input meant to protect our waters and our children. Early childhood education, Governor Dayton; how about early childhood protection? https://www.minnpost.com/earth-journal/2015/05/legislatures-environmental-vandalism-could-undo-dayton-legacy-buffers Unfortunately legislators of a certain mindset dominate the Legislature. "All we're saying is, OK, let's take a breather over these next couple of years here and operate the same way we've operated for the previous 130 years until all the science is in, all the science is complete, all the rules are complete," said Rep. Carly Melin, referring to enforcing the wild rice sulfate standard. (AP) http://www.twincities.com/politics/ci_28122728/deal-reached-over-minnesotawild-rice-sulfate-standards A year ago came this press release: "House DFL Leaders, Rep. Melin and Parents with Suffering Children Announce Medical Marijuana Compromise." DFL Leaders and Melin apparently have forgotten that there are children suffering brain damage because of legislative actions on behalf of the mining industry, perhaps their own children and grandchildren. Minnesota's children have paid the price for the "way we've operated for the previous 130 years." Now Melin is telling them to "take a breather." Minnesota's children cannot afford to subsidize the mining industry with their health and intellect any longer – they never could. Wake up Minnesota, your babies are crying.	HU	NS	X	1	
C.A.Arneson	Scientists still do not completely understand how bacteria, sulfate, iron, and mercury operate in our waters, particularly in the mining impacted St. Louis River. How bacteria may work in collaboration with one another, how numerous (sometimes uncontrollable) factors – known and unknown – influence bacterial activity. Such comprehensive research does not exist. Until it does, there is no justification not to enforce the wild rice sulfate standard – in order to protect our children. http://www.ornl.gov/ornl/news/news-releases/2013/ornl-research-reveals-new-challenges-for-mercury-cleanup	WAT	NS	X	1	

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C.A.Arneson	Taconite mining in Minnesota is already having a profound effect on our water and air quality, on the health of our children. WE NEED COMPLETE CUMULATIVE IMPACT STUDIES NOW AS PART OF POLYMET'S SDEIS: PAST, PRESENT, AND FUTURE ACTIONS. Inspection of the Dunka Mine and Birch Lake Inspection of boreholes under Birch Lake Unnamed Creek is being used as a 7Q10 water; illegal, contaminant numbers are therefore flawed.	CUM	NS	X	1	
C.A.Arneson	Minnesota has experience with impacts from Duluth Complex material; the lack of ability to successfully deal with the Dunka problem needs to be a part of PolyMet's SDEIS.	WAT	NS	X	1	
C.A.Arneson	The effects on Birch Lake from such a small-scale taconite mine that encountered Duluth Complex material needs to be studied and considered as a past action.	CUM	NS	X	1	
C.A.Arneson	See aerial photos at the end of this document. The photos are raw footage; in other words the negatives. Due to their size, the images have been compressed from the originals in order to send them; the color of the 'plume' was lighter in the originals, and the green of the forest has intensified. Franconia Drill Barge is in the photos, just off Bob's Bay. Unnamed Creek empties into Bob's Bay of Birch Lake. Franconia drilled an exploratory borehole and sealed it the day before these photos were taken. (Minnesota Exploration Drilling records, 2005-2010). Beginning on (approximately) May 22, 2008, 5MGD were released from the Dunka Pit to prevent eventual overflow to Birch Lake. What effect did this sudden influx have on Birch Lake (per photos)? Suspended solids: In a photograph water with suspended solids will reflect light instead of absorbing it – water will look light; rather than dark as it normally would from the light being absorbed. The 'plume' on the water needs to be researched; all exploratory underwater borings need to be inspected. Heavy rain event (see link) occurred mid-month; an inflow may have kept water from flowing out of Birch Lake at the normal rate. http://waterdata.usgs.gov/nwis/dv?cb_00060=on&format=gif_default&period=&begin_date=2008-6-1&end_date=2008-6-30&site_no=05125000&referred_module=sw What is the status of the 1984 "slug" of heavy metals and sulfate at the bottom of Bob's Bay of Birch Lake? What plans are in place to halt the contamination from releases to Birch Lake from Peter Mitchell? Dunka contamination? There also needs to be acknowledgment and research into the fact that PolyMet will release contaminants to both the Lake Superior and the Kawishiwi/Rainy River watersheds; the Final EIS is incomplete and the public has been misled by the agencies charged to protect them, to protect their waters. Thousands of exploratory boreholes are already punched into the Duluth Complex and acting as conduits to our aquifers. Full-scale mining would send contaminants through the numerous faults and fractures (Copper-Nickel Study) and through the exploratory boreholes (many of which are unsealed or partially sealed). Some exploratory boreholes are not being sealed the full length, only 250 feet from the surface; the law allows it, no hydrologist worth his salt ever would. How these boreholes are being sealed is pretty much left to the exploratory companies, with little oversight unless there is a reported problem. When has anyone done a complete investigation? Before we consider a sulfide mine in the Duluth Complex, on Superior National Forest Land, we need to deal with and thoroughly understand the problems we already have with our ecosystems, with surface and groundwater degradation.	O	NS	X	1	

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C.A.Arneson	<p>The PolyMet SDEIS does not [adequately] address loss of habitat and other impacts to Minnesota’s moose population by proposed sulfide mining, as well as by taconite mining. This needs to be researched. Coal mining had its canary; it could be taconite mining (and other industry) has Minnesota’s moose. Minnesota needs to have the results of an extensive moose study before it looks at sulfide mining projects; it needs to rule out any possible connections. Having suggested two reasonable possibilities that may be related to the moose losses in Minnesota, I contacted several individuals connected with the moose study and to my knowledge most have been dubious. So I am including my article, and further information I have gathered, as part of my comments, asking that it be considered seriously. I made the possible connections to sulfates and methyl mercury because I was researching the mining issue, including sulfates; if some good can come of it for Minnesota’s moose it would be worth the years of my life I have spent trying to protect Minnesota’s waters. If there were any merit to my theory I hope it would not be dismissed due to political and corporate pressures, or simply because it came from someone outside the ‘ranks.’ Minnesota’s moose are an icon of our State; I care as much as anyone. Another writer also spoke of the utter lack of reference in the SDEIS to impacts on Minnesota’s moose population: http://www.minnpost.com/communityvoices/2014/02/where-are-concerns-Minnesota-s-moose-copper-sulfide-mining-debate My article: http://www.minnpost.com/community-voices/2013/04/are-sulfates-andmethylmercury-killing-Minnesota-s-moose MinnPost received an email from a reader, an anaerobic microbiologist who said: "My PhD was in anaerobic microbiology. The theory discussed is brilliant and highly plausible; particularly the link to warming climate." I found a paper online this past summer that I had not seen when I was researching for my article; it may be that someone posted it after I wrote the article. The paper is, "Transformation of mercuric chloride and methylmercury by the rumen microflora." http://aem.asm.org/content/38/4/626.long Evidently in the 1970's there was also concern about mercury exposure to rumen microflora. The study I linked above was done in 1979 and the results seemed to indicate that there was an equilibrium established between demethylation and methylation in the rumen that protected ruminants. Not long after I found the 1979 study, I came across a paper that reported (recently) identifying the bacterial families in a moose rumen and colon (the author, from the University of Vermont, has since been in touch and I have attached her info below).** I had been thinking that the 1979 paper had only looked at a few bacteria that the researchers felt were responsible for demethylation (and not in moose). I wondered just how many of the bacteria were responsible for mercury methylation and how many for demethylation (and how much effect each had), and if there was some way that the numbers would make a difference (could perhaps change the equilibrium). Also, the bacteria present in the rumen would be related to what a moose ate. I later learned that the Vermont researcher had seen my article and decided to take a look at demethylation in relationship to the bacteria she had identified — we were probably reading what the other wrote about the same time. Just a few months ago, I came across a paper that several college students had written; I subsequently spoke to their professor and expressed an interest in what his students had written concerning demethylation and rising temperatures. (In my article I had linked rising temperatures to the possibility of methylmercury being produced in the moose rumen — increased activity by anaerobic bacteria as temperatures increased.) The professor then told me about a paper he felt would be most helpful to me, one that his students had used for reference.* (At the time I did not discuss my theory with him, just asked about demethylation.) Basically, there is evidence emerging that indicates mercury methylation increases as temperatures rise and demethylation decreases as temperatures rise, possibly creating greater net mercury methylation. Higher temperatures and higher methylation occur in the summer months. (Also a time when more unexplained moose deaths are occurring in Minnesota.) So, my thought is this: with warming temperatures the equilibrium in a moose rumen between</p>	WI	S	N	8	SDEIS Theme WI 02

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	<p>demethylation and methylation may no longer be balanced (or offset) as moose become increasingly overheated. Moose may no longer be protected, if indeed they were. Species with larger body mass would be most significantly affected by climate change because of difficulty with thermoregulation. The Minnesota Zoo, in an article about their work with moose, stated: "Another concern is thermoregulation. (Adult moose have low surface-area-to-volume ratio, placing constraints on their heat dissipation capacities.)" Difficulty with thermoregulation could affect any equilibrium between demethylation and methylation in the rumen. Methylmercury could in turn interfere with thermoregulation. If the effects (resulting in death of an animal) were relatively sudden, how would that affect detection during a necropsy? *The paper below is the one that I was told I would find helpful (Vermont students used it for their research). It is often cited and well respected. I copied the pertinent section on temperature:</p>					
C.A.Arneson	<p>Mercury in the Aquatic Environment: A Review of Factors Affecting Methylation Susanne M. Ullrich, Trevor W. Tanton, and Svetlana A. Abdrashitovab Dept. of Civil and Environmental Engineering, University of Southampton, U.K.; Institute of Microbiology and Virology, Almaty, Kazakhstan 2. Temperature "It has been observed frequently that Hg methylation rates in aquatic systems peak during the summer months (Jackson et al.; Callister and Winfrey; Korthals and Winfrey; Bubb et al.; Hintelmann and Wilken; Watras et al.). Most studies have shown maximum methylation activity occurs during mid or late summer, although Bloom et al. found a sharp peak in sediment MMHg production in early spring, followed by a slow decrease throughout the remainder of the year. Seasonal variations in MMHg production and decomposition generally have been attributed to temperature effects, but are probably also linked with seasonal changes in productivity/nutrient supply and redox conditions (cf. Section III.B.5). Temperature most likely affects methylation as a result of its effect on the overall microbial activity (Bisogni and Lawrence). Wright and Hamilton noted that MMHg release from sediments at 4 degrees C was only 50 to 70% of that observed at 20 degrees C, suggesting that net MMHg production may be significantly decreased in winter due to lower rates of growth and metabolic activity, and Callister and Winfrey reported microbial Hg methylation in surficial river sediments had a temperature optimum of 35 degrees C. Korthals and Winfrey found that while both temperature and anoxic conditions were important factors influencing net methylation, temperature alone accounted for about 30% of the variation. The data suggested that increased net MMHg production was partly due to decreased demethylation rather than an increase in the actual methylation rate, however. Several other workers have also found that demethylation is favored by low temperatures, whereas higher temperatures favor methylation, leading to a large increase in net MMHg production in the summer (Bodaly et al.; Ramlal et al.). Abiotic methylation by humic substances has also been shown to gain in importance with increasing temperature (cf. Section III.A.2), but it is probably of little/ minor significance compared with biotic methylation. In contrast to the findings of Ramlal et al. and Bodaly et al., Matilainen et al. found that</p>	WI	S	N	8	SDEIS Theme WI 02

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	<p>the highest rates of both methylation and demethylation in surficial lake sediments coincided with maximum temperatures. Similarly, Matilainen and Verta found microbial demethylation rates in aerobic surface waters of small forest lakes (up to 13.2% d-1) were decreased by low temperatures. Temperature is clearly an important factor controlling both methylation and demethylation. It appears that moderately high temperatures have a stimulating effect on Hg methylation, which is most likely due to increased microbial activity. Together with seasonal changes in oxygen levels and organic content/primary production, this seems to account for the increased MMHg production rates usually observed in the summer. The results for Hg demethylation are somewhat contradictory, but most workers found demethylation is favored by lower temperatures. It may be that the rate of methylation increases faster than the rate of demethylation with increasing temperature." **This is the message I received from the Vermont researcher (Suzanne Ishaq): "Sorry it took me so long to get back to you, I had to dig through some data to find what I was looking for. I have done more sequencing on moose rumen bacteria using the Vermont samples, as well as some Alaskan and Norwegian. I didn't find very many bacteria in any of the three populations which were capable of demethylating mercury or reducing sulfate, so I ended up not focusing on that in that manuscript [manuscript in review]. Alaska did have more than the other two, and they were fresh off a summer diet whereas the other two locations were on a fall diet, but it still wasn't very many. I also couldn't distinguish which species they were, just that they were of the genus Pseudomonas, so they weren't necessarily capable of demethylation. And I didn't have enough Alaskan samples to know if it was just those moose which happened to have slightly higher counts than moose in other locations, or whether all moose in Alaska have elevated numbers of demethylating bacteria. Bacteria which can demethylate mercury include (but aren't limited to) some species of Pseudomonas sp., and Micrococcus sp. (Kozak S, Forsberg CW: Transformation of mercuric chloride and methylmercury by the rumen microflora. Appl Env. Microbiol 1979, 38:626?636.) and some bacteria in the genera Desulfomicrobium, Desulfobrevibacter, Desulfatibacillum, and Desulfobulbus (Bridou R, Monperrus M, Gonzalez PR, Guyoneaud R, Amouroux D: Simultaneous determination of mercury methylation and demethylation capacities of various sulfate-reducing bacteria using species-specific isotopic tracers. Env. Toxicol Chem 2011, 30:337?44). Your theory does sound like a good one; unfortunately I don't think anyone is working on the rumen populations with demethylation in mind. You would need to try and track moose so you knew where they were feeding, and at least sequence the plant matter in the rumen as well so you could tie the bacteria in with diet (i.e. aquatic plant species so you could tell if they were actually eating from swamps). You would also need to look into summer versus winter diets, to make sure that the bacterial levels were actually changing in response to the seasonal change of mercury. The problem with studying moose is that it is difficult to get fresh rumen samples without hunting the moose; you might have some luck looking into reindeer or wild deer species, since they are often studied in higher numbers, and then extrapolating. I know that Alaskan moose and reindeer have lower mercury levels than other wild ruminants, including those in Norway (6. Lokken JA, Finstad GL, Dunlap KL, Duffy LK: Mercury in lichens and reindeer hair from Alaska: 2005?2007 pilot survey. Polar Rec. (Gr. Brit). 2009, 45:368?374. 7. Lokken JA, Finstad GL, Dunlap KL, Duffy LK: Baseline environmental biomonitoring of mercury for risk assessment and reindeer management on the Seward Peninsula, St. Lawrence Island, and Fairbanks, AK. 2008.), so maybe it is because they have higher levels of demethylating mercury.</p>					

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C.A.Arneson	<p>If I ever generate enough concrete data I will certainly let you know, but right now I don't have statistical significance so this particular info isn't really publishable. Sorry I can't be more help." Insight into the bacterial gut microbiome of the North American moose (<i>Alces alces</i>) Suzanne Ishaq http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3585231/ http://www.uvm.edu/~uvmsrc/postercomp2012/posters/ishaq-pcomp2012.pdf In "Dairy Cattle Feeding and Nutrition," a study was referenced (Neathery and Miller) that found: "Methylmercury primarily affects the nervous system producing symptoms similar to those of polioencephalomalacia in calves." Moose: Additional information to consider: There is reason to look at the sulfate/methylmercury connectons for northwestern Minnesota moose losses as well. There are high geological sulfate concentrations, atmospheric sulfate and mercury deposition, but most importantly frequent flooding that exacerbates the spread of sulfates, the release of sequestered mercury, and the microbial production of methyl mercury; especially within the numerous impoundments that have been built to control the flooding (attractive and easy feeding locations for moose). Research has shown that these impoundments have elevated methyl mercury levels; higher than those found in natural surface waters. http://pubs.er.usgs.gov/publication/70024482 Simply put, impoundments are sulfate/mercury/methylmercury sinks. As well as prime feeding locations for moose. There are also agricultural and industrial sources. Among them, commercial wild rice fields (studies in California http://ca.water.usgs.gov/mercury/yoloBypass.html http://swrcb2.swrcb.ca.gov/centralvalley/water_issues/tmdl/central_valley_projects/delta_hg/other_technical_reports/ybwa_hg_final_rpt.pdf have found mercury and methylmercury in wild rice); coal-fired electrical plants, ash ponds and landfills; fertilizers and fungicides; use of copper sulfate; beet farming, beet processing and its waste; drainage ditches; reservoirs; water treatment plants; Boise Cascade's paper mill at International Falls, reportedly between 1990 and 1994 Boise was among the top three facilities reporting the most toxic pollution of Minnesota's waters. (What effect did ash wastes from its boilers have when spread on local farm fields?) I would also suggest that the moose study results reported in May 2013, showing Voyageurs National Park moose on the Kabetogama peninsula holding their own, may be quite significant since they would be the group most isolated from a sulfate/methylmercury connection in Minnesota.</p>	WI	S	N	8	SDEIS Theme WI 02
C.A.Arneson	<p>Further information: Gypsum (calcium sulfate) I recently came across a peer-reviewed paper on sulfur: "The Relationship Between Sulfur, Thiamine, and Polioencephalomalacia – A Review." It stated: "Sulfur was first linked to PEM in the 1980's when investigators determined that gypsum (calcium sulfate) added to cattle rations to control feed intake caused PEM. When gypsum was removed from rations, the incidence of PEM decreased." The word gypsum struck a cord, because limestone would be used in sulfide mining processing, creating massive amounts of (synthetic) gypsum as the byproduct; gypsum would also be produced from the coal-fired electricity powering the proposed mines. (Limestone is currently used for remediation at taconite sites). [Also used as a flux in processing taconite.] I knew there already were very high sulfate levels in areas surrounding taconite mines and other anthropogenic sources (power plants, water treatment plants). However, depending on how elevated the sulfate levels are, water can be bitter tasting; if given a choice ruminants would generally choose other waters. I also knew that extensive amounts of limestone are used for treating mining waste (as well as in coal fired power plants), which would not only mix with the sulfates but I suspected would also make a difference in the taste. I was curious. So I purchased some calcium sulfate from an animal nutritionist (he has been in the business for many years; feed supplier; works with veterinarians). I discovered calcium sulfate is quite tasteless. He tried it too. I told him why I was curious about it, and he brought up another point. If moose are anything like cattle, they know enough to lick</p>	WI	S	N	8	SDEIS Theme WI 02

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	<p>soil/calcium carbonate/gypsum, something neutralizing – like us taking Tums – when their rumens are upset (can help regulate pH so the rumen does not get too acidic) or if they are lacking calcium. So limestone or gypsum (calcium sulfate) may be very attractive to moose; if they get too much sulfate along with it however, it would also be a very big problem. Evidently, according to the DNR, PEM had not been diagnosed during the necropsies of moose that died. However, I suggest not ruling it out as a possibility, particularly when looking at proposed sulfide mining. “The most dramatic manifestations of S toxicity in ruminants are sudden death, with no lesions, and/or PEM. Polioencephalomalacia is a neurological disease of cattle and sheep, resulting in seizures, ataxia, blindness, and recumbency as the main clinical signs. It is usually fatal. Seven hundred of 2,200 ewes grazing a pasture previously sprayed with elemental S began showing signs of abdominal discomfort within two hours of exposure, and 220 ewes died within five days. Lesions of PEM were found only in the sheep that had survived for five days.” (Water Quality for Wyoming Livestock & Wildlife)</p> <p>https://deq.state.wy.us/wqd/wqd_home/announcements/final_draft_1.pdf Perhaps there are moose fatalities that are acute cases, without time for lesions to appear. It is possible for moose to develop PEM; there was a suspected case in North Dakota (grain overload) that was written about by DNR veterinarian Erika Butler. Which brings up the point that moose have moved into North Dakota, reinforcing the appearance that there is more at play than global warming. There have also been suspected cases of PEM in deer. What were the “ten percent of brain lesions of unidentifiable origins” found in 634 moose killed by hunters in Minnesota between 2007 and 2013? The quote was: “Another ten percent had brain lesions of unidentifiable origins?” (OnEarth) http://www.onearth.org/articles/2013/07/climate-change-could-wipe-outminnesotas-ionic-moose I also found this article interesting: http://www.nytimes.com/1996/03/12/science/acid-rain-leading-to-moosedeaths.html</p>					
C.A.Arnese	<p>Questions: What are the mercury levels in Minnesota’s moose (blood and cord blood, hair, tissue, muscle, organs, teeth)? Saying that they are “not seeing anything to be concerned about” is too vague. How much is too much? Where are moose feeding? What are they eating? Have the aquatic and terrestrial plants and browse that moose eat been tested for sulfates, mercury, methylmercury (what about cadmium, other metals)?</p> <p>http://www.sciencedaily.com/releases/2010/11/101105085330.htm http://www.apnewsarchive.com/1985/Maine-Moose-Hunters-Warned-Of-Possible-Cadmium-Contamination/id-7b70be903d1fbbfe79cbcaa3e6d15a8a Has anyone done the following to investigate methylmercury and the rumen? Suggestion from a scientist now working in the medical field: “I do not know much about the moose rumen but I assume it’s pretty similar to other ruminants. I actually found an article (attached here) that might point in a direction for necropsy tissue choices. The reason I found it is that I searched for the parameters that I recall being used decades ago in assessing domestic ruminant’s health, which focused on papillary health. That’s generally a good area to focus on in any animal’s alimentary canal. This moose article used a similar approach. Two thoughts: perhaps one could assay this papillary tissue assay, based on the gross anatomical parameters as defined in the attached article, and couple that with an enzymatic transferase assay such as that noted in [the following link] http://onlinelibrary.wiley.com/doi/10.1002/etc.5620210610/abstract;jsessionid=38D9E970813AF7D03FB08B00A3F4303E.d03t03?deniedAccessCustomisedMessage=&userIsAuthenticated=false. While I realize the latter is done in soil, recall that much of the soil enzymatic environment reflects anaerobic acidic activity due to the volatile fatty acids produced by those bugs. So I think either that soil assay, or something analogous, could work well with the rumen necropsy material. If you have the capability, I would seriously try to recover the VFA rumen fluid and analyze it by liquid chromatography if you have that type of asset available to you. It’s a tricky recovery if your material is</p>	WI	S	N	8	SDEIS Theme WI 02

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	remote in the field as the VFA chemistry changes quickly upon exposure to air when removed from the animal. It is best captured by aspirating with a gas tight syringe, which can then be placed directly into dry ice level chilling storage for transport." Precisely, where are moose in Minnesota dying and are there any location relationships to high sulfate and mercury sources/levels nearby? Is there a map with the moose fatalities pinpointed for the public to see the locations? Minnesota's moose are important! They may also be trying to tell us something. We need to understand what it is, not permit sulfide mining when we do not know what the ramifications may be to our rapidly declining moose population. I would like to add for my Final EIS comment the following: Minnesota has seen a high incidence of moose calf deaths and a surprising willingness for moose cows to abandon their young. Blame has been placed on wolves by many, but is it not possible that the effects of sulfates and/or mercury could be responsible for the calf loss and for the erratic behavior by cows? Perhaps causing an inherent weakness in newborn calves? Perhaps the effects of mercury are not enough to kill directly, but are enough to change the behavior of the mothers and the resistance/strength of their calves, making them easy prey for predators?					
William K. Dustin	the type of mining proposed here is going to pollute, and a massive low grade deposit in a wet environment is guaranteed to generate acid mine drainage essentially in perpetuity.	WAT	NS	X	1	
William K. Dustin	Instead of experimenting in a sensitive environment, I suggest that PolyMet apply their experimental technology in cleaning up one of the many polluted mine sites that already exist worldwide to see how well it works. If it works as well as the FEIS anticipates, then PolyMet could license their technology to others as well as applying it to their site here.	ALT	NS	X	1	
William K. Dustin	A ten percent chance that a pollutant will exceed the evaluation criteria is simply too high. At a minimum the standard should be P95 and ideally it would be P99. Computer models are quite uncertain as is evidenced by the climate models that have woefully underestimated the amount of global warming that is occurring.	WAT	S	O	2	FEIS Themes PER 37, WR 110
William K. Dustin	The cumulative effects analysis is inadequate by definition* because it refuses to consider the other proposed mines in the Duluth Complex. There is nothing "speculative" about the mine under development by Twin Metals. This company has offices in the Twin Cities and Ely, has been collecting core samples for years, has a proposed infrastructure that ties into the PolyMet project, and it has been running a column in the Ely Echo praising the value of mining. The fact that their proposal has not reached the permitting phase does not make it any less speculative. The environmental outcome of the PolyMet project is far more speculative than the likely success of Twin Metals receiving the necessary permits to mine, and their receipt will be even less "speculative" after the PolyMet approval.	CUM	S	O	2	FEIS Theme CU 02

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William K. Dustin	The FEIS is also vague about how its various proposals to protect the environment will be enforced. The most stringent of standards are worthless unless backed up by rigorous enforcement. The use of the passive voice in describing enforcement is indicative of this weakness. What this boils down to then is the adequacy of the financial assurance which cannot be determined until an accurate economic analysis is applied to all the items in the FEIS. The estimates that appear in the FEIS are way too low. Cleanup and mitigation costs are likely to approach ten billion, not 500 million. The determination of financial assurance will be an interesting exercise, and it had better be conducted above board, in full public view, with complete transparency. The funds for the financial assurance will also need to be protected from any political interference. We have had too many adverse experiences with financial game playing.	FIN	NS	X	1	
William K. Dustin	Although I am totally against this project, I do not question your integrity in doing your jobs to get it approved. It is most unfortunate that the state of Minnesota encourages this activity in the first place.	PER	NS	X	1	
William K. Dustin	Undisturbed natural areas are a resource that can be enjoyed by many generations and they provide ecological services that are grossly underestimated in economic accounting. It is extremely shortsighted that they do not receive the same valuation as other exploitable natural resources.	SO	NS	X	1	
Lori Olinger	The FEIS states that lime will be added to the East Pit during backfill to maintain PH. I am concerned about ARD into the filled pits and wetland over time. I think the FEIS is not clear on what will happen if the acid level continues to rise due to ARD over time. The Berkeley Pit in Butte, Montana is dealing with ARD. The pit filled with ground water and has a PH equal to battery acid. Right now ground water is still flowing into the pit and it is very close to the level where water will begin to flow out of the pit. To prevent that, a RO water treatment plant is being built and it will treat water there forever. It is expensive but Butte has no choice. The alternative is much more expensive. Minnesota still has choices and we should not go down the same path as Butte. How has the PH level of the pits and wetland been calculated for the next 500 years?	WAT	S	O	2	FEIS Themes WR 001, WR016, WR 023, WR 130, WR 203
Lori Olinger	How can the DNR ensure that PolyMet meets the required standards for construction and water seepage? I think an independent group should be involved in monitoring construction and in monitoring for water quality. PolyMet should monitor but should not be the only group involved in monitoring.	PER	NS	X	1	
Lori Olinger	The FEIS states that the basin will need monitoring and repair. I don't think the FEIS adequately covered the long-term monitoring and repair and has any type of information on plans for fixing if/when problems occur.	PD	NS	X	1	
Lori Olinger	there are legacy water quality issues from taconite basins and the risk for the copper tailings is greater than taconite tailings. If the DNR has not enforced standards for taconite basins, how can the public be assured that they will enforce standards for the much riskier copper tailings basins?	PER	NS	X	1	
Lori Olinger	A multi-year study conducted by the Univ of MN was conducted to evaluate the current sulfate standards for wild rice. The results of the study confirmed the current standard. However the MPCA decided to conduct a Peer Review and an additional 3 week lab testing. The proposal to change in the wild rice standards as a result of the lab testing seems too hasty and the timing and results are suspiciously coincidentally to the benefit of the PolyMet proposal.	PER	NS	X	1	

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Lori Olinger	The FEIS seems overly optimistic on the need and cost for water treatment into the future. It states that water will need to be treated for the foreseeable future but also talks about the possibility of transitioning to non-mechanical water treatment. Either mechanical or non-mechanical would require monitoring, maintenance, and replacement in the future and should include best-case and worst-case projections. The FEIS seems to include what I would call best-case and has little reference to worst-case (when things go wrong) plans other than to say that adjustments would be made. The costs for long-term, 500+ years should not be underestimated. PolyMet should be held responsible for long-term costs and not the State of Minnesota.	FIN	NS	X	1	
Lori Olinger	The FEIS states that PolyMet will be released when permit conditions are met. It also states that PolyMet must treat water for as long as necessary. I am concerned that PolyMet will be released too early. Some problems would be evident at closure but the most significant costly problems could occur well into the future. If permit conditions are evaluated too soon after closure then the significant future problems will not be the responsibility of PolyMet. The biggest environmental threats and costliest to clean-up are likely to occur years from now. PolyMet should have financial consequences for as long as the State of Minnesota which is 500+ years. PolyMet must have as much at stake as the State of MN for very long-term environmental impact or their focus will be to finish mining operations and resolve their responsibility as soon as possible. Minnesota will be left holding the bag.	FIN	NS	X	1	
Lori Olinger	Montana State University has undertaken a study of the airborne effects of pollution from the Berkeley Pit on the residents of Butte. We should consider results of this study to understand the potential impact to people living near the proposed PolyMet mine site. Butte is living with the consequences of open pit mining. Minnesota still has the ability to evaluate whether or not it would be safe. We should take the opportunity to do that rather than after the fact as is the case with Butte.	AIR	NS	X	1	
Lori Olinger	The opportunity to add 450 job for the next 20 years is not worth the environmental and financial risk. There are too many questions that have not been answered and disagreements that have not been resolved. The FEIS is a 'Happy Path' assessment that focuses on what is expected to happen if everything goes according to plan. But everything won't go according to plan. Copper mining has a very bad track record and this FEIS has not addressed all the possible issues and eliminated alternative mining options prematurely. We should wait until there are safer ways to mine this copper without the huge environmental risk. We should not approve a plan with such high probability of severe problems which cannot truly be fixed	SO	NS	X	1	
William Lane	The proposed Polymet mine is the proverbial square peg in the round hole that is northern Minnesota. It doesn't fit. It never will. The EIS has largely been created by the mining industry, the state of Minnesota has retained mining industry legal representation, and all this is being propagated to revive an industry notorious for turning pristine areas into blighted landscapes. Apparently, the art of industrial grifting is alive and well in Minnesota.	GEN	NS	X	1	

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William Lane	What this all comes down to is our legacy. Our legacy should not be a limited nostalgic reconnection for the mining industry and the return of "big wheels in the driveways". Instead, our legacy is what we protect and provide to the next generation and generations beyond. Water is what northern Minnesota is known for; pristine, drinkable, sustaining water. It is necessary for life and yet, we are moving forward with Polymet-designed models that make assumptions "nothing will go wrong" or better yet: something bad "probably" won't happen. Look at the Gold King mine in Colorado and Mount Polley in British Columbia; both "engineered and modeled" retention systems failed, leaving their legacy of undrinkable water; an introduction of chemical and mineral-toxicity into aquifers, and a tourism industry that may never recover. Those dams weren't supposed to rupture or leak but they did; my point being these are but two examples of short-term gain being traded for long-term environmental damage.	ALT	NS	X	1	
William Lane	A foreign-owned mega business whose interest in northern Minnesota is entirely profit-based, serving dinner on a platter of economic revitalization that will remain singular in focus during the short-term and worse yet, will irreversibly alter the hydrology, geology, and aesthetics of northern Minnesota forever.	SO	NS	X	1	
Tristan McCormick	Seriously! This is insane! Setting aside the philosophical/ethical obligation we have to this wilderness and future generations' access to it, the economic downside is enormous! Far more than the mine would ever make up for. Seriously. Please. From a 25 year old guy who dreams of bring his kids to this space (and fueling the economy with my gear rental, guide service, restaurant visits, etc), please do not let PolyMet go forward. Please.	GEN	NS	X	1	
Margaret Watkins	Because the Project is the first non-ferrous mine proposed in Minnesota, the Project and the issues regarding its environment impacts are precedent-setting. 20 years of mining is proposed, after which closure and post-closure maintenance would need to continue for more than 200 years because the waste rock will be acid generating. Therefore, Project impacts would be experienced during operations and for generations to come. Yet despite this, the FEIS has many of the same problems of the DEIS and the SDEIS, despite extensive comments and analysis by the Band and many other commenters. The FEIS does not adequately assess impacts, nor does it require appropriate mitigation, and it does not meet the requirements of federal law.	GEN	NS	X	1	
Margaret Watkins	In spite of numerous teleconferences, meetings, and comments in writing at every occasion provided by the Co-leads, the Band must reissue many of the same comments on the FEIS that it has issued on the SDEIS and the DEIS calling for basic evaluation of Project impacts and application of well established Council on Environmental Quality ("CEQ") standards for EIS preparation.	GEN	NS	X	1	
Margaret Watkins	Despite numerous discussions, citation to NEPA, and providing new, responsible opposing views developed after the SDEIS was issued and responses to comments had been written, the Band's post-SDEIS opposing views cannot be found anywhere in the FEIS. As a result, the Co-Leads' responses to the Band's opposing views are not contained in the FEIS either. Instead, in a written response more than halfway through the FEIS comment period, the Co-Leads provided that: Unresolved opposing views including MDOs presented between May 10, 2005 (the date of the Corps initial Section 404 permit application) and March 13, 2014 (the close of the 90 day comment period on draft Environmental Impact Statement) have been included in the FEIS. Opposing views and MDOs presented after March 13, 2014 have not been included in the FEIS. Agencies' decisions can also consider new substantive information as well. Accordingly, this does not preclude	NEPA	S	O	5	SDEIS Themes NEPA 08, NEPA 12

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	consideration of new substantive information in an agency's decision. ⁸ Although this doesn't preclude the Co-Leads from considering new substantive information, it does exclude the public from the opportunity to assess and evaluate that information before decisions are made and final actions are taken. And the outdated MDOs were cited as part of the decision-making process by EPA to deny the Fond du Lac Band's request for a CEQ referral for the FEIS. ⁹ This is a clear violation of NEPA and demonstrates the desire by the Co-Leads to quell any substantial concerns regarding the impacts of this Project.					
Margaret Watkins	NEPA also requires that an EIS at least discuss mitigation measures with "sufficient detail to ensure that environmental consequences have been fairly evaluated." ¹⁰ But the FEIS does not take the required "hard look" at all the environmental consequences of the Project, including polluting surface and groundwater resources and drying up or inundating thousands of acres of wetlands in the 1854 Ceded Territory, nor does it analyze alternatives with sufficient detail. Without adequate study of the adverse effects and determination of possible mitigation measures, the FEIS does not provide sufficient information for either public review or agency decision making. The FEIS therefore does not meet the intended purpose of NEPA which is "to ensure that information on the environmental impacts of any Federal, or federally funded, action is available to public officials and citizens before decisions are made and before actions are taken."	NEPA	S	O	5	SDEIS Theme NEPA 14
Margaret Watkins	Insufficient or inaccurate characterization of the hydrology: The authors reported primary causes of hydrologic characterization failures as overestimations of dilution, lack of hydrological characterization, overestimations of discharge volumes, and underestimations of storm size. ¹⁸	WAT	S	O	3	SDEIS Themes WR 007, WR 008, WR 071, WR 074, WR 078, WR 079
Margaret Watkins	Insufficient or inaccurate geochemical characterization of the proposed mine: ¹⁹ The primary causes of geochemical characterization failures were identified as lack of adequate geochemical characterization, in terms of sample representativeness and sample adequacy. ²⁰	WAT	S	O	3	SDEIS Themes WR 025, WR 025-3, WR 025-13
Margaret Watkins	Peter Mitchell Pit water levels from 1986-1987 were not used for model construction. Instead, water levels were used from 1996-27—a year when the Peter Mitchell Pits were full and discharging water to groundwater in the Partridge River basin. If Peter Mitchell Pit water levels had been incorporated from the same period of time that stream flow measurements were taken, i.e. 1986-87, groundwater flow direction predicted by the MODFLOW model would have been reversed and groundwater recharge predictions may have more closely mirrored the best available science for the project area. That is, 0.9 inches per year of recharge used in the PolyMet MODFLOW model versus the U.S. Geological Survey's 9.0 inches of recharge per year for the same area. Because baseflow and water levels were used from different time periods, accurate flow directions and gradients for groundwater, either in 1986-87 or for present and future conditions, are impossible to determine.	WAT	S	O	8	FEIS reference MDNR et al, 2014b
Margaret Watkins	The Partridge River was digitized so that in some of the MODFLOW model cells, the stage (surface) of the river (actually flowing downstream) is shown flowing uphill. Water flowing uphill is physically impossible and this defect contributes to the illusion of an endless supply of water.	WAT	S	N	2	Barr (Barr Engineering). 2015.

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Margaret Watkins	in the top layer of the PolyMet groundwater model, the water table was modeled using parameters for a confined aquifer with the potential to convert to an unconfined layer. ²⁹ By definition, the water table is unconfined. ³⁰ Modeling the top groundwater layer as confined produces the illusion of no drawdown	WAT	S	N	2	See Thematic Response WR 093. See FEIS reference PolyMet 2015m, Att. B
Margaret Watkins	instead of using the MODFLOW model to estimate water table drawdown effects, the co-lead agencies decided in 2010 that an analog method would be used. That analog approach was to use water table drawdown observations that had occurred at existing taconite pits on the Iron Range. However, the co-lead agencies did not use all of the available data and instead chose to “cherry pick” data that supported a similar range of drawdown that the “modified” contour lines indicated. Although tribal staff on multiple occasions provided the colead agencies with supplemental analog drawdown information, collected by MNDNR staff from additional taconite projects on the Iron Range that indicated drawdown was likely to impact an area similar to the unmodified MODFLOW model, the data was never considered. This is another major defect in the modeling.	WAT	S	O	3	SDEIS Themes WR 119, WR 121
Margaret Watkins	The scope of work did not require the usual steps to determine if the model inputs were similar to other published scientific information for the area, including: hydraulic conductivity, recharge, specific yield, and specific storage. And most of the values for the parameters employed to create the groundwater model were at least one order of magnitude less than any published scientific information for the same area.	WAT	S	O	3	SDEIS Themes WR 087, WR 092, WR 095
Margaret Watkins	the scope of work did not require review to determine if the Peter Mitchell Pit water levels had been incorporated from the same period of time that stream flow measurements were taken.	WAT	S	O	8	FEIS reference MDNR et al, 2014b
Margaret Watkins	several well and surface water monitoring stations’ data completely excluded from the water quality models used to predict Project impacts. ³⁶ Specifically, all data collected from groundwater monitoring wells GW008 (13 sampling events), GW009 (12 sampling events), and GW010 (9 sampling events), were excluded from the models.	WAT	S	O	3	SDEIS Theme WR 076
Margaret Watkins	nine surface water quality sampling events collected at PM 11, a sampling station on unnamed creek located northwest of the tailings basin half-way between the tailings basin and the Embarrass River, were used in the Projects models.	WAT	S	O	3	SDEIS Theme WR 076
Margaret Watkins	excluded from the models were data from nine sampling events collected at Station PM 12.1 in the Embarrass River upstream of the tailings basins. ³⁹	WAT	S	O	3	SDEIS Theme WR 076
Margaret Watkins	models intended to predict impacts from the Project were not calibrated to existing water quality in Colby Lake.	WAT	S	O	8	SDEIS Themes WR 043, WR 046
Margaret Watkins	hydrologic models for the Project were built using modeled inputs rather than actual measurements or estimates from scientific literature. This makes the Project models unable to accurately characterize groundwater flow direction, water tables, potentiometric surface in the aquifers, fluxes to rivers and streams drawdown/mounding impacts to the water tables or surface waters, or to predict water quality impacts. The models for the Project should have been calibrated using all available measured data and scientifically credible basic model inputs.	WAT	S	O	3	SDEIS Themes WR 073, WR 086, WR 097

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Margaret Watkins	The baseflow rate predicted by XP-SWMM is three times lower than flow data indicates, and implies recharge to the groundwater system from precipitation that is not consistent with published literature. ⁴³	WAT	S	O	3	SDEIS Themes WR 052, WR 086, WR 091, WR 092; see MDNR and USFS, 2014; MDNR et al, 2014; Barr, 2015d.
Margaret Watkins	The extrapolated baseflow used 20-year-old stream gauging data collected seventeen miles downstream of the mine site in the Partridge River, ⁴⁶ and stream gauging data that is more than 50 years old collected 11 miles downstream of the plant site in the Embarrass River. ⁴⁷ In fact, the data used to model impacts in the Embarrass River (1942-1964) watershed precedes the LTVSMC mining operations at the site. Therefore, the results are highly unlikely to be representative of current conditions at the mine or plant site.	WAT	S	O	3	SDEIS Themes WR 003, WR 004; see MDNR and USFS, 2014
Margaret Watkins	Not only is the Project modeled baseflow inconsistent with published literature, none of the measured data supports the baseflow predicted by XP-SWMM at SW003 of 0.5 cfs. XPSWMM's extrapolation of unrealistically low baseflows was used to calibrate the MODFLOW model and therefore influences virtually all aspects of the Project water quality and quantity characterization and impact prediction,	WAT	S	O	3	SDEIS Themes WR 003, WR 004; see MDNR and USFA, 2014
Margaret Watkins	Higher baseflows in the Partridge River indicate that the wetlands and river are connected to the groundwater aquifer, that mine pit inflow will be greater; and that groundwater will travel through the aquifer will occur at a much faster rate.	WAT	S	O	3	SDEIS Themes WR 005, WR 052, WR 092
Margaret Watkins	During subzero temperatures January 25-26 and February 15-16, 2011, the minimum baseflow measured by the MNDNR four miles south of the LTVSMC tailings basin ^{13.9} to 15 cfs in the Embarrass River. Model estimated the average annual baseflow for the Embarrass River, based on data more than 50 years old, at 8.7 cfs.	WAT	S	N	12	Model was not used to predict groundwater baseflow in the Embarrass River. See FEIS Section 5.2.2.2.1 and reference to MODFLOW model and calibration process in Water Modeling Data Package, Volume 2 - Plant Site (PolyMet 2015j, Attachment A). Also see Thematic response WR 003.
Margaret Watkins	FEIS indicates that mine pit dewatering impacts will be very limited or non-existent based on the assumption that there is little or no connection between the bedrock and surficial aquifers. ⁵⁰ This assumption is not supported by the data used to characterize mine site hydrology; instead, it is based on an unsupported "professional opinion." ⁵¹	WAT	S	O	8	SDEIS Themes WR 119, WR 120, WR 121
Margaret Watkins	information beyond the flow data collected by PolyMet implies that there may be substantial connection between the bedrock and surficial aquifers and that groundwater travel time will be exponentially faster than predicted. Water quality data collected from two deep boreholes in the area where the Project mine pit(s) will be located found tritium and un-ionized ammonia nitrogen. Both tritium and un-ionized ammonia indicate a strong connection with surface water. Tritium indicates that the water found in the deep boreholes was on the surface sometime after 1950, during or after nuclear testing when atmospheric deposition of this pollutant occurred. Un-ionized ammonia is produced by ore blasting activities. The bore holes where this pollution was measured are approximately one mile southwest of the Peter Mitchell Pit, which is the closest potential source of this pollution and has violated its NPDES permit on several occasions for exceeding un-ionized ammonia limits. Therefore, this data indicates that the PolyMet mine site is already hydrologically connected to the Peter Mitchell Pit through fractures. The distance between the Peter Mitchell Pit and the Project proposed pit(s) is approximately one mile, indicating that groundwater travel time through bedrock fractures will be orders of magnitude	WAT	S	O	10	SDEIS Theme WR 013

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	faster than Project modeling suggests. Such a connection means that dewatering of the mine pits will cause significant drawdown of the water table in the surficial aquifer, potentially dewatering wetlands and ephemeral streams. This also indicates that when the mine pit(s) refill, polluted water will seep and leak out into groundwater surrounding the project.					
Margaret Watkins	The monitoring wells that do exist near the tailings basin have concentrations of pollutants including iron, sulfate, manganese, aluminum, and fluoride that exceeded drinking water standards. But because of the limited distribution of monitoring wells, the extent of the existing contaminant plume is not known. No bedrock monitoring wells have been drilled in the vicinity of the tailings basin. However, domestic wells near the northern property line show substantial contamination of the groundwater aquifer.	WAT	S	O	3	SDEIS Themes WR 008, WR 074, WR 079
Margaret Watkins	the FEIS entirely skirts the question of overall impacts on the groundwater aquifer from putting an already-contaminated site back into production, and then releasing yet more contaminants.	WAT	S	O	8	SDEIS Themes WR 107, WR 108
Margaret Watkins	Blasting and shoveling ore will increase both the number of fractures and the connectivity of fractures potentially increasing baseflow and pit leakage into the bedrock layers below the bottom of the pit: the Virginia Formation and Biwabik Iron Formation.	WAT	S	O	10	SDEIS Themes WR 016
Margaret Watkins	The FEIS asks the public to believe that the most environmentally sound way to dispose of highly reactive waste rock is to put it back into the pit(s) and cover the piles with water.	WAT	S	O	8	SDEIS Themes WR 002
Margaret Watkins	Project baseline data used for both the Mine Site and the Tailings Basin are insufficient. A comparison of hydrologic data that was collected for two other projects in the region demonstrates that the PolyMet project is data-poor	WAT	S	O	3	SDEIS Theme WR 074
Margaret Watkins	existing studies of area hydrology, ⁶⁹ it is perplexing that the preparers have continually refused to use them, even as tribal cooperating agencies have repeatedly requested that they be used. Just a few publicly available examples include: the Minnamax Project; ⁷⁰ the LTVSMC Dunka Pit; ⁷¹ historic MNDNR fisheries documents; ⁷² data required under the Cliffs Erie Consent Decree; ⁷³ and the GFLOW model for the Upper St. Louis River Watershed. ⁷⁴ All these resources should be used to supplement the hydrologic analysis and fully inform the permitting agencies and the public.	WAT	S	O	3	SDEIS Theme WR 060-5
Margaret Watkins	Contaminants from the Project will likely contribute additional loading to these existing exceedences of MN WQS in the Embarrass River, Colby Lake, and the Partridge River. And, as a result of the Project, it appears that arsenic will exceed drinking water standards in Colby Lake.	WAT	S	O	8	SDEIS Themes WR 107, WR 108, WR 123
Margaret Watkins	No water samples have been collected from lakes near the tailings basin (including Hiekillilla, Mud, Kaunonen, or Hay Lakes) to determine if the pollutants found in the surface and groundwater at the existing tailings basin have caused	WAT	S	O	9	SDEIS Theme WR 075

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	contamination of those waterbodies.					
Margaret Watkins	existing LTVSMC Tailings Basin is not lined and currently releases seepage with elevated concentrations of sulfate, TDS, and hardness, among other constituents.” ⁸⁰ It just does not propose any effective means of remediating them.	WAT	NS	X	1	
Margaret Watkins	Even though the FEIS states that 90% of the seepage from the surficial aquifer and bedrock to 100 feet below the top of the bedrock will be captured ⁸¹ there are no plans to capture any seepage flowing through bedrock fractures. In fact, bedrock is the part of this seepage capture system that is supposed to prevent seepage from escaping from the east side of the tailings basin. Without any examples worldwide of such high seepage capture efficiency, the FEIS alleges that this is a fail-safe method of seepage collection able to collect 90 percent of the surficial aquifer seepage and seepage through the upper 100 feet of bedrock.	WAT	S	O	8	SDEIS Themes WR 018, WR 019, WR 020
Margaret Watkins	Anthony Runkel, Chief Geologist with the Minnesota Geological Survey, himself contradicted this approach in his comments on the NorthMet SDEIS: ⁸⁵ Investigations aimed at characterizing the hydrogeologic conditions of fractured bedrock for the purposes of predicting solute transport in crystalline bedrock elsewhere on the Canadian Shield routinely use a number of well-known techniques that were not applied in the hydrogeologic studies at the NorthMet Mine Site and Plant Site/Tailings Basin area. A key component of those investigations is the acquisition of hydraulic and water chemistry data at relatively discrete intervals of bedrock, with the focus on fracture characterization. In part this is accomplished through testing and water sampling of boreholes constructed with relatively short open hole intervals at variable depths (e.g. “nested” wells) and/or discrete interval packer testing and water sampling of long open holes. When these techniques have been used in generally similar hydrogeologic settings elsewhere on the Canadian Shield, the results support hydrogeologic conceptual models that differ substantially from those proposed for the Duluth Complex and Giants Range Batholith described in the SDEIS. Of particular significance for solute transport, the conceptual models commonly include key fractures or fracture zones of relatively high hydraulic conductivity, and multiple flow systems within the bedrock at individual sites. These flow systems are variably connected to the surface water system, have variable residence times, can have upward and downward vertical gradients within a local area, and horizontal flow directions that differ from one another. The data collected thus far from the proposed NorthMet Mine Site and Plant Site/Tailings Basin area are not sufficient to recognize the kinds of hydrogeologic features known to be characteristic of other crystalline bedrock settings on the Canadian Shield, described above. Nor are the data sufficient to adequately support the simpler conceptual model currently depicted in the SDEIS. Nevertheless, the FEIS dismisses fracture flow at both the mine site and tailings basin as insignificant	WAT	S	O	8	SDEIS Themes WR 007, WR 012
Margaret Watkins	Because of the aforementioned hydrologic characterization flaws and incorrectly calibrated groundwater model, none of the analyses based on hydrologic or water quality impacts are scientifically based and are therefore not credible.	WAT	NS	X	1	
Margaret Watkins	The completed tailings height of 1,735 feet above sea level ⁸⁷ is 60 feet above the highest land surface feature to the east, and 200 feet above the highest land surface features to the west, northwest, north and south sides of the basin, creating immense hydraulic head pressure that will push substantial amounts of seepage through bedrock fractures into the	WAT	S	O	8	SDEIS Themes WR 010, WR 061

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	surrounding environment.					
Margaret Watkins	Seepage capture rates projected by the Project Proponent and accepted by the Co-Lead Agencies are unrealistic and cannot be demonstrated by any other project that has been cited as a reference. Yet the tailings basin seepage capture system efficiency rates used to determine impacts are: 100 percent of the Tailings Basin’s surface seepage;100 percent of the groundwater approaching the containment system from the Tailings Basin’s east and south toes, and; 90 percent of the groundwater approaching the containment systems from the Tailings Basin’s north, northwest and west toes (PolyMet 2015d).88 The proponent’s claim that 90 percent or more of the seepage from this tailings basin can be captured is unrealistic, to say the least. Tribes requested any example of the “90 percent or better” capture efficiency rate to be provided by the Co-Lead Agencies, but they were not able to provide a single example anywhere in the world.89 Instead, they provided just one citation from an EPA guidance document that provided: Most barriers in the study have been in place for fewer than 10 years; therefore, long-term performance can only be extrapolated... All sites included in the study were existing sites that had vertical barriers and, in many cases, caps. None of the sites has an engineered bottom barrier. Therefore, the effect of leakage through aquitards was not evaluated in this study.90 But that report also indicated that “10% of the containment systems reviewed failed to meet the performance objectives and required corrective action, and 19% of the evaluated facilities did not have sufficient data to conclude whether the containment system was operating successfully or not.”91 In other words, even the Co-Leads’ own authority does not support a 90 percent capture efficiency rate here.	WAT	S	O	8	SDEIS Theme WR 020
Margaret Watkins	tailings ponds in Fort McMurray, Alberta, Canada, are cited by PolyMet as an example of successful seepage containment: Another example is the installation of a soil-bentonite cutoff wall around the perimeter of a mine tailings pond located in the province of Alberta, Canada. The cutoff wall is approximately 100-feet deep and 3 feet wide, and has a hydraulic conductivity of less than 1x10-7 cm/sec. The cutoff wall was used to isolate the tailings pond from down gradient surface water features including wetlands and the Athabasca River. Unfortunately, Environment Canada, a federal agency, published research in 2014 that substantiates that the Athabasca River has been contaminated by toxic chemicals seeping from Alberta’s tar sand tailings ponds in spite of the fact that ditches, cutoff walls, groundwater interception wells, and a water pumped back system were used to prevent the seepage pollution from occurring. One of the two leaky tailings ponds studied reportedly seeps toxic wastewater at a rate of approximately 2.65 cubic feet per second, or more than 625 million gallons per year, into the Athabasca	WAT	S	O	8	SDEIS Theme WR 020
Margaret Watkins	The Zortman-Landusky Mine in Montana installed containment and pump-back systems to be used in conjunction with a wastewater treatment facility. However, they “did not capture all surface and subsurface drainage.”95 The MolyCorp, Inc. Mine site in New Mexico concluded that “[t]he pathway for contaminant migration is the leaching of tailing seepage downward from the tailing facility to ground water that migrates through fractures to surface water.”96 The FEIS ultimately provides no credible support for its claim of seepage capture rates by these means.	WAT	S	O	8	SDEIS Theme WR 020

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Margaret Watkins	it appears extremely unlikely that PolyMet will be able to capture 90 percent or more of the seepage discharging from an unlined, leaking tailings basin that will ultimately be 60 to 200 feet above the land surface.	WAT	S	O	8	SDEIS Themes WR 018, WR 019
Margaret Watkins	Although the seepage flow has been reduced by approximately 55%, ¹⁰² at SD026 the concentrations of most pollutants have increased. Therefore, only a small pollutant load reduction has been accomplished. But the FEIS provides that: The only untreated Tailing Basin water entering the surrounding environment would be groundwater bypassing the northern, northwestern, and western parts of the containment system at a rate of 20 gpm, a 90 percent reduction of the groundwater flow rates occurring under current conditions. Most of the seepage affected groundwater bypassing the containment system would flow along the north, northwest, and west flow paths towards the Embarrass River and would affect down gradient groundwater quality. ¹⁰³ Without installing a single monitoring well in the bedrock to test this assumption, the FEIS provides that this is “conservative” because the modeling done by the Project proponent assumes that bedrock hydraulic conductivity is extremely low. ¹⁰⁴ So the FEIS’s conclusion that the method would be effective essentially is unsupported.	WAT	S	O	8	SDEIS Themes WR 008, WR 018, WR 194
Margaret Watkins	The Hydrometallurgical Residue Facility (“HRF”) is proposed to be located where the LTVSMC emergency overflow basin currently is. The photo on the cover of the SDEIS shows that emergency basin is flooded right now from groundwater seepage. Even though the PolyMet project proposes to use a double-liner to prevent leakage from the facility, head pressure from the existing seeps and springs at this site mean that the liners, even installed perfectly will not last long before rupturing. This is the most toxic of all the wastes created by the Project. Therefore, a new, dry location must be found for HRF placement. Furthermore, all cap and liner systems leak; therefore, some pumping of water that enters the hydrometallurgical residue cells would be needed in perpetuity.	WAT	S	O	8	SDEIS Themes WR 067, WR 127
Margaret Watkins	PolyMet has determined that water seeping out of the mine pits will flow towards the Partridge River based on their MODFLOW model. However, when the water elevation of the Peter Mitchell Pit is set to its closure elevation in MODFLOW, groundwater from PolyMet flows north towards the Peter Mitchell Pit and the Boundary Waters Canoe Area Wilderness (“BWCAW”) instead of south towards the Partridge River.	WAT	S	N	12	MDNR et al 2015c documents consideration of this phenomena. FEIS Section 5.2.2.3.5 Proposed and Recommended Mitigation Measures describes the contingency mitigation measures that could be implemented to prevent northward bedrock groundwater flow.
Margaret Watkins	Currently no bedrock monitoring wells are located near the tailings basin or in the area between the proposed mine pits and the Peter Mitchell Pit, and too few monitoring wells have been placed in the surficial aquifer to provide early detection of potential exceedances of water quality standards.	WAT	S	O	3	SDEIS Themes WR 079, WR 139
Margaret Watkins	Further, the amount of groundwater flowing out of the east pit northward is at least one order of magnitude more than the Barr MODFLOW model estimates. ¹⁰⁷ More groundwater flowing from the PolyMet mine pits and the tailings basin than has been predicted by PolyMet’s modeling will cause concentrations of pollutants to increase due to less dilution from background groundwater concentrations, likely causing excursions above groundwater and surface water quality standards for several pollutants including mercury, sulfate, arsenic, copper, nickel, aluminum, manganese, and cobalt.	WAT	S	N	12	The basis of the commenters assertion that groundwater flow is an order of magnitude greater than predicted is unclear. Presumably this assertion could be based on GLFWIC FEIS comments that reference uncalibrated use of the MODFLOW model for purposes which the model was not designed (see FEIS Reference MDNR et al 2015c). Comment

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						addressed under Thematic Response WR 005.
Margaret Watkins	based on PolyMet's own data showing un-ionized ammonia and tritium in groundwater from a deep bore hole at the proposed mine site, the rate of travel is likely at least one order of magnitude faster than projected. This means that pollutants from the mine site and plant site could reach compliance points in 20 to 50 years instead of 200 to 500 years as PolyMet claims.	WAT	S	O	10	SDEIS Themes WR 013
Margaret Watkins	Using the flawed hydrologic characterization and incorrectly calibrated groundwater model to assess impacts on stream flows in the vicinity of the Project allows PolyMet to claim that with flow augmentation for streams near the tailings basin, the Project will not change stream flows at the mine site or plant site more than 20 percent, plus or minus. And PolyMet further claims that there will be no cumulative effects on stream flow because of the augmentation planned for the tailings basin, and the lack of connection between the bedrock and surficial aquifer at the mine site.	WAT	S	O	8	SDEIS Themes WR 183, WR 185
Margaret Watkins	Since baseflow is itself partially supported by wetland drainage, it is likely that wetlands between PolyMet and the Peter Mitchell Pit will experience drawdown.	WAT	S	O	8	SDEIS Theme WR 119
Margaret Watkins	The Project CWA Section 404 wetlands permit with corresponding CWA Section 401 certification were put on Public Notice at the same time as the FEIS. This is problematic from a number of perspectives. As stated previously, the mitigation measures that have been identified in the FEIS, and very few alternatives, were not analyzed or evaluated using the required NEPA "hard look" so that the LEDPA could be established. Due to the lack of alternatives, the agency preferred alternative appears to be PolyMet's preferred alternative. Combined, this makes it exceptionally difficult, and meaningless to provide any input on the 404 permit or the corresponding 401 certification.	COE	S	O	3	SDEIS Theme COE 04
Margaret Watkins	Unfortunately, the flawed hydrologic characterization and incorrectly calibrated groundwater model, along with cherry-picked analog data were used to assess indirect wetland impacts. In fact, the PolyMet (Barr) MODFLOW files showed a prediction of approximately 8,922 acres impacted by one foot or more of drawdown. This discrepancy of approximately 2,000 additional acres of indirect impacts associated with drawdown has not been acknowledged or addressed by the Co-Leads. Further, the USACE has not developed a monitoring plan to assess after-the-fact Project impacts to wetlands, but claims that will be the way to best determine and mitigate indirect wetland impacts:	WET	S	O	3	SDEIS Theme WET 08
Margaret Watkins	Statements regarding which wetlands will be monitored are contradictory on page 5-307 and 5-308 of the FEIS. On page 5-307 monitoring is recommended for wetlands with moderate sensitivity to drawdown, while on 5-308 monitoring plans would be developed for wetlands with a high likelihood of indirect effects. Monitoring and mitigation is not anticipated for wetlands with a "slight potential" for indirect effects. So not only are the Co-Leads deferring identification of impacts until after PolyMet begins operations by stating that monitoring is the best way to determine after-the-fact Project impacts, they are suggesting that monitoring may not be required for hundreds of acres of wetlands in the moderate and slightly sensitive categories. Further, these categories are not based on science, 116 and without monitoring impacts can't be identified and compensation won't be required.	WAT	S	O	5	SDEIS Theme WR 139

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Margaret Watkins	The USACE is deferring identification of project impacts until PolyMet begins operations, and deferring final determination on the LEDPA for the EIS Record of Decision.118 40 C.F.R. Section 230.10(a) states that compensatory mitigation may not be used as a method to reduce environmental impacts in the evaluation of the LEDPA and that LEDPA must come before considerations of compensation. And the burden of proof to demonstrate compliance with Guidelines rests with the applicant; where insufficient information is provided to determine compliance, the Guidelines require that no permit be issued.119	WAT	S	O	5	SDEIS Theme WR 130
Margaret Watkins	The FEIS's failure to properly model and mitigate seepage and baseflow rates could result in profound impacts on wetlands. The estimates of groundwater drawdown are currently based on anecdotal and limited observations.126 Because of the generally flat topography and extensive wetlands, mine pit dewatering would likely cause substantial dewatering in nearby wetlands. Estimated indirect impacts to wetlands due to groundwater drawdown at the mine site are summarized in FEIS,127 but without the use of a reliable groundwater model. Instead, dewatering impacts are assessed using an analog method where wetlands impacted by another "equivalent" site are compared with wetlands surrounding the Project to provide an estimate of both the depth and distance from the mine pit(s) that dewatering occurs. The decision to use an analog method came from the Wetlands Impact Assessment Planning work group process, in spite of Tribal Cooperating Agency objections. These objections include: (1) the PolyMet proposed mine pit will be hundreds of feet deeper than any of the "analog" mine pits; (2) PolyMet mine pit walls will be crystalline and sedimentary bedrock versus the analog mine pits in sedimentary bedrock only; (3) data collected from the site would be relatively inexpensive and should be used to inform impact assessment; and (4) relying on only a partial set of available "analog" data as the source of information to estimate dewatering impacts is selective and not scientifically robust.	WAT	S	O	8	SDEIS Theme WR 119
Margaret Watkins	the FEIS states that perched wetlands cover over 50% of wetlands at the mine site. Unfortunately, wetlands interaction with the surficial and bedrock aquifer cannot be reasonably determined due to inconsistent hydrologic characterization, incorrectly calibrated groundwater models, and selectively used analog data. Perched water tables have not been documented by hydraulic head measurements from nests of piezometers; therefore the notion that most of the bogs in the mine site area are ombrotrophic is merely conjecture: The datasets that supports the NorthMet wetland classification does not allow an explicit critique of whether the wetlands within this site are ombrotrophic bogs or minerotrophic fens.	WAT	S	O	8	SDEIS Theme WR 120
Margaret Watkins	In 2015, although not mentioned or cited in the FEIS,130 the USACE issued an amended opinion in response to SDEIS comments that states "[o]mbrotrophic bogs, although precipitation driven, can have flowpath connections with groundwater; therefore, these wetlands could be impacted by groundwater drawdown." Several wetland hydrogeologic studies that have been published provide scientific evidence that raised bogs are directly connected to groundwater flow systems in the underlying mineral sediments both in large peat basins and smaller peatlands. These published scientific studies demonstrate that peatland development to bogs or fens is determined by the local hydrogeologic setting rather than surface processes as suggested by the Co-Leads. And, these publications provide substantial evidence that ombrotrophic bogs are susceptible to both alterations of groundwater flow and pollutant transport.	WET	S	O	3	SDEIS Theme WET 09
Margaret Watkins	the Project proponent has suggested that "most (70 percent) of the NorthMet waste rock would be the low-sulfur, non-acid-generating" and will never cause acid mine drainage. However, the north wall of the east pit is composed of the	WAT	NS	X	1	

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	Virginia Formation (sulfur concentration 0.4 -5%) meaning that it will be exposed to both air and water and will likely contribute a substantial load of sulfate and metals to mine pit water. 20 feet of pit wall will never be submerged and as such constitutes a perpetual source of mine related contaminants.					
Margaret Watkins	PolyMet claims bedrock transport of contaminated water is negligible due to the very low bulk hydraulic conductivity of bedrock and that groundwater flow rates in these flowpaths were not large enough to affect water quality at the groundwater and surface water evaluation locations. As stated previously, due to the flawed hydrologic characterization and incorrectly calibrated groundwater model, these claims are unsubstantiated.	WAT	S	O	8	SDEIS Theme WR 010
Margaret Watkins	The flowpaths and evaluation locations that resulted from this flawed analysis are south of the mine pit instead of north. This means that the Co-Leads are literally looking in the wrong direction and simply not considering some of the most severe Project impacts.	WAT	S	O	8	MDNR et al. 2015c
Margaret Watkins	Because of continued inputs from the stockpiles and the pit walls, the pit lake could exceed surface water quality standards essentially forever.	WAT	S	O	2	SDEIS Themes WR 035, WR 129
Margaret Watkins	an MPCA document from the Minnamax Exploration Project, a test shaft drilled into the Duluth Complex, the rock formation where the mine would be sited, by AMAX Corporation in the 1970s, approximately three miles from the Project mine site. This document states that water was encountered 147 feet below the surface infiltrating into the test shaft at approximately 14 gallons per minute and identified another potentially water bearing fracture zone at 900 feet below the surface. ¹⁴¹ This means that the volume of bedrock groundwater that may be encountered by the Project mine pit has been vastly underestimated.	WAT	S	O	10	SDEIS Theme WR 007
Margaret Watkins	Other MPCA documents detail an unexpected saline water discharge that resulted as part of the AMAX Exploration Project from a water pocket 1,391 feet below the surface. The large quantities of saline water discharged, as much as 275 gallons per minute to Langley Creek, killed much of the vegetation en route. Data show severe impacts to wetlands in the vicinity of the project. Water from stockpiles that were minuscule in comparison to the stockpiles proposed for the PolyMet Project drained water with very high concentrations of nickel, cobalt, copper, zinc, and sulfate, and discharged that water into Langley Creek and the Partridge River. The project polluted streams, groundwater, and a large wetland complex in its vicinity in order for the MNDNR to study potential impacts and mitigation strategies for non-ferrous mining. Yet the data collected from the AMAX project was not used to predict water quality or wetlands impacts presented in the PolyMet FEIS. Also ignored was experience with the Dunka Pit, located on the old LTVSMC site approximately five miles north and east of the PolyMet Project mine site.	WAT	S	O	10	SDEIS Themes WR 007, WR 060-4, WR 060-5
Margaret Watkins	The State of Minnesota spent \$4.3 million over three years in the late 1970s to produce the Regional Copper-Nickel Study, a 5- volume compilation of technical information regarding the potential impacts of copper-nickel mining in the Duluth Complex. ¹⁵⁸ Nevertheless, predicted water quality impacts and ineffective mitigation methods referenced in the Study were ignored when the technical documents and SDEIS were drafted for PolyMet. Therefore, water quality impacts have likely been underestimated and the mitigations proposed may not be effective.	WAT	S	O	3	SDEIS Theme WR 023

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Margaret Watkins	The cumulative public information regarding risks to area hydrology from mining the PolyMet site cannot be dismissed by inserting extrapolated data in place of measured data, or by cherry-picking measured data. Impacts to surface waters, groundwater, and wetlands for a project of this size and complexity demand a scientific, data-driven approach, rather than one based on opinion and selectively used data.	WAT	NS	X	1	
Margaret Watkins	Paste tailings placed on a liner and covered could have a profound, minimizing effect on pollution reaching the Partridge and Embarrass River watersheds wetlands and the Embarrass River and Second Creek. But the FEIS, without justification, does not even mention this modern technique, despite the fact that it is used by many mines in U.S. and around the world, ¹⁶¹ : Converting to paste tailings technology from conventional slurry tailings at most mines makes sense both environmentally and economically. Paste tailings use less water; require less land; do not require engineered containment dams; generate less acid and contaminants; reduce long-term costs and allow for early reclamation. Slurry tailings use and discharge large volumes of water, require dust control measures, require large land areas and containment dams for disposal, and create contaminated water that must be captured and treated. ¹⁶²	ALT	S	O	10	SDEIS Themes ALT 06, ALT 10
Margaret Watkins	the tailings basin seepage capture rate of 90 percent or more assumed in the preferred alternative has not been demonstrated anywhere in the U.S. ¹⁶⁶ and is simply not possible because the tailings basin was built without a liner.	WAT	S	O	8	SDEIS Themes WR 018, WR 020
Margaret Watkins	In response to comments about this defect received on the SDEIS, the Co-Leads state only: “[a] thickened tailings (paste tailings) alternative (A1) was considered but eliminated in the DEIS and post-DEIS, as it was found not to offer significant environmental benefits when compared to the NorthMet Project Proposed Action. ¹⁶⁸ One of the DEIS and post-DEIS claims paste tailings were not given the NEPA required “hard look”. Of “no significant environmental benefits” used to dismiss paste tailings was the re-use of a brownfield site (the LTVSMC tailings basin) instead of disturbing an existing natural site. However, in the final scoping decision documents for the project, several brownfield sites were identified as alternative locations for tailings disposal ¹⁶⁹ rendering that argument moot. Due to the overestimation of seepage capture possible, and possible mitigation strategies to prevent catastrophic tailings dam failure for the LTVSMC tailings basin, the environmental benefits of	ALT	S	O	10	SDEIS Themes ALT 06, ALT 10
Margaret Watkins	The FEIS does not require the use of perpetual pumping, a proven mitigation method. But perpetual pumping of the mine pits to prevent formation of a pit lake is required by the State of New Mexico, Office of Natural Resource Trustee, for the Chino and Tyrone copper mines expressly to protect groundwater and waterfowl. ¹⁷⁰ Numerous western mines have discharged plumes of polluted water into the bedrock aquifer from leaking mine pits, tailings basins and waste rock piles, a problem that is not only difficult but expensive to fix. ¹⁷¹ Requiring perpetual pump out of the mine pit would minimize leakage of contaminated water into the surrounding bedrock aquifer thereby protecting groundwater that the State is required to as source of drinking water.	ALT	S	O	4	SDEIS Theme ALT 04
Margaret Watkins	Suggesting that encumbrance compensation may affect the ability of PolyMet to secure financing is a completely unsubstantiated comment used to deflect the environmental benefits that could be gained by backfilling the west pit. Backfilling all of the mine pits with waste rock would reduce the surface footprint of the mine and make possible 526 acres of wetland an unlined waste rock pile, as proposed in the preferred alternative, that would have to work at an above optimum capture rate in perpetuity. Capping and re-vegetating the mine pits after backfilling with waste rock would	ALT	S	O	10	SDEIS Themes ALT 03, ALT 06

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	prevent deep infiltration of precipitation. In combination, perpetual pumping and backfilling the Category 1 waste rock pile would substantially reduce the risk of polluting groundwater and wetlands in the Partridge and Dunka River watersheds. Restoration where the Category 1 stockpile is now proposed to be stored without a liner in perpetuity. This alternative would prevent the need for a separate seepage capture system around					
Margaret Watkins	The FEIS also fails to require engineered liners. Engineered liners for the Category 1 waste rock stockpile and the Overburden Storage Layout Area (“OSLA”) would ensure that seepage would not migrate into fractures below the storage facilities and increase the effectiveness of seepage capture. The OSLA will contain peat that has sequestered mercury. When water flows through the OSLA the seepage will transport some of the mercury from the peat. By lining the OSLA, less mercury will escape into the environment. If the Category 1 Stockpile were lined, seepage capture efficiency would increase and less water carrying pollution would migrate from the pile into the fractures below the storage area thereby protecting groundwater.	ALT	S	O	10	SDEIS Themes ALT 07, ALT 13
Margaret Watkins	After operations, the FEIS contemplates that the RO plant would continue to treat tailings basin seepage and begin treating tailings pond water. The treated water would be used for augmentation of streams near the plant site. Mechanical water treatment is part of the modeled NorthMet Project Proposed Action for the duration of the simulations—these are 200 years at the Mine Site and 500 years at the Plant Site. The duration of the simulations ensured that peak groundwater concentrations at the locations of release to surface water would occur during the model simulations. ¹⁷³ As the Project is currently proposed, after operations, the mine site wastewater treatment plant will be converted to RO to treat the west mine pit lake and Category 1 stockpile seepage for discharge to the west pit outlet creek that flows into the Partridge River. ¹⁷⁴ An alternative that was not considered in the SDEIS would use RO at the plant site from the start to treat stormwater, mine infiltration, and waste rock pile seepage. Using RO-treated water for stream and wetland water augmentation in the Partridge River watershed would provide mitigation for the some of the adverse effects of mine pit dewatering.	ALT	S	O	10	SDEIS Themes ALT 09 ALT 13
Margaret Watkins	adequate financial assurance must be set aside to maintain and operate perpetual RO treatment at both the mine and plant sites.	FIN	S	O	8	SDEIS Theme FIN 05
Margaret Watkins	RO-treated water should be used to augment streamflow at both the plant site and mine site. RO will not cause waters in the vicinity of the plant site to comply with WQS due to low seepage capture efficiency at the tailings basin.	WAT	S	O	4	SDEIS Themes WR 125, WR 184

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Margaret Watkins	<p>The Band has long cited this defect in its comments, and EPA cited the lack of alternatives as a factor when issuing an EU-3 rating for the DEIS. Although the SDEIS and FEIS were revised to reflect the Project proponents' preferred action, still, the only alternative analyzed in any detail concerns the acreage of the proposed land exchange. This does not represent rigorous exploration and objective evaluation of potential alternatives and is a serious violation of NEPA that has not been remedied. Exacerbating the problems that have persisted throughout the DEIS and SDEIS, the adaptive management concepts listed below (grout curtain, pit lake depression, groundwater extraction wells, artificial recharge) represent new MDOs regarding potential alternatives that were not even disclosed in the FEIS. In sum, the FEIS, SDEIS, and DEIS have all failed to substantively consider many alternatives that may provide mitigation for, or prevent long-term environmental damage. If the mitigations that have been listed above had been given the "hard look," as least some of them would have been considered Project alternatives. However, as plainly stated in chapter 3, "[u]ltimately, the NorthMet Project No Action Alternative was the only alternative evaluated in detail in this FEIS." Instead, "adaptive management concepts" appear to have replaced the alternative analysis—but these do not comply with NEPA or replace a true alternatives analysis. Many of the adaptive management concepts should have been rigorously explored and objectively evaluated to determine the cost and associated potential environmental benefits. These concepts appear in the FEIS text as "strategies" or "plans." In chapter 5, adaptive management is defined as "a system of management practices, based on clearly defined outcomes and monitoring requirements, that assesses whether management actions are meeting the desired outcomes, and, if not, prescribes potential actions that would ensure the defined outcomes are met." But even in the adaptive management plans provided the potential actions that "would ensure the defined outcomes are met" haven't been rigorously evaluated to determine if they could actually be implemented, and if so, whether the desired results would be attained. There are no "trigger points" for implementation; instead the FEIS states that "periodic assessments would be carried out to ensure continuous protection of groundwater and surface water quality and compliance with water quality-based effluent limits."180 This is troubling because periodic assessments (if measurements are required) are indications of water quality. Modeling may be used if an up-tick in concentrations is identified prior to an exceedance of water quality standards. However, without trigger points in the adaptive water management plan ("AWMP"), "periodic" seems to indicate that opportunities to apply adaptive water management to prevent pollution will only mitigate pollution once it has occurred.</p>	ALT	S	O	5	SDEIS Themes ALT 04, ALT 13, ALT 21, ALT 24, WR 007, WR 130

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Margaret Watkins	<p>The MNDNR and USACE considered underground mining as an alternative to the proposed open pit(s) for the DEIS in 2009, but eliminated it because it would have had “a significantly reduced rate of operation that would not be considered economically feasible, and, therefore, would not meet the Purpose and Need of the Project.”¹⁸³ Even though underground mining was reconsidered for the SDEIS, the Co-Lead Agencies did not “exercise a degree of skepticism in dealing with self-serving statements from the prime beneficiary of a project”¹⁸⁴ when analyzing this (or any other) alternative. The Project proponent eliminated the alternative based solely on an economic decision that underground mining would not be as profitable as open pit mining. The Co-Leads stated in the SDEIS that “it was not possible to undertake a quantitative, side-by-side assessment of the underground mining alternative.”¹⁸⁵ Thereafter, the FEIS concludes an underground mine would have a reduced mining rate and life of mine, employed fewer workers for a shorter period of time, and reduced state and local tax revenues.¹⁸⁶ Conversely, although the underground mining alternative would offer environmental benefits, the SDEIS included no economic analysis of those benefits. Still, the Co-Lead Agencies determined that underground mining would result in reduced socioeconomic benefits, and “PolyMet would not move forward with an unprofitable project, thus any potential environmental or socioeconomic benefits associated with this alternative are moot.”¹⁸⁷ Although underground mining was considered technically feasible, the Co-Leads further provided that: PolyMet is a private sector and for-profit company, the value of the saleable material would need to provide sufficient income to cover operating cost (which includes, but is not limited to, the cost of mining, processing, transportation, and waste management), capital cost (to build and sustain facilities), an adequate return to investors, reclamation, and closure costs and taxes. Using underground mining would result in most of the NorthMet Deposit left unmined because of its low metal value (i.e., less value than the cost of mining and mineral processing). Other material would have to be left in place for safety reasons, to prevent collapse.¹⁸⁸ Therefore: ...the Co-lead Agencies found that while underground mining is technically feasible, available, and would offer significant environmental benefits over the proposed NorthMet Project, it would not be economically feasible and would not meet the Purpose and Need. Since the underground mining alternative would not meet all of the screening criteria, it is not considered to be a reasonable alternative. Therefore, the underground mining alternative was eliminated from further evaluation in the SDEIS.¹⁸⁹ An additional purpose for re-assessing the underground mining alternative became known during consultation with the Bands under Section 106 of the National Historic Preservation Act: avoidance of adverse impacts to a traditional cultural property, the Lake Vermillion Beaver Bay Trail (“BBLVT”), which transects a portion of the proposed east pit. Even though avoidance is supposed to be the first consideration before mitigation can be considered for cultural resources, this benefit, along with numerous environmental benefits that an underground mine would afford, were not given adequate consideration and the underground mining alternative remains eliminated from consideration in the FEIS. In no way does this constitute an appropriate level of detail. The conclusion that underground mining is not viable, or preferable, remains substantially unjustified, despite repeated requests for further analysis.¹⁹⁰ It is not even a sufficient cost-benefit analysis. The CEQ regulations require that, only where a cost-benefit analysis is “relevant to the choice among environmentally different alternatives,” there are a variety of additional requirements, including “analysis of un-quantified environmental impacts, values, and amenities,”¹⁹¹ in addition to other CEQ alternatives rules. Here, the FEIS does not consider the economic impact of perpetual treatment, and the economic analysis provided by the Project proponent summarily concludes that underground mining is “[n]ot economically viable”—while contradictorily claiming that backfilling the west pit would create encumbrances not allowed in their lease due to minerals located below the west pit that can only be accessed through underground mining. This is not the</p>	ALT	S	O	10	SDEIS Themes ALT 01, ALT 16

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	<p>appropriate use of a cost-benefit analysis for purposes of analyzing an EIS alternative. As the Band already argued in the Tribal Position, significant additional study of the underground mining alternative is mandated, and the SDEIS and the FEIS offer no new discussion of the reasons for rejecting the alternative. An appropriate analysis of the economic viability of an underground mine depends on a variety of factors including ore grade, market prices, cost of tailings, and waste rock disposal. In fact, a study of this particular deposit was performed by the prior owner of the site, U.S. Steel, which actually recommended underground mining.¹⁹³ PolyMet is well aware of this study, given that the company included it in a 2003 filing with the Securities and Exchange Commission.¹⁹⁴ In fact, by examining cross-sections showing the distribution of ore by depth,¹⁹⁵ it appears that there are substantial ore reserves at depths that likely could not be accessed by the proposed open-pit mine. The ecological costs of open-pit mining and above-ground disposal of tailings and waste rock are immense—and there are clearly economic considerations that would cut in favor of underground mining. This ecological cost, combined with the most current understanding of deposit ore grades and reasonably possible metals prices, and the costs associated with perpetual treatment and adaptive management concepts should have been evaluated to determine the viability of this alternative.</p>					
Margaret Watkins	<p>Grout curtains (grout injected into fractures via a series of closely spaced drilled holes) are a fairly common mitigation strategy that can be effective if installed around the entire perimeter of the pit prior to mining. However, due to expense, PolyMet is only planning to try to grout individual faults or fractures once a water quality or quantity problem has occurred. This adaptive management concept has no trigger point associated with it to make clear when and if it would be employed: “At the NorthMet Mine Site, if monitoring and analysis indicate conditions could arise that create a northward flowpath, PolyMet would have the necessary information about site conditions to grout fractures and faults.”¹⁹⁶ Even PolyMet has admitted this is not likely to be successful stating “its effectiveness at the NorthMet site is uncertain.”¹⁹⁷</p>	WAT	S	O	10	SDEIS Theme WR 007. FEIS reference PolyMet2014I
Margaret Watkins	<p>One of the AMCs is pit lake depression, which would prevent a northward flow of groundwater if the water levels in the PolyMet pits were kept at an elevation below the Northshore Peter Mitchell Pit. However, flooding the pits is a critical component of the proposed action because in order to comply with MN WQS the most reactive waste rock and pit walls must be covered as quickly as possible. Yet this is not part of the AMC. Even PolyMet admits that, without pit flooding, a higher capacity wastewater treatment facility and additional treatment processes may be needed and additional expenses would be incurred. At closure, discharges to the Partridge River would need to be increased and construction of a wetland in the east pit would not be possible. This is an inadequately developed AMC that would have cascading adverse environmental impacts and demonstrates the lack of “rigor in exploration and objectivity in evaluation” when it was proposed. And this concept introduces a very different project than the proposed action which has not been evaluated and therefore cannot be permitted without restarting the environmental review process.</p>	ALT	S	N	12	Consideration of potential northward groundwater flow at the mine site and proposed contingency measures are address in FEIS Section 5.2.2.3.5 and FEIS Reference MDNR et al 2015c.

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Margaret Watkins	Another AMC is groundwater extraction wells, which have the potential to reduce or prevent a northward flow of contaminants. But similar to the two previous AMCs, there is no trigger point associated with it to make clear when and if it would be employed. It also suffers from the same lack of exploratory rigor and evaluation objectivity. The number, location, and capacities of the wells are unknown, along with the associated number of acres of ground disturbance because access roads to the wells would be required in addition to electrical and water lines for pumped water. Further, wetlands would be directly impacted, but the acreage and wetland types are not known. Nevertheless, without support, the FEIS assures the reader that “[i]f the number of wells necessary resulted in unacceptable wetland impacts, other mitigation measures used in tandem with extraction wells would lower the number of required extraction wells.”	WAT	S	N	12	Consideration of potential northward groundwater flow at the mine site and proposed contingency measures are address in FEIS Section 5.2.2.3.5 and FEIS Reference MDNR et al 2015c.
Margaret Watkins	Artificial recharge using an infiltration trench or wells simply will not work at this site because it is too flat—but it still appears as an AMC. But clearly this concept hasn’t been rigorously explored or objectively evaluated. The elevation of the bottom of the surficial deposits shown in an October 12, 2015 Co-Lead memo ²⁰⁴ is 1,625 to 1,650 feet above sea level; however, the land surface or top of the surficial deposits is only at an elevation of 1,600 feet above land surface based on MNDNR topographical maps using LiDAR technology. ²⁰⁵ In other words, in the Co-Lead memo, the land surface is depicted as floating 25 to 50 feet in the air! The science fiction of floating surficial deposits is not simply a graphical error; it is in fact the only way a groundwater mound could be “created” at this site because of its topography. ²⁰⁸ In addition, the size of the groundwater mound, the source of water, the number of wells or the size of a trench; the acreage of land disturbance created by roads, wells, or a trench, water supply and electrical lines; or the acreage of wetland disturbance, are all unknown. ²⁰⁹ Mining need not be synonymous with pollution: “In the right place – and with conscientious companies, new technologies and good planning –many of the potential impacts are avoidable. In fact, most mine pollution arises from negligence, not necessity.” ²¹⁰ But the NEPA “hard look” requires agencies to “exercise a degree of skepticism in dealing with self-serving statements from the prime beneficiary of a project” ²¹¹ when analyzing alternatives. Defects in the AMC and alternatives analysis here are stark enough to suggest lack of rigor on by the Project proponent at best, and data manipulation at the worst. Either way, the FEIS’s analysis of AMCs and alternatives is insufficient to comply with NEPA.	WAT	S	N	12	Consideration of potential northward groundwater flow at the mine site and proposed contingency measures are address in FEIS Section 5.2.2.3.5 and FEIS Reference MDNR et al 2015c.
Margaret Watkins	As it has in all prior comments, the Band continues to object to the lack of a comprehensive cumulative-impacts analysis throughout the FEIS. The CEQ has issued guidelines that illustrate the breadth of the required analysis, which the FEIS purportedly relies upon. ²¹² However, there remain a flawed hydrologic characterization, an incorrectly calibrated groundwater model, unrealistic seepage capture rates, and AMCs that have not been rigorously explored and objectively evaluated, as discussed above.	CUM	NS	X	1	
Margaret Watkins	But cumulative wetland loss from direct impacts cannot even be discerned from the text, and there could be 0.1 to 12 percent cumulative indirect wetland loses in the Partridge and Embarrass River watersheds.	WET	NS	X	1	
Margaret Watkins	There has been no analysis of off-site cumulative effects to groundwater flow. And changes to flows would decrease by approximately 5.0 cfs in the upper Partridge River. Based on FEIS text it is unknown what the changes in flows to the lower Partridge River may be, and flows would increase 3.6 to 7.8 cfs in the Embarrass River.	WAT	S	O	8	FEIS page 6-31, 6-40. SDEIS Theme WR 024
Margaret	Moreover, the proposed Project is located entirely within the boundaries of the 1854 Ceded Territory. Yet despite specific and repeated requests from tribal cooperating agencies, the Co-Leads did not elect to utilize a tool developed in 2011 by	CR	S	O	5	SDEIS Themes CR 08

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Watkins	<p>the EPA in cooperation with tribes, Applying Cumulative Impact Analysis Tools to Tribes and Tribal Lands, in order to discern potential cumulative effects to resources important to the tribes who retain usufructuary rights within the 1854 Ceded Territory. And the Co-Leads rejected the Tribal Cooperating Agencies' repeated requests to evaluate the 1854 Ceded Territory (discussed further below) as the CEAA. To the contrary, the FEIS states that: At various times during consultation for the NorthMet Project Proposed Action, the Bands have proposed using an expanded area for analysis of cumulative effects on cultural resources and natural resources of significance to the Bands, including use of the 1854 Ceded Territory as the CEAA. The Co-lead Agencies believe that the use of the 1854 Ceded Territory as the CEAA for cultural resources would actually diminish the significance of any cumulative effect. This conclusion flies in the face of the data. In September 2013, the Tribal Cooperating Agencies collaborated to produce a 60-page Cumulative Effects Analysis, which appears at Attachment 3 to Appendix C to the SDEIS, along with other tribal comments. Both the SDEIS and FEIS failed to take into account most of the issues cited therein. So, in addition to reasserting and incorporating again all those comments, the Band hired the University of Minnesota Duluth ("UMD") and the Natural Resources Research Institute ("NRRRI") to analyze 1854 Ceded Territory cumulative impacts to wetlands, historic trails connectivity, public access to exercise usufructuary rights, and wildlife passage. In all four areas of analysis, the cumulative effects to the 1854 Ceded Territory resulting from mining on the Iron Range are most distinctive and welldefined. The historic trails connectivity analysis demonstrates that although there have been impacts over time most of the trail corridors are still largely intact and connected to each other throughout the 1854 Ceded Territory. The trail analysis also identified areas that are the most critical to maintain network-wide connections.</p>					
Margaret Watkins	<p>Wildlife passage from south to north is critical to ensure that as the climate warms species can move north in order to survive. The three examples given by UMD/NRRRI were wolf packs, salamanders, and Jack-in-the-Pulpit (plants). Although difficult along the Iron Range, passage is still possible, but could be aided by thoughtful use of culverts big enough to allow wildlife safe passage under roads, and ensuring that the areas still passable are not removed from the landscape. Cumulative wetlands impacts have drastically increased in the past decade, with virtually all of the major destruction occurring along the Iron Range. The one exception occurred where fire had burned the land so intensely north of Iron Range that the top layer of moss and vegetation no longer support wetlands. Because the portion of the Iron Range that is in the 1854 Ceded Territory is all contained within the St. Louis River watershed, there are without a doubt cumulative impacts that would result from this Project that have not been identified or considered.</p>	WI	NS	X	1	
Margaret Watkins	<p>Public access to exercise usufructuary rights has been virtually cut off along the Iron Range. This means that to exercise those rights, Band Members now have to harvest on one side or the other because there simply isn't passage available without driving around the blockages. The analysis did identify land parcels in private ownership that could be purchased by the State or the USFS that would allow that connectivity to fully exercise treaty rights—but still did not treat the entire area as the CEAA. The FEIS contains a profoundly insufficient analysis of cumulative effects.</p>	WI	NS	X	1	

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Margaret Watkins	In order to determine the impacts of a mine, the effectiveness of closure and reclamation after the mine is no longer in use must be assessed. ²²⁷ But in the FEIS, there is little discussion regarding the type of financial assurance that would be used. The level of detail that is provided in the FEIS regarding the estimated amount of financial assurance that would be sufficient for reclamation, closure, mitigation, and remediation of adverse effects from the Project is based upon highly flawed, unscientific analyses of Project impacts. Even though the MNDNR has stated that PolyMet financial assurance will include clean-up costs for contamination resulting from LTVSMC operations, ²²⁸ the FEIS provides no discussion regarding financial assurance that will be needed for the existing contamination associated with previous mining activities at the site. This is of particular concern because the hardrock mining industry has a pattern of failed operations, which often require significant environmental responses that cannot be financed by industry. ²²⁹	FIN	S	O	6	SDEIS Themes FIN 05, FIN 13
Margaret Watkins	no cost estimates were provided for any of the AMCs, and therefore it seems unlikely that any have been factored into the estimate of financial assurance here, either. The cursory estimate of financial assurance in the FEIS provides little detail about how the dollar amount was derived. Instead, discussions have been postponed for the permitting phase of this Project. This approach fundamentally contradicts federal and state environmental policy.	FIN	S	O	6	SDEIS Themes FIN 05, FIN 13
Margaret Watkins	In 2000, the Government Accountability Office (“GAO”) issued a critical report assessing how the Bureau of Land Management and the USFS land exchange program requirements had been implemented between 1989 and 1999 identifying several significant problems. The report states that: ...agencies did not ensure that the land was being appropriately valued, or that exchanges served the public interest, or met certain other exchange requirements. In view of the many problems in both agencies’ land exchange programs and given the fundamental difficulties that underlie land exchanges when compared with cash-based transactions, we believe that the Congress may wish to consider directing the Service and the Bureau to discontinue their land exchange programs. Again, in a 2009 review, the GAO found substantial problems implementing land exchanges. One-third of the 31 land exchanges examined had documented issues in the agency’s public interest determination. 36 C.F.R. Section 254.3(a) provides “[t]he Secretary is not required to exchange any Federal lands. But while there is no requirement to exchange federal land, voluntary real estate transactions are required to follow federal regulations including the public interest determination.” Neither the SDEIS or the FEIS have disclosed appraisal information so there is no way to comment on this aspect of the proposed land exchange.	LAN	S	O	6	SDEIS Theme LAN 02
Margaret Watkins	Of the approximately 6,025 acres of MCBS Sites of High Biodiversity Significance under the Land Exchange Proposed Action, ²³⁷ nearly 2,000 acres of coniferous bog wetlands will be lost to the federal estate, and therefore effectively lost to the Bands as usufructuary resources in the 1854 Ceded Territory, if the proposed land exchange takes place. This is significant because many tribally harvested resources are only available in coniferous bogs (e.g. cranberries, Labrador tea, creeping snowberry), and restoration of coniferous bogs is a very difficult and long process that has extremely low success rates.	WET	S	O	8	FEIS section 5.3.3, Table 5.3.3-5. SDEIS Theme WET 04
Margaret Watkins	Exchanging thousands of acres of diverse, high-quality land—land with some of the few remaining large game corridors in northeastern Minnesota that are available to the Bands to exercise reserved 1854 Treaty rights—for lands that have moderate diversity and lack big-game corridors is inconsistent with the fiduciary responsibilities that are shared by all federal agencies. The FEIS attempts to diminish the significance of the loss of these high-quality lands by stating that “[t]he	LAN	S	O	8	SDEIS Theme LAN 05

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	<p>6,495.4 acres of federal lands are not accessible for public use via land, while substantial portions of the non-federal lands do have public access via public roads or hiking trails. This distinction is a factor in evaluating land use effects, because public access defines the degree to which the lands in question can actually be used..."²³⁹ But again, historic trails are key to the exercise of treaty rights and are of historic significance to the Bands connecting what is now Beaver Bay with Lake Vermillion. These trails "are associated with the lives of persons significant in our past"²⁴⁰ including John Beargrease,²⁴¹ Peter Gagnon,²⁴² and Alec Posey.²⁴³ In more recent history, Bois Forte Band members have used a sugarbush near the plant site and harvested wild rice in the Embarrass River near the LTVSMC tailings basin.²⁴⁴</p>					
Margaret Watkins	<p>Additionally, the FEIS does not provide adequate discussion of the adverse effects of the proposed land exchange on wetlands and headwater streams within the St. Louis River watershed and the Lake Superior Basin. The loss of first-order headwaters streams, second-order streams, and wetlands in the Basin have the potential to significantly adversely impact downstream water quality, fisheries, and wildlife that are important to the Bands. The proposed action land exchange would trade water resources within the Lake Superior Basin for wetlands and surface water outside the Lake Superior Basin and the St. Louis River watershed, although still within the 1854 Ceded Territory. Federal lands now provide 4,164 acres of wetlands within the Lake Superior Basin. Non-federal lands contain 4,669 acres of wetlands, of which 373 acres are within the Lake Superior Basin, demonstrating there would be a loss of 3,791 acres, or 90 percent of federally-managed wetlands within the Lake Superior Basin under the proposed exchange.²⁴⁵ It is well known that wetlands play an important role in the condition of downstream waters by retaining floodwaters, sediment, nutrients, and other pollutants, thereby benefitting the quality of downstream waters. Wetlands may also function as thermal refuge for moose when summertime temperatures exceed 14o C, the point at which moose become thermally stressed.²⁴⁶ Additionally, wetlands with aquatic vegetation provide an important forage resource for moose during the open-water season. Furthermore, the SDEIS acknowledged, as does the FEIS, that the Land Exchange Proposed Action would create a "net increase of third-order streams and decrease in first- and second-order streams which would likely add more habitat diversity to the Superior National Forest."²⁴⁷ But the FEIS underestimates the impact of this increase, and ignores basic EPA guidance: "Headwater streams are the smallest parts of river and stream networks, but make up the majority of river miles in the United States. Many headwater streams have been lost or altered due to human activities ... and this can impact species and water quality downstream."²⁴⁸ The FEIS states the net increase of third-order streams and decrease in second-order streams would likely add more habitat diversity to the Superior National Forest since, generally, stream habitat diversity increases with higher-order streams. No significant habitat changes would likely occur associated with the slight decreases in first-order, headwater streams; however, the net reduction to the Superior National Forest of 0.3 mile of first order streams may result in slightly less habitat available for headwater stream dependent species.²⁴⁹ While greater diversity is desirable, protection of headwater streams is critical because they powerfully influence both the character and functions of downstream waters. Headwater streams transport vegetation, woody debris, organic matter, macroinvertebrates, and other organisms downstream, while providing spawning areas for brook trout. Headwaters provide most of the water to rivers, which in turn provides temperature mitigation and oxygenation which are necessary for healthy fish communities.</p>	WET	S	N	8	<p>FEIS Section 5.3.6.2.2 pg. 5-741. FSDD Section 3.3.3 describes proposed evaluation of physical impacts on Water Resources. FEIS Section 5.3.6.2.2 addresses changes in stream habitat related to the proposed land exchange. FEIS Section 5.2.2 and Section 5.2.3 address potential impacts to water resources and wetlands respectively.</p>

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Margaret Watkins	The Co-Leads concede that the land exchange will cause irretrievable losses of resources for the Bands—but require no real mitigation or fuller analysis: “The federal lands may contain natural resources culturally important to tribal entities, including access to the land itself, which would be irreversibly lost following the Land Exchange Proposed Action and conversion of the land from public to private ownership.” ²⁵¹ Further, the FEIS provides that the land exchange proposal could have direct and indirect effects on tribal cultural resources by creating noise, impeding access to areas that are traditionally or culturally important to the Bands and affecting species of importance to the Bands.	CR	S	O	8	SDEIS Theme CR 01
Margaret Watkins	But the desire to resolve “conflict” between the USFS and Project proponent should not overshadow federal fiduciary responsibility to the Bands. The proponent wishes to develop an open pit mine but cannot due to deed restrictions on the federal estate because the surface estate was purchased by the USFS under the authority of the Weeks Act. More roads and hiking trails may provide more access to the public, but do nothing to promote habitat diversity and long-term ecosystem sustainability that are requirements for the preservation of tribal usufructuary rights. Further, habitat diversity that promotes long-term ecosystem sustainability represents a critical component of climate change adaptation to preserve and sustain tribal usufructuary rights. Although the land exchange proposed action may increase acreage in the federal estate, the loss of critical wildlife corridors, along with high quality and diverse land and water resources, directly connects the federal regulatory agencies’ trust responsibility to the Bands. The land exchange, and the Project, cannot proceed where they require the agencies to approve permits that will have impacts to treaty resources without additional evaluation and mitigation.	CR	S	O	8	SDEIS Theme CR 01
Margaret Watkins	As noted, there has been no analysis of the 1854 Ceded Territory as a discrete area of impact in spite of Band requests beginning with our involvement in Project review. Tribal Cooperating Agencies believe the Cumulative Effects Analysis for land use should encompass the 1854 Ceded Territory. The signatory Bands have already lost access to substantial portions of it and the resources within. The 1854 Ceded Territory encompasses 6,283,836 acres in Northeastern Minnesota. Of that, 4,095,146 acres are public lands. The remaining 2,188,578 acres are private to private industrial land. Band members generally do not exercise usufructuary rights on private lands without landowner permission, although the treaty does not hold that restriction. Lands within the 1854 Ceded Territory that have experienced urban and/or industrial development are permanently “lost” as a source of treaty resources. Cumulative impacts on the 1854 Ceded Territory should have been evaluated.	CR	S	O	8	SDEIS Theme CR 03
Margaret Watkins	During the EIS scoping process for the Project, the Co-Leads failed to ever identify any cumulative impact issues associated with cultural resources, and Tribal Cooperating Agencies were not invited to participate in scoping. The Band’s and other Tribal Cooperating Agencies’ comments on the June 2008 PDEIS, the 2009 CPDEIS, the 2009 DEIS, and the 2013 SDEIS detailed the nature of these substantial cumulative impacts and the need for further analysis. Instead, as discussed, Grand Portage on its own was forced to hire UMD and NRRI in 2014 to do this critical work. Even as the USACE insisted that the only trust obligation to the Bands was “access,” they refused to evaluate this cumulative effect of mining in the 1854 Ceded Territory. And as stated previously, the Co-leads believe that the use of the 1854 Ceded Territory as the CEAA for cultural resources would diminish the significance of any cumulative effect.” This approach is entirely incorrect. In 2014, as noted, the Band entered into an agreement with the UMD and the NRRI to provide a Cumulative Effects Analysis of the 1854 Ceded Territory for wetlands, historic trails, public access and wildlife passage. When the analyses were completed, the Co-	CR	S	O	8	SDEIS Theme CR 03. FEIS section 6.2.9

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	<p>Leads were invited to a presentation of the results held on November 9, 2015, at NRRI. The results of the study demonstrated that using the entire 1854 Ceded Territory as the CEAA did not diminish the significance of any cumulative effect. In fact, for each discrete area of analysis, the results demonstrated that by far the most pervasive cumulative impacts have resulted from iron mining. Cumulative wetlands impacts and public access to exercise usufructuary rights have been severely impacted by the Iron Range. Despite this detailed analysis, the Co-Leads refused to honor the Band's requests and ignored this research, the results of which the Band outlines below, and failed to require appropriate mitigation.</p>					
Margaret Watkins	<p>Unfortunately, the Co-Leads dismissed the Tribal Historic District, calling it "arbitrary" without rigorous exploration or objective evaluation. Furthermore, in a discussion of sacred sites, the agencies were concerned about a lack of documented use by Band members, even after Band members explained that ceremonial sites were rarely "documented," despite the Bands preserving knowledge of their locations, in part because traditional ceremonies were outlawed in the United States for almost a century. Further, only the Bands can determine a property of cultural and spiritual significance—as federal guidance confirms. Since then, the Bands have been forced to request assistance from the Advisory Council on Historic Properties ("ACHP") involvement in the review. Regardless, the Co-Leads' obligations are clear under federal regulations and guidance, and the current analysis is insufficient.</p>	CR	S	O	8	SDEIS Theme CR 04
Margaret Watkins	<p>The FEIS also fails to analyze cumulative effects on water quality and quantity, which has a particular impact on the 1854 Ceded Territory as a whole. The relevant spatial scale for water quality and hydrologic cumulative effects analysis is the entire St. Louis River watershed, and the Dunka River sub-watershed. These watersheds have experienced substantial historic, current, and proposed expanded mining activities, as well as other industrial, agricultural, and urban development. In addition to the direct surface water and wetland impacts (here meaning loss and/or degradation) from these activities, nearly half of the St. Louis River watershed has experienced hydrologic alteration from extensive ditching. This analysis is particularly important in light of the current expansion of mining (new copper-nickel projects and the expansion of existing taconite operations). It is reasonably foreseeable that an additional 3,000 acres of wetlands within the watershed will be directly impacted by proposed new mining projects and expansions that are in active permitting and/or environmental review: the Project, U.S. Steel Minntac mine expansion; U.S. Steel Keetac expansion; United Taconite Tailings Basin 3 construction; and Cliffs Northshore mine pit expansion. The FEIS also fails to adequately analyze cumulative impacts to the water quality of the Partridge and Embarrass Rivers, much less the St. Louis River. In fact, in Colby Lake (the community water supply for the City of Hoyt Lakes), aluminum, iron, copper, and mercury concentrations already exceed Minnesota WQS.257 Modeled concentrations of arsenic also exceed Minnesota WQS. This existing, large number of water-quality exceedences and the suite of constituents, particularly trace metals, that exceed WQS not only confirm the total lack of remediation for the previous mining activities at the LTVSMC site, but demonstrate the importance of evaluating the cumulative losses to water quality. Community drinking water wells, wetland degradation resulting from dewatering, and pollution of community and private drinking water aquifers by previous mining activity should have been assessed throughout the St. Louis River watershed and Dunka River sub-watershed as part of this Project, as well as for all the other mining projects currently underway. Instead, the FEIS concludes that the Project will meet MN WQS and that "the potential for exceedances of water quality evaluation criteria as a result of cumulative effects from the NorthMet Project Proposed</p>	WAT	S	O	2	SDEIS Theme WR 024

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	Action and other reasonably foreseeable actions is considered unlikely.”258					
Margaret Watkins	<p>The FEIS does not determine climate change implications of the proposed Project on the 1854 Ceded Territory (or anywhere). It only superficially discusses climate change impacts to circumpolar species.259 The FEIS also concludes that at the mine site low flow rates from the Pits to bedrock or surficial aquifers were not affected by the climate change and surface water quality won't change much because all surface water discharged from the Mine Site would be treated by the WWTF.260 Similarly, climate change is not expected to cause significant changes in groundwater at the tailings basin, and surface water quality in the Embarrass River and its tributaries is expected to be minimally affected.261 In fact, the only real climate change effect noted is an increase in the amount of water that would need treatment at the WWTF.262 However, the Project has proposed the largest direct wetland fill ever permitted in this region and would disturb extensive areas of peat, which is known to be an important carbon and methane sink. Wetlands in general are recognized as important carbon sinks and areas where wildlife seeks refuge as the climate warms. Nevertheless, to date, virtually all required wetland mitigation for mining impacts has been implemented out of the basin, representing a permanent loss of high quality ecological resources and functions.263 This omission undermines even the MNDNR's own work. The MNDNR's Moose Advisory Committee, which studies the decline of the moose population in northeastern Minnesota, has recommended preserving wetlands as sanctuaries for moose from heat stress related to climate change.264 Furthermore, underestimation of storm size and frequency is a serious problem for capture and treatment of polluted water from the Category 1 waste rock pile and tailings basin, tailings basin stability, stormwater run-off from the Overburden Storage and Layout Area (“OSLA”), and mine pit dewatering. Storm size and frequency is known to be changing. However, the mean annual precipitation used to model climate change was 29.8 in/yr instead of the current from 28.1 inches per year, a change of only 1.7 inches which is less than a 6 percent increase. These and other cumulative effects of climate change should have been addressed.</p>	AIR	S	O	2	SDEIS Themes AIR 01, COE 03, WET 07, WET 13, WR 077, WR 180, WR 196
Margaret Watkins	<p>Also missing is cumulative-impacts analysis of culturally-important plant and animal species that are listed as “Species of Concern.” For example, a substantial moose population has been identified in the mine site area by aerial and ground surveys. Moose are likely to be impacted by the disturbance of two of the few wildlife corridors remaining along the Mesabi Range, not to mention by the massive wetland impacts of this project. The rationale for a comprehensive cumulative impacts analysis for moose is found, again, in the MNDNR's own statements. This Co-Lead itself, in its Statement of Need And Reasonableness (“SONAR”), related to Minnesota's List of Endangered, Threatened, and Special Concern Species, in 2012 proposed listing moose as a species of “special concern:” Between 1990 and 2000, the northwestern Minnesota Moose population underwent a substantial decline, and a 2007 Minnesota DNR aerial survey determined that as of that date, fewer than 100 Moose comprised the northwestern population. Aerial surveys currently estimate the northeastern Minnesota population at roughly 4,230 individuals. The northwestern Minnesota Moose population decline occurred in less than a decade. Recent surveys document a slow decline in the northeastern Minnesota Moose population.266 MNDNR directly linked this decline to climate change, land ownership, and forest management practices: Increased temperatures are likely to increase heat stress and lead to increased mortality within the state's remaining Moose populations. Changes in land ownership and changes in forest management practices within the state's Moose range may be having a significant adverse effect on the quantity and quality of the species' habitat within the state, and particularly on thermal refuges in</p>	WI	S	O	2	SDEIS Theme WI 01

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	warmer weather. The state's northeastern Moose population has not shown as rapid a decline, but is very likely to be dramatically impacted by rising temperatures resulting from climate change. This will likely lead to a marked decline in this population within the foreseeable future. ²⁶⁷ There is no basis to dispute that the Project will have cumulative effects on the moose herd and Tribal harvest in the 1854 Ceded Territory. At a time when moose populations in Minnesota are declining, this analysis is particularly important and should have been done as part of this FEIS.					
Margaret Watkins	The CEAA defined by the Co-Leads for impacts to aquatic species is overly limited. It includes only the Partridge and Embarrass Rivers from their headwaters to a point approximately 15.5 miles downstream of the Project Proposed Action Activities, where the rivers form the St. Louis River. In this Area, the MPCA has assessed and identified waterbodies that are impaired for fish and/or benthic macroinvertebrate communities based upon recent monitoring data (since 2009). But the draft 2012 Section 303(d) list prepared by the MPCA includes more headwaters streams and rivers in the St. Louis River watershed that are also impaired for aquatic communities. It is likely that the state-led stressor identification process will identify historic and existing mining operations as major causal factors for these impairments. Therefore, the appropriate spatial scale for considering cumulative impacts to aquatic species is the Dunka River sub-watershed, the entire St. Louis River watershed and Lake Superior.	AQ	S	O	8	SDEIS Theme AQ 26
Margaret Watkins	Within the Lake Superior basin, which includes the Project area waters, MN WQS prohibit any new or expanded point source discharges of bioaccumulative substances of immediate concern including mercury, ²⁶⁸ therefore this proposal is not permissible. The FEIS states that, based on mercury mass balance analyses, the Project is predicted to result in an overall net decrease of mercury loadings of approximately 1.0 grams per year to the St. Louis River. This is accomplished by a decrease of 1.2 grams per year in the Partridge River and a net increase of 0.2 grams per year in the Embarrass River. ²⁶⁹	MERC	S	O	8	SDEIS Theme MERC 01
Margaret Watkins	Dewatering peatlands will also amplify water table fluctuations because peat has high water storage capacity and releases water more slowly than other surficial deposits. Drying and re-wetting peat will increase mercury methylation and release. Peatlands store methane and carbon that will be released into the environment when overburden is removed from the mine pits or during periods of dewatering.	MERC	S	O	8	SDEIS Theme MERC 20, MERC 21
Margaret Watkins	Moreover, Minnesota's mercury TMDL process will not adequately address the fish consumption impairment in these waterbodies, and any new discharges that would result in further degradation to waters with an existing water quality impairment are not be legally permissible under the CWA. In addition, the FEIS states that the current fish tissue concentration in five local lakes results in Hazard Quotients ("HQs") that exceed 1,272 but provides scarce detail. The maximum incremental cumulative Hazard Quotient from the two reasonably foreseeable cumulative projects over existing fish mercury concentrations is 0.08 for recreational anglers, 0.61 for subsistence/tribal anglers, and 0.54 for subsistence fishers. This is only about a 0.3 to 1.8 percent increase over the existing incremental risk levels, for recreational, subsistence/tribal and subsistence anglers. Of this, the NorthMet Project Proposed Action would contribute approximately 59 to 92 percent of the incremental cumulative Hazard Quotient. In fact, Barr Engineering's July 2012 "Cumulative Impacts Analysis, Local Mercury Deposition and Bioaccumulation in Fish" ²⁷⁴ showed modeled contributions from both the Mesabi Nugget Large Scale Demonstration Plant ("LDSP") on the site and PolyMet. And the Barr report further provides the actual	MERC	S	O	8	SDEIS Theme MERC 22

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	HQs, rather than just saying “they exceed 1.” In one case, the existing HQ equals 46.2—which is 46 times as high as the number where action is recommended. This information should have been explicitly included in the FEIS for public review. The Project contribution of 59 to 92 percent of the incremental cumulative Hazard Quotient is significant. Further, the existing risk is large and has not yet been addressed through a total maximum daily load (“TMDL”) or other reduction program.					
Margaret Watkins	The MDNR conducted mercury studies in the St. Louis River in 2012. The studies found that mercury concentrations were highest in late June and July, reporting 7 ng/L of mercury at Cloquet and 11.8 ng/L upstream of the Partridge River, and then falling through the rest of the summer to 1.4 ng/L and 2.3 ng/L respectively, by late October. Mercury exceeded the 1.3 ng/L standard throughout the study and results indicated the importance of considering seasonal variability when evaluating mercury concentrations in rivers.	MERC	NS	X	1	
Margaret Watkins	Further, in 2003, Berndt found that taconite tailings appear to be a sink for mercury in tailings basins in northern Minnesota. And, the loss of mercury through adsorption to solids in the tailings basin and subsequent burial in the sediments resulted in an overall permanent retention of mercury within the basin and decreases the mercury load released to receiving waters. ²⁷⁸ However, mercury in the existing Cell 2E pond of the LTVSMC tailings basin has a concentration of 1.4 ng/L of mercury and water collected seeping out of the toe of the tailings basin has a concentration of 4.9 ng/L. ²⁷⁹ This contradicts the MNDNR280 by demonstrating that mercury concentrations after seeping through the tailings do not decrease, in fact the concentration more than triples.	MERC	S	N	8	See Thematic Response MERC 06. The comment correctly notes that mercury was picked up between the tailings basin and the well (collecting samples at the toe of the tailings basin). This is not surprising since mercury and methylmercury are commonly picked up by shallow groundwater that contacts organic matter in riparian/wetland settings. It is scientifically incorrect to compare water in a tailing pond to well water sampled outside the basin and conclude that mercury has been leached from the tailings along the flow path.
Margaret Watkins	Any increase of methylmercury in the Embarrass River, Partridge River, or St. Louis River watersheds constitutes a significant adverse impact to a critical trust resource. Not only must this impact be fully evaluated, but it must be fully mitigated. Limiting fish consumption, particularly to comply with fish advisories for women of childbearing age and children under 15 years old, represents a huge loss of usufructuary rights. This statewide advice for the this population is as follows: one meal per week of bullhead, crappie, sunfish; or one meal per month of northern pike smaller than 30 inches, or walleye smaller than 20 inches; and simply not eating northern pike longer than 30 inches, and walleye longer than 20 inches. A more through cumulative effects analysis should have been required for mercury using the appropriate spatial scale for that would have included the entire St. Louis River watershed and Lake Superior basin.	MERC	S	O	8	SDEIS Theme MERC 02
Margaret Watkins	Despite almost 10 years of environmental review, the Cultural Resources chapter of the FEIS is still incomplete, and the requirements of the National Historic Preservation Act (“NHPA”) have not yet been fulfilled. The Project cannot proceed until they are.	CR	S	O	8	SDEIS Theme CR 06

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Margaret Watkins	The Project Area of Potential Effect (“APE”) for cultural resources is based on the Project effects analysis including the flawed hydrologic characterization, incorrectly calibrated groundwater model, and analog wetland data. Therefore, the APE designated by the Co-Leads does not encompass its true extent. Instead, it represents the USACE permit area(s) within the true APE. This is also despite the fact that the Advisory Council on Historic Preservation (“ACHP”) previously advised the USACE that this is not an appropriate way to determine the APE.291 The ACHP stated that “the Corps should be mindful of its responsibility to consider the reasonably foreseeable effects, including long term and cumulative effects the expansion activities could have on historic properties.”292 It went on to reiterate that Section 106 defines undertaking as a “project, activity or program funded in whole or part under the direct or indirect jurisdiction of a Federal Agency, including . . . requiring a Federal permit, license or approval.”293 The ACHP explicitly stated: The undertaking is not the federal issuance of a permit; it is the larger project that includes components that are the specific subject of the permit. The federal agency must consider the effects of the overall project (undertaking) including the permitted components. Once the undertaking has been properly defined, only then can the APE be properly delineated.294 Tribal analysis of Project impacts suggests that the APE should include the Embarrass, Dunka, and Partridge River watersheds, and the St. Louis River from the confluence of the Embarrass River to its mouth in Lake Superior.	CR	S	O	8	SDEIS Theme CR 02
Margaret Watkins	To date, the BBLVT has not been fully researched or rigorously field-verified within the Project area. Although the Bands have repeatedly requested that the Co-Leads refer to the BBLVT as a corridor, the term “segment” is still used, as if this trail was not a vast overland system connecting the sugarbush, overlook, and the Mesabe Widjiu, or that it was used extensively until Ojibwe people were forced onto reservations. Although the Superior National Forest Heritage Program reviewed the Government Land Office plats and conducted field investigations on Superior National Forest land, and the USACE in conjunction with Band staff conducted some field investigations to identify pieces of the BBLVT corridor, more investigation is required. This additional fieldwork should be conducted in the spring or fall when ephemeral features such as foot trails are less easily concealed by vegetation and more easily discerned.	CR	S	O	8	COOP Response 9124
Margaret Watkins	A draft Memorandum of Agreement (“MOA”) to address mitigation for adverse impacts to the Sugar Bush, BBLVT, and Mesabi Widjiu was just provided to the Bands in November 2015. But no avoidance measures for the Sugar Bush, BBLVT, or the Mesabi Widjiu have ever been contemplated for the Project in spite of repeated requests by the Bands (and being required by law). Further, the mitigation measures identified in the draft MOA were astonishingly inadequate and did not incorporate a single suggestion that the Bands have provided since shortly after the DEIS was drafted. Again, all three properties would benefit from additional investigation. The sugarbush has not been formally recorded. The trail has not been adequately documented within the SNF proposed land exchange, requiring additional survey in the upland areas of the Project area. Mesabi Widjiu must be considered in its entirety. As part of the UMD/NRRI 1854 Cumulative Effects Analysis connectivity of all of the mapped historic “Indian” trails were evaluated. The results demonstrate a high level of connectivity leading to the Bands to determine that the trails still possess a high degree of integrity.	CR	S	N	11	The FSDD Section 3.2.10 identifies information that will contained in the EIS related to impacts to tribal rights within the 1854 Ceded Territory. FEIS Section 5.2.9.2 identifies potentially affected cultural resources.
Margaret Watkins	The Project will contribute additional sulfate to the Embarrass River from tailings basin groundwater seepage that is not captured and treated; to Second Creek via tailings basin groundwater seepage that is not captured and treated; and the Partridge River through fractures in the mine pit walls once the pit has filled with water, along with stockpile infiltration and run-off. Furthermore, there are other projects (e.g., Mesabi Nugget and Laskin Energy) that are discharging water into the	WAT	S	O	8	SDEIS Theme VEG 04, WR 152, WR 156, WR 157

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	Embarrass River, Second Creek, and the Partridge River with elevated pollutants, including sulfate. Impacts to wild rice in the vicinity of the Project must be more rigorously analyzed and reported, and cumulative impacts to wild rice in the 1854 Ceded Territory addressed. The Project must provide mitigation for impacts to wild rice.					
Margaret Watkins	The Project will certainly do nothing to aid in the recovery of moose and is likely to reduce available habitat, impact travel corridors, and increase greenhouse gases. Impacts on moose and habitat are impacts on the Band's cultural resources and should have been analyzed as such in the FEIS.	WI	S	O	8	SDEIS Theme WI 09
Margaret Watkins	Executive Order 12898 specifically identifies Environmental Justice issues to be addressed regarding Native American Populations. ³¹¹ But in the SDEIS Socioeconomics chapter, none of the issues identified in the Executive Order have been addressed, despite the Band repeatedly asking for further analysis. It is the Band's position that any impacts to natural resources will disproportionately affect tribes due to their subsistence consumption of wild rice, fish, and other wildlife, and gathering of traditional plants and medicines within the 1854 Ceded Territory. Native Americans should be specifically evaluated as an affected population throughout this section.	SO	S	O	8	SDEIS Theme SO 09
Margaret Watkins	The analysis of socioeconomic impacts resulting from the Project is woefully inadequate. The IMPLAN ("Impact Model for Planning") model was the primary tool used to assess the economic benefits of Project. However, IMPLAN is only able to calculate the Project economic benefits, and cannot calculate the "bust" side of mining's known "boom and bust" economic activity. And IMPLAN has no capability to determine the negative effects of a mine project on areas of the economy that depend on unspoiled and healthy natural environments (e.g., hunting, fishing and gathering, or tourism). Further, IMPLAN cannot assess the economic impact of the Project on ecosystem goods and services that nature provides to society (e.g., no-cost flood control and water treatment).	SO	S	O	8	SDEIS Theme SO 08
Margaret Watkins	But the value of natural resources maintained in good condition is simply not represented in the FEIS. Nor is the economic value of clean water provided or assessed. EPA's guidance even provides a monetary value for water resources, but the Co-Leads failed to take this into account. Instead, the socioeconomic evaluation is simply a discussion of the short-term benefits of the Project, without evaluating long-term socioeconomic effects of the loss of healthy watershed ecosystems on communities during and after mining ceases. Fond du Lac provided an ecosystem services valuation completed for the St. Louis River watershed. Every year, the ecosystem services of the watershed provide \$5 billion to \$14 billion in economic benefits. Despite mining activity in the headwaters of the river and the Area of Concern at the River's mouth, this report demonstrates that the St. Louis River still provides important economic inputs into the regional economy. ³¹⁵ This analysis, like the UMD/NRRI Cumulative Effects Analysis, on the value of ecosystem services was something the Bands have repeatedly requested the Co-Leads provide to assess tribal socioeconomic impacts of the Project. However, the Co-Leads did not honor this request either. The Project proposed action will destroy thousands of acres of wetlands and their water treatment and flood control functions will have to be replaced by perpetual mechanical pumping and wastewater treatment plants costing millions of dollars a year to operate.	SO	S	O	8	SDEIS Theme SO 07

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Margaret Watkins	Based on all of the information contained herein, the FEIS should not be considered adequate. The lack of enforcement to require existing taconite mines to follow Minnesota's environmental laws demonstrated by both the EPA's MOA with MN, and the recent dedelegation petition submitted by Water Legacy to the EPA, must be weighed in the USACE Public Interest Determination. Therefore, we respectfully request that the USACE deny the Section 404 permit and the MPCA deny Section 401 certification of the wetlands permit. We further request that the EPA veto the Section 404 permit requested by PolyMet if the USACE does not deny the permit.	COE	S	N	8	The Final EIS appropriately identifies the permits that are necessary for the project to be implemented. See Final EIS Section 6.2.
Kenneth Westlake	The FEIS adequately resolves EPA's comments on the Preliminary FEIS pertaining to base flow and cumulative impacts, model calibration, and contradictory information. EPA's remaining comments (see attached) can and should be addressed in the USFS Record of Decision (ROD), in the Corps permit evaluation process which culminates in a ROD, and/or in the context of other permitting reviews as appropriate. EPA retains oversight authority for permitting discharges under the CWA's National Pollutant Discharge Elimination System and air emissions under the CAA. EPA also retains regulatory authority, along with the Corps, under CWA Section 404.	NEPA	NS	X	1	
Kenneth Westlake	In our PFEIS comment letter, we recommended that the FEIS analyze and assess the impacts of implementing the proposed contingency mitigation measures. The FEIS includes basic qualitative estimates and presents a general description of the proposed contingency mitigation measures in Section 5.2.2.3.5. This is adequate for purposes of the FEIS. However, further impact assessment is needed during the permitting process, including information on water quality and quantity impacts that may occur as a result of a northward flow path and/or contingency mitigation measures.	PER	S	N	11	Consideration of potential northward groundwater flow at the mine site and proposed contingency measures are address in FEIS Section 5.2.2.3.5 and FEIS Reference MDNR et al 2015c. Proposed and recommended mitigation measures describe the contingency mitigation measures that could be implemented to prevent northward bedrock ground water flow.
Kenneth Westlake	In addition, limited site-specific data is currently available to assess the potential for a northward flow path, and to design effective contingency mitigation measures should northward flow occur. The permitting agencies have proposed to begin routine groundwater monitoring when active operations begin. EPA continues to recommend that the permitting agencies collect and analyze additional site-specific data during the permitting review process as the project design is being further developed. It appears that technology is currently available to implement contingency mitigation measures. However, the selection of any measures determined to be necessary must be informed by data that sufficiently support refining their design and assessing their impacts in the context of the project as a whole (e.g., by determining the rate of downward water leakage at the One Hundred Mile Swamp).	PER	S	N	11	
Kenneth Westlake	Recommendation I: Given the possibility of a northward flow path, analyses of environmental impacts associated with this possibility should be conducted and evaluated during the permitting process. These analyses should include anticipated direct and indirect environmental impacts that may occur if one or more of the proposed contingency mitigation measures are implemented.	PER	S	N	11	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Kenneth Westlake	We understand that the monitoring program outlined in the FEIS will be refined and implemented in greater detail during the permitting process. We share the goal of the permitting agencies to ensure that pollutant migration from the site and impacts to surface waters are minimized and meet the requirements of the CWA. We also want to ensure that a robust monitoring program is put in place to identify pollutant migration pathways in a timely manner, so that permitting and contingency mitigation-related decisions can be made as quickly and effectively as possible. To this end, the following points and recommendations related to monitoring and the contingency mitigation measures should be addressed during the permitting process to inform permit decisions: 1. The trigger(s) for implementing contingency mitigation measures should be defined. 2. Because each contingency mitigation measure, if implemented, would result in other impacts to the project and/or to the environment, each measure requires additional study before approval. 3. In the event that the requirement for one or more contingency measures is triggered, time will be required for additional study, permitting, planning, design and construction. This possibility should be considered in further project development to avoid or minimize any period of noncompliance before such measures are in place.	PER	S	N	11	
Kenneth Westlake	Recommendation 2: A robust and sufficient monitoring program should begin as soon as possible to establish adequate baseline data that help to identify pollutant migration pathways in a timely manner and can detect a potential northward flow. Monitoring data should be collected and analyzed before any major grading or excavation of soils or conveyance or pumping of water is carried out at the site for any purpose other than to install monitoring equipment.	PER	S	N	11	
Kenneth Westlake	Recommendation 3: Any contingency mitigation measures implemented in a permit must include measureable and enforceable outcome-based requirements. The permit applicant should also be required to demonstrate that the proposed contingency mitigation measures will be an effective means to return the project to compliance should noncompliance occur.	PER	S	N	11	
Kenneth Westlake	The potential for water transfer from the Lake Superior watershed to the Rainy River watershed needs to be further evaluated and addressed. Recommendation 4: Potential inter-basin water transfers should be quantified. Interbasin transfers from the Great Lakes watershed are subject to approval under the Great Lakes-St. Lawrence River Basin Water Resources Compact.	PER	S	N	11	Consideration of potential northward groundwater flow at the mine site and proposed contingency measures are address in FEIS Section 5.2.2.3.5 and FEIS Reference MDNR et al 2015c. Proposed and recommended mitigation measures describe the contingency mitigation measures that could be implemented to prevent northward bedrock ground water flow.
Kenneth Westlake	A comprehensive surface water/groundwater monitoring and modeling approach would satisfy the requirements of various permit programs by evaluating the hydrology and pollutant migration from the site during all phases of the project (construction, mining and post-mining). This could avoid duplication by enabling use of the same sampling points for various purposes during further project design and permitting. It would also provide PolyMet with a full understanding of the monitoring that will be expected during the project to meet various permit requirements. We strongly encourage the permitting agencies for this project to involve a specialized expert who can inform the permitting agencies' review of this comprehensive monitoring and modeling approach. Any such review should consider the influence of other nearby mining operations (such as NorthShore's PMP). It should also establish a process that provides for refinement of modeling as additional data become available, and adjustments to the monitoring regime when necessary. Recommendation 5: The	PER	S	N	11	

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	permitting agencies should involve a specialized expert to inform the permitting agencies' review of a comprehensive monitoring and modeling program at the Mine Site. Information gathered through such a program should inform permitting conditions and requirements.					
Kenneth Westlake	Recommendation 6: EPA also recommends initiating a community environmental monitoring program as part of further project development. This would provide ongoing information about the project's environmental performance to the community, including assessments of water quality and quantity near the NorthMet site.2	PER	S	N	11	
Kenneth Westlake	In addition, EPA would like to continue our constructive engagement with the permitting agencies going forward. Recommendation 7: EPA recommends that we continue to engage in a close dialogue with the permitting agencies about the details of modeling, monitoring, and project design (including contingency mitigation measures), as relevant to project construction and permitting decisions. EPA will seek expert input as needed to support this process.	PER	S	N	11	
Kenneth Westlake	The FEIS describes the proposed compensatory mitigation for direct wetland impacts and wetland fragmentation impacts. This mitigation includes wetland restoration, upland buffer, and wetland preservation. Two of the wetland mitigation sites are outside of the St Louis River Watershed and include some out-of-kind wetland replacement. Greater credit ratios are required for out-of-kind and out-of-watershed compensatory mitigation. Based on the credit ratios outlined in the FEIS, if performance standards are met, the three sites would provide sufficient mitigation for direct impacts (Table 5.2.3-17).	PER	S	O	11	
Kenneth Westlake	The FEIS identifies uncertainties in estimating the extent of indirect wetland impacts (pp. 5-257 - 5-260). EPA agrees with the FEIS' statement that an indirect impact monitoring plan, adaptive management plan, and a plan to provide compensatory mitigation are needed to assess and mitigate for indirect wetland impacts if the project moves forward. The descriptions of indirect impact monitoring, adaptive management, and compensatory mitigation within the FEIS should be further developed during the permitting process to sufficiently assess, avoid, minimize, and compensate for indirect impacts to wetlands.	PER	S	N	11	
Kenneth Westlake	Recommendation 8: EPA recommends that the Corps require PolyMet to establish additional wetland monitoring sites, develop a detailed impact assessment method, and plan for the contingency of additional indirect wetland loss as part of an adaptive management strategy that identifies sufficient wetland mitigation opportunities and compensates for all indirect impacts. This could be incorporated into the comprehensive plan called for in Recommendation 5. Because of the importance of these indirect impact plans and any permit conditions outlining them, EPA requests an opportunity to review the Corps' final permit evaluation and draft CW A Section 404 permit - including the indirect and direct wetland impact monitoring, adaptive management, and mitigation plans - in order to assess compliance with the CW A Section 404 Guidelines before permit issuance.	PER	S	N	11	

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Kenneth Westlake	The FEIS notes the current lack of scientific consensus regarding health risks associated with exposure to non-asbestiform varieties of amphibole minerals; and an "ongoing effort" to develop the "scientific tools and expertise" to establish health-based standards for these mineral fibers (p. 5-515). Part of this ongoing effort is a study currently undergoing peer review, which examines the relative cancer potency of various elongated mineral particles based on dose characterization data collected at EPA's Duluth laboratory between 1978 and 1986. Recommendation 9: To address uncertainties regarding health risks, the permitting agencies should consider this research and any further credible scientific evidence that becomes available during the permitting process. The most current scientific understanding of health risks should continue to be considered as appropriate in project design and implementation, in order to minimize worker and public health risks related to mineral fibers. EPA will provide this study and other relevant research it identifies to all agencies with relevant permitting responsibilities.	PER	S	N	11	
Kenneth Westlake	Recommendation 10: During the permitting process, the permitting agencies should require avoidance or minimization strategies that reduce impacts to moose to the greatest extent possible. Examples may include avoiding wetland impacts, preserving known wildlife corridors, and constructing appropriately-placed wildlife crossings at new and existing roads and railroads. Constructing one or more wildlife crossings along the roads and railroads within the project area should be considered as a strategy to reduce collisions between vehicles and wildlife.	PER	S	N	11	
Robert G. Tipping	Important aspects of bedrock hydrogeology at the NorthMet site remain uncharacterized in the FEIS. As stated often in the document, it is "common practice" to use bulk hydraulic conductivity as an input into groundwater modeling. This practice is reasonable when applied to problems of well yield (water quantity) but is not appropriate when applied to transport problems. Contrary to common practice in characterizing sites where transport problems are a concern, no borehole geophysics - gamma log, multiparameter tool (fluid conductivity, fluid temperature), video, caliper, or flowmeter – were conducted on observation or pumping wells at the site. This data gap is particularly acute when considering the Virginia Formation, where stratiform, hydraulically active fractures (Figure 1) can readily be identified using borehole geophysics. Their stratiform nature also makes the distribution of hydraulically active fractures within the Virginia Formation more spatially predictable (mappable) – which makes borehole geophysical methods ideally suited for the proposed site.	WAT	S	O	8	SDEIS Themes WR 007, WR 008
Robert G. Tipping	The northern edge of the east pit will expose the Virginia Formation, potentially encountering hydraulically active fractures such as the one shown in Figure 1. The engineering and monitoring implications of this type of feature at the pit site are two-fold: 1.) Such features may provide a direct hydraulic connection between the pit and surface water bodies/wetlands northwest - as the pit is dewatered, such features, if identified beforehand, can be prepared for; 2.) Such features may account for the high chloride concentration found in the first sample taken from observation well Ob-3 (93.1 mg/L). Under this scenario, hydraulically active bedding plane fractures within the Virginia Formation provide a pathway for potentially saline waters to move up-dip from the Virginia Formation-Duluth Complex contact.	WAT	S	N	8	FEIS pg. 5-240. SDEIS Themes WR 002, WR 007
Robert G. Tipping	Borehole geophysics and discrete interval sampling and head measurements (packer tests) are routinely used for hydrogeologic characterization. Results from these techniques would benefit site plans for both construction and monitoring of the mining operation.	WAT	S	O	8	SDEIS Theme WR 071

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Shaun Braun	I'd like to take a moment of your time to express my support for Polymet's Northmet project. As a regional business leader, I've witnessed firsthand how the downturn of our regional mining economy has affected our community in northern Minnesota. It is a troubling time for both local businesses that support the mines and more importantly, the families themselves. The Northmet mining project will bring an instant revitalization to the community, and will diversify northern Minnesota with an additional form of mining, reducing the region's dependence of taconite mining.	SO	NS	X	1	
Shaun Braun	It is evident that after 10 years of evaluating the possible project effects, the FEIS clearly indicates the project's groundwater flows will not affect the local watersheds and that the project's treatment and mitigation plans will meet all water quality standards.	WAT	NS	X	1	
Laura Berglund	The risk to Minnesota water quality and human health just isn't worth the short-term financial gain.	WAT	NS	X	1	
Steven gammon	I do not agree that the NorthMet Mining Project should be aloud to be mined in the Northeastern Minnesota area because of the threat of possible long lasting pollution to the water, wildlife, land, air, and any other part of the environment and to the present and future generations of the human race	GEN	NS	X	1	
Jodi L. Perkio	I know jobs are needed in our state, but not at any cost. There has never been a sulfide mine able to contain the toxic waste they produce. The companys I'm sure try to do all they can to assure that these toxins are not released into environment, but accidents happen. Why take a chance where something like this could happen on such a prestine area of our state. Even some of our present mines tailings basins are leaking. Once these toxins are released into the environment they are there forever. We see what has happened in other accidents It never totally gets cleaned up, They get into the water table, food chain causing birth defects, cancers and a host of other other health issues. We already have enough of these toxins in our environment. The company said it will maintain the site for 500 years after the mine closes. It will cost more to maintain it than the wages paid for 20 years of production. This type of rock is safe as long as long as it is uderground. Its like a siberian tiger in a cage at the zoo, but if it gets out and it has happened, it will kill you and others until it can be contained again. I personally don't think it is worth the risk. I had to move when I couldn't find work near where I live. I came back when more jobs came to the area.	GEN	NS	X	1	
Lynden Gerdes	I believe that if an adequate and unbiased FEIS Review was undertaken for the NorthMet copper-nickel sulfide mine proposal there would be no way that the USFS could allow for the destruction of these high quality National Forest lands. I also believe that that if an adequate and unbiased FEIS Review was undertaken for NorthMet copper-nickel sulfide mine proposal there would be without question absolute proof that this proposal should not proceed. I believe the process is legally flawed, primarily because agencies, particularly the DNR, are clearly politically and corporately pressured to make this mine proposal and copper nickel mining in general happen in northern Minnesota. The DNR is financially driven and have internal interest (e.g. Lands and Minerals) that have taken precedence over environmental concerns and long term risks to the environment and citizens. This has influenced the quality of the data incorporated and analyzed in the review process...and ultimately the forthcoming Decision.	GEN	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Erik Hatlestad	Long after the final decision on copper nickel mining in the Arrowhead Region Minnesotans must live with the consequences of our actions. As young people in Minnesota the decision to move ahead with the Polymet project will impact us the longest. Ultimately it will be future generations that will inherit 500 years of clean up, undrinkable water, and polluted communities.	GEN	NS	X	1	
Erik Hatlestad	It is our view that the FEIS does not adequately evaluate the pollution risks to surrounding communities, as well as the sensitive ecosystems of the Boundary Waters Wilderness and Lake Superior. The tentative impacts from pollution, which we feel have been understated, would have a devastating effect on drinking water, fish, wild rice and human health.	MEPA	NS	X	1	
Erik Hatlestad	The EPA identifies sulfide mining as the largest toxic waste producing industry in the U.S. and is associated with long lasting water pollution across the country and the world. No sulfide mine has ever operating without polluting surrounding waters. It is naive to think that the same will not happen in Minnesota as well, which will result in hundreds of years of clean up.	WAT	NS	X	1	
Thomas K. Nelson	This Public Comment is submitted in the form of a Resolution by the Minnesota Coalition of Lake Associations Board of Directors as both a Determination of Inadequacy on the Full Environmental Impact Statement provided by the Minnesota Department of Natural Resources, and a Comment of General Opposition on the PolyMet/ NorthMet mining proposal. Further Rationale and Findings supporting this Public Comment are attached as a separate document.	GEN	NS	X	1	
Thomas K. Nelson	WHEREAS, a close examination of the Full Environmental Impact Statement submitted by the DNR does not adequately address a wide variety of potentially harmful environmental impacts (see supplement), nor has a sufficient bonding escrow been established for mitigation and restoration, nor has the MDNR been able to adequately regulate mining of all kinds in the state, WE oppose the current PolyMet NorthMet copper--nickel sulfide mine proposal on the basis of what has been learned and proposed in the Final Environmental Impact Statement (see supplemental Findings and Rationale); WE urge the DNR to expand the time period and scop for public comments regarding such a large and important environmental study, and to provide the missing reference materials, provide a single address for all comments, and allow the Governor to appoint an Administrative Law Judge to supervise the process; WE urge the US Environmental Protection Agency to again rate the PolyMet FEIS as "EU--3," Environmentally Unsatisfactory--Inadequate;	GEN	NS	X	1	
Thomas K. Nelson	WE object to the U.S. Forest Service proposal to exchange Superior National Forest land for the PolyMet proposal and urge the U.S. Forest Service to reject the proposed exchange of Superior National Forest lands for the PolyMet project;	ROD	NS	X	1	
Thomas K. Nelson	WE urge Governor Dayton to recognize the inherent conflict of interest within the mission of Minnesota Department of Resources, Division of Lands and Minerals, and to reject the DNR's FEIS as inadequate in nearly every one of its aspects;	O	NS	X	1	
Thomas K. Nelson	WE urge Governor Dayton to recognize that the cumulative, perpetual risk to the environment exceeds any possible financial assurance, and therefore put a stop to any further sulfide mining in Minnesota;	FIN	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Thomas K. Nelson	WE urge the governor to require restoration bonding to be guaranteed and escrowed in advance of any approvals, with the parent company, Glencore PLC, named specifically;	PER	S	N	11	
Thomas K. Nelson	WE urge the governor not to issue any more permits to mine anywhere in the state until all the currently expired permits are properly re-- permitted and all mining activities brought into compliance;	PER	NS	X	1	
Thomas K. Nelson	WE urge the Minnesota State Legislature to enact a law similar to the "Prove It First" legislation State of Wisconsin (1997), by which it must be demonstrated that before opening a new mine of any kind, the mining company must be able to point to a similar mine to what it is proposing in the United States or Canada that has operated for 10 years without polluting and has been closed for 10 years without polluting.	O	NS	X	1	
Thomas K. Nelson	WHEREAS, clean water is essential to all life on earth; WHEREAS, there has never been a sulfide mining operation that has been successfully and safely closed down without significant environmental degradation; WHEREAS, the PolyMet NorthMet mining project is located in the vicinity of the headwaters of three major continental watersheds, including the federal BWCA, which puts at risk far too much of the nation's clean water;	GEN	NS	X	1	
Thomas K. Nelson	WHEREAS, the DNR acknowledges significant uncertainty regarding the direction of polluted water by means of groundwater flow, but has resisted further modeling or an independent review of the model itself and the untenable assumptions about water levels at the point of mine closure;	WAT	S	N	8	MDNR et al. 2015c. There is no definitive means to address the issue raised in the comment because the EIS was not scoped to address how future activity at the Peter Mitchell Pit might influence the closure conditions at the NorthMet site. The modeling satisfies Final SDD Section 6.2, which required the groundwater flow model to predict inflows at various stages of pit development (i.e., year 1, year 5, year 10, year 20) and include operation, closure, and post-closure. DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected.
Thomas K. Nelson	WHEREAS, if polluted water were to flow as expected by the FEIS into the St Louis River, it would put at risk the estuary and river corridor where considerable public funds that have been spent for restoration;	WAT	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Thomas K. Nelson	WHEREAS, the FEIS does not evaluate the impacts of polluted seepage north of the mine site on the 100 Mile Swamp and the Rainy River Basin, which should be acknowledged as an international issue;	WAT	S	N	8	MDNR et al. 2015c. There is no definitive means to address the issue raised in the comment because the EIS was not scoped to address how future activity at the Peter Mitchell Pit might influence the closure conditions at the NorthMet site. The modeling satisfies Final SDD Section 6.2, which required the groundwater flow model to predict inflows at various stages of pit development (i.e., year 1, year 5, year 10, year 20) and include operation, closure, and post-closure. DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected.
Thomas K. Nelson	WHEREAS, the direct loss of quality wetlands in the vicinity of the NorthMet mine would be the greatest loss ever in Minnesota, with the exchange likely in different watersheds, and with lesser quality;	WET	NS	X	1	
Thomas K. Nelson	WHEREAS, the land exchange with the U.S. Forest Service will provide only a paltry number of acres converted from private to public use, compared to the area put at risk of contamination by the mining activity and debris, nor is there assurance that the land exchanges will be value for value;	LAN	NS	X	1	
Thomas K. Nelson	WHEREAS, a large collective of medical-professional organizations and individuals have expressed grave concerns about the potential harm to public health potentially caused by the PolyMet mine project, including risks from airborne asbestos, methylmercury and other heavy metals and toxins, nearly all of which have not been properly addressed by the FEIS; WHEREAS, the potential threats to children, workers and communities who rely on fish and wild rice for subsistence, have not been properly addressed in the FEIS; WHEREAS, health effects from air pollution and haze emanating from the mining operation has not been adequately studied or provided with mitigation plans for mine workers or the health of the general public; WHEREAS, the adverse effects on groundwater from PolyMet's operations upon the safety and quality of well water have not been adequately studied from a public health perspective; WHEREAS, independent expert testimony regarding hydrology, biogeochemistry, mercury and other toxins, public health, and other essential considerations have not been adequately addressed by the FEIS; WHEREAS, mitigation strategies to prevent various forms of pollution, protect the public health, and compensate for ecological losses have been undermined by cost-saving measures that favor industry over the environment;	HU	S	O	8	SDEIS Theme HU 01

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Thomas K. Nelson	WHEREAS, it is unrealistic to assume and claim that nearly all the polluted water would be captured for treatment;	WAT	S	O	8	SDEIS Themes WR 017, WR 018
Thomas K. Nelson	WHEREAS, the method of Reverse Osmosis is a difficult, short-term, and very expensive process with a high degree of continual maintenance and monitoring, that will be nearly impossible to sustain in perpetuity as would be needed;	FIN	NS	X	1	
Thomas K. Nelson	WHEREAS, mines that would potentially require perpetual treatment of acid mine drainage have been banned in other states due to the severe threat to future generations;	WAT	NS	X	1	
Thomas K. Nelson	WHEREAS, permitting a nonferrous mine that admittedly cannot be closed without perpetual treatment is against Minnesota Statute 6132.3200.subpart 1: Goal. 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;	PER	NS	X	1	
Thomas K. Nelson	WHEREAS, the PolyMet plan for wastewater storage includes an unlined tailings basin, and is protected by only an unstable 40-year-old dam, risking a similar disaster as befell the Mount Polly mine in Canada;	GT	NS	X	1	
Thomas K. Nelson	WHEREAS, the grade of ore in sulfide rock in northeastern Minnesota is very low, at a mere 1%, which will produce a vast amount of sulfide tailings exposed to the weather, in turn requiring extensive protections against great risk, making the project both very dangerous and economically unsustainable to provide adequate protections;	WAT	NS	X	1	
Thomas K. Nelson	WHEREAS, the financial assurance required from PolyMet for eventual cleanup, reclamation of the mine site, and the treatment of continuously polluted water is, and cannot be, adequate to the task, which is admitted to be a high risk in perpetuity; WHEREAS, PolyMet's position that they will address the financial assurance question only after the DNR issues its approvals demonstrates a willful disregard of the probably future costs to the public taxpayers;	FIN	NS	X	1	
Thomas K. Nelson	WHEREAS, regulators and official Environmental Reviews of sulfide mining operations around the United States have consistently underestimated the true costs of clean-up and reclamation after a mine has been closed; WHEREAS, the PolyMet company has no prior experience at all in operating a mine; WHEREAS, the Swiss parent company that owns PolyMet, Glencore PLC, has a dismal record of environmental disasters, labor violations, and flouting of regulations and requirements of its operations; WHEREAS, the liability for cleanup costs once the mining activity has ended remains only with the junior partner PolyMet, which could easily disappear through bankruptcy as there is no financial assurance directed toward Glencore PLC, which is not mentioned in the FEIS; WHEREAS, while the metals that PolyMet will mine (copper, nickel, cobalt, platinum, and palladium) are essential for modern daily life and found in countless products, global metals mines and markets have already produced an overabundance of these materials; WHEREAS, the commodity prices of the materials to be mined by PolyMet have, like iron ore, fallen to a level that could easily cause the venture to fail, risking both the jobs created by the mining and	FIN	NS	X	1	

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	processing operation, and the ability to pay for cleanup and restoration;					
Thomas K. Nelson	WHEREAS, the limited number of jobs created for the short term economic gain will pale in comparison to the need for water treatment and other environmental protections virtually into perpetuity, estimated at least 500 years;	SO	NS	X	1	
Thomas K. Nelson	WHEREAS, the PolyMet mining will do very little to diversify the economy of the region, already heavy with mining projects; WHEREAS, the expected tax and fee contributions to local cities, school districts and the State from the mining activities will not be sustainable to the needs of the region in the long term, and would be at risk if the project fails due to global competition;	SO	NS	X	1	
Thomas K. Nelson	WHEREAS, the overall economic analysis has overstated the short term benefits and not fully considered the risk pushed to future generations;	SO	NS	X	1	
Thomas K. Nelson	WHEREAS, the DNR is unable to provide a fair Environmental Impact Statement due to the conflict in its mission to promote, and not just regulate mining in the state; WHEREAS, DNR Commissioner Tom Landwehr's statement that he expects to certify the FEIS as adequate as early as February 2016 demonstrates a prejudice before the public comment period has expired, and those comments considered; WHEREAS, the Minnesota Legislature has repeatedly attempted and often succeeded in weakening pollution and mitigation standards for political and private gain rather than the public benefit of rigorous environmental protections; WHEREAS, Minnesota's political efforts to repeal or weaken regulations meant to protect the environment from mining activities provides a global template on how responsible, ethical, and successful mining practices can be avoided and ignored; WHEREAS, because the vast majority of information in the EIS was provided and funded by PolyMet itself and other industrial sources, doubt is cast on the objectivity of this crucial science, suggesting bias toward an unrealistic best-case scenario; WHEREAS, the permitting process for iron and taconite mining in the past has allowed activities with expired permits, extensive variances, waived fines, leaking tailings basins, and wastewater releases, demonstrating unwillingness from state agencies to properly oversee the mining industry; WHEREAS, there is a clear conflict of interest in the assessment over the water flowage modeling, which predicts areas affected by polluted run-off from the mining operation, with no independent scientific analysis allowed by the company, or included in the FEIS; WHEREAS, claims by mining companies in Minnesota and in other states that they have not violated water quality standards is too often due because of exemptions from those standards; WHEREAS, the mine in Michigan toured by Gov. Dayton and touted to be a good example of responsible sulfide mining, has in truth many unaddressed or ignored air and water pollution problems, with insufficient oversight and many permit irregularities;	O	NS	X	1	
Thomas K. Nelson	WHEREAS, the physical length and time taken to produce the FEIS, over 10 years and 3,500 pages, with a second attempt following the rejection of the first draft, is no guarantee of its validity or scientific worthiness;	MEPA	NS	X	1	
Thomas K. Nelson	WHEREAS, the inadequacy of the PolyMet FEIS, together with the land exchange proposal will serve as a dangerous precedent for future mining operations in north-east Minnesota, creating a cascade of pollution and environmental	GEN	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
	degradation that serves only private interests and not the public good;					
Thomas K. Nelson	WHEREAS, the cumulative effects of the various direct and indirect activities on the resources in the immediate vicinity of the NorthMet project have, at least, been reviewed in the FEIS, but the cumulative effects of several additional speculative sulfide mines in the Duluth Complex area have been neither included nor considered for their cumulative effects;	CUM	S	O	7	SDEIS Theme CU 02
Thomas K. Nelson	WHEREAS, PolyMet has not considered several relevant mining method alternatives such as keeping tailing dry to reduce toxic runoff (dry stack storage), underground mining to reduce wetland destruction, and alternative tailings disposal sites to reduce the risk of tailings basin leaking and collapse;	ALT	S	O	8	SDEIS Themes ALT 10 and ALT 01. Tailings Basin Alternatives Chart MDNR and ERM May 2009; Co-lead Agencies considered a range of potential Tailings Basin alternatives including removing water from tailings prior to deposition. MDNR et al. 2013b. See Underground Mining Alternative Assessment (FEIS Appendix B).
Thomas K. Nelson	WHEREAS, the PolyMet proposal does not adequately consider alternatives to reduce harm to wetlands and water quality and is not the Least Environmentally Damaging Practicable Alternative;	ALT	S	O	8	FEIS Section 5.2.3.3
Thomas K. Nelson	WHEREAS, the treaty rights and resources of those Native American Bands potentially affected by many of the NorthMet activities have not been adequately respected or addressed beyond simply outlining the differences in opinion;	CR	NS	X	1	
Thomas K. Nelson	WHEREAS, the final public comment period for the FEIS is far too short, no further hearings for consideration of several new studies have been planned, thousands of pages of reference materials are missing, separate comments are required for each agency, plus several other obstacles hindering public input, all indicate a faulty and non-transparent procedure.	O	NS	X	1	
John Lundquist	As a father of three and long time user of the BWCA and other natural treasures of our state, I feel preserving these areas for future generations of visitors should be our priority. The risks involved with allowing mining in the area are not worth the potential loss of priceless natural resources.	WILD	NS	X	1	
Richard Fuller	The environmental risks of the proposed PolyMet NorthMet mine are too great to allow the proposal to become real.	GEN	NS	X	1	
Kathleen Miller	The proposed mining project has numerous flaws. 1. Location: this project is proposed in NE Minnesota where, up until now, we have the best water quality in the state. The water quality in this region needs to be preserved as a safeguard for a better future for its residents.	GEN	NS	X	1	
Kathleen Miller	2. No modeling for climate change: we have seen how unpredictable the weather is. The drastic changes in precipitation either excessive rain fall, snow or drought will challenge the modeling estimates for the impact of the tailing pond capacity to hold contaminants indefinitely. Water flow cannot be predicted with 100% accuracy as we do not know precisely how	WAT	S	O	2	SDEIS Theme WR 077

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
	ground water moves.					
Kathleen Miller	The use of industrial drilling techniques put the bedrock at risk for creating fissure for water to escape.	WAT	NS	X	1	
Kathleen Miller	3. Current practices: I am pleased that the mining company can state they have the technology to clean waste water. Let us see a 50 year demonstration of this best practice on existing mines to really understand how the technology can be employed and improved upon.	PD	NS	X	1	
Kathleen Miller	4. Water quality testing: Furthermore, the water testing should be conducted by an outside agency and not the mining company itself.	WAT	NS	X	1	
Kathleen Miller	Sadly, the DNR has ignored public health requests for an Environmental assessment of water quality, which is absolutely irresponsible.	HU	NS	X	1	
Kathleen Miller	5. DNR variances: If permitted, this company should NOT be allowed any variances of metal or discharge levels to be approved by the DNR - PERIOD!! They say they have the technology - if it doesn't work, they need to shut down until they get it right and can prove it.	PER	NS	X	1	
Kathleen Miller	6. Financial assurances for meeting standards: there is no price that will cover the enduring environmental costs of site clean up, watershed water cleanup and the loss of wildlife and habitat. The officers of the shell company and all affiliates need to be held responsible for all costs including potential well water contamination for municipal water supplies such as in Hoyt Lakes.	FIN	NS	X	1	
Kathleen Miller	7. Timing: Minnesota cannot afford the risks of this project. Lessons must be learned from "deals" struck with other multinational- foreign companies. They don't live here - they don't care. They want to grab and run. With commodity prices so long today and for the near future, it would be poor judgment to permit this mine today given the shaky finances of the mining project sponsor.	FIN	NS	X	1	
Kathleen Miller	I would hope that you would defer this project and ask the following if it is to be considered in the future: 1. Utilize the 'proven' water quality treatment methods today to improve Minnesota's waters (since you have polluted them already).	WAT	NS	X	1	
Kathleen Miller	2. Defer until the mining project sponsor can provide iron clad assurances that 1) technology is in place and will be utilized and is financially reasonable for the company to use 2) the company's financial books are solid and can provide a substantial down payment as a damage deposit that is used and replenished as the project advances. The funds would be used by Minnesota to pay for frequent inspections, water quality testing and funds to "fix" problems as they occur - such as residential contaminated wells, testing of children for heavy metals, etc.	NEPA	NS	X	1	
Lawrence Suchy.	Please do not let this project go forward. The long term risks, verses the short term gains are too great.	GEN	NS	X	1	

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Robert Risch	I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal. It is totally unrealistic to assume that Polymet will be in existence even 50 years from now, not to mention 200 to 500 years from now, How can a nonexistent company guarantee anything in the way of long term environmental protection, or even care, for that matter, that far into the future? Those originally held responsible for allowing this to happen at the permitting level will have left their legacy for approving a highly probable environmental disaster. The short term gains do not in any way justify the end result that is generations from now.	PD	NS	X	1	
Michael Lein	As someone who has spent over 40 years developing environmental protection programs in Minnesota, I strongly oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal. I have seen the destruction that new and old mining practices had brought to the western United states. As an environmental professional who has operated water treatment facilities- and regulated them - I also understand the difficulties in dealing with issues such as water waste treatment and the impacts that result from both technology failure and human error.	WAT	NS	X	1	
Michael Lein	I specifically object to the practice of open pit mining and the archaic practice of wet storage of waste. Alternatives to these should be thoroughly examined - they were not in these documents.	ALT	NS	X	1	
Michael Lein	The PolyMet Final Environmental Impact Statement (FEIS) has many other flaws - the longer they are examined the more are brought to light - issues with groundwater flow monitoring, issues with wetland replacement, ongoing concerns about long term financing.	GEN	NS	X	1	
John Chell	To characterize this 10 year, \$90 million, environmental analysis as anything less than fully adequate is to do a disservice to over 40 years of environmental, technical, and regulatory progress which has brought this state a standard of environmental excellence that is a national and, undoubtedly, an international model for objectively evaluating proposed mining projects. It is unfortunate that many within the environmental community will perceive the affirmative conclusions of this analysis as a defeat when this study represents the pinnacle of their advocacy. The environmental impact analysis process generally, and this exhaustive and technically complex environmental study specifically, was never intended to be an absolute barrier to future mining in Minnesota. It is, rather, a profoundly deliberative process designed to give our elective leaders, our regulatory agencies, our citizens, and the market itself an objective framework by which to judge whether State and Federal environmental standards can be achieved and maintained within the NorthMet proposal. Three independent agencies: the Minnesota Department of Natural Resources, the U.S. Forest Service and the U.S. Corps of Engineers, lead this massive and lengthy analysis. That all three INDEPENDENTLY concluded that the Northmet mining project can be compatible with both the environmental and natural resources of the region (and the outdoor recreational pursuits based on those resources) is both reassuring and conclusive regarding the adequacy of this EIS. Ultimately, the permitting process, the financial assurance component and the world-wide metals market itself will determine if this proposed mine is both environmentally and economically feasible. The state and its federal partners will, through the multitude of mine permit performance standards, a sound financial assurance facility, and a continued high level of transparency and public dialog ensure that the environmental management component of that decision is fully manifest. NCLUCB supports the determination of the Co-Lead agencies that the NorthMet Mining and Land Exchange Final EIS is adequate and urges those agencies to initiate the mine permitting process.	MEPA	NS	X	1	

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Lucinda Lenertz	nickel mine Please register my position as against the sulfide mine proposed for northern Minnesota. This company has no intention of creating jobs in the short term and they just want the permit for future mining...maybe decades in the future.	GEN	NS	X	1	
John Strand	I want to believe that all of this is not just a formality, and that a decision on this disastrous project (that is bad enough in and of itself, but is also a Trojan Horse that will bring with it a whole army of Greeks that will pillage and rape Minnesota beyond all recognition for years to come). It is in that spirit, a spirit of belief in the process that I write. I believe the FEIS has been rushed and is inadequate in almost all respects.	GEN	NS	X	1	
William Fischer	a proposed 500 year cleanup period is reckless in measure exceeded only by the proposed contamination of long duree'. Not only does this time horizon exceed the lifespan of the United States by approximately two fold, but it exceeds individually important human timeframes by at least an order of magnitude, possibly two orders of magnitude if one considers a usual electoral cycle indicative of usual decisionmaking and outcome-expectant timeframes.	PD	NS	X	1	
William Fischer	The people of Minnesota do not want to pay the environmental cost, or acquiesce to proposals of privatized gain at distributed costs proposed by PolyMet.	FIN	NS	X	1	
Wendy Robertson	Even if fully implemented and if all outcomes are as prescribed within the EIS, the impact may be legally acceptable and meet all the prevailing regulations, but such impacts will still remain unacceptable. Technology can cleverly change the form of such impacts but it cannot reduce their total as given by thermodynamic laws: all material transactions with the environment constitute impact and even if the site is restored there will necessarily remain an impact legacy; the extraction and concentration of copper/nickel and dissolved pollutants requires a compensating disordered waste stream, so that the chosen stream is that which is unregulated—namely CO2. Technology can never avoid a waste stream but it can only make it legal under our regulatory scheme. And the accumulation of such legal, incremental impacts over time will prove disastrous. And as this EIS sets a precedent for the opening of a host of such projects, there is effectively no limit to total impact, especially atmospheric carbon. Without a regulatory cap on such wastes, this plan merely sanctions future calamity. More generally, this plan is misleading in that the public erroneously believes that it is a map for impact-less mining, for “getting it right.” The reality is that all such economic growth inevitably and incrementally adds to the planet’s impact load, the total of which is increasingly imposing costs on the public. Since environmental costs accelerate as a function of aggregate impact, and since the EIS evaluates costs as a function of impact in isolation, it concludes that the cost/benefit ratio is favorable, where in reality it is not. Therefore the underlying problem with the EIS is its failure to recognize our collective predicament: we have exceeded carrying capacity and further economic growth results in negative returns wherein costs exceed benefits, which make us worse off rather than better off, make us poorer rather than richer. Secondly this document fails to detail an enforcement plan, without which it is useless. This is especially problematic if the land trade is enacted, as the property will be immediately fenced, gated, and guarded. Ownership confers power and a split estate is the best guarantor of the public’s interest, ensuring enforcement of both process and outcome, as prescribed by the EIS. By forfeiting ownership the public will effectively also forfeit control over both.	GEN	NS	X	1	
Christopher Lish	As a former resident of northern Minnesota, I strongly oppose the PolyMet NorthMet copper-nickel sulfide mine.	GEN	NS	X	1	

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Eric Morrison	The NorthMet FEIS does not properly consider impacts of the NorthMet mine on the Boundary Waters Canoe Area Wilderness and Voyageurs National Park. The hydraulic connection between the NorthMet proposed mine site and the Rainy Lake Watershed via the One Hundred Mile Swamp is obfuscated by incorrect mapping and incorrect statements in the FEIS.	WAT	NS	X	1	
Eric Morrison	The NorthMet mine site is uphill from the body of water known as the One Hundred Mile Swamp. The One Hundred Mile Swamp is a contiguous wetland that inarguably spans the Laurentian Divide and drains to both the Laurentian Watershed and the Rainy Lake watershed. Drainage to the Rainy Lake Watershed will impact the Boundary Waters Canoe Area Wilderness and Voyageurs National Park. In SDEIS maps and now in FEIS maps, the perimeter of the One Hundred Mile Swamp is drawn incorrectly so as to omit the portion of the wetland on the Rainy Lake side of the Laurentian Divide.	WAT	S	O	2	FEIS pg 5-5
Eric Morrison	LINES ON MAPS THAT DEMARCATE WHERE WATERSHED DIVIDES CROSS OVER BODIES OF WATER ARE NOMINAL AND DO NOTHING TO PREVENT THE MOVEMENT OF WATER WITHIN THE BODY OF WATER, including from one side of the divide to the other. To suggest otherwise is preposterous. The statement that the nominal watershed divide across a body of water prevents water from passing between two watersheds also appears on pages A-273 to A-274, A-453, A-519, and A-602. The nominal demarcation of the crossing of the Laurentian Divide over the One Hundred Mile Swamp is a straight line running east-west from 47.6441, -91.9476 to 47.6441, -91.9341 over a flat body of water as can be seen in the Hydro-NHD USGS TMN 2.0 Viewer map available at http://viewer.nationalmap.gov/viewer/ . The Hydro-NHD USGS TMN 2.0 Viewer map is copied below.	WAT	S	O	2	FEIS pg 5-5. SDEIS Themes PD 38, WET 19
Eric Morrison	On page 5 – 5 of the FEIS, the following incorrect statement appears “Yelp Creek and the Partridge River encircle the northern, eastern, and southern sides of the Mine Site. These streams act as hydrologic sinks for surficial groundwater and surface water originating at the Mine Site. Surface runoff or surficial groundwater seepage leaving the Mine Site would flow into Yelp Creek or the Partridge River, and eventually into the St. Louis River.” This statement is incorrect because THE PARTRIDGE RIVER IS NOT A SINK FOR SURFICIAL GROUNDWATER AND SURFACE WATER ORIGINATING AT THE MINE SITE. Water exchanges between the Partridge River and the One Hundred Mile Swamp and groundwater contours in the One Hundred Mile Swamp descend in a northeasterly direction, moving exchanged water across the nominal demarcation of the Laurentian Divide and into the Rainy Lake watershed. Satellite imagery of the Partridge River shows that it disappears completely into the One Hundred Mile Swamp and that at some point all of the water in the Partridge River is groundwater in the One Hundred Mile Swamp. A satellite image of the Partridge River where it disappears into the One Hundred Mile Swamp at latitude 47.63918 and longitude -91.94589 is available at the USGS Earth Explorer web site and is copied below. Groundwater contours for the One Hundred Mile Swamp are shown in EIS Figure 4.2.2-7.	WAT	S	O	8	FEIS pg 5-5. SDEIS Themes PD 38, WET 19
Eric Morrison	The FEIS asserts that surface water flow and surficial groundwater flow from the NorthMet Project will not directly, indirectly, or cumulatively affect the water in the BWCAW and Voyageurs National Park but includes no provisions to guarantee the validity of this statement. The validity of the FEIS assertion can be tested by simply monitoring water quality in Langley Creek but none is planned. This is unreasonable and unconscionable.	WAT	S	O	8	FEIS pg 5-5. SDEIS Themes PD 38, WET 19

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Eric Morrison	To prove that the BWCAW is isolated from the NorthMet Project, hydraulic conductivity testing in the One Hundred Mile Swamp should be required data for the NorthMet FEIS. AT A MINIMUM AND IN ANY CASE WATER IN LANGLEY CREEK SHOULD BE TESTED FOR SULFATE ION AND RESPONSIVE ACTION SHOULD BE REQUIRED IN THE EVENT THAT WATER TESTS POSITIVE FOR SULFATE (levels are currently below detection limits as measured by the EPA 300.0 ion chromatography test method). To not test water in Langley Creek and to have no plan in place for corrective action should sulfate appear is a serious breach of public trust.	WAT	S	N	8	Langley Creek is outside the Partridge River watershed. No project-related discharges are anticipated.
Paul Nasvik	PolyMet is projecting control methods that are based on historical norms. Containment of toxic materials will be stored in wet pits that are Double Lined and yet they are projecting loses of 10gpms and 20gpms leakage in the two containment areas. That converts to 14,400 gallons per day and 28,800 gallons a day respectively.	PD	NS	X	1	
Paul Nasvik	The bentonite clay lining is something that I have used in multiple installation for water containment. It is susceptible to erosion, and shifting. It will dry and shrink when water is not available and then is more susceptible to erosion when exposed to rapidly flowing water.	GT	S	O	2	SDEIS Theme GT 08
Paul Nasvik	The reason for a double containment system is being proposed is because of the potential for one system to develop leaks. Using a synthetic liner system is only good if you have no damage to the liner and it has been water filled and tested for a period of time. Even at that the filling of the pit with mine waste material would have to be done extremely carefully to make sure no punctures are made. Even filled successfully you will still need to worry about shifting material and contact points. One leak, or puncture to the membrane with 600 ft. of head pressure will be disastrous to the ground water. Neither system is fool proof and it would be foolish to put so much at risk on bad technology.	GT	S	O	2	SDEIS Theme GT 10
Paul Nasvik	The risk of this project is so ridiculously high, even if it were a 50 year risk, but for a risk that potentially will last for 500 years, or more, is insane to even think about. Minnesota will be stuck dealing with the largest toxic waste dump in the states history.	FIN	NS	X	1	
Paul Nasvik	The monitoring and maintaining of this project and the risk of failure doesn't come close to the benefits they are offering.	ALT	NS	X	1	
Paul Nasvik	Much of the mitigation properties seems damaged and not worth the risk. If there is property that is of value to the DNR then they should strive to acquire the properties using other means.	LAN	NS	X	1	
Paul Nasvik	Mitigation wetlands seems like a oxymoron. If they are wetlands they should be protected already whether, or not they are government lands, or private. They are not something that are freshly created out of nowhere and given as a substitute.	WET	NS	X	1	
Robert Tammen	Polymet's FEIS does not demonstrate compliance with Minnesota Rule 7050.0185, Nondegradation For All Waters. "It is the policy of the state to protect all waters from significant degradation from point and nonpoint sources..." Promises of reliance upon "Adaptive Management" indicate that Polymet's intent is to react after degradation has occurred.	PER	S	O	2	SDEIS Theme PER 09
Robert Tammen	Polymet's FEIS has not documented that there will be a net economic benefit to the State of Minnesota. The November 2012 report from the Labovitz School of Business & Economics states on p. A-16 "...a cost-benefit analysis would be	SO	S	O	10	SDEIS Theme SO 07

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	needed..." There is no rigorous analysis of Polymet's economic impact.					
Robert Tammen	The absence of documentation for environmental protection or statewide economic benefit indicates that Polymet's FEIS is Environmentally Unsatisfactory and Inadequate and should be rejected.	NEPA	NS	X	1	
Bill Waddington	The environmental studies done up to this point are woefully inadequate: particularly the question of whether pollution will flow into the Boundary Waters. The federal government has said this is a very possible result and recommended further study. This issue has not been studied, in fact folks seem to be avoiding it.	WAT	NS	X	1	
Bill Waddington	The land swap with National Forest land clearly short-changes the people of Minnesota.	LAN	NS	X	1	
Bill Waddington	Polymet even admits there will be at least \$300,000,000 worth of pollution left after the mine is done (this is a very conservative estimate), but at the same time does NOT agree to provide adequate clean-funds in a protected trust fund for this purpose. This proposed mine will trash the range and BWCA, and leave the clean-up bill for the people of Minnesota. And once this land is destroyed, it is destroyed for ever.	FIN	NS	X	1	
William K. Dustin	the type of mining proposed here is going to pollute, and a massive low grade deposit in a wet environment is guaranteed to generate acid mine drainage essentially in perpetuity.	WAT	NS	X	1	
William K. Dustin	Instead of experimenting in a sensitive environment, I suggest that PolyMet apply their experimental technology in cleaning up one of the many polluted mine sites that already exist worldwide to see how well it works. If it works as well as the FEIS anticipates, then PolyMet could license their technology to others as well as applying it to their site here.	ALT	NS	X	1	
William K. Dustin	A ten percent chance that a pollutant will exceed the evaluation criteria is simply too high. At a minimum the standard should be P95 and ideally it would be P99. Computer models are quite uncertain as is evidenced by the climate models that have woefully underestimated the amount of global warming that is occurring.	WAT	S	O	2	SDEIS Themes PER 37, WR 110
William K. Dustin	The cumulative effects analysis is inadequate by definition* because it refuses to consider the other proposed mines in the Duluth Complex. There is nothing "speculative" about the mine under development by Twin Metals. This company has offices in the Twin Cities and Ely, it has been collecting core samples for years, it has a proposed infrastructure that ties into the PolyMet project, and it has been running a column in the Ely Echo praising the value of mining. The fact that their proposal has not reached the permitting phase does not make it "speculative". The environmental outcome of the PolyMet project is far more speculative than the likely success of Twin Metals receiving the necessary permits to mine, and their receipt will be even less "speculative" after the PolyMet approval.	CUM	S	O	2	SDEIS Theme CU 02

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William K. Dustin	The FEIS is also vague about how its various proposals to protect the environment will be enforced. The most stringent of standards are worthless unless backed up by rigorous enforcement. The use of the passive voice in describing enforcement is indicative of this weakness. What this boils down to then is the adequacy of the financial assurance which cannot be determined until an accurate economic analysis is applied to all the items in the FEIS. The estimates that appear in the FEIS are way too low. Cleanup and mitigation costs are likely to approach ten billion, not 500 million. The determination of financial assurance will be an interesting exercise, and it had better be conducted above board, in full public view, with complete transparency. The funds for the financial assurance will also need to be protected from any political interference. We have had too many adverse experiences with financial game playing.	FIN	NS	X	1	
William K. Dustin	Although I am totally against this project, I do not question your integrity in doing your jobs to get it approved. It is most unfortunate that the state of Minnesota encourages this activity in the first place.	PER	NS	X	1	
William K. Dustin	Undisturbed natural areas are a resource that can be enjoyed by many generations and they provide ecological services that are grossly underestimated in economic accounting. It is extremely shortsighted that they do not receive the same valuation as other exploitable natural resources.	SO	NS	X	1	
Dana Bloom	1) The state needs direct access to core samples. During my work with the Minnesota Department of Natural Resources (DNR), in the Hibbing Lands and Minerals office, where the mining companies store their core samples, my supervisor told me that core samples drilled by mining companies are considered confidential/propriety information; DNR staff are not allowed to view the core. Mining companies drill and examine thousands upon thousands of feet of core, much more than the state could possibly drill and examine independently. Since the state is unable to replicate the magnitude and detail of a mining company's drilling and rock core study, and since DNR staff is not allowed to view the mining companies' core, the state is unable to independently verify, with any certainty, the accuracy of the mining companies', and third party contractors', claims. The existing EIS relies too heavily on other party's interpretation of data, and too little on direct observation of raw data specific to this mine plan. The state should be allowed to view rock core samples and verify mining company claims. Not viewing the actual core samples, obtained by mining companies, for this specific mining project, is the equivalent of deciding to purchase a house after only being allowed to tour a couple of neighbors' attics and read the realtor's description. The state cannot determine the EIS is adequate, or accurate, without being allowed to view the core samples from which the conclusions in the EIS are drawn.	WAT	S	N	3	SDEIS Theme WR 026. To support mine planning and waste-rock handling, PolyMet developed a geologic "block model," which is a three-dimensional grid that represents the deposit and that provides an estimate for ore grade and sulfide S concentration in each grid block. The estimates of sulfide S in NorthMet waste and ore are based on interpolation of sulfide S analyzed in recovered drill core (approximately 18,800 analyzed samples). To ensure that the estimates of sulfide S concentration in the waste rock are accurate, the Co-lead Agencies commissioned an independent review of the geostatistical analysis used to develop the sulfide S distribution in the block model. For this, the reviewer obtained the entire dataset of sulfide S analyses on core samples. This audit found that the number and spatial distribution of the sulfide analyzed supported the geologic block model, which was developed to describe the ore and waste rock distribution in the deposit (Optitech 2012).

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Dana Bloom	2) Environmental impact of weak ability, on part of regulators, to enforce mining and environmental rules. There are a number of scenarios in which the state, and other agencies, may be unable to effectively enforce mining and environmental rules; the environmental impacts of these scenarios should be included in the EIS. Neglecting to outline the role, or absence of action, on the part of the state and other regulators, in monitoring, enforcing and controlling environmental impacts implies that the mining companies will regulate themselves. Effective state enforcement results in substantially different environmental impacts compared to scenarios where companies regulate themselves; these differences, and ways to maximize regulatory effectiveness, need to be addressed to ensure obstacles to the state's ability to effectively enforce rules are minimized. What assurances currently exist that the state is capable of effectively enforcing rules to minimize adverse environmental impacts? Vehicle track out on highway 169, between Grand Rapids and the Chisholm area (during active scam mining), shows the state's current lack of success in enforcing environmental rules with current mining companies. It seems like preventing iron ore dust/mud from leaving a mine site on truck tires, would be relatively easy to enforce, compared to enforcing the host of complicated environmental regulations introduced with a copper nickel operation. If the state cannot effectively enforce the existing rules, how can the public be assured the state would have better success with a more complex mining operation?	NEPA	S	O	8	SDEIS Themes NEPA 09, NEPA 15
Dana Bloom	Vehicle track out might seem minor, but the ore dust is re-entrained on passing vehicle tires, washes into our water supply, and some is airborne and readily inhaled. In addition, some residents of Keewatin had to have their homes repainted due to the airborne red iron ore dust. Mine workers laundry rooms accumulate iron ore dust. Iron ore dust might not pose a potential risk for family members, but what are the environmental and health effects of liberated copper nickel mine waste/dust? I have logged rock core from the Duluth Complex, and identified minerals that have asbestos-like crystals/fibers; I have pictures of these fibers. Has the state reviewed images of, or core samples containing, asbestos-like fibers from the Duluth Complex? If not, it strikes me as an inadequate review of environmental impacts. Mine operators are supposed to reduce vehicle track out, and they make efforts to do so; however, despite their efforts, and despite government rules and regulations, highway 169 is frequently is stained red. If the state cannot currently prevent iron ore dust from leaving mine sites, how is the state going to prevent possible asbestos-like materials from leaving mine sites? What obstacles have prevented regulators from effectively addressing these environmental impacts?	AIR	S	O	8	SDEIS Themes AIR 05, AIR 09, HU 03. The NorthMet Project Proposed Action is subject to a number of regulatory permits, reviews, and approvals, including determination of whether the proposed mining activity would result in a change to air quality.
Dana Bloom	What are some possible scenarios in which the regulators are unable to effectively control environmental impacts through regulation? A. Lack of funding for adequate regulatory staff B. Staff, empowered to make decisions, who lack the interpersonal, intrapersonal, technical skill and knowledge, and material resources to carry out effective inspections and the corresponding follow-up tasks - For example, staff might lack the ability to remain unbiased after working closely with industry representatives for years, developing friendly relationships and wanting to avoid conflict and confrontation when put into a position of having to address rule infractions. Empowered individuals within government agencies, make decisions that substantially impact the environment. As individual decisions relate to government agencies abilities to regulate PolyMet, what effective procedures does the state have in place to ensure that individual regulatory employees consistently maintain congruence between the regulatory objectives and their actions, and that they are not influenced by personal agendas (like wanting to reduce personal work load or avoid conflict with colleagues or industry)? C. Poor communication between and within regulatory agencies This comment is not about asbestos or air-quality; this comment is about the state's lack of ability to enforce existing rules, the impact on the environment of poor enforcement, and the need for the EIS	NEPA	S	N	3	SDEIS Theme NEPA 15. NEPA (as well as MEPA) recognize that EISs are planning tools that focus agency analyses on significant environmental issues (40 CFR 1501.1(d)). As a tool, an EIS analyzes proposals at an appropriate level, given that the permitting process would require more finely tuned analyses based on further understanding of environmental conditions and project design. This means that the NEPA and MEPA phase of the environmental review process requires less specificity for proposed projects, and demands additional detail for the permitting phase. Pursuant to NEPA and MEPA, mitigation measures and their effectiveness have been considered in the EIS. The

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	to address environmental consequences of weak government agency enforcement in order to be considered adequate.					actual effectiveness of any approved and implemented mitigation measures would be monitored as part of permit conditions, which may lead to additional mitigation measures being required of the permit holder.
Mark Kaprelian	Commenters, including me, called attention to several factors that create extraordinary risks to the environmental, economic, employment and sociological impacts discussed in the SDEIS. These factors were not addressed in the SDEIS and remain unaddressed in the FEIS.	GEN	NS	X	1	
Mark Kaprelian	The NorthMet Mining Project is the only significant project in PolyMet's portfolio and its only significant source of potential future revenue; The success of the Project depends in large part on the price of copper, which has been falling since 2011 and is likely to be exposed to continued downward pressure from seasoned, low cost producers; and PolyMet is thinly capitalized, with significant amounts of assets that could be impaired if the price of copper remains depressed or if the Project is otherwise unsuccessful.	PER	S	O	2	SDEIS Themes PER 02, NEPA 06
Mark Kaprelian	Underlying the analysis presented in the FEIS is a pervasive assumption that PolyMet will conduct mining operations for approximately 20 years, without interruption, and will then cease operations in an orderly fashion. This assumption frequently is unstated or implicit. Elsewhere it is briefly acknowledged. But the reasonableness of this assumption is never discussed, despite factors such as those above, and despite statements by PolyMet (quoted below) that appear to contradict it. The uncritical acceptance of this assumption is inconsistent with the requirement that the FEIS encourage "good analysis and clear presentation" of the proposed action and include a "thorough but succinct discussion of potentially significant adverse or beneficial effects generated, be they direct, indirect, or cumulative."	NEPA	S	O	5	SDEIS Themes NEPA 08, NEPA 09, SO 05
Mark Kaprelian	The IMPLAN methodology is based on the recognition that "some years will be a little better, others a little worse" (FEIS at 5-577), which is a gross understatement of the "boom and bust" phenomenon described in the FEIS and casts significant doubt on the reliability of the IMPLAN model. If IMPLAN does not model the "boom and bust" phenomenon, then IMPLAN must be supplemented. Simply stating that "[t]he diverse economy of the study area could offset the degree to which the effects of a bust are experienced" does not adequately address the potential effects of a prolonged "bust" cycle on a junior miner in precarious financial condition.	SO	S	O	3	SDEIS Theme SO 08

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Mark Kaprelian	<p>There are good reasons to believe that PolyMet in fact will not continue in operation, and may even cease to be a going concern, in the event of a prolonged downturn in copper prices. Not the least of these reasons are PolyMet's own statements to this effect. For example, in its public financial disclosures, PolyMet states: Because the price of metals fluctuate, if the prices of metals in our ore body decrease below a specified level, it may no longer be profitable to develop our NorthMet Project for those metals and we will cease operations...If the prices of copper, nickel, cobalt, platinum, palladium and gold are, for a substantial period, below our foreseeable costs of production, we could cease operations. Project. If we are unable to raise such additional funds, we will have to suspend or cease operations...If we cannot raise the money necessary to continue to explore and develop our property, we will have to suspend or cease operations...We have had no production history and we do not know if we will generate revenues in the future...While we were incorporated in 1981, we have no history of producing minerals. We have not developed or operated any mines and we have no operating history upon which an evaluation of our future success or failure can be made. We currently have no mining operations of any kind We may not successfully establish mining operations or profitably produce metals at any of our properties. As such, we do not know if we will ever generate revenues...We have a history of losses, which we expect will continue for the future. If we do not begin to generate revenues we may either have to suspend or cease operations. We will need to raise sufficient funds to meet our current obligations as well as fund ongoing development, capital expenditures and administration expenses, in accordance with our spending plans for the next year. While in the past the Company has been successful in closing financing agreements with Glencore AG, a wholly owned subsidiary of Glencore plc (together "Glencore") and other parties, there can be no assurance it will be able to do so again in the future. PolyMet Mining Corp, January 31, 2015 Form 20-F at 7-9.</p>	PER	S	O	3	SDEIS Theme PER 02
Mark Kaprelian	<p>According to the FEIS, "PolyMet states that, due to its structure as a 'low-cost producer,' the NorthMet Project Proposed Action would be unlikely to completely cease operations during a recession." (FEIS at 5-583). The factual basis for this statement is not disclosed. It appears to be inconsistent with PolyMet's own public financial disclosures (~ "we have no operating history upon which an evaluation of our future success or failure can be made.") The Co-Lead Agencies appear to regard it skeptically, noting: That statement notwithstanding, complete suspension of mining activity is not an uncommon response to recession or significant drops in commodity prices. This "bust" aspect of the cyclical economy is familiar to mining regions in Minnesota and beyond. (Id.) Yet the risks of "bust" cycles are addressed only incompletely and indirectly in the FEIS through the use of commodity prices that are characterized as generally conservative, compared to price trends. In particular, copper... prices used in the IMPLAN model are significantly below recent average prices. (Id.) The prolonged downward trend in the price of copper exposes the shortcomings of this approach. Although the current economic expansion is entering its 78th month and is among the longest in U.S. history," the current spot price for copper is around \$2.10 per pound, well below the \$2.90 per pound price used in the IMPLAN model.' In fact, copper prices have been falling since 2011 and have been below \$2.90 per pound for most of the current year- despite larger than normal supply disruptions. Many analysts expect copper production to remain high and copper prices to remain low for many years to come thanks to several large, seasoned low-cost producers, including a huge existing mine in Indonesia with 2016 production costs expected to be \$0.61 per pound?</p>	SO	S	O	2	DEIS Theme SE3; SDEIS Theme SO 04

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Mark Kaprelian	In view of these facts, statements in the FEIS that the copper prices used in the IMPLAN model "are generally conservative" and "significantly below recent average prices" appear to be incorrect. The effects of lower copper prices on the FEIS presentation are likely to be material and to require significant revisions to the FEIS, including updating the results of the IMPLAN model based on contemporary copper prices and directly modeling a reasonable worst-case scenario that includes a complete suspension of operations.	SO	S	O	3	SDEIS Theme SO 08
Mark Kaprelian	Moreover, while the Co-Lead Agencies claim to have addressed many of the comments concerning PolyMet's financial condition in Section 3.2.2.4 of the FEIS, no substantive discussion of PolyMet's financial condition appears there. Among other things, Section 3.2.2.4 claims to outline the "risk analysis" involved in determining the required financial assurance. Section 3.2.2.4 discusses the costs that would need to be covered by PolyMet and sets forth PolyMet's estimates of amounts needed to cover these costs at various points in time. It does not, however, include any discussion of the financial resources available to PolyMet to cover these costs. There is ample reason to doubt that PolyMet currently has such resources. For example, PolyMet estimates it would need between \$50 and \$90 million to cover the costs of closure at the end of its first year of operation (FEIS at 3-142). PolyMet also estimates that post-closure monitoring and maintenance costs would amount to \$3.5 and \$6 million per year (id.) for an indefinite period that could last for more than 200 years. (FEIS at 5-8). At an interest rate of 3 percent, the value of a perpetual annuity covering the minimum estimate of post-closure monitoring and maintenance costs exceeds \$115 million." But according to its most recent Condensed Interim Consolidated Financial Statements, PolyMet has current assets of only approximately \$9.3 million." The ability of PolyMet to obtain the necessary resources to cover the costs of closure and to provide for annual post-closure monitoring and maintenance, by operations, assets sales, financing or other means, is a significant risk that should be included as part of the risk analysis outlined in the section, particularly in view of the "boom and bust" phenomenon described in the FEIS and PolyMet's precarious financial condition. The omission of such a discussion is inconsistent with the requirement that the FEIS encourage "good analysis and clear presentation" of the proposed action and include a "thorough but succinct discussion of potentially significant adverse or beneficial effects generated, be they direct, indirect, or cumulative." This omission must be corrected.	FIN	S	O	3	SDEIS Themes FIN 01, FIN 05
Harold Edwards	I am a geologist licensed by the State of Minnesota, and I object to the NorthMet Mining and Land Exchange project.	GEN	NS	X	1	
Harold Edwards	the investors in Polymet have relatively low risk compared to the people living in northern Minnesota and the taxpayers of Minnesota. We need to change that. We need to monetize the actual risk and transfer it to the investors. Then the marketplace will think twice about this project and probably kill it.	O	NS	X	1	
Harold Edwards	As things stand today, chances are that Governor Dayton will approve the project. He will cherry pick best case scenarios of "good" mining practices to justify his decision. Notwithstanding the fact that there is a report in today's news on the catastrophic effects a mine dam breach in Brazil: http://www.latimes.com/world/brazil/la-fg-brazil-spill-20151220-story.html Dayton will probably argue that that is Brazil. Here in America, in Minnesota, we do better.	PER	NS	X	1	
Harold Edwards	Polymet promises badly needed jobs and tax revenues for Minnesota. What governor wants to refuse that let alone have the courage to do so? If Dayton turns the project down, he will kick the can down the road and leave the decision to	PER	NS	X	1	

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	someone else.					
Harold Edwards	Investors do not know if any particular company will succeed or fail. They way they handle this risk is to diversify. They simply invest in a large number of companies, some will fail, but most will succeed. They invest a few thousand dollars in Polymet with sober expectation they might lose it all. They will make money somewhere else. Know this: they are prepared to lose the few thousand dollars they have invested in Polymet. You must convince them that they will not lose just a few thousand dollars but ten to a hundred times that amount. You must convince them that they will have continuous liability for any environmental mishap. Many of you will, as will the investors themselves, argue that investors have no additional liability beyond what they paid for the stock they bought.	PD	NS	X	1	
Harold Edwards	You must convince all the sets of investors that because the stock merely passed through their hands they too have additional liability.	O	NS	X	1	
Harold Edwards	The mine is expected to produce ore for one hundred years and the environmental hazard from the waste is expected to persist for another four hundred years. Today Polymet's assets mostly consist of its plant and equipment and the value of the mining leases for the ore under the mine site. They do not own the ore outright. In the event of a environmental catastrophe these all will become worthless. Who would want to mine on a superfund site? In that event Polymet has insufficient assets to make any cleanup. Furthermore, it will have declared bankruptcy and gone out of business leaving the local population and Minnesota taxpayers holding the bag. To mitigate this possibility, Polymet has set aside a contingency fund for some cleanup.	FIN	NS	X	1	
Harold Edwards	Consider this: in the first year there will be a large amount of ore in the ground with enormous potential to generate money. In the first year there will be little waste generated with little risk from the toxic wastes, and what there is can easily be handled by the cleanup fund. In the 100th year there is no more ore in the ground, and the mine is worthless. In the 100th year there is a large amount of toxic waste with little money to clean it up if there should be a disaster. Furthermore there will have to be an additional four hundred years of monitoring and a possible cleanup. At some point before the end of 100 years there will be too little ore in the ground and too much waste generated to make the mine profitable anymore. At that point Polymet will go bankrupt and leave the local population and Minnesota taxpayer holding the bag. It is obvious that there are insufficient funds from Polymet to cover this loss.	FIN	NS	X	1	
Harold Edwards	Ordinarily the investors of a corporation are held harmless when the company can no longer pay its bills. However, in the case where a company has insufficient assets to cover the harm it creates the local population and/or the taxpayers of Minnesota may pierce the corporate veil and collect directly against the investors. The governing law on that is a Minnesota Supreme Court case, Victoria Elevator Co. v. Meriden Grain Co., 283 N.W.2d 509 (1979): "Factors considered significant in the determination [to hold shareholders liable] include: insufficient capitalization for purposes of corporate undertaking. . ." Polymet has insufficient assets to cover any reasonably expected environmental cleanup. Of course the law is complicated, and in actual litigation the investors of Polymet might be held harmless. That is neither here nor there. The Sierra Club must do two things: First, conduct a media campaign threatening the investors with future litigation and liability. This is a wake-up call to them. Investor beware!	FIN	NS	X	1	

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Harold Edwards	Second, lobby with legislature to pass a law codifying the above decision in a Minnesota statute that allows the Attorney General to sue the shareholders of companies that 1) harm the environment, or 2) harm public safety, or 3) harm public health and which do not have reasonable assets to pay for the damage. The Attorney General should be able to recover damages and legal fees against any and all the shareholders. If other corporations own the tortfeasor and in turn have insufficient assets, then the Attorney General should be able to pierce their corporate veils as well. This law is fair but will not easily get through the legislature. Remember those sports stadiums? Just keep coming back at them again and again.	FIN	NS	X	1	
Harold Edwards	We have made it all too easy for investors to create mischief and walk away from it with little thought. Once they know they have additional legal liability, they might have second thoughts about projects like Polymet. This in turn will force companies to keep bigger financial reserves and to take additional measures to keep their investors free from liability. The marketplace will now put a reasonable dollar value on the actual risk. I suggest the DNR assist the legislature in writing up the bill that allows the Attorney General to pierce corporate veils as outlined above.	FIN	NS	X	1	
Lori Andresen	We respectfully submit these comments, reiterating our position that sulfide mining cannot be done in water rich northeast Minnesota without severely damaging and polluting our environment into perpetuity. No amount of data manipulation on paper will change that outcome in the environment. At this time, the technology is not available to mine the highly disseminated, low-grade ores of the Duluth Complex without causing severe and significant environmental impacts for this generation, and for those to follow. The PolyMet FEIS is inadequate and should be rejected.	MEPA	NS	X	1	
Lori Andresen	Re: Comments on Modification of Permit 81-172-13... Please accept these comments regarding the Modification of Department of the Army Permit 81-172-13, submitted on behalf of the Center for Biological Diversity, Save Lake Superior Association, Save Our Sky Blue Waters, the Sierra Club North Star Chapter, and the National Wildlife Federation. The Center for Biological Diversity ("Center") works through science, law and creative media to secure a future for all species, great or small, hovering on the brink of extinction. The Center has offices in a number of states, including Duluth, Minnesota, and has more than 474,000 members and online activists. The Center has hundreds of members who reside and recreate in northeastern Minnesota. Save Lake Superior Association ("SLSA"), begun in 1969, is the oldest citizen group working exclusively to preserve and protect Lake Superior. SLSA's mission is to prevent further degradation of Lake Superior and to promote its rehabilitation. Save Our Sky Blue Waters is an all volunteer grassroots nonprofit organization dedicated to protecting Minnesota's waters, forests, and wildlife. The Sierra Club is a non-profit environmental organization with several thousand members in Minnesota. The National Wildlife Federation ("NWF") is the nation's largest conservation education and advocacy organization with more than 4 million members and supporters. NWF's mission is to protect wildlife for future generations. The October 23, 2012 public notice regarding the modification of Permit 81-172-13 raises more questions than it answers. As set forth in the accompanying Freedom of Information Act request, we seek the following information related to this Permit: (1) any National Environmental Policy Act ("NEPA") analysis (42 U.S.C. § 4332), prepared by the U.S. Army Corps of Engineers ("Corps") prior to issuing Permit 81-172-13 to the Eveleth Taconite Company; (2) any assessment prepared by the Corps, prior to issuing Permit 81-172-13 to the Eveleth Taconite Company, regarding compliance with the Section 404 Guidelines, 40 C.F.R. § 230.10; and (3) any correspondence between the Corps and Eveleth Taconite Company, United Taconite LLC, the Environmental Protection Agency and/or the Minnesota Pollution Control Agency regarding the discharge of dredge and fill material, and/or pollution, into Hammer Lake.	COE	NS	X	1	

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Lori Andresen	we oppose this land exchange as being in opposition to the best interests of the people living in this region and this state, along with the American public, and the international public that could be impacted by pollution entering from our watersheds. The proposed land exchange would be a taking of the Superior National Forest in order to facilitate controversial mining that would pollute the Superior National Forest and the two internationally important watersheds of Lake Superior and the Boundary Waters. In conclusion, all aspects of the exchange proposal favor mining and logging interests and punish the public at large. The proposed exchange is not in the public interest and the USFS has the moral and legal authority to reject the damaging School Trust Land Exchange. The damages to water, wetlands, forests, wildlife, and future generations from the land exchange are unacceptable.	O	NS	X	1	
Lori Andresen	What are some possible scenarios in which the regulators are unable to effectively control environmental impacts through regulation? A. Lack of funding for adequate regulatory staff B. Staff, empowered to make decisions, who lack the interpersonal, intrapersonal, technical skill and knowledge, and material resources to carry out effective inspections and the corresponding follow-up tasks - For example, staff might lack the ability to remain unbiased after working closely with industry representatives for years, developing friendly relationships and wanting to avoid conflict and confrontation when put into a position of having to address rule infractions. Empowered individuals within government agencies, make decisions that substantially impact the environment. As individual decisions relate to government agencies abilities to regulate PolyMet, what effective procedures does the state have in place to ensure that individual regulatory employees consistently maintain congruence between the regulatory objectives and their actions, and that they are not influenced by personal agendas (like wanting to reduce personal work load or avoid conflict with colleagues or industry)? C. Poor communication between and within regulatory agencies This comment is not about asbestos or air-quality; this comment is about the state's lack of ability to enforce existing rules, the impact on the environment of poor enforcement, and the need for the EIS to address environmental consequences of weak government agency enforcement in order to be considered adequate.	CUM	S	N	7	SDEIS Theme NEPA 15. NEPA (as well as MEPA) recognize that EISs are planning tools that focus agency analyses on significant environmental issues (40 CFR 1501.1(d)). As a tool, an EIS analyzes proposals at an appropriate level, given that the permitting process would require more finely tuned analyses based on further understanding of environmental conditions and project design. This means that the NEPA and MEPA phase of the environmental review process requires less specificity for proposed projects, and demands additional detail for the permitting phase. Pursuant to NEPA and MEPA, mitigation measures and their effectiveness have been considered in the EIS. The actual effectiveness of any approved and implemented mitigation measures would be monitored as part of permit conditions, which may lead to additional mitigation measures being required of the permit holder.
Lori Andresen	One of the most egregious effects of sulfide mining would be the trail of sulfates and mercury (methylmercury) that would accumulate in the environment. These issues are not adequately vetted in the FEIS, nor are the cumulative impacts with taconite mining. This is a human health issue.	MERC	NS	X	1	
Lori Andresen	The FEIS fails to assess potential impacts of mineral fibers on human health.	HU	NS	X	1	

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Lori Andresen	Ground water modeling has been an issue going back to the PolyMet DEIS, and is still not resolved. Modeling by the Great Lakes Indian Fish and Wildlife Commission has shown that water from PolyMet operations would flow north upon closure. According to the Timberjay, the Minnesota DNR acknowledges that this is likely, yet will not re-do the ground water modeling in the FEIS. (Tribes: FEIS water model still flawed, Dec. 2, 2015) If the water flows north, it will violate the Great Lakes Compact, a binding agreement in which Minnesota committed to not divert water out of the Great Lakes Basin.	WAT	S	N	8	MDNR et al. 2015c. The possibility of northward flow between the proposed NorthMet Mine and Northshore Mine is speculative and is not reasonably foreseeable with current information. There is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When this might occur is not known, but it is most likely to occur after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected.
Lori Andresen	The FEIS is relying too heavily upon "adaptive management" as the solution to potential problems with pollution. This acknowledges that unexpected and unforeseen pollution will occur, but does nothing to project them.	ALT	NS	X	1	
Lori Andresen	No financial assurance is included in the FEIS, for unexpected accidents, or upon closure. Considering that Brazil is suing BHP/Vale for \$5 billion, the lack of financial assurance is a huge taxpayer liability. The FEIS is inadequate in protecting our tax-paying citizens.	FIN	NS	X	1	
Lori Andresen	PolyMet is relying on Reverse Osmosis to treat plant site water upon closure, even though RO has been proven ineffective on the scale required--both mechanically and financially. Why isn't RO being used right now for ongoing pollution from taconite mining?	O	NS	X	1	
Lori Andresen	The FEIS accepts an unlimited number of years of water treatment (at least 500 years according to the SDEIS) after closure, even though this goes against state law. The solution presented in the FEIS is to label the needed treatment as "passive", thus evading the intent of the law. However, even passive treatment needs maintenance. Permitting a mining operation that will need perpetual treatment is immoral, as well as contrary to state law.	FIN	S	O	2	SDEIS Theme WR 195
Lori Andresen	The DNR and MPCA have never forced taconite companies to meet state standards. Until the state agencies change their policies regarding the granting of variances, the PolyMet FEIS is inadequate.	O	NS	X	1	

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Lori Andresen	The FEIS does not address the degradation of the water of Superior National Forest and the wetland areas that would be destroyed. This will impact the entire region.	LAN	NS	X	1	
Lori Andresen	The FEIS accepts unlined waste rock piles and drainage ditches as adequate, thus allowing contamination of ground water.	WAT	NS	X	1	
Lori Andresen	The FEIS does not incorporate filling of the West Pit upon closure, thus rendering the FEIS incomplete.	ALT	S	O	4	MDNR et al. 2013b. In considering this comment, the DNR reasserts that the response provided for Theme ALT 03 demonstrates adequate consideration of the potential environmental benefits of a West Pit Backfill alternative. DNR's screening of the alternative weighed the environmental, social, and economic trade-offs (i.e., benefits) consistent with Minnesota Rules, part 4410.2300, subpart G. Importantly, some degree of vegetation and wetland impact is unavoidable regardless of future backfilling or not, and the proposed closure condition is consistent with the Mineland Reclamation Rules for these types of facility. Implementing the commeter's proposal would not result in significant environmental benefits beyond those already captured in the impact avoidance and minimization measures identified for the proposed action. Section 2.5.2 of the Final SDD proposed that the EIS include an alternative that would evaluate the feasibility and environmental impacts of mining the NorthMet deposit as two mine pits. The Final SDD states: "with one pit being completely mined out before beginning the second pit [where] waste rock from the second pit would be placed into the first pit so that the final mine pit lake and waste rock stockpiles would be considerable smaller." The Final SDD did not identify which mine pit should receive the materials, but noted that "the issue of encumbering resources and feasibility of backfilling both reactive and non-reactive waste rock" should be evaluated. Consistent with these objectives which were identified in scoping, the project design includes two primary pits with sequential backfilling of waste rock into one of them, with minimal encumbrance of mineral resources. Minnesota Rules, part 4410.2300, subpart G, notes alternatives considered but eliminated based on information developed through the EIS analysis must be

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						discussed briefly and the reason for their elimination must be stated. DNR has satisfied this requirement by considering a potential West Pit Backfill alternative. The agency has also responded to comments submitted on the Draft EIS and Supplemental Draft EIS consistent with Minnesota Rules, part 4410.2800 for public comments raised on the issue.
Lori Andresen	The FEIS allows for a pollution trail along the rail spur between mine and plant, by allowing PolyMet to use refitted rail cars. This does not adequately protect the environment.	PD	NS	X	1	
Lori Andresen	The FEIS does not address treating water from areas adjacent to the pits while mining, or potential elevated concentrations of nitrate and ammonia from blasting agents.	WAT	NS	X	1	
Lori Andresen	The FEIS does not adequately address the stability of the former LTV tailings basin purchased by PolyMet and the amount of additional tailings that will be piled onto the basin due to the low grade character of the deposit. Even after the disastrous Canadian tailings basin breach at Mount Polley, the FEIS does not take into consideration the conclusions of the Canadian Chief Inspector of Mines, or the dry stacking of tailings.	ALT	S	O	8	SDEIS Theme ALT10. FEIS Table 5.2.2-37. Tailings Basin Alternatives Chart MDNR and ERM May 2009; Co-lead Agencies considered a range of potential Tailings Basin alternatives including removing water from tailings prior to deposition.
Lori Andresen	The FEIS is inadequate in considering impacts to wildlife, fish, and wild rice. The FEIS is inadequate in considering past treaty rights and the health and livelihood of future generations.	GEN	NS	X	1	
Lori Andresen	The FEIS does not address (cumulative) impacts to federally listed endangered or threatened species or state species of concern. These include the northern goshawk, great gray owl lynx, long-eared bat, wolf, and moose. These impacts include loss of habitat and wildlife corridors, and exposure to 24 hour a day noise and light pollution. The FEIS does not show compliance with the Endangered Species Act.	WI	S	O	8	FEIS Section 6.3.5
Lori Andresen	Wild Rice as a species of Special Concern in Minnesota. Although the quality and diversity of our natural wild rice (<i>Zizania aquatica</i>) stands have deteriorated over the past 60 years, wild rice has not been mentioned as a species of concern. While sulfate connections to the deterioration of the wild rice crop are being studied, we believe that wild rice should be designated a Species of Concern, giving the DNR the ability to protect this species from mining expansion and to require industries to clean up their pollution. Wild rice, or manomin, is the official state grain of Minnesota and deserves our protection. Wild rice is the canary in the coal (or taconite) mine. The loss and/or degradation of vital wild rice stands in	O	NS	X	1	

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	northeast Minnesota is a warning sign that something must be done in order to protect the quality of our waters.					
Lori Andresen	The FEIS does not adequately address loss of wetlands and indirect impacts to wetlands.	WET	NS	X	1	
Lori Andresen	The FEIS leaves a protected pollution zone on mine property, which encompasses surface and ground water that is publically owned. Water monitoring begins on the mining company boundaries. This is inadequate and allows for dilution of pollution as a mitigation plan, yet allows for the degradation of public waters.	PER	NS	X	1	
Lori Andresen	The no action alternative is dismissed in the FEIS, and fails to accurately describe and address what the potential environmental impacts and outcomes would be from the no action alternative.	NEPA	NS	X	1	
Lori Andresen	An underground mine option is not adequately addressed, especially in regard to the true costs to the environment of an open pit mine. PolyMet must show us that selective mining underground is not feasible and prudent; PolyMet has not shown us a thorough evaluation of that possibility.	ALT	S	O	4	MDNR et al. 2013a. SDEIS Thematic Response ALT 01. Section 2.0 of the September 2013 Underground Mining Alternative Assessment identifies that alternative was screened against five (5) criteria, including economic feasibility and project purpose and need. DNR reviewed the Proposer's cost assessment of developing and operating an underground mine at the NorthMet deposit as defined for the project. The agency acknowledges that this assessment includes uncertainty but asserts this a reasonable approximation of potential economic feasibility for the purposes of alternatives screening. DNR notes that Section 2.4.1 of the Final SDD recognized that both the potential costs and economic return of an underground mine alternative would be considered, including whether the purpose of the project could be satisfied. This latter point is consistent with Minnesota Rules, part 4410.2300, item G, which indicated that an alternative may be excluded from analysis in an EIS if it would not meet the underlying need for or purpose of the project. DNR appropriately considered the factors identified in the Final SDD and determined the underlying need for and purpose of the project would not be satisfied employing underground mining methods.
Lori Andresen	The agencies granted an inadequate amount of time for citizens to process and comment on the FEIS. Furthermore, citizens and volunteer advocates for protecting our environment have had to sacrifice family time during a traditional holiday period in order to do our civic duty in regard to submitting comments, while agency personnel continued to follow their regular	O	NS	X	1	

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	work schedules. Our groups submitted multiple requests for an extension of the comment period, by which the DNR granted one additional week. This is totally inadequate.					
Lori Andresen	At the same time that the PolyMet comment period has been open, the Minnesota PCA opened comments on a draft proposal to weaken the wild rice sulfate standard. Rather than protect a cherished and highly nutritious food crop, the MPCA is being politically driven to weaken the science-based sulfate standard in order to protect current and proposed mine operations from having to control their sulfate emissions. The PolyMet FEIS is inadequate in determining the extent of sulfates that would be leashed upon our waters over the course of hundreds of years, and the cumulative impact to the environment.	WAT	NS	X	1	
Lori Andresen	The PolyMet FEIS is inadequate because it is an appeasement plan for a marginally economic mining operation. The plan will allow a foreign mining company to make a profit at our expense and at the expense of the environment of northeast Minnesota for all generations to come.	SO	NS	X	1	
Lori Andresen	The FEIS fails to evaluate pollution risks from Acid Mine Drainage, heavy metals, arsenic, manganese, mercury, sulfates, etc. to drinking water, fish, wild rice and human health using realistic assumptions about how much polluted seepage will be captured and treated during operations, reclamation, and closure.	GEN	NS	X	1	
Lori Andresen	The FEIS fails to analyze health risks and impacts on children, workers and communities who rely on fish and wild rice for subsistence, including risks from asbestos-like particles and methylmercury.	HU	NS	X	1	
Lori Andresen	The PolyMet project will release mercury into the environment. In addition, sulfates released into the watershed increase methylmercury levels in fish. Mercury in the sediments can be methylated by bacteria when the sulfate level reaches a threshold. This produces methyl mercury, which is the form that contaminates our fish and is harmful to other living creatures. A 2013 study by the Minnesota Department of Health found that 1 in 10 infants on the North Shore of Lake Superior are born with unsafe levels of mercury in their blood, potentially impairing normal development.	MERC	NS	X	1	
Lori Andresen	Mineral Fibers: The FEIS does not adequately evaluate the potential effect of the inhalation of asbestos-like mineral fibers generated at the mine site and in the processing plant. Mesothelioma and other lung disease have been diagnosed in studies by the MN Department of Public Health in taconite workers and local residents.	HU	NS	X	1	
Lori Andresen	According to the FEIS the level of threat from the mineral fibers is unknown and unknowable. The workers and communities need to be protected, it is not sufficient for agencies to simply say that the possible harm from the project can't be predicted.	MEPA	NS	X	1	
Lori Andresen	The FEIS discussion of fibers misstates the current state of knowledge and scientific methodology needed for an assessment of the potential impacts of mineral fibers on public health. The FEIS must disclose and base its conclusions on the best evidence available, rather than continuing to repeat the outdated position that nothing is known or can be known about the toxicity of fibers.	MEPA	NS	X	1	

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Lori Andresen	The FEIS fails to address endocrine disruptors which have been given serious consideration by Minnesota's legislature and scientific community. The FEIS should address endocrine disrupting compounds. "The widespread, continual, and low-level contamination associated with EDCs does not lend itself to remediation. Therefore, preventing the initial use and release of EDCs will likely be more effective in reducing environmental contamination." (MPCA, Endocrine Disrupting Compounds, A Report To The Minnesota Legislature, January 15, 2008)	HU	S	N	6	FSDD Section 3.3.7 identifies the analysis that was to be conducted for wastewater. Predicted wastewater discharges are to be evaluated on the ability to meet water quality effluent standards. Section 5.2.2.1 of the FEIS identifies the evaluation criteria used to assess impacts to ground and surface water. Section 5.2.2.3 discusses the potential environmental consequences to ground water and surface water from the proposed NorthMet project.
Lori Andresen	The ACOE must take into account the weaknesses in the PolyMet FEIS. A main point of inadequacy is the faulty ground water modeling. According to GLIFWC modeling analysis, ground water from the NorthMet mine will flow north into the Rainy River watershed. Proposed NorthMet operations would thus impact two major (international) watersheds: Lake Superior via the St. Louis River watershed and the Rainy River. It is simply unacceptable for the ACOE to ignore significant and long lasting impacts to these navigable waters of national importance (Aquatic Resources of National Importance - ARNI).	WAT	S	N	7	MDNR et al. 2015c. The USACE will consider the Final EIS and related information pursuant to its respective authorities. The possibility of northward flow between the proposed NorthMet Mine and Northshore Mine is speculative and is not reasonably foreseeable with current information. There is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When this might occur is not known, but it is most likely to occur after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected.

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Lori Andresen	Excerpted from the EPA letter dated February 18, 2010 to USACE Re: PolyMet NorthMet Project: Wetlands "EPA finds this project may have substantial and unacceptable adverse impacts on aquatic resources of national importance (ARNI). EPA believes the coniferous and open bogs, comprising a large percentage of the approximately 33,880 total wetland acres, within the Partridge River Watershed to be an ARNI due to the values they provide in terms of unique habitat, biodiversity, downstream water quality, and flood control specifically, to the Lake Superior Watershed and the Great Lakes Basin." The loss of wetlands for the proposed NorthMet mine would be the single largest permitted loss in the history of the state. If PolyMet is permitted, these wetlands will be replaced by an open pit mine and other impacts of mining, with mine waste drainage or water seepage containing toxic pollutants, in an area that now supports plant and wildlife species listed as endangered, threatened, or species of concern within the state. The PolyMet proposal fails to quantify or provide mitigation for indirect loss of up to 8,264 acres of wetlands, and provides wholly inadequate mitigation for direct destruction of 913 acres of wetlands within the Lake Superior Basin. The ACOE must consider the cumulative effects of this wetland loss, along with taconite mining expansions and other proposed sulfide mine projects on the horizon. The Army Corps of Engineers has the authority to deny this project based upon the total impacts to state and national waters. The ACOE has not only the authority, but also the responsibility to protect our waters. We therefore ask that you refuse to allow PolyMet to destroy the high quality functioning wetlands and natural resources that are currently in place.	COE	S	O	11	FSDD Section 3.3.3 identifies the analysis to be conducted for physical impacts to water resources including wetlands. Section 5.2.3.2 of the FEIS assesses wetland effects from the project and Section 5.2.3.3 identifies potential mitigation measures for those effects.
Lori Andresen	We have commented on the PolyMet DEIS and SDEIS, and we object to the proposed U.S. Forest Land Exchange with PolyMet, which would allow PolyMet to open pit strip mine on what is now protected Forest Service land.	ROD	NS	X	1	
Lori Andresen	The FEIS has exempted PolyMet from considering an underground mine option based upon the companies own cost estimates, so no further analysis was done. The USFS has the authority to require an underground mine, rather than submit to a land exchange.	ROD	S	O	11	MDNR et al. 2013a. DNR has appropriately considered an underground mine alternative as required in the Final SDD.
Lori Andresen	The Forest Service succumbed to the decision of a land exchange without examining the loss of wildlife habitat, wildlife corridors, or ecosystem intactness, and without considering the cumulative effects of mineral exploration, taconite expansion, and additional sulfide mining proposals.	LAN	NS	X	1	
Lori Andresen	The agencies are neglecting to include multiple cumulative impacts, including impacts to wetlands from a United Taconite mine expansion and from the proposed School Trust Land Exchange (Boundary Waters) – see our attached comments, incorporated herein by reference. United Taconite wetland destruction must be included in cumulative impacts analysis for the NorthMet project. 1,300 Acres of Wetlands Proposed for Destruction in Northeast Minnesota For Immediate Release, November 20, 2012 DULUTH, Minn.— Conservation groups submitted comments today opposing construction of a new tailings basin by United Taconite that would destroy 1,300 acres of wetlands in northeastern Minnesota. The U.S. Army Corps of Engineers is considering modifying United Taconite’s Clean Water Act permit before construction begins on its third tailings basin near Forbes, Minn. The first tailings basin filled in a lake; the second basin destroyed another 800 acres of waters and wetlands. In addition, the processing facility at the site channels its runoff and wastewater into another lake. Found here: http://www.biologicaldiversity.org/news/press_releases/2012/united-taconite-tailings-11-20-2012.html School Trust Land Exchange (Boundary Waters) land exchange must be included in cumulative impacts analysis for the NorthMet project. In addition to the PolyMet land exchange, the US Forest Service is preparing an EIS on a land exchange proposal that	CUM	S	O	7	FEIS Section 6.1.1. SDEIS Theme WET 18

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	would transfer over 30,000 acres of protected Superior National Forest lands into state management. The underlying purpose of this exchange would be to benefit mining companies and logging interests, by removing Federal provisions protecting the lands. Nearby deposits such as the Mesaba deposit controlled by Teck (Cominco), could be included in the School Trust lands exchange. From the USFS Superior National Forest website: This project would exchange federal Superior National Forest lands located outside the Boundary Waters Canoe Area Wilderness (BWCAW) for Minnesota School Trust land located inside the BWCAW. A Notice of Intent to prepare an Environmental Impact Statement is anticipated for publication in the Federal Register on August 28, 2015. A copy of the Notice of Intent is on this project webpage. Found here: http://www.fs.usda.gov/project/?project=45943					
Lori Andresen	Excess capacity - PolyMet is proposing to use approximately 1/3 of its plant capacity for the proposed NorthMet project. Excess processing capacity is expected to be utilized by neighboring Twin Metals and Teck Cominco. The excess capacity of PolyMet's processing plant is not addressed in PolyMet's environmental review.	CUM	NS	X	1	
Lori Andresen	Twin Metals Mine Project must be included in cumulative impacts analysis for the NorthMet project. The Twin Metals project near the BWCAW plan is to put much of their mine waste into the Lake Superior watershed under the pretense of protecting the Boundary Waters. It is immoral to put the toxic mine waste from the projects near the Boundary Waters, into the Lake Superior basin under the misguided premise that it will protect the BWCAW- it will not. If this is allowed, it will compromise and degrade both the Lake Superior and Rainy River (Boundary Waters) watersheds – See image below from Twin Metals Pre-Feasibility Study. The cumulative impacts to both the St. Louis (Lake Superior) and Rainy River (Boundary Waters) watershed must be included in the PolyMet EIS.	CUM	S	O	7	FEIS Section 6.1.1. SDEIS Theme CU 02
Lori Andresen	The part of Superior National Forest that PolyMet would get in the exchange was purchased under the Weeks Act for watershed protection. The exchange would allow PolyMet to degrade and pollute the headwaters of both the Lake Superior and Rainy River watersheds, which is contrary to the purpose for which the land was acquired.	LAN	S	O	2	SDEIS Theme LAN 02
Lori Andresen	No proof has been provided that the Lake County lands were sold at a public auction, as stated in the FEIS. We reiterate, if Lake County has entered into an agreement with PolyMet, this would be illegal. This type of action would circumvent current law. The agencies should provide documentation showing whether or not the Lake County Lands were actually acquired through a public auction. If they were not, it would be a violation of Minnesota law and the parcels should be removed from consideration in the PolyMet Land Exchange proposal. From Appendix A from the FEIS – Response to Comments: Theme Statement: If Lake County has indeed entered into an agreement with PolyMet, this would be illegal. Minnesota law requires that state agencies (including county governments) not take final action on a project prior to the completion of environmental review. Lake County actions would be prejudicial to the final approval of the NorthMet Project. The USFS should address whether the Lake County Lands were acquired in violation of Minnesota law and, if so, remove them from consideration in the Proposed Land Exchange. Agency Response to theme statement: The Lake County	LAN	S	O	2	SDEIS Theme LAN 09. It is not clear the auction, or even direct sale of these lands to PolyMet is final governmental approval under Environmental Review rules. The legality of Lake County's actions has no bearing on the adequacy of the EIS.

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	lands were tax forfeit lands that were offered for sale by the County through a public auction					
Lori Andresen	The FEIS for the NorthMet project fails to take a "hard look" at potential environmental impacts and reasonable alternatives, in violation of the National Environmental Policy Act (NEPA).	NEPA	NS	X	1	
Lori Andresen	The FEIS fails to adequately consider alternatives to minimize environmental harm, reduce polluted seepage from unlined permanent waste facilities, mitigate wetlands destruction, and reduce the threat of catastrophic dam failure.	ALT	S	O	4	SDEIS Theme ALT10. FEIS Table 5.2.2-37. Tailings Basin Alternatives Chart MDNR and ERM May 2009; Co-lead Agencies considered a range of potential Tailings Basin alternatives as required by NEPA including removing water from tailings prior to deposition and off-site disposal.
Lori Andresen	Health risks to downstream communities, including Duluth, Superior and Fond du Lac, are also excluded in the FEIS.	WAT	S	O	7	FEIS Section 6.2.2
Lori Andresen	The proposed NorthMet mine and land exchange is not in the public interest and should be rejected.	ROD	NS	X	1	
Lori Andresen	We submit that the PolyMet FEIS is inadequate and would violate numerous state and federal laws including the Clean Water Act (CWA), the National Environmental Policy Act (NEPA), and Minnesota Environmental Policy Act (MEPA).	NEPA	NS	X	1	
Lori Andresen	We respectfully submit these comments, reiterating our position that sulfide mining cannot be done in water rich northeast Minnesota without severely damaging and polluting our environment into perpetuity. No amount of data manipulation on paper will change that outcome in the environment. At this time, the technology is not available to mine the highly disseminated, low-grade ores of the Duluth Complex without causing severe and significant environmental impacts for this generation, and for those to follow. The PolyMet FEIS is inadequate and should be rejected.	GEN	NS	X	1	
Russell Hess	Our organization has a keen interest in seeing the Polymet project come to fruition. Hundreds of construction jobs will be created in a region that sorely needs them. Our members have watched this project move through the approval process over the last ten years, both because of their interest in potential job creation and for their interest in protecting the environment of the communities they live in.	O	NS	X	1	
Russell Hess	Now, the Final EIS for PolyMet's proposed mine has concluded a thorough and independent review of the project's potential environmental effects. After 10 years of study, the Minnesota Department of Natural Resources, U.S. Army Corps of Engineers, and U.S. Forest Service have looked at the evidence and correctly found that the NorthMet Mine can comply with strict state and federal environmental standards. The Laborers District Council of MN & ND agrees, it is time to move	MEPA	NS	X	1	

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	forward with permitting.					
Russell Hess	We believe the word “adequate” falls short of describing the Final EIS. It took a careful and comprehensive look at the project from every angle. The Co-lead Agencies have spent 10 years evaluating potential project effects and alternatives. The Final EIS responds in detail to thousands of public comments and questions submitted during the review periods for the Draft EIS and the Supplemental Draft EIS, including those made by our members in public meetings in Northern Minnesota and in Saint Paul. The science backing up the EIS including the water modeling, study of groundwater flows and the project’s effects on human health is sound and thorough.	MEPA	NS	X	1	
Russell Hess	In short, we believe the Final EIS meets all of the requirements of the Minnesota Environmental Policy Act and the National Environmental Policy Act. The time has come to move forward. The DNR should affirm the adequacy of the Final EIS so it can serve as the foundation for the state of Minnesota's permitting process. The sooner this happens, the sooner our members can get to work building the most environmentally friendly mine in the United States.	MEPA	NS	X	1	
Gerri Williams	Duration of water treatment at the plant. Earliest drafts of the EIS said treatment would have to be in place “in perpetuity”; then in subsequent drafts, “500 years” and now in the final EIS: “ The Final Environmental Impact Statement (Final EIS) assumes mechanical [water] treatment would be required indefinitely at both the Mine Site and Plant Site.” The FEIS does not account for the change in these time ranges. "Indefinitely" is not a scientifically accurate or satisfying answer on which to base a project of this scale and damage potential.	WAT	NS	X	1	
Gerri Williams	The reverse osmosis pilot test that was prepared for PolyMet by Barr Engineering does not reflect the quantity or quality of water that would need to be treated upon mine closure. RO is not proven effective on a large mining scale. The concentration trapped in the RO filters is highly toxic and needs special containment. PolymTet has only indicated its plans to address leaching, overspill, etc AFTER such has occurred. These are only a few examples of why the Polymet plan continues to be deficient. That is because, even after many generous opportunities update, amend, and edit their various statements, Polymet remains unable to surmount the many technical, financial, ecological unknowable factors that this mining project would face. That being the case, it is rash and contrary to the public interest for the project to go forward.	WAT	NS	X	1	
Erin Mittag	The undersigned groups (Minnesota Center for Environmental Advocacy, Center for Biological Diversity, EarthJustice, Sierra Club North Star Chapter, Friends of the Boundary Waters Wilderness, Save Our Sky Blue Waters, Northeastern Minnesotans for Wilderness, Friends of the Cloquet Valley State Forest, Voyageurs National Park Association, and the National Parks Conservation Association) (collectively, “Conservation Organizations”) submit these comments on the Final Environmental Impact Statement (FEIS) for the proposed NorthMet Project and Land Exchange. The Center for Biological Diversity (Center) is a national, nonprofit conservation organization with more than 900,000 members and online activists dedicated to the protection of endangered species and wild places. The Center has an office in Duluth, Minnesota, and has hundreds of members who reside within and/or regularly use, enjoy, and recreate on public lands and waters in northeastern Minnesota, including on the Superior National Forest. The Center, its staff, and its members and the interests of its staff and members would be significantly harmed and injured if the proposed project is approved and allowed to be implemented. Earthjustice is a non-profit environmental law organization, defending the right to a healthy environment for all, using the	O	NS	X	1	

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	<p>law to fight for the earth and its inhabitants since the early 1970s. Earthjustice works with individuals and organizations to realize that mission and ensure the implementation and enforcement of our environmental laws. The mission of the Friends of the Boundary Waters Wilderness is to protect, preserve and restore the wilderness character of the Boundary Waters Canoe Area Wilderness (BWCAW) and the Quetico-Superior Ecosystem. We have nearly 3,000 members in Minnesota and across the United States, and regularly communicate with about 27,000 supporters. Our organization values healthy ecosystems, clean water, wilderness character, and primitive recreation. Our supporters enjoy the Superior National Forest and the BWCAW for canoeing, camping, fishing, hunting, bird-watching, and many other reasons, as well as the region's natural, largely-undeveloped character. The risks to many of these activities and attributes from nonferrous mining have been a significant concern for our organization for many years. The Friends of the Cloquet Valley State Forest is a 501(c)(3) non profit organization dedicated to the protection and preservation of the natural and cultural resources of the Cloquet Valley State Forest and promotes responsible enjoyment of this unique treasure. The Cloquet River flows through our forest and into the St. Louis River. The people and the flora and fauna of the Cloquet River Valley are intimately connected with the fate of our river. Our members' concerns range from the health of the people to the legacy of the land, water and ecosystem we leave to the coming generations. Many of us make our livings by relying upon sustainable tourism, the natural world, art, and agriculture, and anything that disrupts the ecosystem is a threat to our livelihoods and well being. The Minnesota Center for Environmental Advocacy (MCEA) is a Minnesota-based non-profit environmental organization, the legal and scientific voice protecting and preserving Minnesota's wildlife, natural resources, and the health of its people. MCEA has members across the state of Minnesota, some of whom live and recreate near the proposed mine. The proposed NorthMet project has environmental implications for many of the areas of MCEA's work, including water quality, natural resources, energy policy and public health. Northeastern Minnesotans for Wilderness (NMW) is a nonprofit regional conservation organization whose core mission is to advocate for the preservation and protection of public lands, designated wilderness areas, national parks, national forests, and other wild places in the Minnesota Arrowhead Region, especially the Boundary Waters Canoe Area Wilderness, the Superior National Forest, and the Quetico-Superior ecosystem. Since its founding in 1996, NMW has grown to represent over 2400 members and supporters, almost all of whom live in Minnesota. The majority of our members and supporters reside year-round or seasonally in the three-county Minnesota Arrowhead Region, own property in the three-county area, and will be directly impacted by the NorthMet Project. Our members and supporters also visit and recreate throughout the three-county area. Save Our Sky Blue Waters (SOS) is a Duluth-based grassroots non-profit organization dedicated to protecting our region's waters, forests and wildlife. SOS formed in response to proposed copper-nickel sulfide mining and exploration in Minnesota's Arrowhead region and the headwaters of Lake Superior and throughout the Superior National Forest. The health of the St. Louis River watershed is a key component of our mission. SOS is a non-profit public interest environmental education and advocacy organization. The issue of potential toxic sulfide mining in northeast Minnesota may greatly impact our organization and citizens across the region. The Sierra Club is a national nonprofit organization of approximately 600,000 members dedicated to exploring, enjoying, and protecting the wild places of the earth to practicing and promoting the responsible use of the earth's ecosystems and resources to educating and enlisting humanity to protect and restore the quality of the natural and human environment and to using all lawful means to carry out these objectives. The Club's particular interest in this case stems from the proposed project's potential impacts on Minnesota's natural resources and public health, including risks to water quality, loss of wetlands, harm to wildlife, and cumulative impacts from mining. The North Star Chapter of the Sierra Club has approximately 14,292</p>					

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	<p>members in the state of Minnesota. The mission of Voyageurs National Park Association is to protect and promote the natural, recreational, and historic resources of Minnesota's Voyageurs National Park. VNPA and our supporters across the state serve as a voice for this water-based national park and its nearly 250,000 annual visitors who enjoy kayaking, canoeing, boating, camping, and fishing there each year, and contribute more than \$16 million to the local economy. The proposed NorthMet project, individually and cumulatively, may have dramatic environmental implications for the water quality and health of the fish and wildlife in Voyageurs and Northern Minnesota. These implications necessitate sound science and analysis. Since its founding in 1919, the National Parks Conservation Association (NPCA) has been the independent, nonpartisan voice working to strengthen and protect our nation's natural, historical, and cultural heritage. Together with its more than one million members and supporters nationwide, including 20,000 in the state of Minnesota, it uses the legislative system, the power of public opinion, and the courts to shape public policy to protect national parks. The proposed NorthMet project has environmental implications for national parks in Minnesota. Additionally, NPCA is a co-chair of the Healing Our Waters Great Lakes restoration coalition, which has successfully advocated to establish and sustain the Great Lakes Restoration Initiative (GLRI), which has helped improve the water quality of all of the Great Lakes. The NorthMet project would be located within the Lake Superior watershed and pose an ongoing pollution threat to Lake Superior long after the proposed mining period stops. These comments reference and incorporate the attached reports of the following technical experts - Dr. David Chambers, geophysicist focus mining engineering and planning - Keith Gadway, environmental engineer focus groundwater transport of pollutants - Dr. Paul Glaser, wetland geohydrologist focus hydrology and wetlands - Dr. Tom Myers, hydrogeologist focus hydrologic modeling - Dr. Glenn Miller, geochemist, focus water quality and treatment - Dr. Ann Maest, geochemist, focus geochemistry and water quality - Dr. Michael Malusis, geotechnical and geoenvironmental engineer focus barrier and containment strategies and - Victoria Stamper, air quality specialist focus air quality Please consider these expert reports and associated attachments independent parts of the record herein. In addition, the Conservation Organizations are delivering with these comments a DVD of reference materials and additional supporting documents. Please ensure that these reference materials are also included in the record and made part of this submission. If DNR requires hard copies of the reference and supporting documents to ensure that they are made part of the record, please let us know and we will supply hard copies.</p>					
Erin Mittag	<p>the 37 days offered for this comment period was far too short to review such a voluminous record. Although the public has had other opportunities to comment on earlier drafts of the EIS, this draft has changed significantly since the previous version. The Supplemental Draft EIS, released in late 2013, was an already-bloated 2481 pages with appendices. The FEIS was released at 3568 pages with the appendices. The Co-Lead Agencies drafted nearly 1100 additional pages for the FEIS, in addition to other textual changes that did not lengthen the document but changed the content, sometimes significantly. Although the agencies did make the Preliminary FEIS available for review prior to the comment period, the document underwent additional changes before it was released as a FEIS. The only way to identify these changes would have been to simply sit down and read the document, a Herculean task in and of itself before one even has an opportunity to gather one's thoughts to prepare comments for the Co-Lead Agencies.</p>	NEPA	S	O	5	SDEIS Theme NEPA 08

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Erin Mittag	Moreover, the FEIS also includes tens of thousands of pages of Reference Materials. Although the Co-Lead Agencies alleged previously that Reference Documents are not part of the record for the public these documents are not ancillary; in many cases they are the only place that substantive work and results are described. Appendix A, in which the Co-Lead Agencies respond to comments by “theme,” makes clear the extent to which the Co-Lead Agencies rely on Reference Materials. At many points where comments point out a lack of detail on any aspect of the mine, the reader is referred to one or more reference documents. ³ In other words, the Reference Documents are an integral part of the FEIS for any detail-oriented commenter. Because of the unacceptably short comment period, Conservation Organizations reserve their right to supplement these comments with additional arguments and materials.	NEPA	S	O	5	SDEIS Theme NEPA 08
Erin Mittag	Second, we note the extraordinary degree to which the FEIS relies upon work completed by PolyMet or its consultant, Barr. In the reference documents, are Barr Engineering and 48 are PolyMet. Many of those documents were produced in 2014 and 2015. In contrast, there are only five reference documents from ERM, DNR’s consultant, and only one of those in 2014. Although 93 documents are cited to MDNR, the vast majority are publications or database citations, rather than specific work done on this mine site or for this FEIS. It is unclear why DNR would not have used its own consulting firm, ERM, or its own employees to complete at least some of the extensive work done by Barr and PolyMet, given that PolyMet bears the costs. It gives the reader the general impression that, in the wake of public comments on the SDEIS, the Co-Lead Agencies simply asked the project proponent for additional work to defend its project in the FEIS, rather than the Co-Lead Agencies making an effort to give serious consideration or independent evaluation to comments.	NEPA	S	O	5	SDEIS Theme NEPA 08
Erin Mittag	Third, the Co-Lead Agencies’ efforts at “categorizing” the comments resulted in a failure to respond to technical and specific comments, many of which were made by groups or individuals with considerable expertise. Categorizing comments by “theme” placed general public comments in the same category as specific comments by experts, resulting in a lack of response to expert and technical comments. The Conservation Organizations will point out these deficiencies where they occur below, but this is a persistent problem throughout. As a result, the Conservation Organizations emphasize that our previous comments submitted on the SDEIS in early 2014 remain valid, and largely unaddressed.	NEPA	S	N	5	FEIS App A, Sec. A.2; DNR considered all comments submitted on the Draft EIS and Supplemental Draft EIS consistent with Minnesota Rules, part 4410.2700, subpart 1, which indicates the final EIS shall respond to the timely substantive comments on the draft EIS consistent with the scoping decision.
Erin Mittag	All predictions made by the FEIS regarding activities after closure, including but not limited to reclamation, mitigation measures, water treatment, transitions to new technology including reverse osmosis (RO) at the Waste Water Treatment Facility (WWTF) are unsupported without analysis of financial assurance. This FEIS also relies to an extraordinary degree on “adaptive management” strategies—used incorrectly here as merely monitoring plans with general descriptions of potential strategies that could be used if problems arise—that will require action after Year 20, when PolyMet says it will cease mining operations. But adaptive management strategies can only be deployed if there is money to pay for them. Thus, all adaptive management strategies identified in the FEIS are also unsupported without specific financial assurance information.	FIN	NS	X	1	
Erin Mittag	Dr. Chambers elaborated on the specific legal and scientific obligations of an agency overseeing environmental review of a mining operation to provide financial assurance details. In addition, the Conservation Organizations have attached an example of an EIS with adequate financial assurance details, the FEIS for the Idaho Cobalt Mine. The Co-Lead Agencies have continually alleged that there is no obligation to provide financial assurance information until permitting. ⁷ The FEIS states that “[n]either NEPA nor MEPA rules require that all financial assurance mechanisms be in place before the EIS is finalized.”	FIN	S	O	5	SDEIS Themes FIN 05, FIN 07

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	However, the Co-Lead Agencies misstate concern here. The Conservation Organizations are not suggesting that any financial assurance mechanisms should be in place before the EIS is finalized. We are saying that details regarding the financial assurance package need to be included the FEIS in order to understand the potential impacts of the project as analyzed under NEPA or MEPA.					
Erin Mittag	The FEIS is limited to statements that there will be a financial assurance package of some sort, and that it will meet the requirements of Minnesota Rules. If this was all the information required for an EIS to assess potential impacts and mitigation measures, than an EIS could be quite short. The section on water quality impacts, for instance, could simply state that the mine is governed by the Clean Water Act and therefore will not violate any water quality standards or other state or federal laws. But that is not how adequate EISs are written. Rather, under state and federal law, EISs must provide substantive analysis and scientific support for their statements. It is not enough to allege that the project will have no impact because it will comply with the law; if the FEIS concludes that the project will have no significant impact, the FEIS must demonstrate that the project is designed to comply with the law, and capable of minimizing potential impacts to support its statements. The reason for this is that NEPA is designed to be more than a box to be checked by agencies; an EIS is an action-forcing document designed to ensure that agencies have thoroughly studied the impacts of a project before making any irretrievable commitment of resources.	NEPA	S	N	8	SDEIS Themes FIN 05, FIN 06. Financial assurance is a tool to manage state or federal financial risk. The CWA regulates environmental impacts. The comparison is not apt. No detailed description of financial assurance would have changed the quantitative or qualitative description of potential impacts.
Erin Mittag	The EPA has estimated that total liability for cleanup of all hardrock mines across the US is between \$20 and \$54 billion.	O	NS	X	1	
Erin Mittag	This particular FEIS states the need for extensive work after closure, including the requirement that two active waste water treatment plants with a particularly expensive form of treatment run for an indefinite period of time. Without adequate financial assurance determined and supported in the FEIS, a foreseeable impact of any mine would be that, upon closure, whether planned or unplanned, there will be insufficient funds available and either the state or federal government will need to bear the cost of reclamation, cleanup and long-term treatment—or those activities will not take place and the site will cause significant impacts to the environment. Any agency that permits a mine without determining whether the financial assurance amount is adequate has not assessed this impact, and risks making an irretrievable commitment to a project without fully understanding the consequences, in violation of NEPA.	FIN	S	N	8	SDEIS Themes FIN 05, FIN 06. If a Permit to Mine is issued, it will be done after a thorough review of financial assurance. Completing a state permit requirement prior to issuance of a FEIS is not required.
Erin Mittag	NEPA requires agencies to “study, develop, and describe appropriate alternatives to recommended courses of action in any proposal that involves unresolved conflicts concerning alternative uses of available resources.” “An agency must look at every reasonable alternative, with the range dictated by the nature and scope of the proposed action.” MEPA similarly requires that an EIS “compare the potentially significant impacts of the proposal with those of other reasonable alternatives to the proposed project.” Additionally, the Clean Water Act prohibits the discharge of dredge and fill material “if there is a practicable alternative to the proposed discharge which would have less adverse impact on the aquatic ecosystem.” Where a proposed action is not “water dependent,” practicable alternatives that avoid special aquatic sites are presumed to be available, unless clearly demonstrated otherwise. In other words, the permit applicant bears the burden of showing that no practicable alternatives with less adverse impact are available. The alternatives section is considered “the heart” of an EIS.	ALT	NS	X	1	

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	The Co-Lead Agencies are expected to “[r]igorously explore and objectively evaluate all reasonable alternatives” and “[d]evote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.”					
Erin Mittag	The NorthMet environmental review process identified underground mining as an alternative for assessment, but the Co-lead Agencies ruled it out. They concluded “that the Underground Mining Alternative is not . . . a reasonable alternative because it would not be economically viable and therefore it would also not meet the Purpose and Need.” This conclusion rests on errors and discrepancies in the estimates of mining costs, as explained below. Furthermore, the FEIS states that “the geology outside of the open pit has not been characterized enough to support a mine plan and is beyond the boundaries of the NorthMet Project area, so it is not reasonable to include for consideration of the Underground Mining Alternative.” This statement is not true. While PolyMet may not yet have prepared a mine plan or assessed the economic viability of resources outside of the pit envelope, the geology for at least some of these resources is characterized enough to support a mine plan should PolyMet choose to prepare one. And while we do not find a specific definition of the “NorthMet Project area” in the FEIS, it is generally treated as including the entire area designated as the “mine site.” At least some of the additional mineralization that is well-characterized is found within what the FEIS shows as the project area. The determination that an underground mine is not a reasonable alternative is not supported by the evidence. This issue was raised in our comments on the SDEIS at MCEA 2, 33-35, Friends 2, 48, 51-52; and CBD 108-110. It was also raised in a supplemental letter to Forest Supervisor Brenda Halter on October 8, 2015. ²¹ All of these materials are incorporated herein.	ALT	S	O	4	MDNR et al. 2013b; Foth 2012
Erin Mittag	The basis of the FEIS’s economic analysis is quite simple: a value was calculated for the amount of ore to be mined on the one hand, and for the total costs of mining that ore on the other. If the costs were greater than the value of the ore, the mine was deemed not economically viable. The FEIS analyzed five mining rates ranging from 2000 tons per day to 15,000 tons per day. ²² To simplify the following discussion, we focus on the 7500 tons-per-day scenario because that is the scenario with the most positive economics according to the FEIS analysis. ²³ The Co-lead Agencies presented an overall loss for this scenario of \$168 million. ²⁴ It appears that all of the numbers used in the Co-Lead Report were taken directly from Foth Infrastructure & Environment, LLC, Economic Assessment of Conceptual Underground Mining Option for the NorthMet Project (Oct. 2012) (hereinafter, Foth 2012), which was prepared on behalf of PolyMet and is also provided in Appendix B of the FEIS.	ALT	NS	X	1	
Erin Mittag	The FEIS divides total estimated costs of mining into operating costs and pre-production capital costs. ²⁶ Operating costs on a per-ton basis are provided in Table 1 of the Co-Lead Report. At the 7500 ton-per-day level, total operating costs are estimated at \$49.00 per ton, and pre-production capital costs are estimated at \$250 million total. Foth 2012 divides operating costs into three components: mining costs, processing costs, and general and contingency costs. ²⁸ The Foth 2012 report estimates costs for the 2000 and 5000 ton scenarios, and then adjusts these for the larger scenarios. ²⁹ To arrive at its estimates, Foth drew from several sources, including InfoMine (an online model commonly used by the industry), examples from other mines drawn from 43-101 reports filed on SEDAR, and a memo prepared for this purpose by AGP Mining	ALT	NS	X	1	

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	Consultants Inc. (AGP), which has done much of PolyMet’s engineering work.					
Erin Mittag	<p>For mining costs, the Foth 2012 report provides cost estimates for both room-and-pillar mining and long-hole open stoping. Many of the estimates did not include cemented backfill, although Foth states “Cemented backfill typically represents roughly 20 percent of mining costs.”³¹ The report settles on a mining cost of \$40 per ton for the 5000 tons-per-day scenario. This amount is significantly higher than any estimate from any source used in the Foth 2012 report. The only source that estimates mining costs above \$30 per ton for the 5000 tons-per-day scenario is the AGP Memo, which Foth reports as \$44 to \$52 at 5000 tons per day for long-hole stoping.³² However, the AGP Memo provides this figure for total operating costs (including processing and administrative),³³ while the Foth 2012 report uses it for mining costs only. The Foth 2012 analysis then goes on to add processing and administrative costs again to reach a total operating cost, which doubles the estimated processing and administrative costs included in the total operating cost estimate.</p>	ALT	S	N	8	<p>InfoMine, AGP, and a mine were used to inform the mining operating estimate of \$40/ton. Section 2.0 of the September 2013 Underground Mining Alternative Assessment identifies that alternative was screened against five (5) criteria, including economic feasibility and project purpose and need. DNR reviewed the Proposer’s cost assessment of developing and operating an underground mine at the NorthMet deposit as defined for the project. The agency acknowledges that this assessment includes uncertainty but asserts this a reasonable approximation of potential economic feasibility for the purposes of alternatives screening. DNR notes that Section 2.4.1 of the Final SDD recognized that both the potential costs and economic return of an underground mine alternative would be considered, including whether the purpose of the project could be satisfied. This latter point is consistent with Minnesota Rules, part 4410.2300, item G, which indicated that an alternative may be excluded from analysis in an EIS if it would not meet the underlying need for or purpose of the project. DNR appropriately considered the factors identified in the Final SDD and determined the underlying need for and purpose of the project would not be satisfied employing underground mining methods.</p>

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Erin Mittag	The estimates that Foth 2012 later uses for processing and “general and contingency” costs are \$13 and \$3.50 per ton, respectively. ³⁴ If these are subtracted from the AGP total operating costs, the AGP estimate for mining costs alone is \$22.50 to \$33.50 per ton at the 5000 ton-per-day level.	ALT	S	N	8	It is not clear how the commenter arrived at \$22.50/ton for back-filled long-hole stoping mining costs. Section 2.0 of the September 2013 Underground Mining Alternative Assessment identifies that alternative was screened against five (5) criteria, including economic feasibility and project purpose and need. DNR reviewed the Proposer's cost assessment of developing and operating an underground mine at the NorthMet deposit as defined for the project. The agency acknowledges that this assessment includes uncertainty but asserts this a reasonable approximation of potential economic feasibility for the purposes of alternatives screening. DNR notes that Section 2.4.1 of the Final SDD recognized that both the potential costs and economic return of an underground mine alternative would be considered, including whether the purpose of the project could be satisfied. This latter point is consistent with Minnesota Rules, part 4410.2300, item G, which indicated that an alternative may be excluded from analysis in an EIS if it would not meet the underlying need for or purpose of the project. DNR appropriately considered the factors identified in the Final SDD and determined the underlying need for and purpose of the project would not be satisfied employing underground mining methods.

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Erin Mittag	Foth 2012 also included cost estimates from InfoMine.35 InfoMine estimates the cost of long-hole stoping with sand backfill at \$20 per ton for 5000 tons per day; adding 20 percent to that for cemented backfill gives \$24.00 per ton, very much in line with the AGP report.	ALT	S	N	8	InfoMine costs are for standard underground mines and thus, provide a cost minimum that is likely to be too low as applied to large shallow tonnages at NorthMet. Section 2.0 of the September 2013 Underground Mining Alternative Assessment identifies that alternative was screened against five (5) criteria, including economic feasibility and project purpose and need. DNR reviewed the Proposer's cost assessment of developing and operating an underground mine at the NorthMet deposit as defined for the project. The agency acknowledges that this assessment includes uncertainty but asserts this a reasonable approximation of potential economic feasibility for the purposes of alternatives screening. DNR notes that Section 2.4.1 of the Final SDD recognized that both the potential costs and economic return of an underground mine alternative would be considered, including whether the purpose of the project could be satisfied. This latter point is consistent with Minnesota Rules, part 4410.2300, item G, which indicated that an alternative may be excluded from analysis in an EIS if it would not meet the underlying need for or purpose of the project. DNR appropriately considered the factors identified in the Final SDD and determined the underlying need for and purpose of the project would not be satisfied employing underground mining methods.

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Erin Mittag	<p>Finally, Foth 2012 included one comparison mine, Podolsky/Levack/McCreedy West in Sudbury, Ontario, which has mining costs of \$38 for 2250 tons per day.³⁶ Scaling that to 5000 tons per day would come to about \$26 per ton. These are all of the estimates provided, and they agree to a remarkable extent. And yet Foth 2012 sets the estimate for 5000 tons-per-day at \$40 per ton. This cost estimate has no support in the record.</p>	ALT	S	N	8	<p>The mine uses a variety of mining methods, only one of which is cemented. Section 2.0 of the September 2013 Underground Mining Alternative Assessment identifies that alternative was screened against five (5) criteria, including economic feasibility and project purpose and need. DNR reviewed the Proposer's cost assessment of developing and operating an underground mine at the NorthMet deposit as defined for the project. The agency acknowledges that this assessment includes uncertainty but asserts this a reasonable approximation of potential economic feasibility for the purposes of alternatives screening. DNR notes that Section 2.4.1 of the Final SDD recognized that both the potential costs and economic return of an underground mine alternative would be considered, including whether the purpose of the project could be satisfied. This latter point is consistent with Minnesota Rules, part 4410.2300, item G, which indicated that an alternative may be excluded from analysis in an EIS if it would not meet the underlying need for or purpose of the project. DNR appropriately considered the factors identified in the Final SDD and determined the underlying need for and purpose of the project would not be satisfied employing underground mining methods.</p>

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Erin Mittag	The \$40 figure seems less inflated for room-and-pillar mining, but is still questionable. The only source cited by Foth 2012 is InfoMine, which gives a \$32 per ton cost at 5000 tons per day, without backfill. ³⁷ Adding 20 percent to that gives \$38.40.	ALT	S	N	8	Info Mine costs are for standard underground mines and thus, provide a cost minimum that is likely to be too low as applied to large shallow tonnages at NorthMet. Section 2.0 of the September 2013 Underground Mining Alternative Assessment identifies that alternative was screened against five (5) criteria, including economic feasibility and project purpose and need. DNR reviewed the Proposer's cost assessment of developing and operating an underground mine at the NorthMet deposit as defined for the project. The agency acknowledges that this assessment includes uncertainty but asserts this a reasonable approximation of potential economic feasibility for the purposes of alternatives screening. DNR notes that Section 2.4.1 of the Final SDD recognized that both the potential costs and economic return of an underground mine alternative would be considered, including whether the purpose of the project could be satisfied. This latter point is consistent with Minnesota Rules, part 4410.2300, item G, which indicated that an alternative may be excluded from analysis in an EIS if it would not meet the underlying need for or purpose of the project. DNR appropriately considered the factors identified in the Final SDD and determined the underlying need for and purpose of the project would not be satisfied employing underground mining methods.

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Erin Mittag	<p>However, the Foth 2012 report fails to mention that AGP estimated room-and-pillar mining without backfill at \$22 to \$28 per ton, which with 20 percent added would be \$24.40 to \$33.60.38 The Foth 2012 report provides no comparison mines for room-and-pillar mining. At any rate, the alternative of underground mining should not be eliminated from NEPA review based on economics if any environmentally acceptable underground mining method shows a profit in the screening analysis; more expensive methods should be irrelevant to this analysis.</p>	ALT	S	N	8	<p>The AGP reports says, "The economic cutoff value for underground mining is expected to be in excess of \$20 per ton of mill feed and in most instances in excess of \$30 per ton due to the deposit geometry and anticipated mining cost. Section 2.0 of the September 2013 Underground Mining Alternative Assessment identifies that alternative was screened against five (5) criteria, including economic feasibility and project purpose and need. DNR reviewed the Proposer's cost assessment of developing and operating an underground mine at the NorthMet deposit as defined for the project. The agency acknowledges that this assessment includes uncertainty but asserts this a reasonable approximation of potential economic feasibility for the purposes of alternatives screening. DNR notes that Section 2.4.1 of the Final SDD recognized that both the potential costs and economic return of an underground mine alternative would be considered, including whether the purpose of the project could be satisfied. This latter point is consistent with Minnesota Rules, part 4410.2300, item G, which indicated that an alternative may be excluded from analysis in an EIS if it would not meet the underlying need for or purpose of the project. DNR appropriately considered the factors identified in the Final SDD and determined the underlying need for and purpose of the project would not be satisfied employing underground mining methods.</p>

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Erin Mittag	<p>Using its \$40-per-ton estimate for the 5000 ton-per-day scenario, Foth estimated \$33-per-ton for a 7500 ton-per-day scenario. This amounts to a 17.5 percent reduction. Using the same percentage reduction for the maximum cost estimate from any source (\$33.50, the maximum amount in the AGP memo) gives a figure of \$27.64 per ton. Once again, in the context of eliminating an alternative from NEPA review based on economics, the lower (or at least average) cost estimates should be used, and this estimate is still on the high end of the various figures given by Foth 2012. We also point out that AGP does not provide a basis for its estimates; as far as we can tell, there is no support for its estimates in the record. Nonetheless, for the sole purpose of showing that the economic analysis included in the FEIS does not indicate an operating loss for at least one scenario, we will use \$27.64 as an estimated mining cost. The second of the three categories of costs included in total operating costs is processing costs. Foth adopts the InfoMine processing cost for a three-concentrate flotation mill of \$13 per ton at 5000 tons per day, after noting comparable values at Copperwood in Michigan (\$11.75 per ton) and Lac des Iles in Thunder Bay (\$14 per ton). It goes on to scale this to \$12.50 per ton for the 7500 tons-per-day level. Remarkably, the report ignores PolyMet’s own processing cost estimate for processing ore from the open pit, which is \$6.99 per ton.⁴² We were unable to extrapolate this to a smaller operation because of unknown scaling factors, but would expect this to be considered in a legitimate economic analysis. The last of the three categories of operating costs is administrative costs. Because different mines label this category differently, it is difficult to compare the numbers from various sources. Foth does not provide an InfoMine estimate for this cost. The examples provided include \$3.30 for general and \$2.00 for contingency per ton at Lac des Iles (presumably for a total of \$5.30 per ton); and \$3.35 per ton for general and administrative at Copperwood. The report settles on an estimate of \$3.50 per ton.⁴³ This cost apparently does not change based on tonnage; the same cost-per-ton is used in all scenarios. Again, the report completely ignores PolyMet-specific information, which estimates “general and administrative” cost for the open pit mine at \$0.66 per ton. Using the numbers discussed above, Foth 2012 reaches a total of \$56.50 per ton for total operating costs at the 5000 ton-per-day level, and \$49 per ton at the 7500 ton-per-day level. Based on the above discussion, these estimates are clearly inflated. Even if the processing and administrative costs are not adjusted based on PolyMet’s own estimates, and the only correction made is for the discrepancy in the AGP figures, the estimate at the 7500 ton-per-day level would be \$42.64.</p>	ALT	S	N	8	<p>The value is \$27.64 for 7500. Section 2.0 of the September 2013 Underground Mining Alternative Assessment identifies that alternative was screened against five (5) criteria, including economic feasibility and project purpose and need. DNR reviewed the Proposer's cost assessment of developing and operating an underground mine at the NorthMet deposit as defined for the project. The agency acknowledges that this assessment includes uncertainty but asserts this a reasonable approximation of potential economic feasibility for the purposes of alternatives screening. DNR notes that Section 2.4.1 of the Final SDD recognized that both the potential costs and economic return of an underground mine alternative would be considered, including whether the purpose of the project could be satisfied. This latter point is consistent with Minnesota Rules, part 4410.2300, item G, which indicated that an alternative may be excluded from analysis in an EIS if it would not meet the underlying need for or purpose of the project. DNR appropriately considered the factors identified in the Final SDD and determined the underlying need for and purpose of the project would not be satisfied employing underground mining methods.</p>

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Erin Mittag	<p>Capital costs are also significantly overstated because they fail to account for the savings that PolyMet will achieve due to the use of an existing processing plant. Rather than using PolyMet-specific information, estimates were based on industry costs drawn from InfoMine. Foth provides separate InfoMine estimates for mine capital costs and processing plant capital costs. The Foth 2012 report estimated mine capital costs at 7500 tons per day at \$125 million for room-and-pillar mining without backfill (adding 20 percent gives \$150 million) and \$115 million for long-hole stoping with sand backfill (adding 20 percent gives \$138 million).⁴⁶ For the processing plant, Foth 2012 provides an InfoMine estimate for a three-concentrate flotation mill of \$98 million at the 7500 tons-per-day level, which Foth adopts as its estimated processing plant cost.⁴⁷ However, PolyMet provides an estimate of its own processing plant at 32,000 tons per day, which is \$63 million.⁴⁸ The significantly lower cost is the primary savings that PolyMet will achieve by using an existing processing plant. Again there are scaling considerations; the total capital cost at 7500 tons-per-day should be lower than the cost at 32,000 tons per day. However, again solely for the purpose of this discussion we will use the \$63 million estimate. Foth also added a contingency amount of approximately 10 percent to the mine and process plant capital costs to calculate the total capital costs.⁴⁹ Adding 10 percent contingency gives a total capital cost of \$234 million for long-hole stoping. This is in comparison to a \$250 million estimate used by Foth and the Co-lead agencies.</p>	ALT	S	N	8	<p>At the 7,500 tons/day production rate for long-hole stoping with cemented backfill, it is unclear how the commenter arrived at \$234 million capital cost based upon this comment. Section 2.0 of the September 2013 Underground Mining Alternative Assessment identifies that alternative was screened against five (5) criteria, including economic feasibility and project purpose and need. DNR reviewed the Proposer's cost assessment of developing and operating an underground mine at the NorthMet deposit as defined for the project. The agency acknowledges that this assessment includes uncertainty but asserts this a reasonable approximation of potential economic feasibility for the purposes of alternatives screening. DNR notes that Section 2.4.1 of the Final SDD recognized that both the potential costs and economic return of an underground mine alternative would be considered, including whether the purpose of the project could be satisfied. This latter point is consistent with Minnesota Rules, part 4410.2300, item G, which indicated that an alternative may be excluded from analysis in an EIS if it would not meet the underlying need for or purpose of the project. DNR appropriately considered the factors identified in the Final SDD and determined the underlying need for and purpose of the project would not be satisfied employing underground mining methods.</p>
Erin Mittag	<p>To be clear, we are not arguing that the amount presented here is an appropriate estimate of underground mining. We think that that estimate would be significantly less based on a number of factors described above for which we have made no adjustment. Our only purpose here is to show that after correcting only the two most obvious discrepancies in the economic analysis prepared by Foth, the analysis does not show a loss at the 7500 ton-per-day level. Using an operating cost of \$42.64 per ton and a total pre-production capital cost of \$234 million results in a net profit of \$39 million.</p>	ALT	S	O	8	<p>Foth October 20, 2015, "Determining the Validity of the Claims in the Letter to United States Forest Service"</p>
Erin Mittag	<p>The existence of ore outside the pit envelope is a critical factor in determining whether an underground mine will be economical, because limitation to the pit envelope artificially limits the amount of ore of a particular grade that is available for mining. Co-Lead Report Table 2 provides net metal value for the five mining scenarios. Dividing this number by the total tons to be mined provides a value per ton. This exercise reveals that at the lower production rates, the minerals to be extracted have a higher per-ton value. The range is from \$60.40 per ton for the 5 million ton scenario to \$41.42 per ton for the 100 million ton scenario. These values are apparently based on how much ore there is in the pit envelope for each of the net metal values. That is, there are 5 million tons of mineable ore within the pit envelope with an average metal content worth \$60.40 per ton; 30 million tons with an average metal content worth \$51.73 per ton; and 50 million tons with an</p>	NEPA	S	N	8	<p>FEIS Section 1.3.2.4. The purpose of the proposed project is to produce base and precious metals precipitates and flotation concentrates from ore mined at the NorthMet Deposit, which is the deposit proposed to be mined by PolyMet.</p>

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	<p>average metal content worth \$47.72 per ton. Including mineralization beyond the pit envelope would affect the amount of ore available at each net-value-per-ton level. As an example, assume that the mine could be extended into an area that would provide 50 percent more ore of a given grade than is available within the pit envelope. The outcome would be that, for example, 30 million tons of ore would grade at \$53.85 per ton (the Co-Lead Report Table 2 net metal value per ton for 20 million tons of ore) rather than \$51.73 per ton. Mining costs might go up somewhat due to the increased area to be mined, but other costs would remain the same. This could add up to \$2.12 per ton in net value, or a total of \$60 million to the mine's profit in the 7500 tons-per-year scenario. AGP prepared both the mine plan and PolyMet's NI 43-101 Technical Report, and thus is very knowledgeable about the NorthMet deposit. The AGP report for the underground mining economic analysis provides the following table, which indicates that for one 5000 ton-per-day scenario, more than half of the economic ore lies outside of the proposed pit: A graphic representation is also provided: In light of this evidence, Foth 2012 goes into several obfuscations as to why an economic assessment of an underground mine should be limited only to the ore in the proposed pit. The obfuscation begins with Foth's special definition of "NorthMet deposit" for the purposes of the Underground Mining analysis: "The term NorthMet deposit used in this report will refer to NI 43-101 compliant measured and indicated mineral resources within the open pit." The Co-Lead Agencies use information straight from the Foth 2012 report without mentioning this special definition. They thus state "The NorthMet deposit is considered to be a near-surface, bulk, low-grade mineralization," when the reality is that most of the mineralization at the NorthMet site is not near-surface. For example, "NorthMet consists of seven igneous units that dip southeast, with most economic sulfide mineralization in the lowermost unit."53 And: Though grades vary, Unit 1 is also mineralized to the east of the deposit, down-dip (south) to depths of at least 2,500 feet, and past the limits of expected pit development in the west. The development of waste rock stockpiles over these areas is not expected to encumber any material that could reasonably be classed as ore because the upper units are barren and the Unit 1 mineralization is from 1,700 to over 2,500 feet below ground surface. Furthermore, the statement in the FEIS that "the geology outside of the open pit has not been characterized enough to support a mine plan" is flatly untrue for at least some areas. According to PolyMet's 2013 43-101 SEDAR filing, ore within the pit envelope accounts for "significantly less than half of measured and indicated resources. Under Canadian regulations, "measured" and "indicated" resources are used to estimate the economic viability of a potential mine. The focus of the Foth 2012 report on the identification of "mineral reserves" as a limiting factor is just another obfuscation; the term "mineral reserves" carries no additional meaning in regard to the level of characterization of the geology. Rather, "mineral reserves" simply indicates measured and indicated resources for which a mining company has prepared an economically viable mine plan. The reality is that the only reason that the economic assessment for underground mining of the NorthMet deposit has been limited to the ore within the pit envelope is because this is the ore that PolyMet plans to mine in its first stage of open pit mining. Mineral reserves were delineated based on economics and other factors specific to open pit methods. This has nothing to do with the level of characterization of the geology. And using the same specified ore body to assess the economic viability of underground mining is an exercise designed to fail. Measured and indicated resources do not become mineral reserves until a mine company has a mine plan showing that they can be mined economically using a particular mining method. To put it another way, with regard to an underground mine, minerals within the pit envelope can no more be referred to as "mineral reserves" than can those outside of the pit envelope. Cutting the assessment off at the boundary of the proposed pit is completely arbitrary. The Foth 2012 report is at best disingenuous in its explanation of the deposit and what is known about it: There is mineralized rock outside of the volume of rock contained within the proposed open-pit. This mineralized rock</p>					

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	<p>occurs below the open-pit. While this mineralized rock is excluded from this report, speculatively it may be possible for it to be economically viable to extract decades in the future. Only approximately 10% of the measured and indicated resource is below the open-pit. Compare this to the statement from PolyMet’s SEDAR filing quoted above: “The pit plan is not fully optimized and the 20-year permit application covers significantly less than half of the measured and indicated resources.” The SEDAR filing reports measured and indicated resources of 442 to 694 million tons. Mineral reserves (i.e., measured and indicated resources within the pit envelope) are reported at 274.7 million tons. Perhaps the Foth 2012 statement can be regarded as technically true if only 10 percent of measured and indicated resources lie directly underneath the planned pit; however it is clearly not true that only 10 percent of the measured and indicated resources are located outside the pit envelope at a depth amenable to underground mining. Foth 2012 goes on to discuss “inferred resource” to further confuse matters: “The majority of inferred resource defined by PolyMet (2008) is below the open-pit. There is a lack of geological data to characterize the deep mineralized rock that in turn results in a lack of geological confidence leading to the inferred classification.” Once again, this may be technically true as applied only to the inferred resources, and yet misleading in regard to measured and indicated resources. In other words, the presence of inferred resources at depth does not mean that significant amounts of measured and indicated resources are not also present at depth. While it is likely true that PolyMet has insufficient information for some areas of mineralization to include them in an economic analysis, it is also true that there are mineralized areas outside of the mine pit for which it does have sufficient information. In the 1970’s U.S. Steel (USS) engaged in a very extensive program of drilling to define an underground mining resource. According to PolyMet’s geology background document “There is every indication that the sampling and analytical work performed by USS was thorough, professional, of a high standard, and reliable.” All of the USS drill core and data is available to PolyMet, and much of it is in PolyMet’s database. As of 2007, USS had obtained more linear feet of drill core and had drilled almost as many holes as PolyMet. The USS drilling was all done with the intent of developing an underground mine, and is thus concentrated in the areas where mineralization was known to be greatest at depth. While about 50 percent of the USS drill core has not yet been assayed, it is available at the Coleraine Minerals Research Laboratory. NEPA requires agencies to undertake necessary research when important relevant information is not readily available but could be obtained. Refusing to assess an important and potentially viable alternative based on lack of information when the missing information is obtainable does not comply with NEPA.</p>					

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Erin Mittag	<p>As a final note, we object to the lack of documentation of the figures provided by Foth and accepted by the agencies. We do not object to the use of InfoMine for estimated costs; in fact we think that it is a more reliable source than analog mines chosen at the discretion of PolyMet’s contractor, who has every reason to identify the costliest mines possible for the analysis. However, it is unclear how or why the InfoMine figures that were included were chosen. For example, underground mine cost data available from InfoMine includes production rates up to 45,000 tons per day.⁶⁸ The analysis needs to explain why Foth limited its InfoMine estimates to the 5000 ton-per-day level and used its own scaling factors (which also need explanation) for the larger scenarios. Throughout the exercise, the Foth cost estimates are given with no explanation as to why any particular number was settled on. For each parameter, the Foth 2012 report lists figures from different sources, and then comes up with a number without any explanation or reasoning. It justifies those numbers by comparisons to other mines, but provides no explanation of why the mines used were chosen. The costs from analog mines are consistently higher than those from InfoMine, which is commonly used by the industry and would provide a less biased assessment. It is also unclear what information either Foth or the agencies rely on for statements relating to characterization of the ore body. For example, where is the data indicating that the NorthMet deposit is a “shallow” ore body, or that less than 10 percent of the measured and indicated resource is below the open pit? If the Co-lead agencies in fact did any independent evaluation of the Foth report, they need to make their analysis transparent. NEPA requires that the underlying data that forms the basis of conclusions in the FEIS be made available to the public.⁶⁹ The obfuscations and biased analysis of PolyMet’s contractor and the failure of the Co-lead Agencies to properly review the contractor’s work or perform their own independent analysis has resulted in the summary rejection of an alternative that could result in significantly less environmental harm than the proposed project, in violation of NEPA, MEPA, and the Clean Water Act. Before going forward toward permitting an open pit mine and all the destruction that entails, the agencies must take an honest, hard look at the possibility that an underground mine might be a viable option.</p>	ALT	S	N	3	<p>Comment noted. Section 2.0 of the September 2013 Underground Mining Alternative Assessment identifies that alternative was screened against five (5) criteria, including economic feasibility and project purpose and need. DNR reviewed the Proposer's cost assessment of developing and operating an underground mine at the NorthMet deposit as defined for the project. The agency acknowledges that this assessment includes uncertainty but asserts this a reasonable approximation of potential economic feasibility for the purposes of alternatives screening.</p> <p>DNR notes that Section 2.4.1 of the Final SDD recognized that both the potential costs and economic return of an underground mine alternative would be considered, including whether the purpose of the project could be satisfied. This latter point is consistent with Minnesota Rules, part 4410.2300, item G, which indicated that an alternative may be excluded from analysis in an EIS if it would not meet the underlying need for or purpose of the project. DNR appropriately considered the factors identified in the Final SDD and determined the underlying need for and purpose of the project would not be satisfied employing underground mining methods.</p>
Erin Mittag	<p>The Co-Lead Agencies failed to take a “hard look” at this alternative, instead eliminating it as an alternative without substantive analysis.⁷⁰ (MCEA 2, 33, 35–39; Friends 2, 49–52; CBD 110–111) Under NEPA, the FEIS must: examine all reasonable alternatives to the proposal. In determining the scope of alternatives to be considered, the emphasis is on what is “reasonable” rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.⁷¹ The Co-Lead Agencies claimed that the West Pit backfill would not provide substantial environmental benefits. Yet they concede that “the opportunity to reclaim wetlands vegetation at the Category 1 Stockpile footprint area and not having to treat seepage from the Category 1 Stockpile” would be “measurable environmental benefits offered by backfilling the Category 1 Stockpile into the West Pit.”⁷² Nevertheless, the Co-Lead Agencies eliminated the alternative for consideration based on several factors, which are addressed below:</p>	ALT	NS	X	1	

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Erin Mittag	<p>Backfilling would affect the water quality in the West Pit by increasing constituent loads, so additional mechanical treatment of water in the West Pit may be required for a certain timeframe following backfilling. However, there would be no effect on surface water quality discharged to the environmental because mechanical treatment of water from the West Pit would still be required in the long term. Response: Backfilling may actually decrease required mechanical water treatment at the site because it eliminates the Category 1 stockpile, currently identified as an indefinite source of pollution. It is hard to imagine how the treatment in the West Pit as a result of a backfill could be longer than the projected time for treatment of the Category 1 stockpile. Additionally, the potential for additional mechanical treatment is speculative at best, as the Co-Lead Agencies did not attempt any modeling to support this hypothesis. Submerging the Category 1 stockpile would remove the last permanent stockpile on the site, improving aesthetics and potentially allowing greater recreational use of the site after closure. ● Moving the waste rock from the stockpile into the West Pit would result in prolonged dust, air, and noise emissions, but these would be unlikely to exceed the respective maximum years modeled during operations. Response: Noise, dust and air emissions are only an issue during operations; perpetual active water treatment and the aesthetics of the site remain for centuries after closure. Any advantages in the latter would certainly outweigh this minimal impact.● 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. The PolyMet lease agreements could be renegotiated, which might involve monetary compensation for the mineral owners if the minerals are encumbered. Response: As Conservation Organizations noted in 2014, PolyMet has not provided any support for this claim, including a copy of any lease or other contract. PolyMet has also not provided any support for the notion that this pit could or would be remined, something that is quite unusual.⁷⁵ It would be far more likely that PolyMet or another entity would choose to expand the proposed mine deeper, perhaps into an underground mine, rather than close and reclaim the site, if the minerals underneath were found to be economically desirable. Moreover, PolyMet’s current reclamation plan also encumbers deeper mineral rights, probably beyond reach without extraordinary expense. Dr. Myers notes that to access these minerals after reclamation, “the large volume of pit lake water will need to be entirely pumped and treated to meet the 10 mg/l sulfate requirement, and the cost and time required for pumping and treating the entire pit lake prior to remining effectively eliminates this as a possibility.”⁷⁶ The presence of polluted water that must be pumped and treated before discharge may be a greater burden than simply digging out additional rock.● [B]ecause of the temporal effect that the stockpile would have, the [wetlands and vegetation at the Category 1 Stockpile footprint area] would be required to be mitigated regardless of future backfilling or not. Response: The Co-Lead Agencies are confusing benefit to the company with benefit to the environment. There is still an environmental benefit to reclaiming wetlands at the site, even if the company cannot claim mitigation credits for it. There is value to wetland restoration within the same watershed, which PolyMet only partially proposes, and on-site mitigation. Additionally, as the FEIS noted, such wetland reclamation credits may be used for contingency mitigation,⁷⁹ perhaps for the significant indirect wetland impacts this project is likely to have. These wetlands would offer a financial advantage to PolyMet, allowing it to save the cost of restoration for contingency mitigation elsewhere or, if PolyMet does not need the credits, it could establish a wetland bank and sell the credits to other entities, perhaps other mining companies that need wetland credits within the St. Louis River watershed.⁸⁰● [T]he costs associated with backfilling, additional water treatment rates, and encumbrance compensation determined in revised lease agreements may affect the ability of PolyMet to secure financing. Response: As noted by the Conservation Organizations in 2014, this is an assertion by PolyMet offered without any support whatsoever. It is speculative and the agencies are abdicating their duty</p>	ALT	S	O	8	MDNR et al. 2013b

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	<p>to independently verify statements by the company.⁸² Moreover, it gives a project proposer extraordinary and unjustified control over the alternatives analyzed if an alternative is dismissed based on an unsupported statement by the company that an alternative “may affect the ability” of the company to secure financing. The Conservation Organizations are only asking at this stage that the West Pit Backfill be given consideration as an alternative in the FEIS, not that it necessarily be adopted. The approach taken to this alternative is to speculate on its comparative benefits and drawbacks without any real information, rather than gathering the information first and then making the comparison. The Co-lead Agencies reject this alternative prior to obtaining the very information that they purport to be using to judge it.</p>					
Erin Mittag	<p>The Co-Lead Agencies have improperly eliminated dry stacking or paste tailings as an alternative to using the pre-existing LTV tailings basin. Under NEPA, the FEIS must: examine all reasonable alternatives to the proposal. In determining the scope of alternatives to be considered, the emphasis is on what is “reasonable” rather than on whether the proponent or applicant likes or is itself capable of carrying out a particular alternative. Reasonable alternatives include those that are practical or feasible from the technical and economic standpoint and using common sense, rather than simply desirable from the standpoint of the applicant.⁸³ Although PolyMet wishes to use the old LTV tailings basin because it is located on the site that they have agreed to purchase, alternative methods of storing waste are technically feasible, environmentally preferable, and avoid what is possibly the most devastating impact that could occur at a mine site—the collapse of a tailings basin, resulting in widespread impacts that could travel and diffuse for tens or even hundreds of miles when waste spills into moving water. We have attached a letter from Dr. David Chambers of the Center for Science in Public Participation. Dr. Chambers has extensive knowledge of both the tailings dam collapse at the Mount Polley mine in British Columbia in 2014 as well as PolyMet’s tailings dam design. In his report, Dr. Chambers observes that there is no engineering reason for tailings dams to fail at the rate that they do, and that this is a “prime indicator that something is wrong with the way tailings dams are designed, constructed, and/or operated.”⁸⁴ Dr. Chambers also notes that the tailings basin construction method used at the PolyMet site is the least safe construction method, and that PolyMet will continue to use this method. “Extending a risky design on top of an old design that itself poses higher risk, against the recommendation of the Mt. Polley Expert Panel for dry closure, for a facility that has not yet received regulatory approval, would not be recognizing the long-term risks being posed to the public.”⁸⁵ Dr. Chambers also recommended that the Hydrometallurgical Residue Facility should be constructed using dry stack methods.⁸⁶ Dr. Chambers’ review was submitted to the Co-Lead Agencies on April 30, 2015, after the release of the report of an independent expert panel that investigated the cause of the Mt. Polley disaster. Although this was after the close of the comment period for the SDEIS, it was submitted well in advance of the FEIS in hopes that the Co-Lead Agencies would recognize the value of the Mt. Polley recommendations and the inherent risks in PolyMet’s use of an old tailings dam designed to store tailings in a way that is no longer considered safe. The Co-Lead Agencies, in response to Dr. Chambers’ work, provided only a single paragraph. They concluded that dry stack tailings did not offer a significant environmental benefit as an alternative. The analysis is dismissive, failing to provide support or analysis consistent with NEPA’s requirements.⁸⁷ The three reasons given are addressed below:</p>	PD	NS	X	1	

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Erin Mittag	Industry standard for dry stacking includes the use of a basin liner. Construction of a basin liner on the existing LTVSMC tailings basin has been evaluated and determined not to be feasible. Response: As observed by Dr. Chambers, the reason that a basin liner is not feasible is because the tailings basin is not a stable structure, which should bear more heavily on the Co-Lead Agencies' decision. ⁸⁸ Moreover, this comment ignores the fact that a dry-stacking facility could be built somewhere other than the existing LTVSMC tailings basin. • Use of dry stack technology would require a new tailings basin to be constructed in a different location as a lined dry stack basin. A separate dry stack tailings basin would increase footprint effects of the project. Response: The impacts of this could potentially be minimal. Unlike an open-pit mine, where some impacts on wetlands, streams and other natural features may be unavoidable due to the precise location of a mineral deposit, a dry-stack tailings facility has more flexibility when it is sited. The Co-Lead Agencies must investigate potential sites for a dry-stack facility that could minimize impacts. It may even be possible to site it elsewhere on the LTVSMC property in an area that is already mining-impacted.	ALT	S	N	11	No analysis is provided here or in Chambers appendix which supports the opinion that the Tailings Basin would not be stable. The FEIS evaluated a range of alternatives including paste tailings disposal at on an off site brownfield as well as dry stack tailings on site. See Underground Mining Alternative Assessment (Appendix B of FEIS). SDEIS Theme ALT 10, ALT 01. The FEIS has met its requirements under NEPA.
Erin Mittag	The proposed Project addresses legacy water quality issues of the LTVSMC tailings basin while making use of the brownfield site for tailings disposal. A separate dry stack tailings basin would not address LTVSMC tailings basin legacy issues. Response: PolyMet would still take possession and legal responsibility for permitting at the LTVSMC site. Discharges from the tailings basin would be required to meet state water quality standards and other state and federal environmental laws regardless of whether PolyMet uses it as a disposal site in any event. (See also Section 6 of these comments on the no-action alternative, addressing Cliffs Erie's legal responsibilities to ensure that this site meets state and federal law).	WAT	S	N	8	No evidence is provided and the Co-lead Agencies have no evidence that PolyMet would take possession of the LTVSMC Tailings Basin if it were not used for their Proposed Project. Use of the LTVSMC Tailings Basin is an efficient means to achieve positive environmental outcomes that have not been achievable to date.
Erin Mittag	As with the West Pit backfill alternative, the Co-lead Agencies have inappropriately prejudged this alternative, making assumptions about the benefits and drawbacks that are the very things that an alternatives analysis is designed to reveal.	ALT	NS	X	1	

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Erin Mittag	<p>Finally, the current design for the tailings basin does not meet the requirements of Minnesota Rule 6132.2200. Dry-stacking is an alternative made reasonable by virtue of the fact that it is the only way that this mine can comply with Minnesota law. This rule states: B. A reactive mine waste storage facility must be designed by professional engineers registered in Minnesota proficient in the design, construction, operation, and reclamation of facilities for the storage of reactive mine waste, to either: (1) modify the physical or chemical characteristics of the mine waste, or store it in an environment, such that the waste is no longer reactive; or (2) during construction to the extent practicable, and at closure, permanently prevent substantially all water from moving through or over the mine waste and provide for the collection and disposal of any remaining residual waters that drain from the mine waste in compliance with federal and state standards. Mine waste includes tailings.⁸⁹ “Reactive mine waste” is defined as waste “that is shown through characterization studies to release substances that adversely impact natural resources.”⁹⁰ In other words, “reactive waste” is not limited to waste that creates acidic conditions. Heavy metals can leach from rock under many conditions, some of which do not involve a low pH; whenever those conditions result in a great enough release of metals to adversely affect natural resources, the rock is deemed “reactive.” Thus the PolyMet tailings will be “reactive” even if they do not result in acid drainage, because they have been characterized (by PolyMet’s modeling) to release (at a minimum) copper, nickel, lead, and arsenic at levels far above surface and/or groundwater quality standards.⁹¹ Rule 6132.2200(2)(B) provides two possible means of handling reactive mine waste after closure. Either the waste rock, tailings, and exposed rock must be left in such a way that they are not “reactive” (i.e., they no longer leach heavy metals), or the facilities must be closed in a way that “permanently prevent[s] substantially all water from moving through or over” them. Taken together, the import of the regulations is that nonferrous mine waste and mine pits must be closed in a way that does not result in a significant amount of water that will have to be treated before it can be discharged to the environment. The Statement of Need and Reasonableness for this rule makes it clear that the point of Rule 6132.2200(2)(B) was to preclude perpetual or long term water treatment as a closure option: [M]erely collecting contact water and treating it in order to meet water quality discharge standards, without a substantial effort to minimize the amount of water contacting the waste, has been rejected. While this method may provide acceptable results during active operations, when the permittee is present, the potential for long-term failure of such a system, when the operator is no longer available to correct the situation, is too great. Because of the necessity to provide a permanent solution to the water quality concerns related to reactive mine wastes, the two required methods of storing these wastes are the only reasonable methods currently available.⁹² The current plan for the tailings basin allows the tailings to remain reactive and allows a significant amount of water to move through the tailings. It thus does not meet the regulatory requirements. The Co-lead agencies should assess the dry stack alternative as the only suggested alternative that might meet the requirements of state law.</p>	PER	S	N	11	
Erin Mittag	<p>The EIS must provide information on what can be expected under the “no action” alternative in such a way that it can be compared to the impacts of the proposed mine. The FEIS does not adequately assess the “no action” alternative. This issue is presented at MCEA 40 and CBD 107–108, which along with cited exhibits and references are incorporated herein. An EIS must include “no action” as one of its alternatives.⁹³ “No action” in situations like the proposed NorthMet mine and land exchange could mean either that the mine would not be permitted or implemented, or that the land exchange would not occur.⁹⁴ Importantly, when the choice of no action by the lead agencies would result in “predictable actions by others,” this consequence of the no action alternative needs to be considered and included as part of the no action analysis in the FEIS.⁹⁵ Although the NorthMet FEIS purports to do this, it does not provide adequate information about the environmental</p>	ALT	S	N	8	<p>The CEC provides a reasonable means of determining the relative efficacy of impact avoidance and/or minimization measures incorporated into the project if they were not present. Final EIS Section 5.2.2.4 provides a qualitative description of water-related resources under the No Action Alternative. See FEIS pg. 5-93.</p>

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	<p>conditions that would be expected under the No Action Alternative. This violates 40 C.F.R. § 1502.14(b), which requires the FEIS to “devote substantial treatment to each alternative considered in detail including the proposed action so that reviewers may evaluate their comparative merits.” The FEIS does not contain sufficient detail on the predicted water quality at the Plant Site and in the Embarrass River watershed under the No Action Alternative to allow an evaluation of the comparative merits of the Proposed Action. In fact, the FEIS completely fails to provide any information on the expected water quality at the Plant Site and in the Embarrass River watershed under the No Action Alternative. Instead, the predicted water quality under the Proposed Action is exhaustively compared to a modeled “Continuation of Existing Conditions” (CEC) scenario, which ignores the existing responsible party (Cliffs Erie)’s legal obligation to clean up and manage the site consistent with state and federal environmental laws. In addition to the violation of 40 C.F.R. § 1502.14(b), this violates the requirement that the FEIS provide a “hard look” at the impacts of the Proposed Action. By repeatedly comparing the polluting effect of the Proposed Action with an already polluted situation that is presumed to continue (but which in reality would not and could not continue under existing law), the FEIS presents an inaccurate assessment of the impacts of the Proposed Action. Furthermore, the “Existing Conditions” that were modeled by PolyMet and disclosed in the FEIS do not actually reflect currently existing conditions, because Cliffs Erie has already taken steps to address water quality issues at the site as required by a consent decree with MPCA. Cliffs Erie and MPCA entered into a judicially enforceable consent decree in March 2010, with Cliffs Erie agreeing to take corrective actions to resolve “all alleged violations” of its NPDES permits at these locations.⁹⁶ Pursuant to the consent decree, Cliffs Erie was required to submit “Short-Term Mitigation Evaluation Plans” for each of the three locations.⁹⁷ Cliffs Erie was also required to submit “detailed Field Studies Plan Outlines” for each location.⁹⁸ And, “Long-Term Plans” were required to identify mitigation strategies to address elevated concentrations of sulfates and other parameters of concern at each location.⁹⁹ Each of these corrective actions were required to be approved by MPCA, and would then become “an integral and enforceable part” of the consent decree.¹⁰⁰ If Cliffs Erie fails to comply with the consent decree, it is required to pay monetary penalties to MPCA.¹⁰¹ In addition to failing to adequately address and disclose the corrective actions that have already been taken by Cliffs Erie at the LTV sites in its analysis and disclosure of “existing conditions,” the FEIS also fails to assess the additional corrective measures that will continue to be undertaken by Cliffs Erie in the event the no action alternative is chosen. The very purpose of the consent decree is to bring Cliffs Erie into compliance with the NPDES permit requirements at the LTV tailings basin and mine site, along with the Dunka Pit. Cliffs Erie coming into compliance with the Clean Water Act is not only “predictable” and “reasonably foreseeable,” but also legally required under both the consent decree and the Clean Water Act. Thus comparing in the FEIS the proposed action with a no action alternative where pollution would continue indefinitely at the plant site is both inaccurate and unlawful under NEPA.</p>					

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Erin Mittag	<p>The FEIS also fails to describe the foreseeable impacts of the no action alternative at the mine site. According to the Draft Record Of Decision (DROD): the reason the Forest Service is conducting this land exchange is that if it does not, PolyMet is likely to litigate its right to build an open pit mine on Forest Service property acquired under the Weeks Act, and the outcome of that suit is uncertain. In other words, the Forest Service believes that there is a significant chance that the no action alternative would result in an open pit mine on Forest Service land. Although we agree that this outcome is not certain, if it is foreseeable enough that the Forest Service is trading away a ten-square-mile contiguous piece of property with irreplaceable resources in order to avoid it, it is surely certain enough to assess in the FEIS. Indeed, the Forest Service's actions to avoid this scenario prove that it is already effectively foreseen. The Forest Service has the established right to impose conditions on mining operations to protect natural resources in situations like this one, where the Forest Service owns the surface and a private party owns the mineral estate.¹⁰² Because the mine as proposed would violate so many of the provisions of the Superior National Forest Land and Resource Management Plan (Forest Plan), the Forest Service would undoubtedly impose many additional requirements if the mine were to be built on Forest Service land. The Forest Service cannot assume for the purposes of NEPA that an open pit mine on Forest Service land would have the same impacts as an open pit mine on non-Forest Service land. We understand that the Forest Service does not want this mine on its property, and we can hardly blame it. We also understand that the Forest Service sees an advantage in obtaining other land in exchange. But neither we nor the Forest Service know that this is the environmentally preferable outcome, and the FEIS does nothing to enlighten us. The whole point to the NEPA process is to look at the actual expected environmental effects of the range of alternatives in a given situation. In this particular situation, it is unclear that there will be any on-the-ground environmental benefit of Forest Service ownership of the nonfederal lands, as opposed to the current owner. Will water quality, vegetation, wildlife, or ecosystem services benefit from the change of ownership? FEIS that goes into this alternative at length. On the other hand, would these natural resources benefit from Forest Service ownership of the mine site, if a mine will be built regardless? The FEIS tells us absolutely nothing about this possibility. The Forest Service is hiding behind its legal position when it says that if there is no land exchange, there will be no mine. But the Forest Service cannot have it both ways. If an open pit mine on the Superior National Forest is foreseeable enough to drive this entire action, it is foreseeable enough to require assessment under NEPA.</p>	ROD	S	N	12	<p>FEIS 3.3.3.3.7, Any USFS authorization of private open pit mining in the Superior National Forest would need to be consistent with the management objectives of the Superior National Forest. The USFS does not believe that such authority or consistency exists with respect to the open pit mining proposal of PolyMet. The Land Exchange is a solution to a legal conflict, not an indicator of foreseeable outcomes through a settlement or court decision. It is therefore speculative to predict environmental impacts under the proposed scenario.</p>
Erin Mittag	<p>The FEIS fails to provide adequate analysis of the effectiveness of mitigation measures, and the impacts of reasonably foreseeable accidents and failures. Where the FEIS relies on mitigation measures as its reason for not disclosing impacts should those mitigation measures fail, it must include a discussion of the efficacy and certainty of the mitigation measures. That discussion must include whether the measures are proven or theoretical and the degree to which they have worked as planned at other facilities. The agencies must also assess the probability of accidents, and make a holistic assessment of accident risk for all mining features.</p>	NEPA	NS	X	1	

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Erin Mittag	<p>PolyMet relies on a number of engineered systems to minimize impacts on the environment from the proposed mine. This is no different than what is done for every modern industrial mine around the world indeed it is legally required in virtually any jurisdiction. Each mine plan is designed to address the particular difficulties of the site, the ore body, and the mining and processing methods. The FEIS presents the NorthMet mine plan as though it identifies the perfect engineered systems that will result in a mine with no accidents, no failures, and no errors in the systems as designed, installed, or maintained. Mining companies throughout history have laid out plans to minimize environmental impacts. And yet significant environmental impacts often occur, as demonstrated in recent global mining catastrophes highlighted in the media. Given the size of the proposed mine and its location in one of the wettest parts of the United States, concern for accidents, failures, and unforeseen design, installation, and maintenance errors should be heightened rather than dismissed. NEPA requires that to the extent that errors, accidents, and failures are reasonably foreseeable over the expected life of the project (i.e., more than five hundred years), the potential impacts must be disclosed in the FEIS. The FEIS completely fails to meet this requirement. This shortcoming affects virtually every aspect of the mine plan and the FEIS. It was raised generally and in relation to several specific mine features in our comments on the SDEIS at MCEA 3, 5–6, 22, 40–54 Friends 1–8, 32–37, 39–40 CBD 33–45, 57–59 and in our supplemental letter on the Mt. Polley tailings basin disaster in British Columbia. All of these materials along with exhibits cited therein are incorporated herein. The legal requirement begins with the most elementary aspect of NEPA review an EIS must disclose all reasonably foreseeable significant impacts of a proposed project. Both the CEQ and the courts recognize that this involves some conjecture in many situations, whether or not a particular impact will occur cannot be known with any certainty at the time an EIS is prepared. But this does not allow an agency to ignore the possibility of impacts. In the face of uncertainty, an agency must provide a scientifically defensible assessment of the likelihood of the impact’s occurrence, and a discussion of the potential effects commensurate with the likelihood and severity of those effects.¹⁰⁵ In a situation where errors, accidents, and failures could result in significant impacts, “[t]hat circumstance obliges the agency to undertake risk assessment an estimate of both the consequences that might occur and the probability of their occurrence.” While “NEPA does not require consideration of risks that are ‘merely speculative’ or ‘infinitesimal,’” it also does not allow an agency to ignore risks based on unsupported assumptions that errors, accidents, and failures will not occur. To use waste storage facilities as an example, the FEIS Response to Comments Theme GT 15 acknowledges that “If incorrectly designed, constructed or managed, or from other unforeseen circumstances, waste material storage facilities would have the potential to result in increased hydrologic and/or water quality effects and could potentially lead to slope or dam failure.” Pursuant to NEPA, this acknowledged fact necessitates a risk assessment addressing “an estimate of both the consequences that might occur and the probability of their occurrence.” In the NorthMet FEIS, however “hypothetical failure scenarios are not assessed,” apparently because the Co-Lead Agencies believe that “design and safety requirements, including adaptive management procedures” will work perfectly for hundreds of years.¹⁰⁹ Theme WR 129 makes the statement “With appropriate monitoring and pre-planned contingency actions, and adequate financial assurance, it is technically feasible to maintain the operation of engineered systems indefinitely into the future.” Unfortunately, technical feasibility has never been enough to prevent accidents and failures. And history is replete with engineered systems that theoretically should have worked perfectly, but nonetheless eventually revealed that the engineers who designed them or the workers who built and maintained them were not themselves infallible, not to mention myriad external forces beyond human control. Human Error It is often noted that while the safety and reliability of engineered systems in-and-of-themselves continues to improve over time, the propensity for human error does not. Across</p>	NEPA	S	N	8	<p>Geotechnical evaluations have been completed at the NorthMet site which indicate designs meet factors of safety which is a measurement of risk. No evidence has been provided proving this analysis is flawed. Recent mining accidents are not evidence that the NorthMet project is unsafe or that a dam failure at the NorthMet tailings basin is foreseeable.</p>

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	<p>numerous industries, the percentage of errors caused by human error is estimated at about 80 percent. Thus despite the technological advances that have been made in aviation, maritime shipping, medicine, IT, and many other industries, accident and failure rates decrease far more slowly than would be expected given improvements in technology. In a study of “operation events” that represented some sort of operations failure at nuclear power plants, the U.S. Nuclear Regulatory Commission made the following observations</p> <ol style="list-style-type: none"> 1. Human error contributed significantly to risk in nearly all events analyzed. Forty-one percent of events involved partial or complete loss of either onsite or offsite power, 22 percent involved loss of Emergency Core Cooling Systems (ECCS) and 19 percent involved loss of feedwater. . . . The average human error contribution to the change in risk was 62 percent. 2. Latent errors were present in every event analyzed and were more predominant than active errors by a ratio of 4 to 1. Latent errors were noted in all facets of performance studied, including operations, design and design change work practices, maintenance practices and maintenance work controls, procedures and procedure development, corrective action program, and management supervision. . . . 3. Without exception, the operating events analyzed included multiple contributing factors. On the average, the thirty-seven events contained four or more human errors in combination with hardware failures. Fifty percent of events contained five or more errors. Many events contained between six and eight human errors. 4. Human errors can result in the failure or increased likelihood of failure of risk-significant equipment. For a sample of ten events with the highest event importance, human error was determined to contribute to component failure. There were three events where a single human error contributed to a single PRA [Probabilistic Risk Assessment] basic event, and seven events where multiple human errors contributed to multiple PRA basic events. . . . 5. Design and design change work practice errors were present in 81 percent of events, maintenance practices and maintenance work control errors were present in 76 percent of events, and operations errors were present in 54 percent of events. Additionally, more maintenance and operations errors mapped to basic events in the PRA model than did design and design change errors. 6. Forty-one percent of the analyzed events demonstrated evidence of failure to monitor, observe, or otherwise respond to negative trends, industry notices, or design problems. This suggests that inadequacies in licensee corrective action programs may play an important role in influencing operating events. These findings are mirrored in the recommendations of the Independent Expert Engineering Investigation and Review Panel on the Mt. Polley Tailings Storage Facility Breach in British Columbia. While the focus of the report was on dam design and construction and the underlying geology, the Independent Panel turned its attention squarely toward human error in its recommendations. Tailings dams are complex systems that have evolved over the years. They are also unforgiving systems, in terms of the number of things that have to go right. Their reliability is contingent on consistently flawless execution in planning, in subsurface investigation, in analysis and design, in construction quality, in operational diligence, in monitoring, in regulatory actions, and in risk management at every level. All of these activities are subject to human error. Human error is often, if not always, found to play a key role in technological failures. And human error will always be with us, as much as we might wish it to be otherwise. This is why failures invariably bring about improvements in technology that help compensate for human error. In perhaps the most notorious containment failure, double-hulled tankers were mandated after the Exxon Valdez oil spill. Similarly, improvements to rail tank cars are being adopted in the wake of the Lac-Mégantic tragedy. But tailings dams have no such redundancies. Without exception, dam breaches produce tailings releases. This is why best practices can only go so far in improving the safety of tailings technology that has not fundamentally changed in the past hundred years. Improving technology to ensure against failures requires eliminating water both on and in the tailings water on the surface, and water contained in the interparticle voids. Only this can provide the kind of failsafe 					

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	<p>redundancy that prevents releases no matter what. In terms of portfolio risk, Appendix I shows that this works by reducing the inventory of active tailings dams subject to failure in the first place. Simply put, dam failures are reduced by reducing the number of dams that can fail. The Independent Panel recommends that all future tailings storage facilities be in the form of dry stack tailings because failures due to human error cannot be completely guarded against, and dry stack tailings facilities cannot fail. To repeat the words of the Co-Lead Agencies “If incorrectly designed, constructed or managed, or from other unforeseen circumstances, waste material storage facilities would have the potential to result in increased hydrologic and/or water quality effects and could potentially lead to slope or dam failure.” Recognizing that this potential always exists at conventional dams due to the stubborn problem of human error, the Panel recommended a method that will not lead to hydrologic or water quality effects regardless of human error. It should be obvious from this discussion that as long as engineered systems are dependent on human design, operation, and maintenance, theoretically perfect engineering will not eliminate the risk of accidents, failures, and releases of pollutants to the environment. The risk of human error is always foreseeable. While it is true that the likelihood of a given failure event and the degree of impact it would have are unknown, this does not foreclose a qualitative discussion of the risk. Furthermore, statistical analyses exist for many mine features that allow for a quantitative assessment some of these are discussed below. Modern industry has developed many methods of assessing risks from engineering and materials failures, natural catastrophic events, and human error. These methods are used routinely by responsible safety and financial managers in many industries, including mining. These methods draw from past experience to quantify the risk of accidents and failures at industrial facilities, including those caused by human error. A good example of the assessment and disclosure of risks based on statistics drawn from past experience is provided by the U.S. EPA’s assessment of the potential impacts of the proposed Pebble Mine in Alaska. The Co-Lead Agencies dismiss this report, saying it does not address a specific mining proposal, and is therefore not applicable. But historical experience at mining sites in general can and should inform the statistical risk of accidents at a particular mine site. While the FEIS may point out situations where it has mitigated risk as compared to other sites, it is not appropriate to evaluate risk in a vacuum. Indeed, there are some cases where statistical risk at a generic mine appears indistinguishable from statistical risks at the PolyMet site. For instance, there is no reason why PolyMet’s pipelines are less likely to break or cause spills than pipelines at other locations. And while PolyMet’s wastewater treatment strategy may be unique to the pollutants at the site, there is no reason why their technology is less likely to break down. In fact, as observed by Dr. Miller, it may be more likely to break down due to its complexity. Similarly, PolyMet’s tailings dam seems just as vulnerable to breach as tailings dams at other locations, if not more so.</p>					
Erin Mittag	<p>Effectiveness of mitigation measures. In addition to the potential for errors, accidents, and failures, an important factor in assessing the risk of unexpected consequences is the uncertainty of mitigation measures designed to prevent those consequences. To use the tailings basin seepage containment system as an example, a risk assessment must account for the extent to which the actual performance of the system in the field remains an unknown. As discussed below, the record contains no examples of similar systems achieving the level of capture assumed by the FEIS. While the design may work perfectly in a software model, conditions and events in the real world rarely conform to theoretical designs. Established mitigation measures have a history that can be used to estimate the uncertainty and risk that outcomes will not match the theoretical or modeled expectations. The fact that success rates for a mitigation measure are not available does not provide a reason to assume that it will work perfectly. To the contrary, it increases the uncertainty that the measure will perform as designed. The FEIS must disclose and discuss the unknowns of the systems and mitigation measures proposed for this</p>	ALT	S	N	8	<p>Performance in the field is not an unknown. A purpose of engineering is to create with an acceptable degree of certainty the performance of man-made systems before they are built. With respect to capture systems, the FEIS analysis does not assume perfection as the comment states. The FEIS assessment of water quality impact probabilities is an important indicator of risk.</p>

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	project, and what that uncertainty means in terms of risks to the environment.					
Erin Mittag	<p>NEPA requires that an EIS include a discussion of “means to mitigate adverse environmental impacts. “The NorthMet FEIS is replete with mitigation measures; however it does not address the uncertainty of their effectiveness or the risk that they will not operate as intended. Rather, it assumes that all mitigation measures work perfectly, for hundreds of years if not forever. This is not the approach to mitigation measures required by NEPA: [NEPA] does require that an EIS discuss mitigation measures, with “sufficient detail to ensure that environmental consequences have been fairly evaluated.” Methow Valley, 490 U.S. at 352, 109 S.Ct. 1835. An essential component of a reasonably complete mitigation discussion is an assessment of whether the proposed mitigation measures can be effective. Compare Neighbors of Cuddy Mountain v. U.S. Forest Service, 137 F.3d 1372, 1381 (9th Cir.1998) (disapproving an EIS that lacked such an assessment) with Okanogan Highlands Alliance v. Williams, 236 F.3d 468, 477 (9th Cir.2000) (upholding an EIS where “[e]ach mitigating process was evaluated separately and given an effectiveness rating”). The Supreme Court has required a mitigation discussion precisely for the purpose of evaluating whether anticipated environmental impacts can be avoided. Methow Valley, 490 U.S. at 351–52, 109 S.Ct. 1835(citing 42 U.S.C. § 4332(C)(ii)). A mitigation discussion without at least some evaluation of effectiveness is useless in making that determination. Furthermore, the “evaluation of effectiveness” must be supported by substantive evidence: [T]he Court holds that the Corps’ reliance on mitigation measures that were unsupported by any evidence in the record cannot be given deference under NEPA. The Court remands to the Corps for further findings on cumulative impacts, impacts to ranchlands, and the efficacy of mitigation measures. Several examples are provided below for which the FEIS fails to provide information about the uncertainty of the effectiveness of particular engineered systems or mitigation measures. Rather than preparing a risk assessment to account for uncertainty and potential errors, accidents, and failures, the FEIS repeatedly invokes the phrase “adaptive management.” Whatever might go wrong with the project, all will be corrected by adaptive management. This approach also runs afoul of NEPA, because it postpones the disclosure of environmental impacts until after a project has been undertaken. Most of the promises of adaptive management in the FEIS amount to nothing more than the promise to make changes after problems occur. While of course a company must make changes if problems occur, this cannot substitute for revealing the potential for problems before the project is permitted. As the U.S. Court of Appeals for the Ninth Circuit puts it, “The agency cannot increase the risk of harm to the environment and then perform its studies. . . . This approach has the process exactly backwards.” In adopting 40 C.F.R. 1502.22(b), which addresses how to proceed in the face of uncertainty, the CEQ stated: It must be remembered that the basic thrust of an agency’s responsibilities under NEPA is to predict the environmental effects of proposed action before the action is taken and make those effects known. Reasonable forecasting and speculation is thus implicit in NEPA, and we must reject any attempt by agencies to shirk their responsibilities under NEPA by labeling any and all discussion of future environmental effects as “crystal ball inquiry.” Furthermore, adaptive management plans are themselves subject to the same risks and uncertainty that pertain to engineered systems as initially planned. The FEIS mentions a number of possible “fixes” for problems that may arise, but once again fails to discuss the uncertainty as to whether they will actually be effective. The FEIS simply</p>	NEPA	S	O	8	The FEIS discloses potential impacts from modeling mitigation such as imperfect covers, liners, capture systems, and treatment systems, for example. The Adaptive Water Management Plan (AWMP) in concert with other documentation is an adequate disclosure of mitigation (PolyMet 2015d). The AWMP and FEIS state that its purpose of this approach is to ensure compliance by making predictions and taking corrective actions. PolyMet 2015d Section 1.1. FEIS pg. 5-234.

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	<p>assumes that all problems can be fixed. As the U.S. District Court for the Western District of Wisconsin put it in addressing unplanned, unpredicted water quality violations at the Flambeau Mine in Wisconsin: the mining company could not be expected to end its discharges, because to do so would require it to “stop the rain.” If the history of mining and hazardous waste sites has taught us anything, it is the unfortunate reality that not all unforeseen results can be fixed to the point of meeting environmental standards. Although the FEIS relies on promises of “adaptive management” to evade an assessment of risks to natural resources, it does not provide adequate adaptive management plans to cover most of these risks. These statements amount to little more than promises to fix any problems that occur. The FEIS provides no basis for the assumption that impacts can and will be limited to the impacts discussed in the FEIS. The reference documents include several adaptive management plans for different systems, which are reviewed in comments from the Center for Science in Public Participation (CSP2).126 As CSP2 points out, PolyMet’s proposed use of Adaptive Management is problematic because most of its applications do not include important features of adaptive management. Most of the proposed Adaptive Management Plans are in fact more akin to normal project management where project activities and plans are modified as necessary and appropriate based on changed conditions, failed activities, leaks, improvements in available technologies, etc. CSP2’s comments on adaptive management plans are incorporated herein by reference. There are essentially two categories of Adaptive Management measures discussed in the FEIS. The first are systems that are designed with some flexibility involved and with some planning of the steps to be taken if certain contingencies occur. The FEIS refers to these systems as “adaptive,” while other systems are referred to as “fixed.” The adaptive systems are the Waste Water Treatment Plant and Facility, the Category I Stockpile cover, the HRF cover, and the Tailings Basin pond liner. All other systems are considered “fixed,” including the containment and collection systems and the HRF liner. The FEIS does not provide true adaptive management plans for any of the fixed systems, and no arrangement is planned to ensure that they can be paid for if needed. In regards to these systems, CSP2 notes: “It is not sufficient to just monitor activities and commit to possibly implementing from a list of contingencies when a problem is discovered. This is not adaptive management - it is the mine operator responding to a problem without clear commitment to meaningful adaptive process or outcome.” The FEIS includes a section entitled “Contingency Mitigation” starting on page 5-239. These are measures that are “not initially included in financial assurance,” and hence it is completely unclear how they will be paid for, particularly if the condition does not arise or is not discovered until after the mine closes and PolyMet no longer has a source of revenue. The list of potential problems includes: · Overflow of process water sumps or ponds; · Water quality problems in streams due to rail transport; · Groundwater quality noncompliance due to liner issues; · West Pit water not as expected; · Greater inflow to pits than expected; · New surface seepage locations below the Tailings Basin; · Tailings Basin water not as expected; · Water quality downstream from Tailings Basin not as expected; · Northward flow of pit water. For each of these potential problems, the FEIS suggests mitigation measures that could be used to address the problems if they arise. These suggestions do not come close to constituting an adaptive management plan, and this particular section of the FEIS does not refer to them as such. But throughout the FEIS and especially in the Response to Comments, these suggestions are elevated to the status of “adaptive management,” making it appear that PolyMet and the Co-lead Agencies have a plan to address problems that arise, when that is simply not true. In general, wherever a question is raised regarding the certainty of the mine plan and the engineered systems’ ability to meet regulatory requirements and otherwise protect the environment, the response is that no assessment is needed, because “adaptive management” will be used to fix the problem. For example, Comment Theme GT 15 states, “The SDEIS does not properly address the potential environmental consequences of a geotechnical</p>					

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	<p>failure due to unplanned and catastrophic events (e.g. extreme weather events, equipment failure, human error) at the Tailings Basin, Hydrometallurgical Residue facility, stockpiles, or pit.” The response is, “Because the risk of failure is mitigated through application of design and safety requirements, including adaptive management procedures, the potential effects of hypothetical failure scenarios are not assessed in the FEIS.”¹²⁸ But there is no adaptive management plan that addresses problems that arise due to extreme weather events, equipment failure, and human error. FEIS App. A. As another example, Theme AQ 05 asks about “sulfates and toxic metals . . . that are not captured for treatment.” The response: “The NorthMet Project Proposed Action is designed to capture sulfates and metals with engineering controls and adaptive management.” But there is no adaptive management plan (and no money will be set aside) to address solutes that leach to groundwater. Although the list cited above does mention some potential ways that the problem could be addressed, the FEIS does not review the efficacy of those methods and how they would be paid for. Regardless of whether the suggestions for possible “fixes” described for the problems listed above are referred to as “adaptive management” or as “contingency mitigation,” they do not obviate the need to provide disclosure of the risk of the problem occurring, and the potential impacts if the problem does occur. The FEIS and reference documents provide absolutely no support for the assumptions that these measures will work at this site and that money will be available to pay for them. This violates the NEPA requirement that mitigation measures be described in sufficient detail to determine whether the risks to the environment can in fact be avoided. One of the FEIS sections that relies most heavily on “adaptive management” without an adaptive management plan is the section on indirect impacts to wetlands. According to the Executive Summary, In the event that the required wetland monitoring identifies additional indirect effects, permit conditions would likely include a plan for adaptive management practices to be implemented, such as expanded monitoring and hydrologic controls. Additionally, compensatory mitigation would be required if indirect impacts were identified during annual reporting. Permit conditions would likely include an adaptive management plan to account for any additional impacts that may be identified in the annual monitoring and reporting. The words “adaptive management practices . . . such as expanded monitoring and hydrologic controls” come up in several places, but just what those “hydrologic controls” might be is never revealed. Similarly, the introduction to the section on indirect impacts to wetlands states, “permit conditions would include an adaptive management plan, summarized below, to account for any additional effects that may be identified in the annual monitoring and reporting.” As far as we can tell, there are no adaptive management practices identified for indirect wetland impacts, nor is there an adaptive management plan to guide what will be done when monitoring reveals a certain level of impact. Perhaps the words “adaptive management plan, summarized below” are a misprint; what is summarized below in that section of the FEIS is an adaptive monitoring plan. Two paragraphs are provided under the heading “Indirect Effects Mitigation.” This section begins, “If it is determined that indirect wetland effects occurred based on the criteria effects threshold levels, PolyMet would work with the appropriate agencies to respond, which could require PolyMet to provide compensatory mitigation for any documented indirect effects.” This section discusses only compensatory mitigation – absolutely nothing about adaptive management to maintain hydrology, water quality standards, or vegetation. In sum, despite appearing to promise that adaptive management measures would be used to address indirect impacts to wetlands, no such measures are identified, and it does not appear that this is in fact the plan. This is particularly problematic for certain indirect impacts such as degradation of water quality, which cannot be mitigated under Clean Water Act regulations. Thus if an EIS predicts violations of water quality standards, the Section 404 permit must be denied. The Co-lead Agencies have refused to assess whether the project might result in water quality standard violations in wetlands, but promise to</p>					

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	monitor after the project is permitted. And the outcome if violations are discovered will apparently be to require compensatory mitigation. This is clearly not sufficient to meet the requirements of either NEPA or the Clean Water Act.					
Erin Mittag	Issues in relation to specific engineered systems are discussed below, including: errors, accidents, and failures; the uncertainty of mitigation measures; and unfounded promises of adaptive management. However, two other factors affect uncertainty and risk for all systems at the proposed NorthMet project: cost and financial assurance; and the length of time that systems will need to operate. In regard to cost and financial assurance, many problems that could occur would not surface until after mining ends and the company no longer has a source of revenue. As an example, the tailings basin leachate containment and collection system will likely need to operate for centuries after mining has ended. A series of mishaps, errors, and negligence might result in a blocked drain, a build-up of water, and a significant rupture in the containment wall. Fixing the system would no doubt be expensive. PolyMet will not be required to post financial assurance at the outset to cover this or other unplanned events, because Minnesota regulations only require financial assurance for predicted reclamation needs. If things do not go according to prediction to the extent that a permit violation may result, the DNR may require financial assurance at the time when the potential violation is discovered. In this example, because the problem would not occur until after mining has ceased, there would be no source of financing. Whether it is called “mitigation” or “adaptive management,” it is not effective if there is no way to pay for it.	FIN	S	O	8	SDEIS Themes FIN 05, FIN 06. Violation of the Permit to Mine may or may not equate to an violation of water quality or air quality permits. Financial assurance generally considers a wide variety of contingencies as well as on-going site maintenance.
Erin Mittag	Furthermore, even before mining ceases, there is no guarantee that the mining company will have the money for additional financial assurance to cover contingencies as they arise. In fact, a typical scenario at a mine that becomes a Superfund site is that the mine begins with financial assurance set aside to cover reclamation costs, just as is planned for PolyMet. A problem occurs, which in this case could be anything on the list above, or many other possibilities that have not yet been recognized. Environmental standards are violated, and the regulatory agency seeks money from the mining company to address it. Often it is precisely this cost that drives the mining company into bankruptcy. In regard to the length of time over which systems may need to be maintained and/or operated, a number of risks become foreseeable that would not be an issue for a project that would be maintenance-free within a reasonable time following the cessation of mineral extraction. For example, over a 500-year period the risk of societal change resulting in a disruption in regulatory oversight or the failure of financial institutions becomes foreseeable, where it would not be considered foreseeable over a 50-year period. The FEIS does not discuss the fact that governments and other institutions do not last as long as may be necessary to ensure the continued maintenance and/or operation of systems at the NorthMet site. However, the same issue has been thoroughly vetted in the context of storage and disposal of nuclear waste, where governments and experts have uniformly reached the conclusion that long-term storage requiring active maintenance is ultimately not an appropriate option. Quoting from the International Atomic Energy Agency: All human made facilities require maintenance to preserve their integrity. It follows that if the integrity of a structure is essential to protecting the health and safety of people and the environment, ongoing maintenance will be required to avoid gradual deterioration of the protection afforded by the facility. Ongoing maintenance requires the continued existence of authorities and institutions that can ensure that essential maintenance is carried out. Since adequate protection of humans and the environment will continue only as long as maintenance is continued on storage facilities, and since some of the radioactive material in storage will remain hazardous for many thousands of years, maintenance — or institutional control — would be required for such periods of time or until permanent disposal is	NEPA	S	O	8	SDEIS Themes FIN 05, FIN 06. Probabilistic modeling, sensitivity analyses, consideration of climate change, adaptive management strategy, identification of financial assurance as a permitting tool, engineering contingencies build into the project design, and the identification of future modeling, monitoring and maintenance activities are all ways in which the FEIS analysis and the project recognize and manage uncertainty and risk.

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	<p>implemented. A review of world history reveals that turmoil and change usually occur in much shorter periods of time and therefore that it is unlikely that any societal infrastructure currently in place or envisaged would last for the time period needed.¹³⁸ And: The safety of long term storage requires the maintenance of the industrial, regulatory and security infrastructure as described in previous sections. Long term safety also requires that future societies will be in a position to exercise active control over these materials and maintain effective transfer of responsibility, knowledge and information from generation to generation. Long term storage is only sustainable if future societies can maintain these responsibilities. Active controls cannot be guaranteed in perpetuity because there is no guarantee that the necessary societal infrastructure can be maintained in perpetuity. Therefore, for the types of radioactive wastes considered here—wastes that remain hazardous for thousands of years—perpetual storage is not considered to be either feasible or acceptable.¹³⁹ As consistently acknowledged by nuclear regulatory agencies, “turmoil and change” in human institutions is foreseeable over the time frames for which maintenance activities may be required at the NorthMet site. The risks to the environment from such turmoil and change therefore must be disclosed in the FEIS. Aside from the issue of the longevity of human institutions, activities stretching over hundreds of years also present a much greater risk to the environment due simply to probabilities over time. For example, if the probability of a wastewater treatment plant malfunction and resulting release of polluted water to the environment is 1 per 50 years and wastewater treatment was planned to operate for 25 years, there would be a 50 percent probability of such an event during the lifetime of the project. On the other hand, if wastewater treatment is planned for a 500-year period, 10 such events could be expected. The probability of a major failure resulting in severe impacts would also be correspondingly higher. Such information is absolutely critical to a determination as to whether the benefits of a project are worth the impacts and risks. If, for example, a tailings basin dam must hold for more than 500 years, and the probability of a catastrophic breach over that time approaches even 5 percent, one would hope that the Co-Lead Agencies care enough for future generations not to leave them with that risk. As one court put it: “Any substantial risk that the dam could fail would be intolerable; and, if the agency were to proceed in the face of that risk, that would constitute an abuse of agency discretion.”¹⁴⁰ And from the Independent Panel on the Mt. Polley dam breach: In risk-based dam safety practice for conventional water dams, some particular level of tolerable risk is often specified that, in turn, implies some tolerable failure rate. The Panel does not accept the concept of a tolerable failure rate for tailings dams. To do so, no matter how small, would institutionalize failure. First Nations will not accept this, the public will not permit it, government will not allow it, and the mining industry will not survive it.¹⁴¹ Disclosing the statistical probability of failure over the time period that the tailings basin dam will need to hold (based on past experience, which accounts for human error, rather than on engineering calculations, which do not) would constitute the “hard look” required by NEPA. Instead, the Co-Lead Agencies have avoided learning about the probabilities of accidents and failures over an extended time frame so that they can pass the risk on to future generations without troubling their conscience. The lack of risk assessment is a systemic problem affecting virtually every aspect of the FEIS, and time does not allow identification of all of the systems and uncertainties involved. The following discussion identifies only the most obvious issues. Preparation of a new supplemental draft EIS that provides a comprehensive risk assessment should not be limited to these issues.</p>					
Erin Mittag	<p>The collapse or major breach of the tailings dam is likely the most devastating impact that could occur at the PolyMet mine. Recent reports demonstrate that the risk of tailings dam collapse is not nearly as remote as PolyMet suggests. Two hundred and fourteen tailings dams have had failures or accidents since 1940.¹⁴² Since 1960, “serious” and “very serious” tailings dam failures have occurred with greater frequency.¹⁴³ Very large releases occur even at relatively small mines, such as the</p>	GT	S	O	8	<p>The FEIS quantitatively evaluated the safety of the proposed Tailings Basin (PolyMet 2015I). The proposed dam construction methods are not unique. See the Flotation Tailings Basin Management Plan</p>

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	<p>Mt. Polley mine.¹⁴⁴ Moreover, the cost of cleanup for a catastrophic failure averages \$543 million.¹⁴⁵ This dollar value is beyond the capacity of most mining companies to cover. Nor is it required that the risk of tailings dam collapse be included in the financial assurance package.¹⁴⁶ While the cited Bowker and Chambers report is not about any particular mine, the authors note how critical statistical analysis of tailings dam failures is when evaluating the potential for a collapse at any given mine: Having something more like “actuarial data” to refer to is important in understanding the potential magnitude of loss from an individual dam or a permitting districts portfolio of dams and TSFs [Tailings Storage Facilities]. With such low frequency high severity losses we can never assign risk to an individual TSF based on its design and receiving environment parameters. Unless it has an identified flaw that puts it at near certain risk of imminent failure, we can’t say whether a given dam “will” fail. We can only say what the consequence would be in economic terms if it failed.¹⁴⁷ In addition, Dr. Chambers has identified risks unique to the PolyMet Proposed Alternative tailings basin, including a choice to use the cheapest and least safe form of dam construction, and, most importantly, the choice to use wet, instead of dry, tailings storage. Dry tailings storage would eliminate the chance of tailings dam collapse, a benefit that outweighs any downsides due to the potential catastrophic impact of such a collapse.</p>					<p>version 5 (March 2015): Attachment H - Flotation Tailings Basin Dam Break Analysis.</p>
Erin Mittag	<p>As noted in the Friends of the Boundary Waters comments on the SDEIS and still relevant here, the FEIS does not describe the pipeline system that will be used to transport untreated and treated water and tailings.¹⁴⁸ A description of the length of pipeline that will be used, the various purposes, the pipeline construction and the pumping system is a necessary first step in assessing the risk of pipeline spills. In a review of fourteen copper mines (representing 89 percent of copper mined in the United States), the conservation organization Earthworks found that every mine experienced pipeline spills. The number of spills per mine over a 26 year period ranged from 2 to 54. The EPA’s assessment of potential mining in Bristol Bay includes a good example of a risk assessment for pipeline spills.¹⁵¹ The assessment used statistics from the oil and gas industry. The assessment found: Although the range of published annual failure rates for U.S. oil and gas pipelines spans more than one order of magnitude (0.000046 to 0.0011 per km-yr) (URS 2000), the range for pipelines most similar to the assessment pipelines along the transportation corridor is much narrower. For example, the failure rate is 0.0010 failure/km-yr for pipelines less than 20 cm in diameter (OGP 2010), 0.0015 failure/km-yr for pipelines in a climate similar to Alaska (Alberta, Canada) (ERCB 2013), and 0.00062 failure/km-yr for pipelines run by small operators (those operating total pipeline lengths less than 670 km) (URS 2000). The geometric mean of these three values yields a failure probability of 0.0010 failure/km-yr. This overall estimate of annual failure probability, coupled with the 113-km length of each pipeline as it runs along the transportation corridor within the Kvichak River watershed, results in an 11% probability of a failure in each of the four pipelines each year. Thus, the probability of a pipeline failure occurring over the duration of the Pebble 2.0 scenario (i.e., approximately 25 years) would be 95% for each pipeline. The expected number of failures in each pipeline would be about 2.2, 2.8, and 8.6 over the life of the mine in the Pebble 0.25, 2.0, and 6.5 scenarios, respectively. The chance of a large rupture in each of the three pipelines over the life of the mine would exceed 25%, 30%, and 67% in the Pebble 0.25, 2.0, and 6.5 scenarios, respectively. In each of the three scenarios, there would be a greater than 99.9% chance that at least one of the three pipelines carrying liquid would fail during the project lifetime. The Co-lead Agencies apparently take the position that because engineered systems have progressed, the history of accidents and failures in the past has little bearing on the probability of accidents and failures in the futures. But as the Bristol Bay assessment points out: It may be argued that engineering can reduce pipeline failures rates below historical levels, but improved engineering has little effect on the rate of human errors. Many pipeline failures, such as the cyanide water spill at the Fort Knox mine (Fairbanks, Alaska) that</p>	WAT	S	O	8	<p>The alignment selected for the Treated Water Pipeline between the Mine Site and Plant site is parallel to Dunka Road and has a total length of approximately 40,000 feet (PolyMet 2015r). The flotation tailings basin pipeline is depicted in Large Figure 6 of the Plant Site Management Plan (PolyMet 2015r). Spills from the flotation tailings basin pipeline would be deposited in the tailings basin.</p>

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	<p>resulted from a bulldozer ripper blade hitting the pipeline (ADEC 2012), are due to human errors. Perhaps more important, human error can negate safety systems. For example, on July 25 and 26, 2010, crude oil spilled into the Kalamazoo River, Michigan, from a pipeline operated by Enbridge Energy. A series of in-line inspections had showed multiple corrosion and crack-like anomalies at the river crossing, but no field inspection was performed (Barrett 2012). When the pipeline failed, more than 3 million L (20,000 barrels) of oil spilled over 2 days as operators repeatedly overrode the shut-down system and restarted the line (Barrett 2012). The spill was finally reported by a local gas company employee who happened to witness the leak. The spill may have been prevented if repairs had been made when defects were detected, and the release could have been minimized if operators had promptly shut down the line.¹⁵³ The assessment goes on to identify resources that could be affected by pipeline spills, and the range of potential consequences. The risk probabilities calculated for Bristol Bay may not apply to the proposed NorthMet Mine. The lack of information about pipelines in the NorthMet FEIS makes it impossible to draw comparisons or to estimate what the degree of risk might be. However, the Earthworks Report and the Bristol Bay assessment do indicate that the risk of pipeline leaks and ruptures at any mine is not “remote or highly speculative.” The FEIS thus must present information about the degree of risk and the potential consequences.</p>					
Erin Mittag	<p>In the realm of transportation, risks to natural resources arise both from accidents and from inherent imperfections in modes of transport. The two most obvious transportation risks that are inadequately assessed in the FEIS are the risks of accidents and the uncertainty of containing ore dust and spillage along the transportation corridor. While the FEIS includes a probabilistic risk assessment for accidents involving diesel fuel and PAX, the results understate the risk of accidents because of the limitation to these two materials. Furthermore, the assumption that all shipments begin in Duluth very significantly reduces predicted transportation impacts. Finally, the risk of accidents in regards to the shipment of waste and of mineral concentrate has been arbitrarily excluded.¹⁵⁷ As the FEIS states that both waste and mineral concentrate will be shipped from the facility, accidents involving these shipments are foreseeable and thus must be addressed in the FEIS. Dust and spilled ore from rail transport has been identified as a risk of the proposed project from the start and remains an issue in the FEIS. As with virtually every other system at the mine, the FEIS provides an optimistic estimate regarding the amount of spillage without regard for accidents, less-than-perfect maintenance, or simple uncertainty. Rather than discussing the probabilities that some rail cars at some times will not achieve the predicted 97 percent reduction in spillage, the FEIS assumes that all will go as planned and recommends monitoring “to check for any potential deteriorations of water quality over time from ore spillage.” The Conservation Organizations agree with the Great Lakes Indian Fish and Wildlife Commission (GLIFWC): “GLIFWC does not believe that monitoring of the creeks along the rail line will be effective in preventing or minimizing impacts because once detected in monitoring, the impact will have already occurred. GLIFWC states that cleanup of ore dust in an aquatic environment is a long and difficult process. “Furthermore, monitoring to identify impacts after they occur cannot take the place of disclosure of the risks of impacts in a NEPA document.</p>	O	S	N	6	FEIS pg. 5-164, 5-251. SDEIS Theme HAZ 06
Erin Mittag	<p>The FEIS and supporting documents do not address the uncertainties of the proposed liner and cover systems raised by comments on the SDEIS, nor do they present sufficient design specification to meet legal standards for reactive mine waste. As discussed by the expert report by Michael Malusis, incorporated with MCEA’s comments to the SDEIS, there are numerous identified questions and concerns raised by the environmental review documents describing proposed liners and covers.</p>	GT	NS	X	1	

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Erin Mittag	The Tailings Basin's bentonite-amended layers' documentation: contains inconsistencies about the thickness of layers; lacks design criteria for the layers such as hydraulic conductivity and moisture retention; fails to explain how a 3 percent bentonite addition could create a proper barrier when mixed with coarse tailings; lacks information on saturation that is necessary to assess the layers as a barrier to oxygen; lacks sufficient information on wet-dry/freeze-thaw cycling and root penetration's effects on the proposed layers; includes no information on field performance benchmarks for the layers' operation; proposes three methods of creating a subaqueous bentonite seal at the bottom of the tailings pond that are experimental and have not been proven by case studies, while excluding alternatives that are proven to work as needed in this project; and incorrectly assumes that manufacturers' reported hydraulic conductivity will translate perfectly to field hydraulic conductivity.	GT	S	N	8	SDEIS Themes GT 08 , WR 060-2. PolyMet 2015d, Section 5; Flotation Tailings Basin Management Plan version 5 (PolyMet March 2015) Section 7.0; PolyMet 2015q Section 10.
Erin Mittag	The Hydrometallurgical Residue Facility's liner and cover systems' documentation: lacks data on the values of compression and swell index values used in modeling and/or gives values too low for fine tailings and slimes; incorrectly modeled LTVSMC tailings as homogeneous without consolidation test results for verification; lacks discussion of the potential for spreading and separation of GCL panel overlaps; fails to provide citations for slope stability assumptions and fails to provide for site-specific tests of the final design proposed; similarly assumes a slope for the cover that will be insufficient to avoid ponding and erosion; and significantly underestimates the actual leakage of liners in the field based on best-case assumptions and does not provide for proper testing of actual leakage potential.	WAT	S	N	8	PolyMet 2014c, 2015j, 2015l
Erin Mittag	The Category 2/3 and Category 4 Stockpiles' liner systems' documentation: lacks any liner design feature that could effectively prevent or deal with punctures; fails to justify the fact that these liners are projected to allow a higher hydraulic conductivity than is generally recommended for leach pad liners; and does not commit to rigorous geomembrane best practices for installation, observation, and testing that are required to prove efficacy at the high level projected by Polymet.	WAT	S	N	8	PolyMet 2015h, Section 2.1.3
Erin Mittag	While the comments submitted on the SDEIS went into considerable detail on how to remedy the mistakes in analysis and research, it appears from the response to comments that no significant additions were made to the FEIS to correct these many omissions and mistakes. Nor does the FEIS or Response to Comments address most of Dr. Malusis's suggestions. Failure to respond to his specific comments violates CEQ NEPA regulations. "Final environmental impact statements shall respond to comments . . . [and agencies] shall discuss at appropriate points in the final statement any responsible opposing view which was not adequately discussed in the draft statement. . ."163 Moreover, where the FEIS did respond to his points it still fell short of assessing uncertainty and risk and disclosing the potential environmental consequences.	NEPA	S	N	5	The Co-lead Agencies have considered all public comments and have responded to them. The Co-lead Agencies are not required to perform analyses and disclose details requested by the public.
Erin Mittag	As discussed above, much of the FEIS is premised on assumptions that whatever the issue or problem, it will be fixed. This assumption is apparent in the responses to comments on liners and covers. For example, rather than correcting the identified slope gradient issue and properly addressing the missing information on how the Category 1 Stockpile cover would be designed to avoid root and freeze damage, the response merely says that maintenance would continue long-term to deal with erosion and tree removal.164 Similar responses to comments regarding the stockpiles' covers need for ongoing maintenance are also made without addressing Dr. Malusis's expressed concerns.165 This assurance does not engage the issue raised by Dr. Malusis, that the cover should be designed with known properties that prevent erosional damage before it occurs. Vague references to maintenance are not sufficient analysis of potential impacts under NEPA. The response goes	WAT	S	O	8	PolyMet 2014p, PolyMet 2015d Section 3

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	on to make conclusory statements about how liners will perform as predicted in the overly optimistic SDEIS.166 Dr. Malusis has given an important critique on how the liners likely will not perform to expectations that goes well beyond this cursory mention, and has asked for more information on permeability issues that has not been provided. The Co-lead Agency response is insufficient under applicable law.					
Erin Mittag	Similar to the failure to address Dr. Malusis’s concerns for the Category 1 Stockpile, the response regarding the Hydrometallurgical Residue Facility also avoids addressing important concerns. Rather than providing the information requested, the response merely repeated lab research information.167 This response does not address the need for site-specific testing and fails to provide additional information that is necessary to evaluate potential environmental impacts at this facility.	WAT	S	O	8	PolyMet 2014a of FEIS App A; RS33/RS65
Erin Mittag	Responses also highlight the fact that the FEIS’s analysis is incomplete. The statement that “Additional geotechnical analysis and design details would be required for permitting, including more detail on the foundation material characteristics, design details to ensure foundation and liner integrity, and details on the installation, operation, monitoring, and maintenance of the liners, covers, and stockpiles”168 admits that the FEIS analysis does not cover significant details that will affect the degree of environmental impact. Without this information, the agencies cannot confidently say what the environmental impacts of this proposed project will be, therefore this assessment does not satisfy NEPA.	NEPA	S	N	8	Minnesota Rules, part 4410.2300, item H, states that the data and analyses must be commensurate with the importance of the impact and the relevance of the information to a reasoned choice among alternatives and to consideration of the need for mitigation measures. Consistent with the Final SDD Section 6.3, the Final EIS assesses liner systems to capture water flowing through the stockpile(s) or for transporting or storing reactive wastewater for ditches and ponds. The FEIS provides sufficient detail to evaluate both the potential impacts associated with the proposed liner systems and whether additional mitigation measures are appropriate. Project-related permitting will evaluate fully-engineered proposals, and if implemented require specific monitoring, to ensure the project impacts are within the range considered in the Final EIS.
Erin Mittag	Regarding the lack of support for the assumption that liners at the hydrometallurgical facility will actually work as projected, the response to comments merely reiterates the fact that the proponent intends to use a double liner and a leakage recovery system.169 This response is given despite an absence of information in the NEPA documents about the liners and their real-world success rate, or studies showing how they would operate in Northern Minnesota with these specific wastes. Nor does the response to comments address the concerns raised about the agencies’ failure to support the assumption that bentonite will perform as expected, or that freeze-thaw cycles cause erosion and liner breakage. In response to comments that liner leakage rates used were unrealistic, the response merely reiterated that the leakage rate was based on literature values and modeling.170 The very point of the comment was that the leakage rate should be based on more than literature values and modeling; it should include real-world testing and historic data regarding the efficacy of liners at other mines to assess the actual potential for leakage.	GT	S	O	8	SDEIS Themes GT 11, GT 12

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Erin Mittag	The response to the comment that liner leakage is often the product of mistakes in installation is similarly limited to a reiteration that PolyMet plans to use liners, completely failing to respond to the comment. ¹⁷¹ Liner installations involve covering uneven ground for distances as long as a mile or more with virtually no breaks or gaps. While theoretically of course this could be done perfectly, it rarely is. This is a good example of a situation where the human factor often intervenes; perfect installation requires commitment, ability, and patience that are sometimes lacking. Across all of these responses is a marked unwillingness to address the need for consideration of both site-specific factors and the performance of the chosen technologies in the field, rather than in a best-case laboratory setting. Because this fails to recognize foreseeable risks that the liners will not perform to theoretical predictions, it does not meet NEPA requirements.	WAT	S	O	8	PolyMet 2015d Section 3.0. PolyMet 2014r Table 2-3, Section 2.2.4 and Attachment H; "Good" quality installation represents 1-4 defects/acre. This range is what PolyMet used to reflect installation methods.
Erin Mittag	The FEIS shows a similar disregard for potential problems with the use of bentonite as a pond and bench liner at the Tailings Basin. As for other systems, the FEIS and Response to Comments simply assume that any problem can be fixed, without assessing or discussing the uncertainty of measures that might be used. Regarding concerns expressed about the untested application of bentonite plan, the Response to Comments states: "Potential measures that could bring the capture efficiency of the system to 100 percent include improvements to the existing dam such as lining the upstream dam face with bentonite and injecting grout into the dam." ¹⁷² There is no support given for this statement; it also does not acknowledge the fact that the proffered fix (another bentonite liner) is the same technology that commenters questioned in the first place. Bentonite amendment is not a universal panacea, especially when it is being used in unproven and uncertain ways that could be negated by the chemistry of the tailings at this site.	WAT	S	O	8	Barr 2015e Section 4
Erin Mittag	Concerning comments like Dr. Malusis's regarding the implausible uses of bentonite proposed in the preferred alternative, the response states: [P]ublications indicate that uniform blending is important, so that amendments would probably be applied in multiple layers, and that site-specific field tests would be required prior to full-scale application to tailings surfaces or the tailings pond bottom. . . . The [bentonite amendment] plan would be updated as necessary as part of facility permitting, with future in-laboratory material testing performed to confirm percentage of bentonite addition requirements, and with in-field test plots constructed preceding initial cover construction activities to confirm material placement procedures. The specific methods for bentonite amendment at the Tailings Basin, including a material testing program and construction quality control plan would require approval by the facility engineer of record and PolyMet prior transitioning to full-scale implementation. ¹⁷³ This is a misunderstanding of how a NEPA document is meant to function. To the extent that the agencies agree that the effectiveness of bentonite amendments and application to the pond bottom are still untested and unproven—and therefore in need of field and laboratory tests—the environmental review cannot simply assume that the strategy will be successful. The Co-Lead Agencies cannot rely on unproven mitigation measures. As water pollution due to seepage is one of the large risks of this project, it is wholly inappropriate to put off necessary tests until after the FEIS is finalized, and even more inappropriate to assume that the results of those tests will be favorable.	WAT	S	O	8	PolyMet 2015d, Section 5.2.3

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Erin Mittag	<p>In his report prepared in response to the FEIS, Dr. Malusis shows that the analysis remains flawed on key issues. He points out that mixing bentonite into tailings will be less effective than assumed. Tailings “metals will inhibit bentonite swelling as the bentonite hydrates within the mixture, possibly to the extent that the bentonite will not adequately plug the voids in the mixture. If this is the case, then the bentonite-amended tailings layer will be a poor water/oxygen barrier.”¹⁷⁴ The current proposals for bentonite additions to dams will not effectively block water or oxygen, and therefore all of the predictions of water quality impacts that are dependent on this mitigation measure are incorrect. Dr. Malusis also indicates that important information is still missing from the FEIS. The inconsistencies regarding, and uncertainty of effectiveness for, bentonite-amended dam raises must be disclosed in the FEIS, along with disclosure of the potential environmental impacts should the plan prove less effective than assumed.</p>	WAT	S	N	8	<p>The Final EIS appropriately considers the potential performance of the tailings basin cover, where proposed management of this project feature includes adaptive management provisions. Specifically, the bottom cover thickness, or the percentage of bentonite in the pellets or grains, or both can be changed if monitored water quantity or quality suggested that modifications were needed to meet resource objectives. The modifications can occur before or after installation to modify performance. See FEIS page 5-238. SDEIS Themes WR 057, WR 060-2. See PolyMet 2015d Section 5.4.3.2</p>
Erin Mittag	<p>While the DNR regulation (discussed above in the section on the Dry Stack Tailings Alternative) requiring either that the tailings be rendered nonreactive or that essentially all water be prevented from moving through the tailings¹⁷⁵ is not mentioned in the FEIS, we would like to point out that the bentonite amendment strategy will not meet this requirement. As Dr. Malusis explains, the design proposed for the Flotation Tailings Basin does not sufficiently prevent the incursion of water. Indeed, it is designed to allow a fourth of the annual precipitation to percolate into and through the basin, and is likely to be even less effective than designed. Environmental Impact Statements must demonstrate compliance both with NEPA and with other environmental laws.¹⁷⁶ The failure of the proposed project to meet regulatory requirements in this case is a good illustration of the wisdom of this NEPA requirement. No FEIS should be deemed adequate when it envisions an illegal outcome as a preferred alternative.</p>	PER	S	N	8	SDEIS Theme PER 05

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Erin Mittag	<p>The FEIS and supporting documents do not address the uncertainties of the proposed leachate barrier and collection systems at the Category 1 Stockpile and the Tailings Basin. These systems are assumed to collect more than 90 percent of the leachate from these mine features, and this collection rate is critical to all of the predictions of water quality impacts from this project. If these systems do not operate as assumed, the increases in pollutants in surface and groundwater at both the mine and plant site will be significantly higher than predicted in the FEIS, to the point of violating or increasing violations of water quality standards for some constituents. For systems modeled at 99 or 100 percent capture efficiency, a change of even one percent could double the amount of pollutants predicted to enter ground and surface water. In response to questions about the adequacy of the capture systems, the FEIS contains new information showing modeling of the operation of the capture systems.¹⁷⁷ Dr. Tom Myers has provided a comprehensive review of this modeling.¹⁷⁸ As Dr. Myers concluded regarding the Tailings Basin system, The FEIS' statement "[m]odel results indicate that all seepage from the Tailings Basin would be captured along the north and northwest flowpaths under all assumptions of the bedrock fracture zone thickness" is true only because the model was set up in a highly biased fashion. The model was set up to confirm: "These results indicate that the Plan site Goldsim model assumption (that groundwater seepage equal to 10 percent of the aquifer's transmissive capacity bypasses the Tailings Basin containment system) is conservative" The model was hardwired to show what the modelers were told by Polymet to make it show. The evidence for this is that the model parameters do not resemble the parameters used for other modeling and the boundaries were set to create hydraulic barriers and sinks that will not be present in the field.¹⁷⁹ In his review of the SDEIS, Dr. Michael Malusis also identified numerous questions and concerns regarding the barriers. For the Category I Waste Rock Stockpile, EIS documentation: lacks information on soil content and a potential additional barrier in the wall; indicates an incorrect liner will be used for a vertical wall; is based in part on missing information (i.e. broken links in reference materials and missing documents referenced) and insufficient explanation; presumes an unrealistic permeable conductivity rate for the vertical barriers; lacks information on keying walls to bedrock; is not clear about wall thickness; and indicates an insufficient surface slope which will lead to ponding and infiltration. The Tailing Basin's groundwater seepage containment system's documentation similarly lacks information on wall keying and inward gradient, and indicates a wall thickness that will be too difficult to construct and backfill properly and is not consistent with conventional practice. It appears from the response to comments that no significant additions were made to the FEIS to correct these many omissions and mistakes. As discussed above, reliance on a mitigation measure to avoid disclosing possible impacts of a project requires sufficient evidence for the assumption that the mitigation measure will work as planned, and/or a disclosure of the degree of risk that it will not work as planned along with information about the potential impacts if it does not. Instead of providing this assessment, the FEIS and Response to Comments tell us that the barrier and capture system is both a well-established technology, and a new technology for which historic information about the efficacy of such systems is irrelevant. In hailing the groundbreaking uniqueness of the capture systems, the Response to Comments states: The Co-lead Agencies acknowledge that there are existing water containment systems at other mine sites that do not operate with a high degree of capture, but these are different designs and cannot be directly compared to the system proposed for the NorthMet Project Proposed Action. The proposed containment system uses pumping on the tailings side and reinjection on the downgradient side to reverse hydraulic gradients across the slurry wall and in underlying bedrock. Relatively few containment systems have been built with this degree of pumping and reinjection to ensure effective capture. The conceptual hydraulics of this type of system provides evidence that it would achieve complete or nearly complete capture.¹⁸⁰ In other words, the Co-lead Agencies are not</p>	WAT	S	O	8	Comparison of Myers Flow/Transport Model with Agency EIS Models September 21, 2015; PolyMet 2015h Attachment C & E; PolyMet 2015i Attachments A, B, & C; FEIS pg. 5-240; Barr 2015e

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	<p>relying on evidence that this technology has worked at this level of capture before. The only evidence it has for its assumption of greater than 90 percent capture (and in some places, 100 percent capture) is “conceptual hydraulics.” However, the FEIS states in another place that The proposed containment system technology is not new nor unique; the slurry cutoff wall and collection trench approach has been used for many decades, beginning initially as a means to facilitate construction of deep foundations in locations of shallow groundwater and difficult soil conditions, and subsequently expanding to other uses such as the containment of contaminated groundwater emanating from unlined waste disposal facilities (e.g., landfills, stockpiles, etc.). There are many papers written about the use of groundwater containment systems and a number of contractors well-experienced and proficient in containment system construction.¹⁸¹ The comment that this text responds to specifically challenges the assumption that the capture efficiency will be greater than 90 percent.¹⁸² Thus the response that the proposed technology “is not new or unique” and “there are many papers written” about it refers to a “unique” technology for which the agencies have no evidence other than conceptual hydraulics. Notably, no citations are provided for the papers. Similarly, in response to comments that the chosen control technologies have never been proven in this type of mining, the agencies cite to a 1986 USACE manual in support of the statement: “Design criteria for the Tailings Basin are based on well-established geotechnical design standards with significant precedent in Minnesota, in the greater United States, and worldwide.”¹⁸³ In short, the agencies tout “significant precedent” for use of slurry wall technology when commenters point out the complete lack of information on the practical, as-built efficacy of the reverse hydraulic gradient system. And when commenters point out the ineffectiveness of slurry wall technology as shown by “significant precedent,” the agencies tout the uniqueness of the hydraulic system. In neither situation is the comment actually responded to. Despite this attempt to confuse the issue, it is clear that the Co-lead Agencies have no documented examples of situations in which this type of system has worked at the level of accuracy that the FEIS assumes. Given that these walls will be miles long and that the systems will need to continue operating for hundreds of years, assumptions that they will operate perfectly defy belief. Our expert reports provide many reasons to doubt these assumptions. In light of the lack of precedent and the resulting uncertainty in the capture rate of these systems, one would think that the amount of leachate escaping from the Category I Stockpile and the Tailings Basin would be set as variable factors in the GoldSim modeling, allowing a picture of what might happen if the systems are less effective than assumed. Given the relative ease and simplicity of this means of assessing the outcome of a less-than-perfect performance of the containment system, there is simply is no excuse to ignore significant risks of water contamination, as the FEIS currently does.</p>					
Erin Mittag	<p>The Hydrometallurgical Residue Facility (HRF) is the only disposal area proposed on the site with double liner. The materials contained within the HRF may be among the most dangerous on the site. The SDEIS was dismissive of the possibility that the HRF would leak;¹⁸⁴ the FEIS doesn’t mention it at all. Yet the underlying documents demonstrate that the materials in the HRF will undergo “an initial rapid flush of acidity and metals,” and will remain acidic over time.¹⁸⁵ As noted by Dr. Chambers and Dr. Malusis in both comments submitted herewith and previous comments, substantial concerns remain regarding stability and potential impacts of the HRF. Even a small leak would have a significant impact that must be assessed.</p>	WAT	S	O	8	Mine Site Equalization basins are double-lined (PolyMet 2015m) FEIS pg. 5-130; PolyMet 2014r Attachments H, I, J, K
Erin Mittag	<p>As with other systems, the FEIS fails to discuss any potential difficulties and breakdowns that the Waste Water Treatment Plant and Facility might face, despite the assumption that they will have to operate for centuries. Rather than discussing the uncertainties of scaling up to large facilities from the pilot scale testing and the inherent uncertainties of adjustments needed to meet discharge limits for all constituents, the FEIS simply assumes that an answer will be found for any</p>	WAT	S	N	8	FEIS 5-236 to 5-238: The WWTF processes could be adapted depending on actual water quality conditions encountered during the NorthMet Project Proposed Action phases and estimated by water quality monitoring and model updating. Treatment

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	<p>unexpected results. Rather than responding to questions about the uncertain efficacy of meeting the applicable standards at the necessary scale, the Response to Comments focuses on the ability to increase capacity, and to continue treating and/or storing water during any breakdowns. But these responses do not address uncertainty relating to the systems' ability to meet the discharge limits in the first place. Although reverse osmosis (RO) may be "standard technology that has been operated around the world for decades,"¹⁸⁶ the FEIS and supporting documents provide no examples of it meeting the discharge limits that will apply here, at the scale it will need to operate. And please note that we are not saying that it cannot be done; we are saying that there is uncertainty involved and no resolution of the issue. The FEIS must reveal that uncertainty along with the range of impacts on water quality that might result if it does not work as well in reality as it did in a small pilot test.</p>					<p>performance issues that could occur from changes in influent water quality could be addressed by making adjustments to operating conditions (PolyMet 2015d). The Final EIS provides an appropriate level of analysis of the proposed water treatment facilities at the mine and plant sites. If implemented the project would be required to meet applicable water quality protection rules and regulations. As the comment notes, the Final EIS adaptive management actions available for the Plant Site WWTP and contingency mitigation measures available for both the WWTP and Mine Site WWTF. See Final EIS Section 5.2.2.3.5.</p>
Erin Mittag	<p>Regardless of the technology involved or the size of the plant, wastewater treatment facilities are not immune from accidents and failures, and most modes of failure involve human error.¹⁸⁸ For example, it may be the case that in RO systems "membrane failure tends to be gradual and provide advanced warning,"¹⁸⁹ but acting on that warning requires human reliability. The best way to estimate the potential for accidents, failures, and releases due to human error is not to examine the technology but to refer to history. The greatest failure of the FEIS in regard to risk assessment of the water treatment systems is its failure to disclose what it will mean for water quality (and the humans and wildlife that depend on it) if waste water treatment ends prematurely due to a disruption in regulatory or financial institutions. As discussed above, given the timeframes involved this is not a "remote or highly speculative" possibility, and thus must be discussed in the FEIS.¹⁹⁰ The public deserves to know the quality of water that will be released if treatment ends prematurely, and decision makers need this information in order to take a "hard look" at what they are approving. The EPA assessment of potential mining in Bristol Bay provides an example of disclosure of the impacts of a treatment plant failure.¹⁹¹ The assessment provides the following description of difficulties with RO systems: Studies of wastewater treatment plant (WWTP) efficiency and design considerations show that reverse osmosis water treatment systems can be compromised by fouling and scaling from calcium, iron, barium, strontium, silica, microbial growth, and silt (Mortazavi 2008). The Bingham Canyon WWTP in Utah treats groundwater contaminated with sulfate and total dissolved solids from copper mining by reverse osmosis. Pilot tests and optimization studies have shown that the structural integrity of its reverse osmosis membranes can be damaged by abrasive materials (e.g., silt) or chlorine (ITRC 2010). Changes in water composition could increase the concentration of chlorine if the mine pit encounters a large flow of brine transmitted to the pit through deep fracture systems, or from localized areas of mineralized rock with anomalous water quality. An example of WWTP failure due to highly variable chemical composition of inflow wastewater has been documented at a copper mine in Chile: when silica concentrations exceeded the design range, the whole reverse osmosis system could not be operated and was therefore shut down until feed water quality improved (Shao et al. 2009).¹⁹² Once again, although it may be true that these difficulties can be dealt with if maintenance, replacement, and repairs are performed as needed, it is exactly the failure of maintenance, replacement, and repairs that leads to accidents and unintended releases. The EPA assessment concludes: Although it is highly likely that mine operations would adversely affect water quality at the mine site, several factors make it difficult to predict the level of effects and consequent risks to fish. One component of this uncertainty is associated with the likelihood of water collection and treatment failure. Water collection and treatment failures have been documented at 13 of 14</p>	WAT	S	O	8	SDEIS Theme WR 144

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	<p>porphyry copper mines in the United States (Earthworks 2012). These 13 cases represent instances in which engineering uncertainties led to prediction failures, despite the fact that mine permits included mitigation measures intended to prevent such occurrences. These results indicate that failures are not uncommon at modern U.S. copper mines; however, they cannot be used to quantitatively predict the likelihood of water collection and treatment failures in this or future assessments. Even in the absence of failures, predicting the effects of mining on water quality is difficult and results are uncertain. Further, the effects of water quality changes on aquatic communities are uncertain. The following factors contribute to these uncertainties. ? The range of potential failures is wide and the probability of occurrence for any of them cannot be estimated from available data. Therefore, we can only state that, based on the record of the mining industry, treatment failures of some sort are likely to occur.¹⁹³ As stated by Dr. Miller, RO systems are notoriously difficult. This is an extremely complex system, and the likelihood that it will encounter problems is at least as likely at the 13 other locations studied in the Earthworks report.</p>					
Erin Mittag	<p>The plan to pump and treat water from the East Pit as it is filling is a mitigation measure designed to help meet groundwater standards. This strategy is unproven and receives only limited attention in the FEIS and its reference documents. The FEIS fails to respond substantively to SDEIS comments asking for further explanation and details. It also fails to provide any discussion of the uncertainty involved or the risk of unplanned difficulties. The strategy is to “rinse” the rock in the backfilled East Pit, with the goal of flushing out constituents to improve water quality in the pit. The plan calls for pumping water out of the backfilled East Pit at a rate of 1750 gallons per minute (gpm), treating the water and returning it to the pit. However, the record does not appear to include any evaluation of the uncertainties of pumping water at this high rate from the backfilled pit, or whether the rock in the pit is certain to remain saturated while pumping at that rate.¹⁹⁴ The FEIS fails to assess the risk that pumping at the rates described could desaturate the contents of the East Pit, thereby exposing the most reactive rock (Category 2, 3 and 4) to oxygen that may result in the generation of pollution that subaqueous disposal is intended to limit. It appears that PolyMet proposes to add water back in at the same rate that it pumps water out, and therefore operates on the assumption that the rock will remain saturated. But water that is added back into a backfilled pit will follow preferential flowpaths, which may leave some areas unsaturated.¹⁹⁵ The NorthMet Project Water Modeling Data Package notes that: “After Mine Year 31 the WWTF can accept more water from the East Pit due to decreasing flows from other sources, and the quantity extracted from the East Pit is allowed in the model to increase.”¹⁹⁶ But the FEIS does not evaluate the uncertainty and the potential risks of increasing pumping beyond the already high 1,750 gpm rate.</p>	WAT	S	O	8	FEIS pgs. 5-101 to 5-102. SDEIS Theme WR131. If pumps fail they would be replaced.
Erin Mittag	<p>Nor does the FEIS provide examples of mines where the rinsing of a pit was successfully achieved in the manner in which PolyMet proposes. The FEIS lacks the description and analysis of this proposed method necessary to assess its mitigation potential or to ensure the method itself does not cause significant environmental harm. The Response to Comments on this issue provides only unsubstantiated assurance: FEIS Section 5.2.2.3.1 accurately describes how East Pit backfill would be flooded as it is emplaced during operations to maintain water within 5ft of the backfill surface using effluent from the WWTF and storm water runoff. The Co-lead Agencies’ review of the model found that the footprints and depths of East/Central Pit are correctly incorporated into the three-dimensional model mesh, and that appropriate boundary conditions are used to simulate pit inflows. During reclamation (year 21 – 40), “water from the East Pit would also be pumped to the WWTF and treated...”, after which treatment of water in the East Pit may continue into closure and long-term maintenance¹⁹⁷ However, Section 5.2.2.3.1 provides only general statements of what is proposed and does not</p>	WAT	S	N	8	The Final EIS response considers the comment an appropriate scale. How the East Pit is expected to fill is documented in PolyMet 2015m at Section 6.1.2.2.

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	describe the “three-dimensional model mesh” or other details of the method, much less a response to concerns that discharge back into the pit would follow preferential flowpaths and leave areas of reactive rock unsaturated. Rather than providing data, analysis, or examples to support the certainty that the plan will operate as intended, the FEIS Response to Comments simply restates the belief that all areas of the pit will remain saturated: “The Co-lead Agencies believe that the existing plans, as described in the FEIS, are sufficient to ensure that the East Pit backfill would remain saturated perpetually beyond closure.” ¹⁹⁸ This reliance on a mitigation measure, whose efficacy is not supported by the record, and the failure to discuss the risks and uncertainties of the method, violate NEPA requirements					
Erin Mittag	The FEIS is based on a flawed water model that does not consider all potential impacts of the project. The FEIS’s MODFLOW and GoldSim models contain a series of flaws and unrealistically optimistic assumptions that ultimately result in a model that is not useful to predict conditions at the site, particularly the mine site. Indeed, in many cases, the model has inputs that have biased it towards a particular outcome.	WAT	NS	X	1	
Erin Mittag	The simulation estimated recharge that is far too low for the area because it improperly used the 30-day low flow as baseflow, thereby ignoring that baseflow occurs at higher rates even during storm events. Calibration with a very low recharge caused a very low conductivity estimate.	WAT	S	O	8	Partridge River Groundwater Baseflow & Sensitivity Analysis Background and Rationale for Agency Recommendations November 17, 2014.
Erin Mittag	The modeling set a vertical conductivity several orders of magnitude less than the horizontal. This limits the flow from the surface layer into the bedrock layer.	WAT	S	O	8	PolyMet 2015m Attachment B, Section 3.2.3.1.
Erin Mittag	The plant site model assumed that bedrock had such low conductivity that it was modeled as a no flow boundary but the cross-section model of seepage containment set the bedrock conductivity high so that groundwater flow through bedrock would curve upward and be captured by the drain.	WAT	S	O	8	Co-Lead Agencies Bedrock Hydrology at the NorthMet Mine and Plant Sites Rationale for Model Change Recommendations Nov. 17, 2014; Barr 2015b; PolyMet 2015i Attachment C.
Erin Mittag	Storage parameters based on textbook values are too high. Specific yield for unconsolidated and bedrock units was set to 0.25 and 0.05, respectively. The specific storage is 3x10 ⁻⁶ ft ⁻¹ for each formation which means that a very small amount of water removed from a confined aquifer will cause a foot of drawdown. This causes an underestimate of dewatering by an order of magnitude, meaning that a predicted dewatering rate of 500 gpm could actually be 5000 gpm.	WAT	S	O	8	SDEIS Theme WR 095

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Erin Mittag	<p>The mine site model simulates the Peter Mitchell Pit (PMP) as a constant head tens of feet higher than water levels at PolyMet when PMP water levels actually vary and in future will be as much as 300 feet below PolyMet and will be at least 75 feet lower in perpetuity. Adding the PMP to the Myers modeling shows that its long-term dewatering and pit lake development will substantially affect groundwater flow patterns at the proposed Polymet project. It will create pathways at depth from the Central and East Pits north to the PMP and contaminants could reach the PMP in less than 100 years.</p>	WAT	S	N	8	<p>MDNR et al. 2015c. DNR assessed the Myers model against the EIS modeling for the Final EIS; see Thematic Response WR 062. Although not identified as an issue for assessment in the EIS, DNR considered potential future operations at the Northshore Mine against information that is available. DNR acknowledges it cannot rule out that future operations at the Northshore Mine could induce northward groundwater bedrock flow from the NorthMet Mine Site. See Final EIS Section 6.2.2.3.1. This might happen if there is insufficient natural downward leakage into bedrock from the overlying wetlands and surficial materials between the proposed NorthMet Mine (in closure) and the Northshore Mine (in future operations and closure). If there is sufficient downward leakage, then there would be groundwater flow divide between the two mines where there is no continuous one-way flow between the facilities. If natural leakage is insufficient to maintain a groundwater flow divide between the two facilities, then it is possible a northward groundwater flowpath would be present. DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected.</p>
Erin Mittag	<p>PolyMet's MODFLOW modeling ignored the backfill added to the pits and the pit lake in the West Pit in their simulation. The backfill properties would control the amount of water required to fill the pit, but the model did not adjust the properties from those of bedrock to emulate backfill during the pit refilling. As the water levels recover into a backfilled pit, the uppermost part of the backfill would be an unconfined aquifer and the backfill will would require five times as much water to saturate as would bedrock. The West Pit would be a large open volume but the modeling did not change properties to reflect that fact. A lake would require twenty times the amount of water as compared to bedrock with specific yield equal to 0.05.</p>	WAT	S	N	12	<p>See PolyMet 2015m, Table 1-1: Input Variables for the Mine Site Data Package. The porosity value of the backfill added to the pits is 0.2.</p>

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Erin Mittag	These errors or bad assumptions when applied to GoldSim cause many potential errors or biases in the model results.	WAT	NS	X	1	
Erin Mittag	The water model also ignores nitrate and ammonia concentrations, and underestimates sulfate concentrations.	WAT	S	O	8	SDEIS Theme WR 032
Erin Mittag	It predicted sulfate water quality that is chemically impossible because it is not "charge-balanced."	WAT	S	N	12	The Final EIS identifies contingency mitigation that can be applied if the West Pit water quality were not as expected. If, for instance, sulfate concentrations were higher than predicted, options identified include adding water with lower concentrations of contaminants to the West Pit by routing additional stormwater to the West Pit, or treating the West Pit either by pumping West Pit water to the WWTF for treatment or treating the West Pit Lake in situ with iron salts, fertilizer, or other methods tailored to the contaminant.
Erin Mittag	The Conservation Organizations recognized the fundamental flaws with PolyMet's water modeling early in the process. Viewing it as insufficient merely to suggest changes to PolyMet's model, we commissioned Dr. Myers to generate his own water model to demonstrate what a more accurate model without PolyMet's flawed assumptions would look like. That model is described in Dr. Myers's comments on the SDEIS in 2014. But the purpose of this modeling was not merely to generate a different, competing water model; it was to give the Co-Lead Agencies additional expertise on which to base their own model. As described in Myers 2015 at 5 - 6, hydrology models can benefit greatly from multiple conceptual models. It is not that one model is better than another, but that multiple models are optimal. But they are only optimal if the modelers choose to take advantage of them. In this case, the Co-Lead Agencies were dismissive rather than accepting of Dr. Myers's expertise.	WAT	S	O	8	Comparison of Myers Flow/Transport Model with Agency EIS Models September 21, 2015
Erin Mittag	In response to comments, the Co-Lead Agencies asked Barr Engineering to prepare, among other documents, a Memorandum on the four containment systems, and a sensitivity analysis of various inputs into the water model. The Memorandum on the containment systems begins as follows: The Co-Lead Agencies have requested a summary of the four containment systems that are planned for the NorthMet Project (Mine Site and Flotation Tailings Basin [FTB]) and the justification for how they are represented in the water quality (GoldSim) modeling. This memorandum represents the rationale for the modeling assumptions for each of the following containment systems: • FTB Seepage Containment System (north and west) • FTB Seepage Containment System (east) • FTB South Seepage Management System • Category 1 Waste Rock Stockpile Groundwater Containment System. The Co-Lead Agencies requested a "justification" for how the containment systems are represented—not a response to substantive questions raised by public comment. Notice also that the Co-Lead Agencies did not request this "justification" from their own staff or consultants, but from the project proponents consultants. According to the project proponent's consultant, capturing 100 percent of the surface water discharge and 90 percent of the groundwater discharge is a "conservative" assumption. In a second memo prepared by Barr entitled "Sensitivity Analysis of the NorthMet Water Quality Models," Barr stated that although it would describe its	NEPA	NS	X	1	

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	sensitivity analysis to see if various changes to the model would change the outputs: Because of the proposed engineering controls and the adaptive water management strategy, it is not expected that the modeled concentrations in the Partridge River would exhibit much sensitivity to most input variables for the Mine Site water quality modeling, except those inputs that control water quantity and quality from unimpacted portions of the watersheds. If this expectation is borne out in the sensitivity analysis, the results will be positive with respect to the potential for environmental impacts: this will indicate that as long as the engineering controls perform as planned and the adaptive water management strategy is able to achieve its objectives, there is little likelihood that a mischaracterized input variable would result in unforeseen environmental outcomes. In other words, PolyMet’s consultant would do the work, but the outcome was preordained by the assumptions in the model. This demonstrates that the Co-Lead Agencies have not taken a “hard look” at the water quality impacts of the PolyMet proposal.					
Erin Mittag	Modeling must be re-done to reflect the actual hydrology of the mine site to provide an honest assessment of impacts.	WAT	NS	X	1	
Erin Mittag	Since the close of the comment period for the SDEIS, new information has come to light regarding the potential for groundwater to flow north out of the East and West pits after closure, toward and into Northshore Mining’s PMP. The PMP will be dewatered for many years following the closure of the proposed NorthMet mine. Even after the PMP is closed and fills with water, that water will be maintained at a lower elevation than the water in the NorthMet West Pit lake and East Pit pore water, causing a northward migration of groundwater. This water will enter the PMP, from which all water will be discharged to the Rainy River watershed after mine closure, constituting a diversion of water from the Great Lakes basin to the Hudson Bay basin. This issue was brought to the Co-Lead Agencies’ attention by GLIFWC, whose position and modeling results are contained in a letter attached to these comments. Dr. Tom Myers has done additional modeling that also indicates a northward flow from the mine pits after closure. ²⁰⁵ Remarkably, the Co-lead Agencies defend their failure to establish the likely flow paths of groundwater from the mine pits by stating that the modeling done was not intended for this purpose. The agencies as much as admit that they did not plan to require PolyMet to accurately characterize the hydrology of the site after closure, when to do so is required to obtain a water appropriation permit. ²⁰⁶ DNR will no doubt respond that this is a permitting rather than a MEPA requirement, but when exactly is it that the required hydrological investigation and modeling was going to be done? It legally must be completed before finalization of the FEIS.	MEPA	NS	X	1	
Erin Mittag	PolyMet and the agencies’ response to this issue is to promise to find some form of mitigation that will prevent water from flowing to the north. At this point, the promises of mitigation have reached the point of absurdity. According to the FEIS, no matter what goes wrong at this mine, some ideal means will be found to address it. But it is abundantly clear from all evidence and all sources that this is not the way things work at similar mines. If it was, we would not have billions of dollars of contaminated mine sites spread across the country that are not being remediated because the ideal means and money to do so is not available. The FEIS provides four pages of mitigation ideas without one word about cost. GLIFWC reviewed an early version of proposed mitigation measures and responded: Given the uncertainty that the co-leads feel there is in characterization of contaminant flowpath direction, the draft co-lead memo of June 22 proposes several mitigations that attempt to prevent northward flow of contaminants. The feasibility of any of those measures has not been evaluated. Even with the minimal information presented in the memo, several obstacles to successful mitigation of a northward flowpath	WAT	S	O	8	Depressing pit water elevations (FEIS pg. 5-241) and treating resulting excess pit water would eliminate any chance of northward bedrock flow if it were to materialize. The feasibility of operating a pump and treating water is high. DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the

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	<p>are evident: 1) The thickness of the low conductivity surficial deposits between the PolyMet site and the P-M pits, approximately 50 feet thick according to Minnesota Geological Survey 2005 publication M158, makes the practicality of an infiltration trench questionable; 2) Lowering of water levels in the the PolyMet pits would expose reactive Virginia Formation rock to air and water, creating acid generation and dewatering surrounding wetlands; 3) Groundwater injection or extraction wells may be a feasible, but costly, mechanism to block northward flow but, as noted in the memo, would require perpetual operation, care and replacement. In addition to the proposed adaptive management appearing to be impractical, substituting “adaptive management” for understanding of the hydrologic system is contrary to the NEPA concept of site characterization and impact prediction. NEPA is a forward-looking process with the goal of anticipating and describing impacts so that measures can be taken to avoid or minimize those impacts. A northward flowpath for contaminants is indicated by both MODFLOW and MathCad. The character of the hydrology between the PolyMet and P-M projects needs to be described correctly so that impacts of that northward flowpath can be evaluated and the feasibility of mitigation measures can be determined. In an Expert Report submitted with these comments, Dr. Tom Myers reviews the suggested mitigation possibilities, and points out: All of these measures would have to be maintained indefinitely because the northward flow gradient would last forever (Myers 2015). The FEIS has failed to prove that any of them could effectively work or that Polymet could afford to implement them. The FEIS should not rely on these mitigation strategies but rather should complete analysis to lower the uncertainty as to whether they will be needed by completing better upfront analyses of the potential for northward flow. The FEIS discussion states that proposed mitigation measures “if needed, would be maintained indefinitely or until acceptable bedrock groundwater flow conditions are obtained without those measures.”²¹⁰ Acceptable bedrock groundwater flow conditions could not be guaranteed without a change in the law, which is what PolyMet seems to be banking on.</p>					<p>NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected. DNR concurs that contingency mitigation can only be considered conceptually based on available information. The exact type, location, scale, and timing of contingency measures is unknown. When and if employed, a flexible approach is advised where the mitigative response evolves over time as the efficacy of the mitigation is evaluated. The original need for and performance of any mitigation would be subject to continual reassessment. The possibility of northward flow between the proposed NorthMet Mine and Northshore Mine is speculative and is not reasonably foreseeable with current information. There is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When this might occur is not known, but it is most likely to occur after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. There would be ample opportunity to collect necessary data, and complete applicable environmental review and/or permitting prior to the development of a northward flowpath, including preparation of an EIS supplement if the conditions of Minnesota Rules, part 4410.3000, subpart 3 are met.</p>
Erin Mittag	<p>Our observation is that once a mine or a mineral processing plant is built in Minnesota, no branch of state government will require the company to do anything that it says it cannot afford. A case in point is Mesabi Nugget, which promised to build a water treatment system to address discharge problems within five years of startup. The plant was permitted and began operating, but when it came time to build the water treatment system, the company couldn’t afford it, and ten years later continues to operate with a variance. Another is Reserve Mining, which promised on obtaining its permit to discharge tailings into Lake Superior that if the tailings did not settle on the lake bottom as expected, it would “take whatever action might be necessary to remedy those conditions.” The length and complexity of the legal proceedings to force it to do so are legendary.</p>	PER	NS	X	1	
Erin Mittag	<p>The willingness of the Co-Lead Agencies to accept PolyMet’s promises at face value, without assessing their practicality or the likelihood that they would be effective, abrogates the agencies’ responsibilities to the public.</p>	NEPA	NS	X	1	

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Erin Mittag	Financial assurance is given as the answer to all questions. Moreover, Minnesota regulations require financial assurance only for planned remediation. We note that the mitigation measures proposed to address potential northward flow “would not be initially included in the financial assurance package, but, if required in the future, these measures would be added to the financial assurance package.” But even if the need for the measures was established before mining ended, neither we nor the Co-Lead Agencies have any reason to believe that PolyMet would be able to afford the financial assurance when the need is discovered. At that point, the mine will be operating, and even the Great Lakes Compact is unlikely to require mitigation when the company says it will close rather than pay for such measures. It is also possible, even likely, that any northward flow will not be discovered until after PolyMet has ceased operations. Once the mine is no longer producing ore in twenty years, obtaining any sort of financial assurance will be impossible because PolyMet will not have a source of revenue.	PER	S	N	8	DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected. No violations to the Great Lakes Compact are predicted.
Erin Mittag	PolyMet has to promise to keep its pit water from flowing toward the Rainy River, because according to the terms of the Great Lakes Compact, it could not otherwise be permitted. The Great Lakes Compact prohibits diversions of water out of the Great Lakes basin for anything other than public water supply. There is no minimum volume on this prohibition; another section of the Compact indicates that volumes as low as 5.7 gallons are included. The Co-Lead Agencies need to take a realistic look at the proposed mitigation measures, PolyMet’s financial situation, and the very foreseeable risk that a diversion of Great Lakes water will result from permitting this mine.	PER	S	N	8	DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected. No violations to the Great Lakes Compact are predicted.
Erin Mittag	The Geochemistry work relied upon by the FEIS uses unsupportable assumptions and inadequate data. Similarly, the geochemistry work is insufficient to support realistic, defensible predictions of water quality impacts. The water quality predictions in the FEIS are based on insufficient data and unsupported assumptions. The combination of the uncertainty in regard to hydrology and geochemistry inputs to the model results in an overly-optimistic assessment of water quality impacts. As with hydrological impacts, the FEIS must include the full range of reasonably possible acid production and metals leaching potential of rock at the site, and the resulting range of reasonably possible impacts on water quality.	WAT	NS	X	1	
Erin Mittag	Nitrogen and ammonia are ignored in the proposed water treatment schemes. Both constituents are likely to be present at high volumes because of blasting agents; yet PolyMet has failed to address them in their water quality predictions and treatment strategy.	WAT	S	O	8	SDEIS Theme WR 032
Erin Mittag	An inadequate number of samples were used to characterize the chemical composition of waste rock, and almost no acid base accounting (ABA) analyses were done on the samples that were examined. As a result, the FEIS provides insufficient support for its conclusions regarding the potential for acid mine drainage and for virtually all of its water quality predictions.	WAT	S	O	8	SDEIS Theme WR 025-3

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Erin Mittag	The use of concentration caps and averages, the disregard of actual results of HCT and field tests, and the failure to account for heterogeneity of the rock and seasonal variability result in a FEIS that almost certainly underestimates water quality problems.	WAT	S	O	8	SDEIS Theme WR 033
Erin Mittag	PolyMet assumes in its analysis that the stratigraphic units within the deposit are very similar, but does not have adequate support for this assumption.	WAT	S	O	8	SDEIS Themes WR 011, WR 007
Erin Mittag	The modeling used a high adsorption factor that prevents contaminants from moving along flowpaths. Seasonal variability, including spring snowmelt, and other conditions may result in higher-than-predicted concentrations.	WAT	S	O	8	SDEIS Theme WR 060-1
Erin Mittag	There is potential for acidic conditions in the Category 2/3 and 4 wasterock stockpiles to develop more quickly than predicted.	WAT	S	O	8	Maest March 12, 2014 pg.25 addresses Cat 4 waste. PolyMet 2015q Section 8.2.5.
Erin Mittag	The FEIS must assess water quality impacts in the Partridge River at the closest point between the river and mine features.	WAT	NS	X	1	
Erin Mittag	The FEIS must assess water quality impacts from groundwater discharge to the Partridge River at any point where those impacts may be the greatest, including the point where the river comes closest to mine features. The FEIS cannot omit impacts on the river upstream of SW-004 unless it provides adequate data showing that those impacts will be less than the impacts at SW-004 and below. This issue was raised in our comments on the SDEIS at CBD 6 - 9, which is incorporated herein by reference. We asked Keith Gadway, principle of Quantum Environmental, Inc. in Ann Arbor, Michigan, to review the FEIS and our SDEIS comments in regards to this issue. His response is included as an expert report. The methodology for assessing water quality impacts included assigning a number in the model to represent the distance between mine features and the river. This was apparently based on the average distance to the river within the flowpath.223 As such, the accuracy of the location and width of the flowpaths becomes important. FEIS Figure 5.2.2-7 shows the flowpaths as estimated for the GoldSim modeling. Note that point SW-003 is the closest point to the Partridge River from the Category 2/3 stockpile. However, the East Pit/Category 2/3 Flowpath was deliberately drawn to begin just below this point, and no assessment was made of the impact of leachate from the stockpile on surface water quality in this location.	NEPA	S	O	8	Water Resources/Groundwater Impact Assessment Planning Memo NorthMet Project EIS June 30, 2011.

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Erin Mittag	The flowpaths shown in Figure 5.2.2-7 and used in the GoldSim model do not accurately reflect the geography and hydrology at the site. As the Response to Comments admits, the flowpaths “do not exactly line up with the flow trajectories predicted by MODFLOW.” And even if they did, the MODFLOW modeling itself was not designed to accurately identify flow paths. The FEIS makes several vague statements such as, “A secondary purpose of the MODFLOW model [including “groundwater flow directions” and “the distribution of groundwater baseflows along the Partridge River.”] An evaluation of these parameters showed that the GoldSim setup/inputs were generally consistent with the MODFLOW results.” The FEIS needs to provide sufficient information about both the MODFLOW assumptions and the consistency between the two models to allow for some judgment as to the accuracy of the flowpaths. The Co-Lead Agencies seem to begin with the assumption that there will be no significant impacts along this stretch of the river, thus making the accuracy of groundwater discharge points unimportant. As Mr. Gadway states: Impacts to the river would presumably be greatest along the primary groundwater recharge zone closest to mine operations. Based on predicted pathways for discharges to the river from mine features, monitoring and evaluation points are more than three miles downstream from this point and are just below the discharge from a creek. Selection of these monitoring and evaluation points ensures that the discharges likely to be highest in pollutant concentrations are not caught by monitoring until well downstream, having been diluted by presumably clean groundwater and by surface water from an area less likely to be affected by mine operations. The failure to monitor surface water at the actual point of contact with groundwater and surface water closest to the mine is directly contrary to Great Lakes Initiative (GLI) requirements and standards that ensure that water quality will not be lowered for impaired waters. The FEIS methodology fails to evaluate the receiving water nearest the actual discharge to the Partridge River, and therefore is inadequate to address potential impairment.	WAT	S	O	8	PolyMet 2015m Section 5.1.2.6 and 5.2.3; SDEIS COOP Response #17749
Erin Mittag	For reasons stated in our comments on the SDEIS, we believe that water from the Category 2/3 Stockpile and the East Pit will enter the Partridge River to the west of the mine as well as to the south.	WAT	NS	X	1	
Erin Mittag	Supplemental modeling from Dr. Myers and scientists at GLIFWC indicates that water will likely move north as well.	WAT	S	O	8	MDNR et al. 2015c
Erin Mittag	The mine site is located in a bend in the river, and the closest distances to the river for both the Category 2/3 stockpile and the East Pit are in locations that the FEIS omits from the evaluation. A new modeling effort is needed for this project for other reasons; in the course of that modeling, the effort should be made to identify what stretches of the actual river (as opposed to the modeled river) will receive polluted groundwater. The GoldSim model should then be adjusted to account for the reduced distance from mining features to the river.	WAT	S	O	8	PolyMet 2015m Section 5.1.2.6 and 5.2.3; SDEIS COOP Response #17749
Erin Mittag	The EIS must disclose the predicted quality of publicly-owned water within the property boundary, including groundwater.	WAT	NS	X	1	

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Erin Mittag	The EIS must disclose the predicted quality of publicly-owned water within the property boundary, including groundwater. This issue was discussed in our comments on the SDEIS at CBD 12 - 15 (surface water) and 20 - 21 (groundwater), which are incorporated herein. Allowing a landowner to pollute groundwater to the property boundary and failing to disclose the level of that pollution in environmental review are both unconscionable in this case. The property here covers close to thirty square miles, 229 or about half the size of the city of Minneapolis. A number of streams have their headwaters within the property. Both the streams and the groundwater below the property are public resources, as explained in our comments on the SDEIS. In regard to groundwater, the Response to Comments asserts without basis that assessing impacts at the property boundary "is typically used in EISs for mining and industrial facilities." We are not sure what is meant by this statement, but after scanning a number of recent mining EISs, we do not believe that it is true. We did not find a single EIS that provided quantified information on predicted water quality at the property boundary that did not also provide information for predicted water quality in pit lakes and backfilled pits. Most of the EISs we surveyed predicted no impacts on groundwater quality even within the mining area. The two EISs we found that did quantify impacts to groundwater included information on water quality within or under the mine workings following reclamation.	NEPA	S	O	8	SDEIS COOP Response #17749; Water Resources/Groundwater Impact Assessment Planning Summary Memo NorthMet Project EIS June 30, 2011
Erin Mittag	If the Co-Lead Agencies are saying that assessment of groundwater quality impacts at the property line is standard practice for DNR and MPCA for projects in Minnesota, we do not believe that there has ever been another industrial or mining project permitted in the state of Minnesota with comparable predicted impacts to groundwater. Sulfide mining is unique, and new to Minnesota. The "typical" approach is entirely inadequate for this atypical project. And in any event, an approach does not necessarily meet regulatory requirements just because that is the way it has been done in the past. Whatever MPCA's practice is in permitting discharges to groundwater, that practice does not provide a limit on the impacts that must be discussed in an EIS. There is no valid reason for treating impacts to groundwater any differently than impacts to surface water (including wetlands), wildlife, and other public resources found within the boundaries of a proposed private industrial site.	PER	S	O	11	SDEIS Theme WR 071
Erin Mittag	The FEIS must contain a more complete disclosure of what is known about the length of time for which water treatment will be necessary. The EIS states only that the need for water treatment is assumed to be "long-term." However, the water quality modeling results clearly indicate that treatment is likely to be needed for more than 500 years, which is as long as the model was run. An accurate statement would be "The length of time for which water treatment will be needed is unknown, but is predicted to be more than 500 years."	WAT	S	O	8	Duration of Water Treatment at Mine Site and Plant Site Rationale for Thematic Response November 17, 2014; It is uncertain how long the NorthMet Project Proposed Action would require water treatment.
Erin Mittag	The discussion of "passive" treatment in the FEIS is misleading and should be removed. The "passive" or "non-mechanical" treatment is as yet undeveloped, and there is no evidence that it will ever prove technically capable of treating water at this site to the levels used for the WWTF effluent in the water quality modeling. While the FEIS does state that the agencies are not relying on passive treatment for water quality predictions, and that the need for mechanical water treatment is assumed to be long-term, the placement of the material on passive treatment has the effect of insinuating that this assumption probably will not prove true. This insinuation in concert with the failure to define "long-term" does not provide the "hard look" at the need for perpetual treatment. 233 The FEIS and supporting documents assume throughout that unproven passive treatment systems will be implemented. For instance, the FEIS contains a section describing the predicted transition from mechanical to non-mechanical treatment: As described in the Water Management section above, water	NEPA	S	N	8	SDEIS Themes FIN 05, FIN 06

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	<p>modeling for the NorthMet Project Proposed Action and the environmental analysis in Chapter 5 assumes that mechanical water treatment would continue indefinitely. PolyMet would include funds in its contingency reclamation estimate and financial assurance package to operate mechanical water treatment for as long as necessary as a part of its Permit to Mine. However, the Permit to Mine would also require PolyMet to present a plan for eventual transition from mechanical water treatment to non-mechanical water treatment, and to adjust its financial assurance on an annual basis in accordance with Minnesota Rules, part 6132.1200 to conform to the transition. This section provides an overview of the transitional approach from mechanical water treatment to the use of non-mechanical treatment technologies. PolyMet would transition from mechanical to non-mechanical water treatment as soon as the company demonstrates that non-mechanical water treatment technologies would effectively treat water to meet water quality based effluent limits and as soon as formal approval is received from the agencies. Non-mechanical water treatment technologies need to be designed for site-specific conditions and actual site water quality. PolyMet accordingly would test non-mechanical water treatment technologies for several years during mine operations and reclamation, until an acceptable treatment performance could be achieved. Non-mechanical water treatment technologies can be evaluated in the following steps: 1) collection of additional local site information (i.e., hydrology and influent water quality), 2) laboratory testing, 3) pilot-scale testing, 4) design of a system for full-scale implementation, and 5) continued evaluation of effectiveness over time. The conceptual design for a non-mechanical treatment system is to treat each flow expected in the long term. The Adaptive Water Management Plan (PolyMet 2015d) outlines preliminary/conceptual information on non-mechanical treatment systems. PolyMet has initiated testing of non-mechanical water treatment technologies on site (in collaboration with Cliffs Erie) and will continue testing these systems and evaluating other non-mechanical water treatment technologies until they could be demonstrated to the satisfaction of the MDNR and MPCA to provide the required water treatment. Provisions would be included in the NorthMet Project financial assurance package to ensure this test work and implementation of the non-mechanical water treatment technologies could be completed.²³⁴ The Adaptive Water Management Plan, cited in the FEIS above, treats the transition to non-mechanical treatment as a certainty, with the only question being timing: The ultimate goal of long-term closure (Figure 2-4 and Figure 2-5) is to transition from the mechanical treatment provided by the WWTF to non-mechanical treatment. Because non-mechanical treatment designs are very site-specific and very dependent on the quality of the water to be treated, it is assumed that the WWTF will operate in the long-term and the transition to non-mechanical treatment will take place only after the performance of a non-mechanical system has been tested on site, proven effective, and approved by the agencies. The two non-mechanical treatment systems at the Mine Site are independent of each other. It is expected that the Category 1 Waste Rock Stockpile Non-Mechanical Treatment System will be deployed earlier than the West Pit Overflow Non-Mechanical Treatment System, as described in Sections 6.2 and 6.3. As noted previously, water from the Category 1 Waste Rock Stockpile will continue to be treated by the WWTF until non-mechanical treatment with gravity discharge to the West Pit has been proven to provide appropriate treatment. This may occur during reclamation or long-term closure... Operation of the WWTF will occur year-round with the discharge directed to a small watercourse that flows into the Partridge River until non-mechanical treatment has been proven effective at achieving water quality objectives.</p>					

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Erin Mittag	<p>PolyMet has used these statements to sow confusion in the public about the length of time for which water treatment would be required at the site. • “But because the study focused on the water that could escape rather than water contained at the site, other factors would have to be considered to give a true estimate of how long treatment would be needed, said Brad Moore, PolyMet’s executive vice president of environmental and governmental affairs. He said company officials expect mechanical treatment, such as the reverse osmosis systems PolyMet is proposing for the mine and plant sites, would only be needed for decades. The effectiveness of passive treatment techniques such as wetlands is still being studied.” • “Moore, a former commissioner of the Minnesota Pollution Control Agency, also disputed the need for long-term treatment at the mine site. The company estimates mechanical water treatment will only be needed for about 40 years after the mine is closed. When the mine opens, Moore said, PolyMet would begin testing passive wetland filtering systems designed specifically for the site’s water chemistry. He said state and federal regulators chose the word ‘indefinitely’ in the document to be conservative, since the reverse osmosis technology is treatment that’s already proven.” • “One point of debate is the length of time water from the site would need to be treated after the mine closes. The environmental review includes the scenario in which water treatment could be needed for up to 200 years at the mine site and 500 years at the processing plant. But Moore said treatment won’t be needed for that long. He said the conservative modeling used assumes that all elements of the rock will enter the ground water through the weathering process, although that doesn’t happen.” PolyMet also released its own “factsheet” about long-term water treatment in which it said that “PolyMet believes that within 30 years after closure, all water will be treated by passive treatment technologies.”</p>	WAT	NS	X	1	
Erin Mittag	<p>While the Conservation Organizations recognize that PolyMet’s statements are not part of the FEIS, they are supported by statements in the FEIS that have no place in an agency document. An agency is obligated to assess the effectiveness of potential mitigation measures.240 In this case, the Co-Lead Agencies have concluded that the potential mitigation measure is not effective at all because it relies upon non-existent technology, yet continue to discuss it at multiple points throughout the FEIS, including the Executive Summary: The NorthMet Project Proposed Action includes long-term mechanical treatment (RO or equivalently performing technology) at both the Mine Site and Plant Site with a goal of transitioning to a non-mechanical water treatment technology requiring less maintenance over the long term. Pilot studies for non-mechanical treatment would be conducted during operations (and post-closure as necessary) to demonstrate the ability to transition to non-mechanical water treatment. Both mechanical and non-mechanical treatment would require periodic maintenance and monitoring activities for as long as treatment is required.241 Also, in response to public comments that treatment would be essentially perpetual, the Co-Lead Agencies responded: Minnesota Rules, part 6132.3200, Closure and Postclosure Maintenance, identifies several goals for non-ferrous mining areas, including the goal that sites be closed so that they are maintenance-free. A maintenance-free site is the goal of the Minnesota Department of Natural Resources (MDNR) for the NorthMet Project Proposed Action, as it is for every mining site. The NorthMet Project Proposed Action includes piloting a non-mechanical treatment system to achieve this goal. PolyMet would include funds in its reclamation cost estimate and financial assurance package to fund mechanical water treatment for as long as necessary, but the Permit to Mine would require PolyMet to present a plan for eventual transition from mechanical water treatment to non-mechanical treatment. PolyMet cannot be released from its responsibilities, including financial assurance requirements, until there is no longer a need for closure/post-closure treatment/maintenance. Financial assurance is a component of any Permit to Mine, to ensure that necessary maintenance can be provided for as long as it necessary.242 Over the course of any project, technology changes and improves, and sometimes projects are implemented differently than predicted in an EIS where technology that</p>	NEPA	S	N	8	SDEIS Theme NEPA 09

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	<p>is newer, better or less costly becomes available. Yet there is no doubt that the original 500-year predictions for water pollution in the SDEIS quickly became the most controversial aspect of this project.²⁴³ The current FEIS still concedes that mechanical treatment is required for at least 200 years at the Mine Site and 500 Years at the Plant Site.²⁴⁴ Thus, it appears that FEIS continually repeats the goal of non-mechanical treatment solely for political reasons to address public concerns about committing to a mine that requires hundreds of years of water treatment, rather than any justifiable belief that this is a proven mitigation measure.</p>					
Erin Mittag	<p>Furthermore, non-mechanical treatment will not meet the goal of maintenance-free closure. To repeat the Executive Summary: “Both mechanical and non-mechanical treatment would require periodic maintenance and monitoring activities for as long as treatment is required.”²⁴⁵ While less intensive or less frequent maintenance might be required for a non-mechanical system, in some respects this could add to the potential that failures and problems would go undetected. In any event, representing that non-mechanical treatment would meet the maintenance-free goal of the regulations is simply false.</p>	PER	S	O	8	SDEIS Theme PER 04; SDEIS COOP Response #3111
Erin Mittag	<p>In summary, the many statements about transition to non-mechanical treatment mislead the public and agency decision-makers into believing that non-mechanical treatments exist that will work at this site, and that they will eliminate concerns over the length of time that treatment will be needed. Neither of these things are true. These statements should be removed.</p>	WAT	NS	X	1	
Erin Mittag	<p>The FEIS does not address the need for pumping and treating water from areas adjacent to the pits during mining, or the potential for elevated concentrations of nitrate and ammonia from blasting agents. The FEIS failed to take a “hard look” at the possibility that runoff from the area around the pits could have elevated concentrations of nitrate and ammonia from blasting agents, and that the area around the pits will need to be dewatered by pumping. The FEIS thus failed to consider the need for this additional pumping, which would add water to the total to be treated, including the need to treat process water for ammonium and nitrate. Mine water that has been in contact with blasting agents, including leachate from stockpile materials stored at the mine site and the pit walls, will have elevated concentrations of ammonia and nitrate from the use of high volumes of blasting agents such as emulsifiers, boosters, and ammonium nitrate – fuel oil (ANFO). The treatment pilot tests, however, assumed that mine water would have near-background levels of nitrate and ammonia, and so the effectiveness of the selected methods for removal of these constituents under mining conditions has not been properly tested or considered. The FEIS discloses that large amounts of explosives will be needed to create the open pits: 18,650 lb/yr for the booster, 4.65 million lb/yr for the emulsion, and 10.6 million lb/yr for ANFO. As result, nitrate, ammonia,</p>	WAT	S	O	8	SDEIS Theme WR 032

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	<p>and oil & grease concentrations could be high in primary contaminant sources at mine sites and downstream. For instance, the significant exceedence of permit limits for nitrate in downgradient groundwater and surface water has been seen at the Buckhorn Mine. However, while the FEIS lists that the “environmental concern” from these hazardous materials includes harm to water and aquatic life, the FEIS fails to actually consider and address the effects of blasting on water quality. Indeed the objectives for wastewater treatment at the Mine Site do not even include mention of nitrate or ammonia removal. The agencies’ response to comments on this issue is inadequate. First, no response was provided for concerns about ammonia removal. And for treatment of nitrates, the response states that the WWTF will also be of modular construction, such that additional modules can be added for increased capacity if necessary. However, because nitrate, ammonia, and oil & grease concentrations will increase as soon as blasting begins (during mine development), treatment approaches cannot be addressed using adaptive management but must rather be in place before mining begins.²⁵² The response also states that nitrate will be addressed at the Plant Site if nitrate is included in the discharge permit.²⁵³ However, much of the water at the Plant Site comes from the Mine Site, and the response ignores the potential for transport of mine water to downgradient groundwater and surface water at the Mine Site. The FEIS also fails to address that neither chemical precipitation nor filtration, which are the planned treatment schemes at the mine site, will remove nitrate or ammonia. The FEIS further fails to properly address nitrate and ammonia in environmental modeling. And, the FEIS fails to include mitigation measures or pollution prevention plans for minimizing the use of blasting chemicals.</p>					
Erin Mittag	<p>Our comments on the SDEIS raised a number of issues related to mercury in leachate from mine features, and its potential discharge to surface water through groundwater transport. We also commented on mercury in air deposition and wastewater discharges. These issues affect wetlands, the Partridge River, and the Embarrass River and its tributary streams.²⁵⁵ In addition, we attach and incorporate comments on the SDEIS by Daniel Pauly, who is a board member of Friends of the Boundary Waters Wilderness. Many of our points were ignored in the Response to Comments and the FEIS, in violation of CEQ NEPA regulations.²⁵⁶ The following discussion addresses a few of the most important issues, but should not be taken to indicate that issues not repeated here are no longer of concern. All of the points regarding mercury raised in the above-referenced comments remain an issue.</p>	MERC	NS	X	1	

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Erin Mittag	We pointed out in our SDEIS comments that the air deposition analysis fails to quantify the amount of mercury that will be deposited in the Embarrass and Partridge Rivers from air emissions, despite the obvious availability of this information. This point is reiterated by Keith Gadway in his expert report submitted with the current comments. The FEIS reports on the change in mass loading of mercury in the Embarrass and Partridge Rivers, but does not include the load from air deposition, which misinforms readers. The Response to Comments states “The increase [from air deposition] would not be expected to have any appreciable effect on the loading estimates from permitted discharges to the Embarrass River, Partridge River, or the lower St. Louis River.” ²⁵⁷ As far as we can tell, this is simply untrue. According to the FEIS, the “loading estimates from permitted discharges” are an increase of 0.2 grams per year to the Embarrass River, ²⁵⁸ and a decrease of 1.2 grams per year to the Partridge River. ²⁵⁹ In contrast, the deposition analysis indicates that the increased load from air emissions from the NorthMet Project would be between 5.88 and 21.06 grams per year to the Embarrass River (upstream of Sabin Lake), and between 4.62 and 16.35 grams per year to the Partridge River (upstream of Colby Lake). ²⁶⁰ If the estimates for the watershed of these two lakes do not reflect the load to the upstream rivers, please explain why in the NEPA document. ²⁶¹ If they do reflect the load to the upstream rivers, it is impossible to reconcile the numbers with the words “no appreciable effect.”	MERC	S	N	8	SDEIS Theme MERC 08. Barr 2015f 4.3.5.1, 4.3.5.2. The Final EIS acknowledges that under certain localized conditions the introduction of sulfate to a water resource may contribute to the production of methyl mercury. However when taken as a whole, the project would result in a reduction of the loading and concentration of sulfate within the Embarrass River watershed and that this overall reduction would likely not result in adverse effects on downstream resources from mercury methylation. It is this concept that formed the basis for the MPCA strategy (MPCA 2006a) to address the indirect effects of sulfate on methyl mercury production. It is noted that sulfate that discharges directly into streams only enhances methyl mercury if it interacts extensively with organic carbon along the flow path to the stream or as it moves downstream. Empirical evidence from around the Iron Range (comparing low and high sulfate rivers - where sulfate is introduced from the sumping of pits) reveal that once in the river, sulfate interaction with organic matter is usually insufficient to impact methylmercury that comes from other background sources
Erin Mittag	The Response to Comments also misrepresents the air deposition analysis as having been done by MPCA. ²⁶² The analysis was actually performed by Barr Engineering on behalf of PolyMet.	MERC	NS	X	1	
Erin Mittag	The FEIS also fails to quantify mercury discharging to surface water through groundwater. We pointed out in our comments on the SDEIS that methods are available to model mercury transport to surface water through groundwater. The EPA suggested one such method in its comment letter of March 13, 2015: “If GoldSim is not suitable to model this pollutant, elemental mercury can be modeled using a different water quality model, such as the Water Quality Analysis Simulation Program (WASP), which is commonly used by EPA to model elemental mercury.” Keith Gadway suggests another: “Simplified mercury modeling for point concentrations are available in MINTEQ to evaluate chemical equilibrium and, when coupled with a transport model such as MODFLOW, can provide useful data.” In SDEIS comments, CBD submitted an example of groundwater mercury transport modeling that was done for a mine in Michigan. The FEIS and Response to Comments do not explain why none of these methods were used.	MERC	S	O	8	SDEIS Theme MERC 09. Barr 2015f pg. 48
Erin Mittag	The FEIS takes the position that the mass balance studies are an adequate substitute for modeling. But the West Pit mass balance study does not account for the mercury that will escape from mine features through groundwater.	MERC	S	O	8	SDEIS Theme MERC 09

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Erin Mittag	The mass balance treats that mercury as being collected and settling out in the West Pit or tailings basin, which is erroneous. The Response to Comments ignores this point, and simply reiterates that the mass balance study was done to characterize mercury releases.	MERC	NS	X	1	
Erin Mittag	It is possible that the greatest source of mercury to the Partridge River from groundwater transport from mine features would be the Overburden Storage and Laydown Area (OSLA). A large volume of peat will be excavated and stored in this area; as pointed out in Keith Gadway's report, peat is known to sequester mercury and to release it when excavated and exposed to wetting and drying. In addition, the OSLA will be unlined, and a larger volume of groundwater will enter the river from this source than from any other mine feature. Furthermore, mercury from this source will enter the river prior to the time that the Waste Water Treatment Facility (WWTF) begins discharging treated water to the river (which is expected to dilute concentrations of pollutants that enter from the groundwater flowpaths). Discharge of mercury from this source will occur prior to the time of the predicted decrease of 1.2 grams per year in mercury load. While several "Theme Statements" in the Response to Comments point this out, the responses never address it. The response to MERC 20 is typical. The discussion only mentions water that is routed to Pond PW-OSLA, which is routed from there to the Tailings Basin or mine pits. Release to groundwater from either the OSLA itself or from the pond is completely ignored.	MERC	S	O	8	SDEIS Theme MERC 20. PolyMet 2015q Section 7.2
Erin Mittag	PolyMet and the Co-lead Agencies take the position that mercury will not discharge to surface water through groundwater or enter the treatment plant or facility at above 1.3 ng/L at any point in either watershed. This position is based on shake-flask tests that do not stand up to scientific scrutiny. These tests are wholly insufficient for the purpose they are used for, as explained in our SDEIS comments. The Response to Comments does not address any of our objections to the use of these tests as the basis for assumptions about mercury groundwater transport through tailings or from mine pits and waste rock.	WAT	S	O	2	SDEIS Theme MERC 06. The Co-lead Agencies consider this test sufficiently accurate for purposes of environmental review
Erin Mittag	Our SDEIS comments also objected to the selective use of data on mercury in seepage from the tailings basin to support estimates of mercury in leachate. Although the FEIS figures have changed based on additional data points, they still ignore data indicating that the mercury level is higher in groundwater seeps than it is in surface seeps or pond water. Again, this point is ignored in the Response to Comments and in the FEIS. And although the Response to Comments states that data was reviewed for inconsistencies, ²⁶⁷ it is unclear whether the problems identified by Daniel Pauly have been corrected.	WAT	S	O	8	SDEIS COOP Response #29801
Erin Mittag	All of these issues are of critical importance in regard to the mercury levels in influent to the WWTF and Waste Water Treatment Plant (WWTP). Pilot testing of the RO system did not include treatment for mercury, and the level at which the systems will remove mercury is simply unknown. ²⁶⁸ The FEIS assumption that the WWTF and WWTP will be able to achieve a 1.3 ng/L mercury concentration in effluent appears to be based on projections that influent will be below at or below that level. ²⁶⁹ Although the FEIS states several times that RO technology is "known to remove mercury," ²⁷⁰ the FEIS treats the level of removal as essentially irrelevant, because the analysis has already been manipulated to indicate that the influent will meet the water quality standard. Before this project is permitted, the agencies must correct errors and base mercury levels in influent on scientifically acceptable evidence, followed by a scientifically sound analysis of the mercury removal capabilities of the treatment systems.	MERC	S	O	8	Barr 2013f Section 7

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Erin Mittag	We note that the mercury removal efficiencies in literature cited in the Pilot Testing Report will not necessarily transfer to the treatment of influent from the NorthMet project. Removal of mercury at very low levels to meet the 1.3 ng/L standard is notoriously difficult, far more difficult than (for instance) achieving 99.9 percent reduction for an influent of 6 ug/L mercury, which still leaves the effluent significantly above the 1.3 ng/L standard.	MERC	NS	X	1	The basis for citing a 6,000 ng/L influent is unclear.
Erin Mittag	In its discussion of adaptive management, the FEIS states, "Adaptive management would be implemented as necessary based on monitoring for total mercury to determine whether the treated water could be discharged to surface waters, or whether some additional treatment is needed." The text goes on to discuss possible treatments, but provides no information on how effective they have proven to be. This is not adaptive management, which would identify the trigger point at which adaptation would be required, along with measures that have been proven to give the necessary results and what they would cost.	O	NS	X	1	
Erin Mittag	Furthermore, adaptive management cannot be used as a means to avoid the necessity of providing a scientifically defensible analysis of mercury levels in the waste water treatment influent and effluent. Regulatory agencies cannot simply accept PolyMet's optimistic belief about influent mercury levels and wait until the WWTF and WWTP are built to test the effluent to find out if it needs additional treatment. At that point, several years of discharges at above the water quality standard are likely to have happened, discharges that would not have been permitted had they been properly assessed before the mine was built.	MERC	S	O	11	SDEIS Theme MERC 04
Erin Mittag	Finally, we note that while discharge of Colby Lake water without treatment for flow augmentation is no longer proposed, it is unclear whether Colby Lake water might at times be routed directly to the WWTP, for discharge to the environment below the tailings basin. 272 Colby Lake water averages approximately 6 ng/L mercury, and the FEIS provides no evidence that the WWTP will be able to treat it to the 1.3 ng/L standard. The responses to comments addressing this issue repeatedly refer the reader to the FEIS section on monitoring for more information. Promises of monitoring cannot take the place of providing adequate evidence that discharge will meet the 1.3 ng/L standard—not just on average, but on a regular basis.	WAT	S	N	2	PolyMet proposes to discharge treated Colby Lake water to Second Creek. SDEIS Theme MERC 15. Barr 2013f
Erin Mittag	As explained in our comments on the SDEIS, in the absence of site-specific data the wetlands at both the mine and plant sites must be considered to already violate the water quality standard for mercury. The FEIS includes a prediction that a certain number of acres of wetlands may suffer water quality impacts due to groundwater transport and air deposition. Mercury from the project will enter the wetlands from both sources, contributing to water quality standard exceedances in violation of the Clean Water Act. PolyMet's attempts to avoid the law by refusing to model or otherwise provide scientifically defensible estimates of releases of mercury (to both wetlands and streams) or other solutes (to wetlands) should not be countenanced by regulatory agencies. The Co-Lead Agencies' willingness to adopt PolyMet's position does not do justice to the people of Minnesota, who expect to see our environmental laws respected and enforced.	PER	S	O	11	
Erin Mittag	We recognize that the amount of mercury in this case is small compared to the mass of mercury circling the globe and coming down in precipitation, but we do not agree that this makes it insignificant. Mercury in the environment is a serious public health issue, especially in Northeastern Minnesota. It is a cumulative problem; the mercury load to any particular water body comes from thousands of sources. When the Great Lakes Initiative (GLI) was adopted, it was with the recognition that drastic measures were needed to address this issue, and a complete prohibition was placed on new or	PER	S	O	11	

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	increased discharges of mercury to any water body in the Lake Superior basin, including the Embarrass River. The mining industry might find it inconvenient, but the decision was made after a lengthy process with extensive public input, and that public now expects the law to be followed. This is Co-Lead Agencies' clear duty.					
Erin Mittag	In Minnesota the prohibition on new or increased mercury discharges extends to wetlands through the application of water quality standard regulations. This is particularly appropriate in regards to mercury, because wetlands play such a significant role in producing methylmercury, which in turn makes fish unsafe to eat.	PER	S	O	11	
Erin Mittag	The NorthMet project will also increase sulfate levels in wetlands, which may play an even greater role in increased mercury methylation. We note that the FEIS added an analysis indicating a potential increase in sulfate levels in wetlands from air deposition alone at 1.7 mg/L, after dilution from precipitation. While the FEIS treats this as negligible, it is actually quite a substantial addition to wetland waters. We were unable to find any baseline information about water quality in the wetlands at the NorthMet site, and our understanding is that there is none. The "background" sulfate level in surface water in Minnesota is often estimated at 3.0 mg/L or below; we assume this is an approximate level for wetlands at the mine site at least. If so, increases from air deposition alone would be as high as 50 percent. Although MPCA estimates that any waters with a current sulfate level above 40 mg/L are "high risk" waters for increased mercury methylation, this does not mean that sulfate does not significantly increase methylation of mercury at much lower levels. Increasing sulfates from 3.0 to 4.7 mg/L in wetlands would be expected to significantly increase mercury methylation. Note that even with similarly low levels of sulfates in most northern Minnesota waters, we have a dire situation in regards to mercury in fish tissue. Small increases in both mercury and sulfate in the water of extensive wetland areas are virtually certain to increase mercury methylation, and to lead to increased mercury levels in fish tissue and in fish-eating wildlife. Methylmercury is known to build to high levels in this situation, flushing out to area streams and lakes with snowmelt or floods. This phenomenon is expected to increase in Minnesota with global warming. The increases in mercury and sulfate that can be expected from the proposed project are likely to result in significant impacts, and thus must be properly assessed in the FEIS; monitoring cannot take the place of this assessment.	MERC	S	O	8	SDEIS Themes MERC 02, MERC 09
Erin Mittag	17.0 The FEIS fails to adequately disclose, analyze or discuss the effects of the project on area wetlands. The FEIS still fails to adequately disclose, analyze, or discuss a number of questions regarding the environmental effects of the PolyMet mine and processing facility on area wetlands, addressing few of the questions and issues raised in the extensive comments on the SDEIS. Therefore, the Conservation Organizations restate and incorporate in their entirety, the comments and accompanying expert reports of MCEA, Friends, and CBD on wetlands and related issues regarding hydrology, air deposition, and financial assurance. The Conservation Organizations address below the change from the SDEIS to the FEIS identifying a number of wetlands as not likely to be indirectly affected to "low likelihood" of indirect effects, as well as a few of the relevant responses to comments (and their failure to adequately address issues raised). The Conservation Organizations will also highlight and emphasize some of the continuing wetland issues that are critical to permitting decisions moving forward.	WET	S	O	8	FEIS Section 5.2.3, and App A. See Responses to FEIS Submission Section V

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Erin Mittag	17.1 Wetland identification and classification is impermissibly skipped over in the FEIS. One of the primary issues raised in comments on the SDEIS concerned the failure to adequately classify and the potential misclassification of minerotrophic wetlands as opposed to ombrotrophic wetlands. While Eggers' January 2015 Memorandum appears to agree with Dr. Glaser regarding the references and guidance to be used in such identification, the FEIS is at best conflicted, and at worst simply wrong, in its approach to identifying project-affected wetlands as either ombrotrophic or minerotrophic and the resulting potential for negative effects and type of negative effect. Instead of identifying wetlands that may be affected and their type, the FEIS now simply assigns a "low likelihood" of effect to area wetlands in an effort to avoid assessing wetland character as minerotrophic and to negate or minimize the importance of identifying specific wetlands as minerotrophic in the affected area. While it is correct that this is a slightly more conservative approach than the approach originally taken in the SDEIS, it is neither an accurate nor complete approach and tends to trivialize why it is important in environmental review to make the distinction. Type of wetland will be relevant for more than assessing indirect effects as a result of hydrology and it is a required component of an EIS as well as for the analysis for the purposes of issuing a C.W.A. § 404 permit.	WET	S	O	8	SDEIS Theme WET 09
Erin Mittag	First, as discussed below, hydrology is not the only manner in which wetlands will be and are affected by the project, but it is a component among several. In order to fully understand effects, all ways in which wetlands might be affected should be addressed. Therefore, simply changing the NEPA document conclusion from no likelihood of effect to low likelihood does nothing to address the overall potential for effects to area wetlands, including the heightened potential for effects to minerotrophic wetlands and their unique characteristics.	WET	S	N	2	The FEIS identifies the multiple ways indirect effects can materialize (pg. 5-259) and the probability of those effects occurring.
Erin Mittag	Second, low likelihood as a blanket statement utterly fails to demonstrate the required level of analysis and disclosure for an EIS. There is no analysis in this blanket probability statement in the FEIS. A generic statement about all wetlands on and around the site tells the co-lead agencies, decision-makers, and the public absolutely nothing about what may occur as a result of the project and what is lost because of it. And the blanket "low likelihood" statement, absent assessment and analysis of wetlands that are actually in the area and their hydrologic character, is simply inaccurate. It is unlikely that all ombrotrophic and minerotrophic wetlands in the area are vulnerable to effects from the project in the exact same manner and degree. This is not analysis based upon evidence and science; this is just an effort to escape the requirements for environmental review. Third, the blanket "low likelihood" coupled with the FEIS's simplistic use of distance from the pit in areas between the East Pit and the PMP as the only measure of whether a wetland might be affected by drawdown, fails to adequately assess potential wetland effects.	WET	S	O	8	SDEIS Theme WET 10
Erin Mittag	Fourth, also discussed in more detail below, the type of wetland is important to identifying type and difficulty of mitigation needed and may affect whether the effect must, under applicable law, be completely avoided. As the FEIS acknowledges, both state and federal law require that full function of wetlands be mitigated if they cannot be avoided (avoidance is by far preferable and the required first step in analysis and decision-making for projects that will affect all types of wetlands) ²⁸¹ Function includes the hydrology and the plants and wildlife that are dependent upon that hydrology and the characteristics of a particular wetland type, including whether that wetland is ombrotrophic or minerotrophic. ²⁸² It also includes placement of the wetland in the landscape and relationship to the habitat and ecosystems within the area. Where a wetland is unique, rare, and/or difficult to restore or mitigate, avoidance is even more important and mitigation ratios must increase.	WET	NS	X	1	

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Erin Mittag	While it may be correct that an EIS does not always require original scientific research, it does require assessment and analysis of the site of the project itself sufficient to adequately characterize the environmental effects. Analysis of the actual site is not original research, it is in fact the very point of environmental review. There is no reason the project proponent and/or its consultants and/or the Co-Lead Agencies cannot access the site and survey potentially-affected wetlands to determine type through soil and plant analysis. The FEIS has been years in the making and this issue in particular was raised by the Conservation Organizations and their experts in comments over twenty months, and two entire growing seasons, prior to the issuance of the FEIS. In particular, MCEA's original comments on the SDEIS, at 87, criticized the lack of vegetation plots for assessment of wetland types and potential effects. Moreover, when the Conservation Organizations requested access to the site to conduct their own analysis during the 2015 growing season (something that the proponent and co-lead agencies should have done, but that non-profits were willing to do nonetheless), PolyMet denied access to public lands and the Forest Service allowed PolyMet to do so.	WET	S	O	8	Barr 2011d Section 2.1
Erin Mittag	Finally, the Response to Comments284 complains that a quantitative functional wetlands assessment has not been done because there is not a software program that can accomplish this task for a particular site. While that may be true, it does not then allow the project proponent and co-lead agencies to simply skip the task altogether. The combined effect rises to the level of purposeful, studied ignorance and avoidance of the plain legal requirements of NEPA, MEPA, and C.A.W. § 404.	NEPA	S	N	8	DNR believes the Final EIS appropriately discloses that DNR and the USACE require functions to be replaced consistent with the requirements of Final SDD Section 3.3.3. The Final EIS reports that both agencies use a set of defined ratio requirements to determine the number of acres required to replace functions lost; this is because there is currently no suitable quantitative functional assessment method in Minnesota. Based on the findings and where impacts occur (e.g., types of wetlands), the mitigation ratios and credits have been increased to take into account the functions lost due to the NorthMet Project Proposed Action. For example, additional compensatory mitigation (i.e., a higher replacement ratio) is proposed to offset loss of bog wetlands, a difficult-to-replace wetland type. All of the wetland mitigation proposed would be restored with minimal wetland preservation; no creation of wetlands would be part of the off-site mitigation. Furthermore, as previously noted, the mitigation sites would need to meet performance standards in order to be considered successful.
Erin Mittag	The FEIS fails to adequately identify minerotrophic wetlands potentially affected by the project and has plainly made no attempt to do so.	WET	S	N	8	See Final EIS Section 5.2.3.1.2. Impacts to both minerotrophic and ombrotrophic wetlands were assessed. See PolyMet 2015b, Large Table 10.
Erin Mittag	The Conservation Organizations strongly disagree with the premise in the FEIS that by changing the description of potential indirect effects to "low likelihood" as opposed to no likelihood allows the co-lead agencies to avoid analysis and disclosure of potential for negative effects to wetlands from the project. This shorthand and non-analytical approach is inadequate and misleading.	WET	S	O	8	SDEIS Theme WET 08

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Erin Mittag	17.2 Avoidance and mitigation of wetland impacts is required by law but not sufficiently covered or assured in the FEIS. The state and federal requirements for projects that affect wetlands have been set forth in earlier comments and in the FEIS itself and will not be repeated in detail here. Nonetheless, the Conservation Organizations emphasize two important components of wetland preservation and mitigation: the need to wholly avoid impacts to unique and rare natural resources and the need to fully mitigate all functions of any affected wetlands resource. The FEIS fails to provide adequate information and analysis of wetland impacts within those legal requirements and associated mitigation to address these requirements.	NEPA	S	O	8	SDEIS Theme WET 20
Erin Mittag	17.2.1 State and federal law require that effects to rare natural communities must be avoided, but the FEIS does not consider avoidance. The FEIS acknowledges that the Minnesota Wetland Conservation Act (“WCA”) requires special consideration for wetlands that are rare natural communities. 285 Rare natural communities are native plant communities having conservation rank of S1, S2, or S3, or are communities within an area that has outstanding or high biodiversity significance rating. The FEIS further acknowledges that the entire project area is one of high biodiversity significance and that most of the S2/S3 ecosystem is within the mine site itself or within the direct influence of the mine site activities and effects. More than 50 percent of the Upper Partridge River area of high biodiversity significance will be obliterated by the mine and associated mine features, while a substantial portion of the remaining 50 percent of the high biodiversity significance will be “indirectly” negatively affected by the mine. The FEIS continues, however, to omit any analysis of what this actually means in terms of ecosystem impacts, implications for downstream and surrounding areas and the wildlife and vegetation that is present or depending on these high-quality areas, and fails to address the implications for mitigation. These very questions were originally raised in comments on the SDEIS by Friends and MCEA and remain unaddressed. Plainly, even if the FEIS does not expressly so state, the mine will permanently destroy the rare natural communities identified. The FEIS also fails to address the issue this raises regarding Minn. R. 8420.0515, subp. 3, which provides that mitigation plans must be denied for an activity that involves the modification of a rare natural community if the proposed activity will permanently adversely affect that natural community. The foundation for this requirement is plain: rare natural wetlands communities such as those at the PolyMet site, comprised of a large, contiguous assemblage of northern peatland wetlands including coniferous bog (both ombrotrophic and minerotrophic) is impossible to restore or recreate elsewhere. Mitigation of the functions for this wetlands complex is an unworkable and unsupported concept. There is no scientific evidence that it can or has been successfully done. The research strongly cautions against allowing effects to peatland or bog environments because they cannot be rectified. The scientific literature is largely in agreement on this point. As noted by an article authored by EPA and provided on USGS’s website, these types of wetlands “have developed over thousands of years and ...have hydrologic conditions that are difficult, if not impossible, to duplicate,” and that “experts agree” that bog and fen ecosystems are the least likely to be effectively replaced. This is consistent with the report of the National Research Council in 2000 that pointedly stated wetland mitigation to date had been largely a failure, resulting in continuing net loss of wetlands and further emphasizing that bog wetlands in particular do not appear susceptible of restoration or mitigation once harmed. The NRC Report, in surveying the literature, stated wetland types like fens and bogs “cannot be effectively restored with present knowledge”, and recommended avoiding impacts to those resources. In a follow-up article, scientists on the panel stated that the no net loss mitigation program had been in fact fostering a net loss of approximately eighty percent of wetlands. For years, the Corps has followed the advice of the NRC Report that bog and fen-type ecosystems are difficult-to-replace and impacts to them should therefore be avoided. Research published as recently as 2012 continues to demonstrate these problems, finding that restored wetlands, despite real effort (as opposed to the often failed and	NEPA	S	O	11	SDEIS COOP Response #12602

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	incomplete efforts allowed by regulatory agencies) still suffer from structural and functional loss of ecosystem function. Despite the requirements for high value and difficult to replace wetlands and ecosystems such as those proposed to be destroyed by PolyMet, and despite the agreement in the science regarding the fallacy of thinking that the destroyed wetlands can be replaced or restored, the FEIS spends no time contemplating, analyzing or discussing these issues and concerns and blithely proposes mitigation business as usual.					
Erin Mittag	17.2.2 Indirect wetlands effects are not adequately disclosed and analyzed and are defined too narrowly in the FEIS. Both federal and state law are clear that wetland effects that must be avoided and/or mitigated include all direct effects (e.g. where wetlands will be destroyed by the mine pit) and indirect effects—which includes changes in size, type, hydrology, or plant composition of a wetland as well as overall biodiversity and function of the wetland within the larger landscape. Both direct and indirect effects must be mitigated under state and federal law, and the mitigation must replace the full functions lost by virtue of either the direct or the indirect effects.	WET	NS	X	1	
Erin Mittag	Yet, the FEIS fails to adequately identify and analyze indirect effects and further defines and treats indirect effects very narrowly. The FEIS appears to constrain the definition of indirect effects on wetlands as including only changes in the hydrology of a wetland as a direct result of mine or processing facility activities or by virtue of “fragmentation,” further appearing to narrowly define fragmentation as a diminishment in physical size (i.e. acreage) of a specific individual wetland. ²⁹⁷ Even fragmentation is largely regarded through a hydrological lens. These constraints fail to address and disclose all potential impacts to wetlands from the PolyMet project and in turn fail to address the full mitigation obligation primarily by fragmenting the analysis itself on a ‘wetland by wetland’ basis instead of looking at the entire, complex wetland and ecosystem assemblage that is the mine site.	WET	S	O	8	FEIS Section 5.2.3
Erin Mittag	First, the FEIS fails to adequately disclose and analyze potential indirect effects even within the narrow definitional constraints used. The FEIS simply states there will be a “low likelihood” of indirect effects and leaves the analysis for another day, likely after the mine has already started operation and it is far too late to avoid effects; the damage will occur by the time it is identified as even a possibility. This is unacceptable	WET	NS	X	1	
Erin Mittag	While the Conservation Organizations acknowledge that the Co-Lead Agencies may be currently unable to identify and analyze all indirect effects to wetlands, they can certainly identify some and begin to assess which are more likely than others.	WET	S	O	8	FEIS Section 5.2.3
Erin Mittag	For example, DNR acknowledges the validity of the modeling and criticisms from GLIFWC regarding groundwater drawdown and flows in the area between the PolyMet pit and the Northshore mine. The information in the FEIS and supplied by GLIFWC demonstrates groundwater flow in and out of the north side of the PolyMet east pit. The FEIS also acknowledges that the Cat 1 stockpile will have an effect on water flows—even if the operation is as PolyMet intends, indirect effects are likely to occur. ³⁰⁰ This is adequate information for the FEIS to provide that some indirect effects are in fact likely to occur and make an estimate of where and what they are. This is particularly important for mitigation as mitigation is required to occur BEFORE the effects do. The co-lead agencies should make every effort to identify potential effects now and protect against them with conservative mitigation measures and ratios, not wait for the damage to occur and then scramble for a	COE	S	O	8	SDEIS Theme WET 01

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	solution.					
Erin Mittag	<p>Second, the narrow approach to defining indirect effects fails to conform to the legal requirements for avoiding and/or mitigating all effects to wetlands. Hydrologic changes are of course an important component of indirect effects to wetlands. With respect to hydrologic changes, the FEIS provides that only those hydrologic changes that result in a 20 percent change in watershed area (converting a function—wetland hydrology—to an areal or geographic measure) will be considered an indirect effect.³⁰¹ It cites solely to a paper by Richter for support of this standard. Upon review, the paper cited does not apply. The Richter paper concerns flow in rivers (and barriers or alterations affecting flow, like dams), an entirely different ecosystem than peatland wetlands. Nothing in the paper suggests it is transferable to any other ecosystem analysis much less peatlands or other wetlands. And it isn't even addressing "watershed area" the metric with which the FEIS purports to be concerned. Rather the paper is referencing 20 percent reductions in river flow, an entirely different metric. It is specious for the FEIS to cite to this as support for a number that otherwise appears entirely arbitrary for assessing indirect hydrologic effects to wetlands. The co-lead agencies admit that the paper is really only about river flows, but state, with absolutely no explanation, discussion, or support, that they "believe" it provides a foundation for using the 20 percent number here.³⁰² The co-lead agencies' "belief" finds no support in the science or the law. The law provides that indirect effects must be avoided and if they cannot be avoided mitigated. It does not set a threshold of 20 percent before the requirements take hold. The co-lead agencies are wrong and arbitrary.</p>	NEPA	S	O	8	The Co-lead Agencies' application of their professional judgment and/or expert opinion was an acceptable practice within the field of environmental review.
Erin Mittag	<p>Third, the narrow definition tied almost exclusively to hydrologic measures also does not take into account the obvious effects on the overall complex of wetlands and the diminishment of the function of the area known as the Hundred Mile Swamp. As noted previously and as is plain from maps and the Co-Lead Agencies' own documents and statements, the area of the PolyMet mine site is a very large intact northern wetland complex, including many high-quality natural communities. This area, as a whole, is the headwaters for the Partridge River. This area functions as a whole, not as a group of smaller, isolated wetland and/or upland ecosystems. Therefore, the FEIS treatment of this area as a group of small isolated wetlands each of which can be destroyed or negatively affected without regard to others is scientifically unsupported and unsupported by the agencies' own previous assessment of the area. The system of assigning a value of 0 to 6 to "assess" risk to each small increment in the system is simply the appearance of an iterative process, but it is in fact a purposefully artificial constraint on assessing the potential risk to this integrated wetlands complex and ecosystem and the need to avoid or mitigate effects to it. The Co-Lead Agencies make the classic error of slicing and dicing an integrated ecosystem in order to minimize negative effects and to effectively deny their consequences. This is an illegal segmentation of NEPA analysis.</p>	WET	S	N	8	Under NEPA segmentation applies to a project, not ecosystems.

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Erin Mittag	<p>The law demands that the function of the entire affected system be taken into consideration in the avoidance and mitigation analysis and requirements. In particular, the FEIS fails to address the effect of taking the larger intact northern peatland and forest assemblage and reducing it to a narrow strip of property, likely with changed hydrology and dust deposition, between two huge mines—PolyMet and Northshore. The entirety of the area, particularly the entirety of the area between these two mines, must be considered indirectly affected with respect to a functions analysis and addressed in the avoidance and mitigation components of the FEIS regardless of hydrological effects determined by after-the-fact spot checking in isolated locations.³⁰³ The FEIS fails to analyze and discuss the functions of the large intact assemblage (the interaction and value of a complex mix of forest and wetland, within a headwaters; the role of the plant and wildlife mix and connectedness of the system) and fails to analyze and discuss the effect of eliminating the large intact assemblage, leaving in its place a very small and likely altered remnant. Instead, the FEIS treats each small individual wetland as an isolated ecosystem, an approach wholly unsupported by science or the facts. Finally, the FEIS fails to propose mitigation for these obvious effects. The entirety of the hundred mile swamp complex should be considered indirectly affected due to its large reduction in overall size and should be mitigated (if the project is allowed to proceed as proposed) as its function will plainly be lost.</p>	NEPA	S	O	6	Addressing ecosystem services was not scoped into the EIS and is not required. No supporting analysis offered.
Erin Mittag	<p>17.2.3 The FEIS inadequately addresses climate change implications for wetland impact avoidance and mitigation. Climate change and its effect on northern wetlands is also inadequately addressed in the FEIS. The FEIS is lacking in this regard in two ways. First, the FEIS fails to adequately identify and analyze the effect that climate change will have on the northern peatlands landscape and how that should shape the avoidance component of wetlands regulation and/or the mitigation requirement. Nowhere in the wetlands section is climate change mentioned. Only in the Response to Comments on wetlands does the document claim a “qualitative assessment of the potential impacts of climate change on wetlands is included in FEIS Section 5.2.7.2.4.”³⁰⁴ Section 5.2.7.2.4 follows on the air quality section, not an obvious placement for wetland impacts. More to the point, Section 5.2.7.2.4 contains little to no assessment of climate impacts on wetlands, much less a “qualitative assessment” stating only that climate change may affect some wetlands in some ways. It then references Barr 2012I. Barr 2012I can be summarized as stating climate change may make some wetlands wetter, some drier, some hotter, some shadier and that increased temperatures may release more methane. The total amount of text devoted to the topic is no more than a page and can hardly be described as a qualitative assessment of what is actually going to occur with wetlands on the site and more importantly contains no discussion of what the may mean regarding impacts from the project and need for and location of mitigation. A quick search of even a single piece of local research would have produced more detailed information. Recent research suggests that Minnesota boreal peatlands may suffer most from the effects of climate change. Most vulnerable will be the southern extent of those lands---the very areas where PolyMet proposes two of the three mitigation sites. Coupled with the science on how questionable mitigation for peatlands is, it is plain that the agencies must consider avoidance of effects to the PolyMet wetlands as an important hedge against the effects of climate change. Maintaining intact ecosystems is plainly identified as the preferable path in the face of climate threats. In light of the science, the FEIS must discuss how eliminating a vast area of high-quality and intact wetland will affect overall system resiliency in the face of climate change. At a minimum, the FEIS must analyze and discuss how climate change may affect the success of the proposed mitigation and whether or to what extent the mitigation proposal may have to adjust in light of climate effects, whether in terms of location, overall size, watershed, and/or ratios.</p>	WET	S	O	8	Assessing potential project-related climate change implications is not a requirement of the Final Scope. Assessment of project-related peatland losses in the context of global climate change is beyond the scope of the EIS.

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Erin Mittag	<p>Second, the FEIS at best is confused on the issue of carbon sequestration and at worst is misleading. The science is undisputed that the best carbon sinks on the planet are peatlands. Globally, peatlands represent just 3 percent of all soils but contain more than one-third of all soil organic Carbon. A preliminary inventory of peatlands in Minnesota estimates that the 5.73 million acres of peatland in the state contain 4,250 megatonnes (million metric tons) of C, or approximately 745 metric tons of stored C per acre. Moreover, drying of peatlands from water drawdown increases emissions of both carbon and methane, creating a feedback loop and increasing fire risk—another source of carbon emissions.</p>	AIR	NS	X	1	
Erin Mittag	<p>The Response to Comments, while acknowledging the loss of carbon sequestration, claims that restoration elsewhere will compensate.³¹¹ This statement comes with no support. There is no independent science to support the claim that the carbon sequestration benefits of the mixed, old peatlands at the PolyMet site will be mitigated with wetlands at any of the three mitigation sites (especially since two of them are south of the project site and don't propose to replace coniferous bog habitat.). Also, even if some mitigation occurs, there is no mitigation for the very big one-time release of the destruction event itself, much less the over-time release that is bound to happen from some indirect effects over time. There is no discussion in the FEIS of the loss of sequestration, or the effects of that loss on the environment. The published research makes clear that avoiding impacts to peatlands is the only way to ensure that they continue their function as a carbon sink and serve as a refuge from future climate change impacts.</p>	AIR	S	O	6	SDEIS COOP Response #17903
Erin Mittag	<p>17.2.4 The FEIS fails to explain how the proposed mitigation complies with the law. As stated above, state and federal law requires mitigation for lost or degraded wetland functions when those effects cannot first be avoided. PolyMet currently proposes to mitigate only direct impacts to site wetlands and proposes to mitigate the majority of those negative effects outside of the Lake Superior watershed. The only explanation for why the Co-Lead Agencies believe this is acceptable is because mitigation sites were “difficult to find” within the watershed. This runs counter to the Friends’ and MCEA’s own expert analysis³¹² and the FEIS fails to provide adequate detail for the public to understand and judge whether rejection of certain sites was proper. Further, even if it is true that there are no acceptable mitigation sites within the watershed, there is nothing in the law that then excuses PolyMet from application of the avoid and mitigate requirements. If the impacts cannot be avoided, they must be mitigated. If they cannot be mitigated they cannot be allowed. The Co-Lead Agencies’ position in the FEIS appears to be that the law is only a strong suggestion or guidance, to be complied with if to do so is relatively easy. This approach would render the law meaningless and that is outside the Co-Lead Agencies’ authority. The apparent lack of mitigation opportunities within the watershed further raises questions with respect to PolyMet and the Co-Lead Agencies’ failure to address expected indirect impacts (discussed above) now, before the impact occurs. Again, that is not compliant with the temporal requirements for mitigation in the law and the FEIS provides no explanation for how the Co-Lead Agencies think it might be. Further, it highlights the fact that mitigating for likely future indirect impacts will be difficult within the bounds of the law. If the Co-Lead Agencies properly require mitigation for the entirety of indirect effects to the Hundred Mile Swamp functions and for expected indirect effects given what is already known about flow between PolyMet’s east pit and Northshore, thousands more acres of wetland must be mitigated. If the Co-Lead Agencies already know that mitigation sites are severely limited, moving forward and allowing impacts nonetheless is irresponsible and not compliant with the law. As MCEA states in the SDEIS comments, thousands of acres of wetlands may be affected with no potential mitigation option identified much less provided before the effects occur. In addition to the out-of-watershed and temporal violations inherent in the current approach, the FEIS pays lip service to mitigating functions lost, but it provides no</p>	PER	S	O	8	SDEIS Theme WET 03

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	<p>real discussion of how PolyMet will in fact “mitigate” or “restore” coniferous bog wetlands, and in particular how PolyMet will recreate a groundwater-fed fen. The suggestion of as much borders on ridiculous. The scientific literature is replete with statements about how it is nearly impossible to mitigate bogs, how it has rarely (if ever, depending on how success is defined) been done successfully, and that therefore, damage to these wetland types should always be avoided. The Conservation Organizations are unaware of any example of a fen being mitigated. And the FEIS appears to recognize this when it continues to talk about “targets” for mitigation³¹⁴ admitting that if the coniferous bog and swamp restoration is unsuccessful then targets will simply be readjusted to be whatever PolyMet actually comes up with in the mitigation effort. The so-called targets concept does not comply with the law’s requirement to fully replace lost functions and is in fact more of a “moving target” for mitigation. Finally, given the out-of-watershed proposal and obvious difficulty with actually mitigating the functions that will be destroyed within a timeframe wherein those functions will actually be replaced, the FEIS provides a somewhat incoherent discussion of mitigation ratios. At some level the FEIS provides for 2:1 but then engages in lengthy speculation regarding reducing those ratios to 1:1. The charts showing mitigation acres actually show that coniferous bog will not be mitigation on a 1:1 basis; it appears that PolyMet will rely on coniferous swamp at their Aitkin site for some of those acres, a failure to meet the mitigation requirements of replacing full function. The Co-Lead Agencies must require 2:1 as the minimum replacement ratio for all wetland effects from the PolyMet project. There is no scientific, legal, or factual support for anything less.</p>					
Erin Mittag	<p>17.3 The FEIS fails to address increased potential for mercury methylation in area wetlands. As the FEIS recognizes, the mine and ore transport facilities will result in airborne particulates and deposition of those particulates in area wetlands.³¹⁵ While the FEIS provides some information regarding inhibited photosynthesis and the response to comments provides some discussion of sulfate and some other metals running off (largely discounting any potential effect) the response to comments in the FEIS wholly fail to answer the comments that raised potential for increased mercury methylation from the deposition of sulfates and mercury in ore and rock dust.³¹⁶ The FEIS acknowledges the research, much of it from Minnesota, that demonstrates sulfates and mercury deposition in peat environments is a synergistic combination. Sulfates hastens the methylation of mercury in the peat environment making the mercury bioavailable. While comments on the SDEIS raised this issue and asked for analysis of how deposition from the PolyMet project will affect mercury methylation in area wetlands, the FEIS failed to include this analysis and the response to comments wholly dodges the question.³¹⁷ The only response claims that mercury that will be deposited from dust and spillage is within the variability of background.³¹⁸ This doesn’t address the direct question of what effect increased mercury and sulfate, acting synergistically, may have on methylation of mercury in the subject wetlands.</p>	NEPA	S	O	8	<p>The re-evaluation indicates the estimated potential incremental increase in sulfate and metals from the deposition of the Project’s fugitive dust emissions is expected to be within the variability of background concentrations and is not expected to have a measurable or significant effect on water quality. See Final EIS Sections 5.2.7.2.5 and 5.2.7.2.6.</p>
Erin Mittag	<p>17.4 The FEIS’s discussion of financial assurance for wetland mitigation obligations is wholly inadequate and largely absent. In the response to comments, the FEIS wetland section refers to the financial assurance responses at FIN 11 for the discussion of financial assurance related to wetland effects. FIN 11 includes no information on financial assurance other than a statement that it will be required. This is wholly inadequate and not compliant with NEPA and MEPA requirements. While the precise form and amount of financial assurance may not yet be finalized, there is a significant amount of information that can and should be provided to the public about what amounts are likely needed to ensure the monitoring and mitigation necessary for the project to comply with the law. PolyMet and the Co-Lead Agencies also know the various forms of instruments available for financial assurance and the FEIS should include a discussion and analysis of the risks and</p>	NEPA	S	O	8	FEIS Section 3.2.2.4; Foth 2013

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	benefits of each type in order to provide the public an understanding of what instruments are preferable and why.					
Erin Mittag	17.4.1 Assurance for monitoring for indirect effects. The FEIS defers the issue of indirect effects and claims that indirect wetland effects will not be mitigated prior to commencement of the mining project. Rather, the FEIS provides that wetlands that have the most probability of impacts (a questionable concept in itself, see discussion above) will be monitored and if indirect effects occur, they will be identified and mitigated. Putting aside the issue of whether this is an acceptable approach to indirect effects as a whole, there remains a serious issue regarding financial assurance to ensure the monitoring will occur at a frequency and adequate number of locations, and for a sufficient period of time after mine closure. The project proponents and the Co-Lead Agencies should disclose the cost of the proposed monitoring given that they know where they intend to place monitors (with their purported ratings approach) and they know how much monitors cost. The costs of monitoring should be extended for the period of time after mining ceases that effects are expected—at least for a length of time after the East Pit fills given the modeling showing movement of water between the East Pit and Northshore and the possibility of flows northward. This is a knowable cost estimate that should be provided to the public.	FIN	S	N	8	SDEIS Theme FIN 11
Erin Mittag	17.4.2 Assurance for mitigation. The FEIS also must disclose the cost estimates for wetland mitigation. The project proponent and Co-Lead Agencies already know the sites where they propose to mitigate for direct wetland effects. Information regarding the costs associated with acquisition of those sites, either directly or through leasing or purchase of easements, is known. Also known are the bulk of activities necessary to restore those sites as demonstrated by the discussions of hydrology restoration, planting, and monitoring set forth in the FEIS. For example, PolyMet and/or the Co-Lead Agencies are fully capable of estimating labor costs, time, equipment necessary to the job and costs of seedlings to arrive at an estimate. Again, those are known quantities with known and knowable costs whereby an estimate can readily be provided. The mitigation sites will also require their own monitoring, another cost estimate that must be provided and that can be readily known with information available now. This information would also allow an estimate for the public for future mitigation needs for indirect wetland effects. It is critical that PolyMet be required to set aside funds should indirect effects need to be mitigated at some point in the future. With the information available regarding mitigation for direct effects, at least some general estimate can be given for financial assurance needs for future indirect effects.	FIN	S	O	8	SDEIS Theme FIN 11
Erin Mittag	17.4.3 Financial assurance instruments. The FEIS includes no information regarding available financial assurance options and the risks and benefits of each, information that is important to Co-Lead Agencies' ultimate decision and certainly important to the public's understanding and assessment of the project and its effect on Minnesota's environment and Minnesota taxpayers. Financial assurance can take the form of cash held in reserve by the state, letters of credit, surety bonds, or insurance. ³²⁰ Some of these instruments are more secure than others. In particular, only letters of credit to the benefit of the state, payable on demand upon the occurrence of a clearly-defined triggering event, are free of bankruptcy constraints and readily available should they be needed to protect the public. This analysis and these disclosures should be made now for the public to have a full understanding of the risks and benefits of various financial assurance instruments.	FIN	S	O	8	FEIS pg. 3-143 lists financial assurance options. SDEIS Theme FIN 11

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	The FEIS includes no discussion of this kind.					
Erin Mittag	17.4.4 Project proponent financial status. The FEIS includes no information or analysis of PolyMet's (or PolyMet's parent's) financial status or credit-worthiness other than to disclose that PolyMet in fact has no assets and is entirely dependent upon its parent company. The FEIS, in connection with information regarding the amount and type of financial assurance that may be available and required for the PolyMet project, should disclose the assets and liability of PolyMet and its parent company, both current and projected through at least the beginning of the mine operation. The disclosures should be comparable to the disclosure that would be provided a bank for financing as that is essentially what is being asked of the State of Minnesota; to trust PolyMet to comply with its obligations to the state's and the nation's natural resource assets.	FIN	S	N	8	SDEIS Themes FIN 01, FIN 02, FIN 03, FIN 04, FIN 11
Erin Mittag	The FEIS must include the off-site "indirect" impacts of this project. CEQ Regulations state that an EIS must include a consideration of "any adverse environmental effects," including both direct and indirect effects. Indirect effects are those which are "caused by the action and are later in time or farther removed in distance, but are still reasonably foreseeable." A "reasonably foreseeable" effect is defined as one which "is sufficiently likely to occur that a person of ordinary prudence would take it into account." Federal courts have held that this includes "downstream" impacts such as the impacts of burning coal after it has been shipped on a new rail line. The Eighth Circuit applied these definitions to a proposal to construct new rail lines to the Powder River Coal Basin in Wyoming. Since those rail lines would increase availability of the coal and decrease its price, the Court held that increased coal consumption was a reasonably foreseeable effect of the proposal, such that its environmental impact must be included in the EIS.	CUM	S	O	3	FEIS Section 6.1.1
Erin Mittag	The FEIS does not assess the indirect impacts of burning coal due to its energy demand from Minnesota Power facilities. According to Minnesota Power's most recent Integrated Resource Plan, at present, Minnesota Power's resource mix includes 75 percent coal-burning power plants. The utility owns two coal-fired power plants, Boswell Energy Center (4 units, 926 MW total) and Taconite Harbor Energy Center (2 units, 150 MW total). Minnesota Power also has a long-term power purchase from the Square Butte Cooperative's coal-fired Milton Young Plant in North Dakota (currently, 100 MW, which purchase MP plans to phase out by 2026). These coal-fired power plants emit over 8 million tons of carbon dioxide per year. The plants emit about 325 lbs of per year of mercury, 7,500 tons per year of nitrogen oxides (NOx), and 7,500 tons per year of sulfur dioxide (SO2). PolyMet will cause an incremental increase in the emissions of these pollutants. 326 Although Minnesota Power expects coal to drop to 33 percent of its resource mix, the timing for this estimate is uncertain. In addition, they will be adding natural gas to the mix, their resources will be less carbon intensive, but certainly not carbon-free. Importantly, large industrial customers heavily influence Minnesota Power's resource planning: In 2014, 54 percent of Minnesota Power's kilowatt-hour ("kwh") sales served large power customers, primarily in the taconite mining, iron concentrate, paper, pulp, refining and pipeline industries...Two additional large power customers expected to be operating soon will also be receiving energy from Minnesota Power: PolyMet, a nonferrous mining operation awaiting final permitting, and Essar Steel Minnesota, a major taconite mine and processing plant now under construction. PolyMet is a sufficiently	NEPA	S	N	6	SDEIS Theme PD 39

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	significant customer that it is mentioned by name in the most recent Integrated Resource Plan. The prospect of PolyMet's future energy consumption is already driving decisions at Minnesota Power, and the FEIS should analyze those effects.					
Erin Mittag	The FEIS fails to address, as did the SDEIS, the safe transport and disposal of materials generated from the wastewater treatment process. A filtered "sludge" material will be generated from treating contaminated water at the WWTF. In addition, the pore water from the HRF must be disposed of. The FEIS calls for disposing of these waste streams at either an "offsite" location or at the Hydrometallurgical Residue Facility. Important information is missing in the FEIS about what the contents of these wastes are expected to be, as well as how to ensure the safe transport and containment of them. Whether or not the waste streams meet the legal definition of "hazardous," it is likely that they will be voluminous and toxic. The FEIS fails to provide information to properly assess the dangers these pose to the environment or human health.	NEPA	S	O	6	SDEIS Theme WR 145

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Erin Mittag	<p>The FEIS fails to take a “hard look” at the environmental effects of transporting ore to smelters, smelting or further processing of the copper ore. The increased copper smelting caused by the removal of copper ore at the PolyMet mine is a reasonably foreseeable impact that should be addressed in the SDEIS. The chain of causation between the extraction of ore at the proposed site and the smelting of the resulting product is much less attenuated than the connection between the construction of new rail lines and coal consumption analyzed by the Eighth Circuit. Copper smelting is clearly certain to occur; for without it the copper precipitate is worthless as an industrial commodity. The FEIS states that the “NorthMet Project Proposed Action would utilize a beneficiation and hydrometallurgical processing technology rather than smelting. Copper smelting at a specific location is not a reasonably foreseeable effect of the NorthMet Project Proposed Action.” It also states that “The off-site transport and use of the metal concentrates is outside the scope of the FEIS.” This response does not meet the requirements of NEPA, as described above. The Hydrometallurgical Facility may replace smelting if it is effective, but it will not become operational for 2-4 years after the beneficiation plant is operational. In the meantime, the copper concentrate produced from the beneficiation process must be smelted. Moreover, the FEIS states that the hydrometallurgical processing technology “would process nickel concentrates.” Based on the FEIS, the Hydrometallurgical Facility is designed to process nickel concentrate, not copper concentrate. A plain reading of Figure 3.2-26 shows that only nickel concentrate enters the autoclave, and copper concentrate must leave the site for further processing, even after the hydrometallurgical facility is built, contradicting the statement cited above from Appendix A that the hydrometallurgical facility replaces copper smelting. As detailed in MCEA comments in 2014, simply because the Co-Lead Agencies do not know the precise location of the copper smelting does not excuse them from analyzing the impacts under NEPA. An indeterminate location of environmental impacts does not affect their inclusion or exclusion in an EIS. In <i>Mid States Coalition for Progress</i>, for example, the court rejected defendant’s argument that increased coal consumption was speculative because specific coal plants that would be built to burn the new coal had not been identified. For NEPA purposes, the court held, it is the nature of the impact that is important. It is certain that some entity will smelt the copper, even if the exact geographic location is still undetermined. CEQ regulations specifically address indirect impacts where there is incomplete or unavailable information. The agency should evaluate those impacts to the extent possible, and include a statement of incompleteness. Even if the environmental impacts of the copper smelting are primarily borne by Canada, those extraterritorial effects do not bar their consideration under NEPA. The federal courts note that “NEPA requires agencies to consider reasonably foreseeable transboundary effects resulting from a major federal action taken within the United States.” This would include any transboundary effects from copper smelting taking place outside U.S. jurisdiction. Moreover, the fact that the location of the smelting is unknown may be the result of willful ignorance, rather than a lack of available information. According to Polymet’s NI 43-101, in the first phase of the NorthMet operation (prior to the construction of the on-site hydrometallurgical facility) the copper and nickel concentrates will be sold to Glencore International “under a long-term marketing agreement.” After the second phase processing facility is built, Polymet will also sell the nickel-cobalt hydroxide and precious metals precipitate produced by that facility to Glencore. In fact, the 2008 long-term marketing agreement specifies that Glencore will purchase “all of Polymet’s products (metals, concentrates or intermediate products) on independent commercial terms at the time of the sale. Glencore will take possession of the products at site and be responsible for transportation and ultimate sale.” After publication of the NI 43-101, Glencore International merged with Xstrata PLC to become Glencore Xstrata PLC. Glencore Xstrata owns a copper smelting operation in Sudbury, Ontario called Sudbury Integrated Nickel Operations, with the capacity to smelt 95,000 tons of nickel and copper concentrates, and the</p>	NEPA	S	N	6	SDEIS Themes PD 13, PD 37, WR 055

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	<p>Horne Smelter in Quebec, Canada, which produced 194,000 tons of copper anodes in 2012.³⁴¹ Therefore, the best approach is for the Co-Lead Agencies to simply ask Glencore where it intends to process the materials. If there is a sound and supported reason why Glencore cannot specify the location of smelting, then it does not excuse the Co-Lead Agencies from analyzing the impacts, but it does allow them to analyze the impacts of smelting at a more general level, along with a statement as to what information is incomplete or unavailable consistent with Minn. R. 4410.2500 and If Glencore can specify the likely location where some or all of the ore would be smelted, than the EIS must analyze those location-specific impacts. MCEA's SDEIS comments describe some of those impacts on pages 100-105, providing a helpful description of the type of impacts from smelting that must be considered. In addition, the FEIS should analyze the potential impacts of additional transportation of the copper and nickel concentrates to smelters. The FEIS discusses transportation of hazardous materials – primarily diesel fuel and PAX – but does not discuss transportation of the final product. The FEIS should address potential transportation modes (rail, truck, freighter) as well as potential routes over land and water. The transportation of ore may generate air pollution, among other risks. The impacts associated with the transport of ore are “prime examples of indirect effects that NEPA requires be considered. “While the Conservation Organizations acknowledge that there is some uncertainty as to the final destination of the processed material, the final products will be the property of Glencore by contract, and an inquiry of Glencore as to the likely destination should be part of the analysis. Moreover, Glencore owns other mining assets in North America, as well as smelting facilities. Glencore also owns warehousing and port facilities in North America. Glencore advertises that “we have a sizeable custom smelting and refining capacity.” Glencore’s vertical integration of shipping and processing narrows down the potential routes and destinations considerably. At a minimum, where information about a potential environmental impact is incomplete and cannot be obtained, the RGU must include, by law, the following information in the EIS: A. A statement that the information is incomplete or unavailable and a brief explanation of why it is lacking; B. An explanation of the relevance of the lacking information to evaluation of potentially significant environmental impacts and their mitigation and to a reasoned choice among alternatives; C. A brief summary of existing credible scientific evidence that is relevant to evaluating the potential significant environmental impacts; and D. The RGU’s evaluation of such impacts from the project and its alternatives based upon theoretical approaches or research methods generally accepted in the scientific community. Copper ore contains, obviously, copper, which is toxic to aquatic life, but also [arsenic, cadmium, selenium and other toxic heavy metals discussed in Section 15.2.6, above. Thus, a spill or accident involving metal precipitates could be harmful to human health and aquatic life.</p>					
Erin Mittag	<p>The EIS fails to adequately analyze and disclose impacts to federally listed species, and fails to demonstrate compliance with the Endangered Species Act for these species. As acknowledged in the FEIS, the NorthMet mine would impact three federally listed species: the Canada lynx, gray wolf, and northern long-eared bat.³⁴⁷ The mine would result in the long-term destruction of two square miles (1454 acres) of designated critical habitat for the Canada lynx and gray wolf.³⁴⁸ The project may also kill lynx and wolves as result of the significant vehicle traffic within the Mine Site, and the significant vehicle and railroad traffic between the Mine and Plants Sites.³⁴⁹ The project would also impact two of the thirteen remaining wildlife corridors that allow wildlife migration (including for lynx and wolves) from northwest to southeast of the Mesabi Iron Range.³⁵⁰ Moreover, the project would destroy habitat that may be used by the northern long-eared bat at the Mine Site, and would also disrupt the bat’s use of the Plant Site.³⁵¹ Due to the significance of impacts to these three threatened species that would result from the proposed mine, the FEIS is inadequate in assessing and disclosing the direct, indirect, and</p>	WI	S	O	8	SDEIS Theme WI 11

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	cumulative impacts, and fails to demonstrate compliance with the Endangered Species Act (ESA).352					
Erin Mittag	<p>The ESA represents “the most comprehensive legislation for the preservation of endangered species ever enacted by any nation.” Congress enacted this statute “to halt and reverse the trend towards species extinction, whatever the cost.” In enacting the ESA, Congress spoke “in the plainest of words, making it abundantly clear that the balance has been struck in affording endangered species the highest of priorities, thereby adopting a policy which it described as ‘institutionalized caution.’” As the court in Tennessee Valley Authority observed: One would be hard pressed to find a statutory provision whose terms were any plainer than those in [Section] 7 of the Endangered Species Act. Its very words affirmatively command all federal agencies ‘to insure that actions authorized, funded, or carried out by them do not jeopardize the continued existence’ of an endangered species or ‘result in the destruction or modification of habitat of such species...’ This language admits of no exception. Section 7 of the ESA mandates that “federal agencies take no action that will result in the ‘destruction or adverse modification’ of designated critical habitat.” “Destruction or adverse modification” of critical habitat is defined as “a direct or indirect alteration that appreciably diminishes the value of the critical habitat for both the survival and recovery of a listed species. Such alterations include, but are not limited to, alterations adversely modifying any of those physical or biological features that were the basis for determining the habitat to be critical.” The courts have found that this regulatory definition reads the “recovery” goal out of the statutory adverse modification inquiry, “and that agencies must in fact consider impacts that appreciably diminish the value of critical habitat for either survival or recovery. “Thus, the agencies’ assessment of the impacts of a proposed action on a listed species’ critical habitat must address the project’s potential impact on the species’ habitat in terms of the species’ recovery as well as its survival. In addition, agencies are not allowed to characterize as “insignificant” the potential impacts on a species’ critical habitat by considering only the broad scale or long-term impacts. The NorthMet Mine Site is within designated critical habitat for the Canada lynx and gray wolf, and signs of lynx and wolves have been observed near and at the Mine Site. The proposed mine would reduce suitable habitat for lynx and wolves, and fragment their remaining habitat. Significantly, the proposed mine would destroy two square miles (1454 acres) of critical habitat for lynx and wolves for at least 40 years.363 Moreover, the mine would further affect lynx and wolf critical habitat through impacts to two of the remaining wildlife corridors in this region. Because the proposed mine would result in the destruction and adverse modification of critical habitat for both the Canada lynx and gray wolf, the project violates Section 7 of the ESA and cannot proceed. In addition to the direct impacts on lynx and wolf habitat at the Mine Site, an average of 2066 miles per day of vehicular traffic is expected within the site, with an additional 1734 miles of traffic each day between the Mine Site and Plant Site. This does not include additional highway traffic from workers driving to and from work, or truck traffic delivering supplies. The agencies acknowledge that increased vehicle and train traffic could further affect lynx and wolves, including through vehicle collisions.</p>	WI	NS	X	1	

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Erin Mittag	<p>The consideration and disclosure of cumulative impacts to lynx and wolves in the FEIS is also inadequate, including the cumulative impacts to the few remaining travel corridors in the region. There have been two studies of the few remaining wildlife corridors through the Mesabi Iron Range and Arrowhead Region. In 2006, Emmons and Olivier Resources prepared for the DNR, "Cumulative Effects Analysis on Wildlife Habitat Loss/Fragmentation and Wildlife Travel Corridor Obstruction/Landscape Barriers in the Mesabi Iron Range and Arrowhead Regions of Minnesota."368 As stated by Emmons & Olivier, wildlife travel through this region is restricted "because of the extensive change to the landscape, including large mine pits, stockpiles, mining infrastructure, regional development associated with the Mesabi Iron Range, and highways."369 Emmons & Olivier identified only thirteen remaining wildlife corridors across the 100 mile Mesabi Iron Range.370 Moreover, Emmons & Olivier found that any future losses of these relatively small remaining corridors may be considered significant.371 Additionally, due to cumulative effects of past habitat losses in this region for "mammalian species of greatest conservation need," Emmons & Olivier determined that "any future losses to the habitat requirements for these species could be considered significant."372 The second study is entitled, "Cumulative Effects Analysis of Wildlife Habitat and Threatened and Endangered Wildlife Species, Keetac Expansion Project," prepared by Barr Engineering in 2009.373 The Barr Report states that mining features already cover 118,314 acres along the Iron Range, including 36,962 acres of open pit mines, 78,620 acres of stockpiles and tailings basins, and 212 acres of facilities and infrastructure.374 The cumulative impacts of 125 years of mining in this region has fragmented habitat and resulted in a loss of wildlife travel corridors.375 "It is feasible that in the future, mining in the Iron Range could potentially culminate in a 100-mile long landscape barrier that severs wildlife travel corridors, which may have impacts on dispersal, migration, and/or seasonal movements of many species."376 The Barr Report identified eighteen remaining wildlife corridors.377 Of the eighteen, the Barr Report predicts that "four will likely become completely impassable within the next 25-30 years as a result of planned mining activities," and an additional four corridors "will retain some functionality, but will be significantly degraded by future mining plans."378 In addition, "[a]s wildlife are increasingly exposed to mining activity, roads, and urban centers due to the degradation of available corridors, the incidence of wildlife mortality within the corridors is likely to increase."379 Due to insufficient data, however, the Barr Report was unable to determine whether wide-ranging mammals such as lynx and wolves would be "sensitive" to these cumulative effects.380 As briefly summarized in the FEIS, there are thirteen wildlife travel corridors that remain along the Mesabi Iron Range, ranging from less than 0.1 mile to over 3.2 miles wide.381 "Of the 13 large mammal wildlife crossing corridors . . . two are in the vicinity of the Mine Site or Plant Site."382 The first is located just a mile from the Plant Site, and the second is located just a half mile from the proposed Mine Site.383 "Operations at the Mine Site would indirectly affect the corridor by reducing its size and acting as a source of noise and activity near the large habitat block southeast of the corridor."384 Additionally, the proposed mine's transportation and utility corridor between the Mine Site and Plant Site runs parallel to wildlife corridors and would further affect wildlife use.385 Moreover, other reasonably foreseeable projects are anticipated to adversely affect the remaining wildlife travel corridors in the region, including the complete loss of some of the corridors.386 "These effects may include blocking or encroachment into the mapped wildlife corridors, which affects adjacent habitat that may make the corridor less valuable to wildlife, and increasing traffic along new or existing roads through the corridor.387 "The effects on these corridors include complete loss (depending upon final extent of activities), habitat isolation, fragmentation, and/or minimal effect."</p>	WI	NS	X	1	

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Erin Mittag	The proposed mine's direct and long-term destruction of two square miles of designated lynx and wolf critical habitat, along with the mine's adverse and cumulative impacts to the few remaining travel corridors for lynx and wolves, would result in the "destruction or adverse modification" of critical habitat, which is prohibited by the ESA. ³⁸⁹ The conversion of the critical habitat at the Mine Site to an open-pit mine would destroy and adversely modify all of the primary constituent elements for Canada lynx and gray wolves identified by the U.S. Fish and Wildlife Service, including for lynx the destruction of boreal forest landscapes that support a mosaic of forest stages, sites for denning, and matrix habitat allowing for travel and habitat connectivity.	ROD	S	N	12	Final SDD Section 3.3.2 required the EIS to evaluate impacts to both the gray wolf and Canada lynx. See Final EIS Appendix D.
Erin Mittag	Additionally, despite the acknowledged significant impacts to lynx and wolves, and their designated critical habitat, including impacts to the few remaining wildlife travel corridors in the region, the FEIS fails to consider or address the impacts of the proposed mine and land exchange on lynx and wolf recovery. By adding to the widespread cumulative impacts of mining projects and other development across this region, including contributing to the continuing decrease in available travel corridors, the proposed mine project is likely to appreciably contribute to the diminishment of the chances for the lynx and wolf populations in this region to recover, and to be eventually taken off the list of threatened species. The FEIS's failure to consider this fundamentally important factor concerning lynx and wolves violates NEPA and the ESA.	ROD	S	N	11	Final SDD Section 3.3.2 required the EIS to evaluate impacts to both the gray wolf and Canada lynx. See Final EIS Appendix D.
Erin Mittag	Section 9 of the ESA prohibits any person from "taking" a threatened or endangered species. ³⁹¹ "Take" is defined broadly to include "harass, harm, pursue, hunt, shoot, wound, kill, trap, capture, or collect, or to attempt to engage in any such conduct." ³⁹² The proposed mine would likely result in the "take" of Canada lynx and wolves, through the destruction of their critical habitat, vehicle and train collisions, and the continued loss and fragmentation of the few remaining wildlife corridors in the area.	ROD	S	N	11	Final EIS Appendix D.
Erin Mittag	The EIS must disclose the ongoing, acute decline in the moose population, the position of the mine site on the edge of what is now considered moose territory, and the impact of this loss of habitat. The EIS fails to provide the "hard look" at impacts on moose that is required by NEPA. This issue was raised on our comments on the SDEIS. ³⁹³ Our SDEIS comments are attached to this objection letter, and the referenced pages along with all cited materials are incorporated herein. This issue was not addressed in the FEIS Response to Comments. Although the FEIS has added a small amount of information on moose, it neither includes the factors that we raised in our comments nor explains why they are not included, in violation of 40 C.F.R. § 1503.4(a) (agency must consider and respond to comments) and 40 C.F.R. § 1502.9(b) (agency must discuss in FEIS "any responsible opposing view," and "shall indicate the agency's response to the issues raised"). For instance, the FEIS fails to assess the project's impact on moose due to vehicle and train collisions and the increase in noise and human activity, which were raised in our comments on the SDEIS and supported by scientific literature. The FEIS discloses that 2,785.9 acres of moose habitat would be directly affected by the project, but fails to discuss either indirect impacts on habitat or the actual effects on moose. ³⁹⁴ This includes significant impacts to high quality wetlands, which habitat is particularly important to moose due to ongoing and future climate change. In fact, the 2009 Report to the DNR by the Minnesota Moose Advisory Committee recommended the enhancement of the availability of "wetlands and other habitats where moose are most secure from heat stress." ³⁹⁵ The impacts of the proposed mine on heat stress and thermal refugia for moose, however, are not considered or disclosed. More generally, the FEIS fails to assess the impacts to moose and other species dependent on wetland habitat in the context of the current and anticipated impacts of climate change, which will cause the	WI	S	O	8	FEIS pgs. 5-568 to 5-569

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	disappearance of wetlands, higher temperatures, increased evapotranspiration, and longer droughts over the same time period of the proposed mine and its impacts. ³⁹⁶					
Erin Mittag	<p>As recognized by the CEQ, “[c]limate change is a fundamental environmental issue, and the relation of Federal actions to it falls squarely within NEPA’s focus.”³⁹⁷ Agencies must consider not only a proposed action’s effects on climate change, but also “the implications of climate change for the environmental effects of a proposed action.”³⁹⁸ “Federal agencies, to remain consistent with NEPA, should . . . take into account the ways in which a changing climate over the life of the proposed project may alter the overall environmental implications of such actions.”³⁹⁹ The impacts of climate change are already occurring, are predicted to intensify, and are directly related to the environmental consequences of the proposed NorthMet mine on the state’s sensitive and declining moose population. As recognized by the Moose Advisory Committee, climate change is a long-term threat to the persistence of moose in Minnesota.⁴⁰⁰ Moreover, “large bodied mammals, such as moose [a]re more likely to rapidly respond to climate change, which indicates a higher extinction risk.”⁴⁰¹ As a result of climate change, “[m]oose will lose crucial habitat, experience heat stress and malnutrition, and come into contact with more pathogens and winter ticks as a result of warmer, wetter winters and springs, a reduction in snow depth, and hotter summers.”⁴⁰² Moreover, boreal species on which moose rely are expected to decline, “and forested wetlands – an incredibly valuable type of habitat for moose – will likely disappear.”⁴⁰³ The adverse impacts of losing over 2,700 acres of important moose habitat as result of the proposed mine simply cannot be considered in isolation of the significant, recognized threats to moose and its habitat in the region resulting from current and predicted climate change. Furthermore, NEPA does not allow the agencies to not address in the FEIS the combined impacts of climate change and the proposed mine on moose just because the exact rate and extent of climate change remains uncertain. NEPA instead requires agencies to engage in reasonable forecasting when preparing EISs, as speculation is implicit in NEPA.⁴⁰⁴ As stated by the Eighth Circuit, “when the nature of the effect is reasonably foreseeable but its extent is not, . . . the agency may not simply ignore the effect.”⁴⁰⁵ Moreover, as recognized by CEQ, agencies should describe the region that would be affected by a proposal “based on available climate change information, including observations, interpretative assessments, predictive modeling, scenarios, and other empirical evidence.”⁴⁰⁶ And despite remaining uncertainties, CEQ emphasized that a NEPA analysis “should present a reasonably thorough discussion of probable environmental consequences.”⁴⁰⁷ The agencies’ failure to consider the implications and impacts of climate change along with the proposed NorthMet mine project on the declining moose population is especially egregious due to the very long-term duration of the proposed mine, and its severe impacts on wetlands and other habitat needs of moose. As highlighted by CEQ, “climate change effects should be considered in the analysis of projects that are designed for long-term utility and involve resources considered vulnerable to</p>	WI	S	O	8	FEIS Sections 4.2.5.1.1 and 5.2.5.2.2 discuss the additive effect of climate change on moose.

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	specific effects of climate change within the timeframe of the proposed project’s anticipated useful life.” ⁴⁰⁸ Overall, the agencies failure to consider and disclose in the FEIS the combined impacts of climate change and the proposed mine on moose habitat and the remaining declining population violates NEPA.					
Erin Mittag	The FEIS also fails to inform the reader of the actual situation regarding moose in Minnesota and the potential impact of this and other projects on moose recovery in the Midwestern United States. Much of this information is provided in a petition to the U.S. Fish and Wildlife Service for federal Endangered Species Act listing of alces alces andersoni, the subspecies of moose found in the Midwest. ⁴¹⁰ In addition, we are including the report from the MDNR’s 2015 aerial moose survey. ⁴¹¹ These documents are in addition to the material submitted with comments to the SDEIS, which are again included with this submission.	WI	S	O	8	FEIS App. D pg. 6-85
Erin Mittag	Moose, which have been observed in the project area, ⁴¹² are listed by the state as a species of special concern. ⁴¹³ The DNR and Forest Service have been well aware for years that the moose population in the state and on the Superior National Forest is in precipitous decline, a fact that cannot be discerned from the NorthMet FEIS. The FEIS discussion of this issue is a classic example of providing only data that tends to discount the problem in the eye of the reader. What the FEIS tells us is: The overall moose population declined approximately 35 percent from 2012 to 2013. The 2014 winter aerial moose survey estimated the population at 4,350 animals, up from the 2013 estimate of 2,760. However, this is likely due to variability in the survey conditions from year to year and uncertainty inherent in the survey itself. ⁴¹⁴ The reader is left with the idea that perhaps the 35 percent change from 2012 to 2013 was an anomaly due to counting methods, and with no understanding as to the actual situation. According to the MDNR, the population estimate for moose in the state was 8,840 in 2006, and in 2015 is estimated at 3,450. ⁴¹⁵ While the count did go up in 2014, the trend over a ten-year period is a decline of more than 60 percent. The FEIS also fails to recognize the critical importance of northeastern Minnesota for the remaining moose population in the state. Moose also used to be common in northwestern Minnesota, but that population has disappeared over the last twenty years. From a population of 4,000, fewer than 100 remain, with any rebound seen as very unlikely. This leaves northeastern Minnesota, including the Proposed Project area, as the only remaining refuge for the	WI	S	O	8	FEIS Section 5.3.5.2.2, pg. 4-237

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	<p>state’s declining moose population. To summarize, the Minnesota moose population is undergoing a rapid decline and may be extirpated from the state of Minnesota within another decade; habitat loss and fragmentation is acknowledged to be a factor in that decline; it is acknowledged that this project will result in a loss of habitat; and with no further information, the FEIS concludes that the project would likely not affect moose at the population level. NEPA prohibits agencies from making such sweeping general statements without providing supporting data or analysis.⁴¹⁶ As noted below, the FEIS analysis of the potential impacts to moose is even more deficient and problematic in the cumulative impacts analysis, where moose are not even mentioned. Overall, the FEIS has failed to meaningfully consider and disclose the impacts of the proposed mine on the state’s dramatically declining moose population. The omission of any meaningful consideration of such an important issue “precludes the type of informed decision making mandated by NEPA.”</p>					
Erin Mittag	<p>The Cumulative Effects Analysis in the FEIS is Inadequate. NEPA and MEPA both require an analysis of the potential cumulative impacts of a proposed action.⁴¹⁸ The NEPA regulations provide the following definition for cumulative impacts: Cumulative impact is the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (Federal or non-Federal) or person undertakes such other actions. Cumulative impacts can result from individually minor but collectively significant actions taking place over a period of time.⁴¹⁹ In order to properly consider cumulative effects in an EIS, NEPA requires quantified and detailed information.⁴²⁰ “Without such information, neither the courts nor the public, in reviewing the [agency’s] decisions, can be assured that the [agency] provided the hard look that it is required to provide.”⁴²¹ “General statements about ‘possible’ effects and ‘some risk’ do not constitute a ‘hard look’ absent a justification regarding why more definitive information could not be provided.”⁴²² “Nor is it appropriate to defer consideration of cumulative impacts to a future date,”⁴²³ as NEPA requires consideration of the potential impact of an action before the action takes place.⁴²⁴ As explained throughout these comments, the FEIS cumulative impacts analysis for a number of resources – including but not limited to water quality, wetlands, and wildlife - is inadequate and fails to comply with NEPA or MEPA. The FEIS provides only general, mostly non-quantified analysis, which falls far short of the detail required. In <i>Great Basin Mine Watch v. Hankins</i>, 456 F.3d 955, 971-974 (9th Cir. 2006), the court struck down an agency’s reliance on generalized descriptions of mining impacts in a region, and instead required the agency to include “mine-specific ... cumulative data.”⁴²⁵ The court highlighted the need for a “quantified assessment of [other projects’] combined environmental impacts” and an “objective quantification of the impacts.”⁴²⁶ The FEIS for the proposed PolyMet mine fails to provide this necessary analysis.</p>	NEPA	NS	X	1	
Erin Mittag	<p>In addition to providing primarily general, non-quantified analysis, the FEIS makes a number of fundamental mistakes in its cumulative impacts analysis. The FEIS, for instance, in its assessment of past, present, and reasonably foreseeable actions, the agencies failed to include the hundreds of exploratory drilling projects taking place in the same region on federal, state, and private lands.⁴²⁷ The fact that these exploratory drilling projects will collectively contribute towards significant cumulative impacts on a number of resources is acknowledged by the Forest Service in the forest-wide EIS that it prepared</p>	CUM	S	N	12	<p>The Final SDD did not identify exploratory drilling activity as a reasonably foreseeable action for consideration in cumulative effects analysis. DNR did not receive comments on the Draft EIS or Supplemental Draft EIS requesting consideration of this activity in the cumulative effects analysis. The</p>

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	for only a subset of these past, present, and reasonably foreseeable projects.					issue is beyond the scope of the EIS.
Erin Mittag	<p>The FEIS also limited its consideration of reasonably foreseeable future actions to only those that are included in approved planning documents and have approved funding, are permitted, or have a currently active federal or state permit or site plan application under review. 428 This definition of reasonably foreseeable actions is unreasonably narrow and violates NEPA. The United States Court of Appeals for the Eighth Circuit has more broadly held that an environmental effect is reasonably foreseeable under NEPA if it sufficiently likely to occur that a person of ordinary prudence would take it into account in reaching a decision.429 Moreover, “when the nature of the effect is reasonably foreseeable but its extent is not, . . . the agency may not simply ignore the effect.”430 The lead agencies claim that they relied on 1997 CEQ and 1999 EPA guidance in preparing the cumulative impacts analysis.431 The CEQ guidance, however, demonstrates that the approach taken by the agencies in the FEIS is impermissibly narrow and violates NEPA. As explained by CEQ: Commonly, analysts only include those plans for actions which are funded or for which other NEPA analysis is being prepared. This approach does not meet the letter or intent of CEQ’s regulations. It underestimates the number of future projects, because many viable actions may be in the early planning stage. 432 Agency must instead “use the best available information to develop scenarios that predict which future actions might reasonably be expected as a result of the proposal.”433 Similarly, “[i]f the analyst is uncertain whether to include future actions, it may be appropriate to bound the problem by developing several scenarios with different assumptions about future actions.”434 Future actions can only be excluded from the cumulative impacts analysis if the action is outside the established geographic boundaries or time frame, the action would not affect any resources, or the agency can show that including the action would be arbitrary.435 Importantly, CEQ makes clear that “reasonable forecasting is implicit in NEPA,” and therefore “it is the responsibility of federal agencies to predict the environmental effects of proposed actions before they are fully known.”436 EPA’s 1999 guidance further demonstrates that the agencies definition of reasonably foreseeable actions in the NorthMet FEIS is too restrictive and violates NEPA. As explained by EPA, “reasonably foreseeable future actions need to be considered even if they are not specific proposals.”437 As with CEQ, EPA directs agencies to utilize the best available information “to develop scenarios that predict which future actions might reasonably be expected as a result of the proposal.”438 The NEPA requirement, as explained by CEQ, EPA, and the courts, to use reasonable forecasting and to develop scenarios that predict and disclose the environmental consequences of future actions, along with the NorthMet proposal and other past and present actions, is particularly important for the NorthMet proposal due to its extremely long time-frame. The lead agencies recognize in the FEIS that the necessary maintenance, mitigation, and monitoring for the NorthMet mine will be required indefinitely, likely for hundreds of years. In light of the lead agencies current understanding of the copper, nickel and other mineral deposits within the “Duluth Complex,” along with the expressed interest of mining companies from across the globe to access and mine these minerals, it is at least “reasonably foreseeable” to anticipate additional mining proposals during this time frame. In fact, it is arbitrary and unreasonable for the agencies to assume that no additional copper nickel mines will be proposed and considered during the hundreds of years of mining activities that the agencies are considering authorizing for PolyMet’s NorthMet mine. The lead agencies must therefore consider a range of development scenarios that meaningfully assess and</p>	CUM	S	O	5	SDEIS Theme CU 02. FEIS Section 6.1

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	disclose what the cumulative impacts would be to the various resources of the region under each of these scenarios. Because the FEIS fails to do so, a Supplemental EIS must be prepared.					
Erin Mittag	The agencies unlawfully narrow definition of reasonably foreseeable future actions led the agencies to exclude the proposed Twin Metals copper-nickel mine from the FEIS' cumulative impacts analysis.439 From its 8,800 square-foot headquarters in Ely that was constructed in 2011, to its past, ongoing, and proposed exploration throughout the region, and its proposed hydro-geologic study, along with the ongoing consideration of the environmental impacts of its proposed lease renewals by the BLM, the Twin Metals proposal and its environmental impacts are far beyond "speculative," and are instead ongoing or at least reasonably foreseeable. Significantly, in 2014 Twin Metals completed a voluminous "Technical Report on Pre-feasibility Study" (PFS), which was prepared by a large team of engineers and describes in detail where the company plans to mine, the characteristics of the mine site, the mineral reserve estimates, the proposed mine plan, the mining methods, the recovery methods, the project infrastructure, and, environmental protection strategies, and environmental concerns and issues.440 The Twin Metals proposal includes a 30-year mine plan focused on the development of the Maturi and Maturi SW mineral deposits, located about 9 miles southeast of Ely and 11 miles northeast of Babbitt. The PFS estimates an average production rate of 50,000 tons of mineralized ore per day. The mine plan consists of four major facilities: an underground mine site, a concentrator site, a tailings basin facility, and utility corridors. The Twin Metals PFS demonstrates that there will undoubtedly be significant cumulative impacts to numerous resources that would also be affected by the NorthMet project, as Twin Metals proposes to place its massive tailings facility in the same St. Louis River watershed, adjacent to the Peter Mitchell Mine. The agencies have entirely failed to consider or disclose in the NorthMet FEIS the major impacts and issues concerning geology, hydrology, groundwater, surface water, and pollution that would result from the interactions and cumulative impacts of the NorthMet mine site, Peter Mitchell mine pit, and Twin Metals tailings basin in	CUM	S	O	7	Twin Metals is located outside of cumulative effects spatial and temporal boundaries for affected resources.

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	<p>the same general location. Without such an analysis, that also takes into account the existing changes and predicted impacts to the Laurentian Divide, the agencies are wholly unable to predict or disclose the extent of pollution that would flow to the St. Louis River and Boundary Waters watersheds. According to Twin Metals, the details from the PFS will “form a Mine Plan of Operations (MPO) that will be submitted to state and federal regulatory agencies for environmental review.”⁴⁴¹ Twin Metals further states that it has been conducting environmental studies and assessments of its mine proposal for “more than five years,” which will continue during the development of its Mine Plan of Operations, and “will feed into the formal, Draft Environmental Impact Study (DEIS) that will be conducted by state and federal agencies. Key environmental issues include: surface water quality and hydrology, threatened and endangered species, air quality, plant life, wetlands and socioeconomic factors.” And “[m]ore than \$250 million has been invested in exploration and project development to date.”⁴⁴³ In sum, there is no question that the Twin Metals proposed mine is not “speculative,” but rather “reasonably foreseeable,” and was required by NEPA and MEPA to be included in the cumulative impacts assessment for NorthMet FEIS.</p>					
Erin Mittag	<p>In fact, in March of 2013, the “Minnesota Minerals Coordinating Committee,” which includes the DNR, issued a document entitled “Explore Minnesota: Copper, Nickel PGEs.”⁴⁴⁴ The document stated that PolyMet, Twin Metals, and Teck American were all “active” copper-nickel projects at that time. Moreover, the document referred to the Twin Metals PFS, which was then underway, acknowledged that the PFS will be comprehensive and evaluate all project details, and then stated: “Once completed, the PFS will provide multiple state and federal agencies the information needed to conduct a rigorous and thorough environmental review of the proposed plan.” Now that the PFS is complete, and provides the agencies with hundreds of pages concerning the proposed mine’s specific details and impacts, the lead agencies still refuse to include Twin Metals in the cumulative impacts analysis for the NorthMet proposal, in plain violation of MEPA and NEPA. Considering additional future proposals, including Twin Metals, is further supported by the definition of “cumulative potential effects,” within Minnesota’s regulations: “Cumulative potential effects” means the effect on the environment that results from the incremental effects of a project in addition to other projects in the environmentally relevant area that might reasonably be expected to affect the same environmental resources, including future projects actually planned or for which a basis of expectation has been laid, regardless of what person undertakes the other projects or what jurisdictions have authority over the projects. . . . In determining if a basis of expectation has been laid for a project, an RGU must determine whether a project is reasonably likely to occur and, if so, whether sufficiently detailed information is available about the project to contribute to the understanding of cumulative potential effects. In making these determinations, the RGU must consider: whether any applications for permits have been filed with any units of government; whether detailed plans and specifications have been prepared for the project; whether future development is indicated by adopted comprehensive plans or zoning or other ordinances; whether future development is indicated by historic or forecasted trends; and any other factors determined to be relevant by the RGU.⁴⁴⁵ The lead agencies violated MEPA because they failed to address whether there is a “basis of expectation” that Twin Metals will proceed.⁴⁴⁶ Moreover, the agencies violated this regulation</p>	CUM	S	O	7	SDEIS Theme CU 02. FEIS Section 6.1

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	<p>by further failing to consider the “detailed plans and specifications” already been prepared for Twin Metals, including its 500+ page Technical Report on Pre-feasibility Study.⁴⁴⁷ The agencies failed to consider whether “historic or forecasted trends” indicate that Twin Metals is reasonably likely to be approved.⁴⁴⁸ It does not take a serious study of the history of the Iron Range to know that virtually all proposed mining projects and mining expansions have been approved in the past, which the agencies did not consider before concluding that Twin Metals remains “speculative.” The agencies also refused to consider Teck and its leases, exploration and drilling on the Mesaba deposit, adjacent to the NorthMet site. As explained in the FEIS comments provided by Andrew Comfort, the FEIS is wrong that the Teck and PolyMet projects are 3 miles apart.⁴⁴⁹ They are instead immediately adjacent to one another, and the agencies have failed to consider the continuous band of ore that connects PolyMet’s proposal to Teck and the Mesabi deposit.⁴⁵⁰ Relatedly, the agencies’ cumulative impacts analysis in the FEIS also fails to address PolyMet’s plans for future expansion and/or for the Plant Site to be utilized for future copper-nickel mining projects in this region. Because the plant capacity is three times as large as is needed for the proposed NorthMet project, its use for other projects is likely.⁴⁵¹ As explained in an Edison Investment Research Limited report, “there is a good chance PolyMet will be able to expand the size of its resource by 50-100% based on what we learned on a site visit.”⁴⁵² Additionally, “[t]here are roughly 11 mineral properties within shipping distance of PolyMet’s mill,” and “[w]e believe there is a good chance PolyMet will decide to toll process third-party ore from some relationships with one or more local projects.”⁴⁵³ Of course the additional use of this Plant Site for expansions and other mining proposals would significantly increase the amount of waste that would be deposited into the tailings basin. This would also greatly increase the amount of vehicle and rail traffic and other disturbances in the immediate project area and affecting numerous resources. The agencies, however, failed to consider the “forecasted trend” for PolyMet and the NorthMet mine site, as analyzed and disclosed by Edison and brought to the agencies’ attention during the NorthMet public comment period, in violation of NEPA and MEPA.</p>					
Erin Mittag	<p>The FEIS also fails to set forth the proper geographic scope for the cumulative impacts analysis, especially concerning the potential impacts to water, wetlands, and aquatics, where the agencies refuse to extend the scope of analysis to the entire St. Louis River watershed. There can be no dispute that past and ongoing mining and related activities have resulted in major, significant impacts to the St. Louis River watershed, all the way downstream to the estuary which is formally designated as an “Area of Concern.”⁴⁵⁴ From thousands of acres of permanent wetlands destruction, to sulfate pollution that has wiped out miles of historic wild rice, to mercury related health warnings, the agencies cannot simply ignore a century of impacts from mining and other industrial activities on this watershed.⁴⁵⁵ As further explained by Tribal Cooperating Agencies, nearly half of the St. Louis River watershed “has experienced hydrologic alteration from extensive ditching.”⁴⁵⁶ It is reasonably foreseeable that an additional 3000 acres of wetlands within the watershed will be directly impacted by proposed new mining projects and expansions that are in active permitting and/or environmental review: the PolyMet NorthMet project, Mesabi Nugget Phase II, US Steel Minntac expansion, US Steel Keetac expansion, United Taconite Tails Basin 3 construction. To date, virtually all required wetland mitigation for mining impacts has been implemented out of the basin, representing a permanent loss of high quality ecological resources and functions.⁴⁵⁷ Similarly, in looking forward, the agencies cannot simply proclaim that no specific mine, by itself, will have any significant impacts on the entire watershed. First, the agencies are wrong that large-scale open-pit mining, including the proposed PolyMet mine, will not have significant impacts on numerous resources, including water and wetlands. Second, both NEPA and MEPA recognize that cumulatively significant impacts may occur as the result of a number of individually insignificant</p>	CUM	S	O	2	SDEIS Theme CU 02

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	impacts taking place over time within the same watershed.					
Erin Mittag	This is an error that the FEIS makes again and again, for virtually every type of impact. From the air deposition of mercury in area lakes, to ambient air pollution and regional haze, to the loss of critical habitat, to impacts on state-listed endangered plants, the FEIS compares the level of impact from this project to the overall impact and deems the impacts from this project insignificant and thus not of concern, even in regards to the cumulative problem. The FEIS must reveal the level of cumulative impact that all sources together have on impacted resources, and acknowledge that the proposed NorthMet project would be one of many sources that together cause the impacts.	CUM	S	O	2	SDEIS Theme CU 02
Erin Mittag	Due to the major deficiencies in the cumulative effects analysis for the NorthMet proposal, the Tribal Cooperating Agencies prepared their own. ⁴⁵⁹ As explained by the Tribes, the lead agencies failed to consider their repeated requests to utilize a tool developed by the EPA in 2011 in cooperation with tribes entitled, “Applying Cumulative Impact Analysis Tools to Tribes and Tribal Lands.” This is despite the Mine Site and Plant Site, and resulting impacts, being located within the 1854 Ceded Territory, and upstream from the Fond du Lac Reservation. The Tribes thus undertook “a resource-specific GIS-based approach as defined in the 2011 guidance to generate an alternative [cumulative effects analysis] that more accurately accounts for cumulative impacts to resources of tribal significance.” ⁴⁶⁰ The Co-Lead Agencies, however, failed to utilize or consider this contradictory and more detailed cumulative impacts analysis in the FEIS, in violation of NEPA.	CUM	S	O	8	SDEIS Themes CU 03, CU 12
Erin Mittag	Additional major flaws with the FEIS’ cumulative effects analysis are set forth in the November 13, 2015 request by the Fond du Lac Band of Lake Superior Chippewa for predecisional referral of the North Met proposal to CEQ. ⁴⁶² As explained by Fond du Lac, bedrock and surficial groundwater pollution is already documented at the same site PolyMet intends to use for the NorthMet project (the LTV site), and the Dunka Pit. As the Band has requested, the agencies must consider and disclose the cumulative impacts of the NorthMet proposal, LTV site, Dunka Pit, as well as the groundwater pollution from nearby iron ore mines, including the Peter Mitchell Pit, Laskin Energy, Arcelor-Mittal, United Taconite, and US Steel Minntac. Moreover, the Band reiterated the need for a geographically broader and watershed-based cumulative impacts analysis that takes into account other major proposals such as United Taconite’s proposal for 1,200 acres of wetland destruction to build a new tailings basin, and the existing pollution that is already causing water quality standard violations in the St. Louis River watershed.	WAT	S	O	10	MDNR 2015c

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Erin Mittag	<p>22.0 The Co-Lead Agencies Fail to Assess Direct and Cumulative Impacts on Wildlife. The FEIS fails to assess the cumulative impacts on sensitive wildlife species, which the FEIS defines to include federal and state-listed species, species of special concern, and Forest Service sensitive species.⁴⁶³ This issue was raised in our comments on the SDEIS at MCEA 118 and CBD 73-75, which are attached and incorporated herein. We also submitted a supplementary letter to Forest Supervisor Brenda Halter on October 8, 2015, which we incorporate herein. The FEIS neither mentions this issue in its Response to Comments, nor includes material in the text of the FEIS that responds to the issue, in violation of 40 C.F.R. § 1503.4(a) (agency must consider and respond to comments) and 40 C.F.R. § 1502.9(b) (agency must discuss in FEIS “any responsible opposing view,” and “shall indicate the agency’s response to the issues raised”). The FEIS claims that the cumulative effects analysis for wildlife “focuses on potential losses to sensitive wildlife species.”⁴⁶⁴ In fact, however, the FEIS provides only a few pages of very general information, with the vast majority of sensitive species not even mentioned. There is therefore no scientific support for the agencies’ conclusion that the proposed NorthMet mine, along with all other past, present, and reasonably foreseeable actions, “would not further threaten special status wildlife species.”⁴⁶⁵ Although Chapters 4 and 5 of the FEIS list many species of concern that either are found at the project site or for which the project site provides habitat, and Chapter 5 at least purports to assess the impacts that the NorthMet project alone would have on these species, Chapter 6 provides no comparable analysis for cumulative impacts. And yet almost all of the species of concern are on the list of Regional Forester Sensitive Species (RFSS) due to current or expected cumulative losses of habitat across their range within the region.⁴⁶⁶ Without an analysis or explanation of the ultimate impact on these species from cumulative losses and how the NorthMet project would contribute to those losses, the FEIS does not provide the “hard look” at impacts required by NEPA. NEPA requires the Forest Service to consider the potential cumulative effects of proposed actions.⁴⁶⁷ “To ‘consider’ cumulative effects, some quantified or detailed information is required.”⁴⁶⁸ “Without such information, neither the courts nor the public, in reviewing the [agency’s] decisions, can be assured that the [agency] provided the hard look that it is required to provide.”⁴⁶⁹ “General statements about ‘possible’ effects and ‘some risk’ do not constitute a ‘hard look’ absent a justification regarding why more definitive information could not be provided.”⁴⁷⁰ In its cumulative impacts analysis for wildlife, the FEIS provides only very general statements concerning risks and impacts, which falls far short of the detailed and quantified analysis required by NEPA. The sum of the assessment is found in three statements. First: Cumulative effects on wildlife may include the loss and/or fragmentation of habitat and encroachments into critical wildlife travel corridors...⁴⁷¹ Second: In addition to habitat fragmentation and loss and effects on wildlife crossing corridors, wildlife species of concern in the Nashwauk Uplands and Laurentian Uplands ecological subsections are subject to other stressors that could result in cumulative effects. Traffic and activity related to mining projects, urban development, forestry, tourism, and road expansions all increase the risk for special status wildlife species and, as such, could result in cumulative effects.⁴⁷² And finally, in regards to wildlife travel corridors: Wildlife could be affected by the NorthMet Project Proposed Action and other actions through a cumulative disruption of their travel corridors. These actions could pose additional barriers to wildlife movement by increasing the number of isolated patches of suitable habitat, increasing mortality during transit, and physically blocking travel. This may lead to increased population and genetic isolation and decreased meta-population dynamics, which in turn could lead to decreases in overall population stability and persistence. The FEIS provides additional cursory information about the approach it used to reach this “assessment,” including the spatial boundaries; the timeframe; the list of past, present, and foreseeable future actions considered; the causes of habitat changes; the vegetation types of affected habitats; and the list of wildlife corridors and projects affecting them. But aside from a couple</p>	WI	S	O	7	FEIS Section 6.2.5.4.3; FEIS App D BA Section 6.1.4, 6.2.4, 6.3.4; BE 4.5.2. SDEIS Theme WI 01

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	<p>of brief paragraphs on federally-listed species (which are addressed below), the three statements quoted above are all the cumulative assessment says about the actual impacts on wildlife. The FEIS provides no information on the status of or impacts to any specific species. As an example of what is missing, the FEIS tells us that loss of wildlife habitat in the Laurentian Uplands will be due primarily to timber harvest and mining, while losses in the Nashwauk Uplands will be due primarily due to mining and urban development.⁴⁷⁴ But it completely fails to tell us what those losses are expected to be, or how they will impact specific species. Without explaining why more detailed and quantified information cannot be provided, these very general statements are insufficient and fail to comply with NEPA. The U.S. Court of Appeals for the Ninth Circuit rejected a similar cumulative effects analysis for a proposed mining project. In <i>Great Basin Mine Watch v. Hankins</i>, the court struck down the agency’s reliance on the same sort of brief, generalized descriptions of mining impacts in the region.⁴⁷⁶ The court required the agency to include “mine-specific ... cumulative data.”⁴⁷⁷ Relying on prior cases, the court highlighted the need for a “quantified assessment of [other projects] combined environmental impacts” and “objective quantification of the impacts.”⁴⁷⁸ The FEIS for the proposed PolyMet mine similarly fails to provide the required detailed analysis of cumulative impacts. Moreover, the cumulative effects analysis entirely fails to even mention moose, despite the documented presence of moose in the area, its rapidly declining population and designation as a species of special concern, its iconic status to the citizens of Minnesota, and its cultural significance to the Tribes. The agencies’ failure to address such a fundamentally important issue violates NEPA. Chapter 5 of the FEIS acknowledges that the proposed mine by itself “would likely affect moose individuals in the vicinity through habitat loss and fragmentation”;⁴⁸⁰ cumulative impacts to moose and moose habitat should be obvious. As noted by the Tribal cooperating agencies in their comments on the initial DEIS for this project, the Minnesota advisory committee studying the decline of the moose population in northeastern Minnesota recommended preserving wetlands as sanctuaries for moose from heat stress.⁴⁸¹ Yet PolyMet is proposing the largest wetland fill ever permitted in this region, and additional losses will follow with other mining activity. Wetland mitigation for the PolyMet project will be located outside of the area that still supports a moose population, as will the largest tract of the replacement lands that the Forest Service will receive in the land exchange. This loss will undoubtedly be joined by other losses of wetlands throughout Minnesota’s remaining moose territory, but the FEIS provides no information on what the extent of those losses is likely to be. The lack of information on the projected cumulative impacts from this and other foreseeable actions is exacerbated by the lack of information on the current status of other sensitive species. This lack of information makes it impossible to guess at the significance of additional loss or fragmentation of habitat as well. For example, the FEIS tells us that “Two northern goshawk territories have been identified at or near the Mine Site.”⁴⁸² But there is no information anywhere in the FEIS by which to determine whether the loss of these territories is significant in relation to the number of other territories in the state and in the national forest and the threats they may be facing. Because the FEIS fails to provide this information, we turned to AECOM 2011a, which states, “Today, there are 23 known goshawk nest sites in Superior National Forest and 87 in the state of Minnesota.” This cannot be taken as the number of goshawk territories, however, because alternative sites are common: While goshawks do not always use the same nest for more than a year, they typically have two and up to nine alternate nest sites that are usually within a mile of the present nest. It is important to also protect these alternate nest sites that may be used in subsequent years.⁴⁸³ Thus 87 nest sites in the state could represent as few as 10 territories, which puts the loss of one or two territories into a perspective that the FEIS utterly fails to provide. The lack of information on northern goshawks stands in contrast to what is found in other recent EISs prepared by the Forest Service. For example, the Glacier Project Biological Evaluation states,</p>					

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	<p>Surveys for nesting goshawks have been conducted in several project areas within the Kawishiwi Ranger District over the past 6 years. Three occupied goshawk nesting territories have been found. One of them is within the Glacier project area. Eight survey routes consisting of approximately 60 calling points were conducted in the Glacier area in 2006 and 2007(survey records in project file). The best potential goshawk habitat is within the large mature upland patches in the Fernberg corridor and south of the Kawishiwi River and southwest of Birch Lake (goshawk map, project record). 2005 Forest-wide survey efforts showed an increase of known breeding pairs over those known in 2003 (Annual Monitoring Report 2006). Based on the 2007 Statewide Goshawk monitoring effort there are 26 known territories on the Superior National Forest. Nine were known to be occupied in 2007. Contrary to recent practice and NEPA and MEPA requirements, the FEIS provides no context on goshawk territories or population.</p>					
Erin Mittag	<p>In addition to its gaps in crucial information, the NorthMet BE minimizes the amount of impacted acres from the project to “158 acres of mature upland forest habitat” that “would be directed affected” and compares it to “625,000 acres of upland forest within the CESA that could now, or in the reasonably foreseeable future, provide habitat for northern goshawk,” concluding that “habitat loss from the Project would have a negligible cumulative effect on northern goshawks in the CESA.”⁴⁸⁵ But further investigation reveals that the 625,000 acre figure does not take account of any factors that make large portions of that forest unsuitable for goshawks, including fragmentation, age, size of patches, and noises and other disturbances. It is patently false that in the reasonably foreseeable future, this forest will become less fragmented, older, and subject to less noise and disturbance. The Glacier Project BE reveals that forest-wide, the predicted suitable habitat for northern goshawks (large patches of upland mature forest) is about 300,000 acres.⁴⁸⁶ It is unclear from the FEIS or the BE how many acres of suitable habitat will be directly and indirectly affected by the NorthMet project. This would include acreage that, while not directly impacted, is lost to goshawks because it is no longer contained within a large enough patch of mature upland forest.⁴⁸⁷ It would also include acreage affected by noise, traffic, and human presence. For the cumulative effects analysis, added to that would be habitat similarly affected by other past, present, and foreseeable future projects. The Glacier Project BE also reveals that “Foraging areas for nesting goshawk can range from 21,000 to 27,200 acres surrounding the nest site,” which again puts the total of 300,000 available acres in perspective. It would appear from these numbers that there is only sufficient habitat for about 15 breeding pairs of northern goshawks within the Superior National Forest, although the Forest Plan provides a goal of 20 to 30 breeding pairs. The loss of even one breeding pair appears significant in this context, and would be even more significant if additional breeding pairs are threatened by other foreseeable projects and activities. But the FEIS gives us none of this information. In sum, due to the failure of the FEIS to provide meaningful and detailed information and analysis, neither the public nor agency decision-makers have any idea what this project means for northern goshawks in Minnesota or the Superior National Forest. The FEIS has not done its job.</p>	WI	S	O	8	SDEIS Themes WI 01, WI 11

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Erin Mittag	<p>The FEIS provides even less information on great gray owls, which also use the site.⁴⁸⁸ The best information we were able to obtain--again, outside of the FEIS--was the last annual wildlife survey report released by the Superior National Forest in 2009. This report indicates that surveys of the "Laurentian Forest Province of Minnesota" observed one great gray owl in 2008 and two in 2009.⁴⁸⁹ Nesting information from the same report states, MOU records show one nesting record in Lake County. The Biotics database listed two nests in 2004 and four nests as of 2009: the latest two were found and protected, and are annually monitored by FS biologists. NRRl observed one individual during forest breeding bird surveys between 1991 and 2002. There are approximately 36 great gray owl nesting platforms on the SNF since 2007. Platforms have been monitored every year with no detections as of yet.⁴⁹⁰ This report indicates that the fact that great gray owls have been seen nesting and hunting at the PolyMet site is far more significant than one might suppose from reading the FEIS. The agencies' failure to analyze and disclose this directly relevant information in the FEIS violates NEPA.</p>	WI	S	O	8	FEIS App D; FEIS pg. 5-449
Erin Mittag	<p>While northern goshawks, great gray owls, and moose are three species that are known to make use of the mine site and the federal lands, the site also provides habitat for a number of other sensitive species, which are listed in the BE and FEIS.⁴⁹¹ The FEIS must also provide substantially more information on these species of concern, their habitat, and threats to their habitat throughout the Superior National Forest and the state of Minnesota in order to provide a rational and scientifically supported basis for the agencies' judgment as to the significance of the loss of habitat from this project in conjunction with other past, present and reasonably foreseeable actions. The agencies' consideration and disclosure of the cumulative impacts to federally-listed lynx, wolves, and the northern long-eared bat in the FEIS is also insufficient. Each of these imperiled species has been identified as present in the affected region, and would admittedly be adversely affected by the proposed mine.⁴⁹² But the FEIS provides only general and already obvious information that does not satisfy the hard look required by NEPA.⁴⁹³ The FEIS, for instance, discloses that cumulative impacts would result in "additional" habitat fragmentation, "may increase pressures" for lynx and wolves, "would likely result" in additional traffic and potential collisions, and "could affect" northern long-eared bats through habitat destruction and fragmentation.⁴⁹⁴ Yet the FEIS fails to take the next required step to quantify or estimate the extent and magnitude of these anticipated cumulative impacts in any way, or otherwise explain what these cumulative impacts could mean for these already imperiled populations in the region. This information is critical to allow the public and decision maker to actually weigh the significance of the likely cumulative impacts to these listed species.</p>	WI	S	O	8	FEIS Sections 4.2.5, 5.2.5, 6.1, 6.2.5 and App D
Erin Mittag	<p>We also object to geographical limitations on the projects and activities considered in the cumulative impacts assessment for wildlife.⁴⁹⁵ According to the text, The spatial CEEA [Cumulative Effects Assessment Area] for wildlife includes the portions of the Mesabi Iron Range located within the Nashwauk Uplands and Laurentian Uplands ecological subsections (see Figure 6.1.1-1). The area has been limited to the Mesabi Iron Range, as it is a definable physiographic region encompassing the region's mining, which represents an influential land use in regards to wildlife and wildlife habitat. Figure 6.1.1-1 shows the "Mesabi Iron Range" within the "Nashwauk Uplands" and the "Laurentian Uplands" to be a very narrow band of territory with no relationship to the range of any of the wildlife species of concern. Despite the above language, the assessment is not limited to the Iron Range for anything except mining projects. For example, the scant information provided on changes to habitat in the area are given for the entire Nashwauk Uplands and Laurentian Uplands areas.⁴⁹⁷ And in regards to non-mining projects, the impacts of both "community growth and development" and "forestry practices" are given at the "regional" level, which is undefined. Regarding impacts from mining, however, the FEIS inexplicably omits</p>	CUM	S	O	2	SDEIS Themes CU 01, CU 02, CU 10

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	<p>activity outside the narrow band of the Iron Range. In May 2012, the Forest Service completed an EIS for 29 federal hardrock mineral prospecting permits that acknowledged impacts to wildlife including up to 163 miles of new roads, increased traffic volume, and the increased noise from drilling.498 Although the mineral prospecting EIS was limited to an identified number of projects where the federal government owns the mineral rights, there are many additional mineral exploration projects within and near the Superior National Forest where the mineral rights are owned by private interests or the State, along with numerous other projects that were not included in the NorthMet FEIS.4 Additionally, the BLM is currently considering potential lease renewals for Twin Metals, which would result in additional exploration and other mining activities.500 And the Forest Service recently released an Environmental Assessment for the Twin Metals hydrogeological study; the Biological Evaluation from that project is included here.501 All of these projects will have impacts on wildlife, each of which may not be significant standing alone, but are very likely to be significant in the aggregate. None of these projects, however, are considered in the FEIS cumulative impacts analysis for the NorthMet project. Defining an area for the assessment of cumulative impacts must begin by looking at the resource that is potentially affected. If viability of a species within the Superior National Forest is being assessed, the appropriate area for assessing past, present and foreseeable future activities that could cumulatively impact the species is the Superior National Forest. If viability within the state is being assessed, the appropriate area is that area of the state that provides habitat for the species. Without providing information on foreseeable threats to a species in other portions of its territory, it is impossible to know the import of threats within whatever narrow area the agencies arbitrarily choose to assess.</p>					
Erin Mittag	<p>22.1 Cumulative impacts on rare plants. The FEIS contains a similar problem in regard to rare plants. This issue was raised in our comments on the SDEIS at Friends 63-64 and CBD 76, as well as in our letter of October 8, 2015 to Forest Supervisor Brenda Halter. The comments and letter are attached, and the referenced pages incorporated herein. This issue was not addressed in either the Response to Comments or the text of the FEIS, in violation of 40 C.F.R. § 1503.4(a).</p>	VEG	S	O	8	SDEIS Theme VEG 01
Erin Mittag	<p>The cumulative effects analysis for rare plants provides the same delineation of the “cumulative effects assessment area” (CEAA) as is discussed above for wildlife, i.e, the portion of the Iron Range within the Nashwauk and Laurentian Uplands.502 It then discusses the number of populations of rare plants for which Takings Permits have been issued within the CEAA.503 But rather than comparing the number of affected populations in the CEAA with the total number of populations in the CEAA, it instead provides a comparison with the number of populations statewide. The FEIS simply assumes that all populations outside the CEAA are secure, an assumption that has no basis in the record. Furthermore, limitation of the analysis to impacts for which Takings Permits have been issued very likely understates the impacts. According to the assessment for three plant species, none are expected to be indirectly affected. We question whether Takings Permits are an appropriate means to assess indirect effects; we doubt that mining companies have applied for Takings Permits for such effects, which are usually somewhat uncertain until after they occur. At any rate, the fact that as much as 8 percent of the statewide population of one species (ternate grapefern) is expected to be directly affected by currently planned “takings” on the Iron Range alone gives one reason for pause. Without some information about threats to this species throughout its range in Minnesota, the conclusion that “the cumulative effects of the NorthMet Project Proposed Action and other reasonably foreseeable activities are not expected to jeopardize the presence of B. rugulosum in Minnesota” is unfounded. The same is true for all of the other species of concern that will be impacted by this project, including the floating marsh</p>	VEG	S	O	7	SDEIS Theme VEG 01

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	marigold.					
Erin Mittag	<p>The EIS includes information provided by PolyMet contractors that has not been independently verified by the agencies. The Council on Environmental Quality’s NEPA regulation on “Agency Responsibility” clearly establishes agency duties to choose unconflicted contractors, confirm that lack of bias in writing, and supervise contractor work on EIS documents in order to maintain agency control.504 Since Co-Lead Agencies required Polymet “to submit environmental information for possible use by the agency in preparing an environmental impact statement, . . . The agency shall independently evaluate the information submitted and shall be responsible for its accuracy.”505 Moreover, any environmental impact statement prepared pursuant to the requirements of NEPA shall be prepared directly by or by a contractor selected by the lead agency . . . It is the intent of these regulations that the contractor be chosen solely by the lead agency . . . to avoid any conflict of interest. Contractors shall execute a disclosure statement prepared by the lead agency . . . specifying that they have no financial or other interest in the outcome of the project.506 Numerous circuits have read these requirements to obligate agencies to properly engage with unconflicted contractors and see to it that the proper disclosures are complete.507 Furthermore, numerous federal courts have required agencies to perform rigorous independent review of contractor and applicant information in order to prove compliance with 40 C.F.R. § 1506.5(a).508 In general, the Final EIS relies far too much on work from PolyMet and Barr Engineering. In some cases, the SDEIS simply adopts statements from PolyMet without any independent verification, such as the estimates of tax revenues for the state509 or financial assurance estimates, as discussed further in Section 2. This is also the case for many of the inputs into the water model, including recharge and vertical conductivity, as discussed further above.</p>	NEPA	S	O	5	<p>Consistent with Minnesota Rules, part 4410.2100, subp. 6 G, both the Draft and Final Scope identified that the EIS would require many reports and studies that would be supplied by the Proposer, with the content independently reviewed by state/federal agencies or the EIS contractor. No comments were received from the public objecting to this during the comment period for the Draft Scoping Document.</p> <p>During development of the EIS, the Co-lead Agencies and/or the EIS contractor independently reviewed materials submitted by the proposer and its consultant, including data, work plans, reports, and other materials related to EIS analyses. In addition, quality assurance and quality control assessments were completed for all modeling prior to use. This review and revision process resulted in multiple versions of many of the underlying documents, as evidenced by the version number assigned to these documents (e.g.; <i>NorthMet Plant Site Water Modeling Work Plan, Version 6; NorthMet Project Water Modeling Data Package, Volume 1-Mine Site, Version 14</i>). Where applicable, version numbers are included within the reference listings contained in the Final EIS Reference List.</p>
Erin Mittag	The FEIS fails to assess the potential impacts of mineral fibers on public health. The FEIS discussion of fibers misstates the current state of knowledge and scientific methodology for virtually every element that is needed for an assessment of the potential impacts of mineral fibers on public health. The FEIS must disclose and base its conclusions on the best evidence and methods available, rather than continuing to repeat the outdated position that nothing is known or can be known about	AIR	NS	X	1	

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	the toxicity of fibers or the level at which a new facility will emit them. This issue was raised in our comments on the SDEIS at CBD 87-99 and Friends 74-75, which along with reference material cited in those comments is attached and incorporated herein.					
Erin Mittag	The FEIS assessment of mineral fibers appears to be based on information from before 2009. Scientists have done a great deal of work in the past six years developing the ability to assess the toxicity of fibers of all kinds. As the FEIS puts it, “[E]xisting credible scientific evidence, with additional research, may one day provide guidance for future development of a human health based standard for amphibole mineral fiber. There is an ongoing effort in the environmental health community to develop the scientific tools and expertise to arrive at such a standard in the future.” ⁵¹⁰ These tools and expertise have advanced significantly in the past few years.	AIR	NS	X	1	
Erin Mittag	On October 6 and 7, 2015, the conference on Asbestos-like Mineral Fibers in the Upper Midwest: Implications for Mining and Health was held at the U.S. EPA Mid-Continent Ecology Division in Duluth (hereinafter “Duluth Conference”). The work of EPA research scientist Phil Cook on the toxicity of fibers was presented along with other research and information indicating that it is now possible to estimate the potential health impacts from mineral fibers such as those from Northshore Mining’s Peter Mitchell Pit and surrounding mines. The Co-lead Agencies should investigate the current potential for estimating toxicity rather than simply deeming the likely toxicity of fibers from the Duluth Complex as unknown and unknowable.	AIR	S	N	3	SDEIS Themes AIR 03, HU 05, HU 07, HU 08. The approach described in the FEIS is to control for particulate emissions to a high degree. FEIS pgs. 5-518 to 5-519
Erin Mittag	It is also untrue that estimates of emissions of fibers cannot be made. While it may be true that the emissions level cannot be pinpointed with certainty, the same is true of both emissions and discharges of all the other substances that will be released at this mine. The agencies must perform the appropriate studies and calculations of mineral fibers emissions and toxicity at the level of accuracy allowed by existing science, and provide that assessment in the FEIS.	AIR	S	N	3	SDEIS Theme AIR 03. The approach described in the FEIS is to control for particulate emissions to a high degree. FEIS pgs. 5-518 to 5-519.
Erin Mittag	As in so much of the FEIS, the discussion on amphibole mineral fibers begins by minimizing the issue. The first sentence states that the Duluth Complex “may” contain amphibole mineral fibers, as though the very presence of amphibole fibers is still unknown. ⁵¹¹ This is contradicted by the text in the FEIS itself. ⁵¹² The introduction goes on to state that taconite ore from the Northshore Mine “has received public attention with regard to potential releases of amphibole mineral fibers.” ⁵¹³ There is nothing “potential” about these releases; the Minnesota Department of Health and Pollution Control Agency have reams of data stretching over forty years indicating high levels of amphibole mineral fibers emitted from the Peter Mitchell Pit and the Northshore Mining processing plant.	AIR	S	N	12	FEIS Section 5.2.7.5.3.
Erin Mittag	The debate over the toxicity of mineral fibers released by mining in Northeastern Minnesota has long rested on the premise that because these fibers are not “asbestos,” nothing is known about their toxicity; the NorthMet FEIS follows in this vein. Rather than designing studies to look at the toxicity of these fibers, industry has tried to keep attention on the toxicity of “asbestos” fibers and the alleged impossibility of correlating the information.	AIR	NS	X	1	

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Erin Mittag	<p>In the meantime, Phil Cook and a number of researchers studying the fibers that have cost so many lives in Libby, Montana, have set aside the argument over what is and is not “asbestos” or “asbestiform” and have instead looked at toxicity studies of a range of fibers with variable factors such as particle dimensions, mass, shape, surface area, and material type. As some of these researchers point out in a 2011 journal article, “For regulatory and health assessment purposes, it is microscopical morphology that counts: there is no evidence that potentially affected cells can distinguish between ‘asbestiform’ and ‘nonasbestiform’ fibres having the equivalent dimensions.”⁵¹⁴ The EPA put together a database of 70 mineral fiber samples used in biological studies and characterized by transmission electron microscopy (TEM).⁵¹⁵ The database includes fibers from the Peter Mitchell Pit, several types of UICC asbestos fibers, and other mineral fibers not classified as asbestos.⁵¹⁶ This work was done in response to the understanding that although non-asbestos fibers (including “cleavage fragments”) may not be as toxic as asbestos, that does not mean that they are benign. As Dr. Roberts pointed out in his report to MDH, The current approach for evaluating risk from airborne asbestos dates back to 1986 and is based upon measurement of fibers of a specified size and aspect ratio (i.e., length-width ratio) using phase contrast microscopy (PCM). There are a number of problems with this approach related to the technology for fiber detection and measurement [PCM], the way in which mineral fibers of interest are defined, and the assumption that a single toxic potency value is adequate to characterize risk from all relevant mineral fiber types. Further, there is also concern mineral fibers that pose cancer risk by inhalation may be defined too narrowly, and that a single potency value for asbestos is too simplistic to adequately cover the variety of fiber sources and exposures that exists. Dr. Roberts was tasked with assessing whether the EPA database provided sufficient information to allow estimates of toxicity of a range of mineral fibers, wholly aside from their categorization as “asbestos.” Specifically, Dr. Roberts was asked to answer three questions: 1. Can the available data be used to provide fiber potency estimates? 2. Are available data adequate for dose-response modeling? 3. Is physiologically-based pharmacokinetic (PB-PK) modeling feasible? The answer to all three questions was “yes.”⁵¹⁸ At the time the report was written (2010), Dr. Roberts noted that although PB-PK modeling was feasible, it did not yet exist, but that it was being developed through the Libby Action Plan and would likely be available in the near future.⁵¹⁹ That work has now been done, and was reported on at the Duluth Conference. Thus if the statement in the NorthMet FEIS that “[t]he Co-lead Agencies believe that there is currently incomplete and unavailable scientific information to characterize the health risk to the public from exposure to mineral fibers and that the means to obtain such information are not known” is true, it is only because the agencies have failed to investigate and inform themselves of the current state of the science. At the Duluth Conference, Acting Division Director Dale Hoff presented the late Phil Cook’s work on calculating fiber potency estimates. The framework was to set the toxicity of UICC amosite asbestos at a potency of 1.0, and to estimate the relative potencies of other fibers as indicated by modeling based on the data in the EPA database. To our knowledge this material has not yet been published, but the methodology and database are available. The EPA estimates that 0.0004 UICC amosite asbestos fibers per cubic centimeter in ambient air will result in one additional cancer per 10,000 people.⁵²¹ While the discussion below relates to cancer risks, non-malignant health risks can be of even greater concern.</p>	AIR	NS	X	1	
Erin Mittag	<p>We recognize that the sum of the various types of fibers that are emitted by the mining industry in Northeastern Minnesota is likely less toxic than amosite asbestos. However, any assessment of the impact on public health has to include a discussion of the level of fibers in the ambient air, both before and during operation of the proposed mine. Information on existing fiber levels is available from MPCA and MDH. This information should have been included in the FEIS, along with a</p>	AIR	S	N	8	SDEIS Theme AIR 03. The approach described in the FEIS is to control for particulate emissions to a high degree. FEIS pgs. 5-518 to 5-519.

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	comparison to levels in a non-impacted area.					
Erin Mittag	<p>We are submitting two exhibits containing monitoring data for ambient air in Silver Bay, Beaver Bay, and Babbitt. The most recent data we have for Silver Bay (F1) and Beaver Bay (F7) is contained on an Excel spreadsheet prepared by MPCA staff and provided to Le Lind on January 24, 2007.⁵²³ The average amphibole fiber count in the ambient air in Silver Bay (F1) in 2006 was 4,998 fibers per cubic meter.⁵²⁴ The average amphibole fiber count in the ambient air in Beaver Bay (F7) in 2006 was 5,823 fibers per cubic meter. This translates to 0.0050 fibers per cc in Silver Bay and 0.0058 fibers per cc in Beaver Bay. If these fibers were as toxic as amosite asbestos, this would translate to an increased cancer risk of 12.5 and 14.5 in 10,000. We are also submitting three sampling data sheets for monitoring in Babbitt in 2008.⁵²⁵ One had a result of zero; the average of the other two samples is 8,806 amphibole fibers per cubic meter, or 0.0088 fibers per cc. This would amount to an estimated increased cancer risk of 22 in 10,000 for amosite asbestos. Thus even if the sum of toxicity of fibers from Minnesota mines is only one-tenth the toxicity of amosite asbestos, the ambient air in Minnesota mining communities is already above the EPA benchmark, which is regarded as an indicator of an acceptable level of risk.⁵²⁶ The Minnesota Air Toxics Study published in 2005 reported on monitored levels of listed air toxics between 1996 and 2001. Although the study found that a few substances were present in ambient air at above the benchmark for an additional 1 in 100,000 increased cancer risk, no substance was present above the benchmark for an additional 1 in 10,000 increased cancer risk at any location. This indicates that even if the sum of toxicity of fibers from Minnesota mines is one-hundredth the toxicity of amosite asbestos, it is still one of the most serious air toxics health issues in Minnesota. This situation is allowed to continue in part because the State focuses attention on epidemiological studies in regard to mineral fibers from mining, while for every other toxic substance (and for mineral fibers from any other industry), allowable levels in the ambient air are based on toxicological studies. Limitations based on toxicological studies protect the public at a level that is not measurable in the local population by epidemiological studies. Given the size of the local population, it would be impossible to detect an increase of one additional cancer in 10,000 people on the Iron Range, much less assign a cause. And yet discussions of the toxicity of fibers in the ambient air on the Iron Range and North Shore invariably center on epidemiological studies such as the Minnesota Taconite Workers Study. The NorthMet FEIS repeats this pattern.⁵²⁷ Minnesota agencies apparently will not require that amphibole fibers in the ambient air in Northeastern Minnesota remain below a certain level until the increase in cancer in the general population is measurable, despite the fact that MDH consistently rejects such an approach as insufficiently protective of public health. Standard agency practice for protecting the public from airborne toxins is nowhere to be found in the public discourse.</p>	AIR	S	N	12	SDEIS Themes AIR 03, HU 05, HU 07, HU 08

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Erin Mittag	<p>Turning to the proposed NorthMet project, any additional health risks from fiber emissions would add to an ongoing problem. The current situation does not allow for permitting a new facility and then monitoring to find out if the fiber level in ambient air in local communities increases. We are already past that point. As the NorthMet FEIS acknowledges, amphibole fibers are present in the NorthMet ore. The discussion of the levels of fibers in the ore attempts to minimize concern without telling us anything about what the level actually is. The text states that “amphibole mineral fibers were found to represent a relatively small percent of the mineral fibers associated with the processing of NorthMet Deposit ore; approximately 9 percent of the fibers identified from all collected samples of ore, tailings, and process water.”⁵²⁸ But the text does not tell us the total number of fibers identified or the volume of ore, tailings, and process water that they were identified in, so 9 percent means absolutely nothing. The text goes on to say that “It is not possible to accurately quantify the amount of fibers that might be emitted from the facility.” This is a curious statement in light of the quantification of emissions of virtually every other possible pollutant.⁵²⁹ The FEIS provides no explanation or reference for this judgment. This statement appears to set up a hurdle for the assessment of fiber emissions that is counter to both NEPA and the other analyses in the FEIS. While we agree that assessments should provide the greatest degree of accuracy possible, NEPA does not allow agencies to forego an assessment because it will not meet some undefined level of accuracy. Instead, the agency must use the best methods and data available, with explanations of the uncertainty involved. Taking an example from the FEIS itself, the water quality modeling provides variable inputs of water quality that may differ by orders of magnitude to consider a range of scenarios. For some of these estimates, there is no correlation between the modeled “continuation of existing conditions” and actual existing conditions at the site. Given the sophistication of air modeling in use today, we find it hard to believe that a similar level of accuracy is not possible for fiber emissions. Quantifying emissions involves two steps: measuring fiber levels in rock or process and waste streams; and applying emission factors and modeling to estimate levels in the ambient air. We found nothing in the record that indicates either of these cannot be done, and the FEIS does not say which of these steps makes the analysis impossible. Throughout the FEIS, analogs of other mine pits, waste rock, river systems, etc. are used where there is a lack of site-specific information. In addition, values from the Regional Copper Nickel Study are often included in analyses, and were in fact included in the discussion of fibers. Rough estimates of fiber levels in the ore and of the resulting impacts on ambient air can be drawn from these sources. In regards to measuring fibers in the ore, the study presented in Barr 2007¹ was done for precisely this purpose. We did not find an explanation of why this information could not be used as a basis for an estimate of the average level of fibers in the ore; if it is because the data set was not large enough, there is no explanation as to why a larger study could not be done.</p>	AIR	S	N	8	SDEIS Theme AIR 03. The approach described in the FEIS is to control for particulate emissions to a high degree. FEIS pgs. 5-518 to 5-519.
Erin Mittag	<p>If PolyMet wants to perpetuate a lack of site-specific data, a report done for the Copper Nickel Study (and referenced in the FEIS) provides a comparison between the Duluth Complex and fiber levels in the Biwabik Formation, which hosts the Peter Mitchell Pit: “The Duluth Complex data show approximately 1/3 the amphibole content of the Biwabik formation. Based on this comparison, the Duluth gabbro will produce, on an average, concentrations of amphibole comparable to or less than those of Reserve Mining Company.”⁵³⁰ The authors of the Copper Nickel Study obviously believed that enough was or could be known about the level of fibers in ore and the fate of those fibers in processing to support modeling of fiber levels in ambient air.⁵³¹ While the modeling for the Copper Nickel Study cannot be used directly for the NorthMet FEIS because the scenario modeled included a smelter and a larger volume of ore being processed, a similar site-specific modeling effort cannot be impossible for the NorthMet project. Indeed, the Copper Nickel Study explicitly expected that such an effort would be undertaken before permitting a particular project: “[T]hese estimates simply serve to highlight areas requiring</p>	AIR	S	N	12	The approach described in the FEIS is to control for particulate emissions to a high degree. FEIS pgs. 5-518 to 5-519.

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	further investigation. The site- specific considerations for a smelter (and tailing basin) must clearly address this question in the light of more detailed data.” 532 Furthermore, the Stevenson report combined with analog information from the communities affected by Northshore Mining provides another avenue for a NEPA-level assessment of potential impacts from the proposed NorthMet mine. We assume that ambient air fiber levels in Babbitt in 2008 stem from the Peter Mitchell Pit; LTV had ceased operating by then, and Mesabi Nuggets had not yet started. Also, the processing plant in Silver Bay is the only local source of fibers in Silver Bay and Beaver Bay, so ambient levels in those locations can also provide an analog.					
Erin Mittag	We assume that the NorthMet mine would process about 80% the amount of ore that Northshore Mining did in 2006, and we acknowledge that the best information available is that the NorthMet ore likely contains about one-third the amount of fibers as the Peter Mitchell Pit. However, at the NorthMet mine, the mine pit and the processing plant are close enough to each other that they would emit fibers to the same ambient air, which would approximately double the amount of fibers from one of the sources alone. This results in an emissions level of about half that affecting any of the mining communities in 2006 or 2008 (.8 x .33 x 2). Given the current level of fibers in the ambient air, increasing them by 50% without any attempt to assess the public health implications is unconscionable. And the planned Mesabi Nugget’s expansion would no doubt further add to the problem, depending on their source for taconite.	AIR	S	N	12	The approach described in the FEIS is to control for particulate emissions to a high degree. FEIS pgs. 5-518 to 5-519.
Erin Mittag	Rather than disclose this information in the FEIS to inform permitting and other agency decisions, the Co-lead Agencies propose controls for PM2.5, along with future monitoring. The levels of fibers present in the air from current mining operations reveal the fallacy of this approach. We have seen almost forty years of “regulation” of fibers at Northshore Mining, which has focused on installing supposed state-of-the-art particulate matter control technology. And while the fiber levels in ambient air are certainly lower than they would be without that technology, they still present a significant risk to public health. Are fugitive dust control measures planned for the NorthMet Mine that are not being used at Northshore Mining? If so, why isn’t Northshore Mining using them?	AIR	NS	X	1	
Erin Mittag	If PolyMet will in fact use the best possible PM2.5 control technology and practices, we fail to see how monitoring ambient air after the mine is built could help. If the agencies find that fiber levels have risen above a particular level, what action will be taken? What action will even be possible, if the best possible controls are already being used?	AIR	NS	X	1	
Erin Mittag	It is clear that the State of Minnesota will not shut down an existing mining operation until epidemiological studies show that people are dying at levels that cannot be ignored.	O	NS	X	1	
Erin Mittag	If state-of-the-art controls are already being used, the decision to permit this mine is in practicality a decision to accept the fiber emissions that will result and the subsequent fiber levels in ambient air. And yet the Co-lead Agencies have not even attempted to find out what those emissions and fiber levels will be.	AIR	S	N	8	The approach described in the FEIS is to control for particulate emissions to a high degree. FEIS pgs. 5-518 to 5-519.

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Erin Mittag	<p>The FEIS Adopts An Overly-Narrow Purpose and Need Statement for the Co-Lead Agencies That Improperly Eliminates Reasonable Alternatives. The Purpose and Need Statements in the FEIS are improperly narrow, resulting in premature elimination of reasonable alternatives. The Co-Lead Agencies are expected to “briefly specify the underlying purpose and need to which the agency is responding in proposing the alternatives including the proposed action.”⁵³⁴ While the agency is free to take the needs of the project proposer into account, but those private interests should not define the scope of the purpose and need. Instead, Agencies must look hard at the factors relevant to the definition of purpose... Perhaps more importantly [than the need to take private interests into account], an agency should always consider the views of Congress, expressed, to the extent that the agency can determine them, in the agency’s statutory authorization to act, as well as in other congressional directives.⁵³⁵ As the Seventh Circuit has explained, “One obvious way for an agency to slip past the strictures of NEPA is to contrive a purpose so slender as to define competing ‘reasonable alternatives’ out of consideration (and even out of existence).”⁵³⁶ An overly-narrow purpose that focuses on the needs of the applicant to mine a particular resource has the potential to narrow the range of alternatives “to those that would allow the miners to mine” the proposed property.⁵³⁷ The Purpose and Need Statements in the FEIS are categorized by entity, starting with PolyMet. While it is fine for the Co-Lead Agencies to include PolyMet’s purpose, it is not appropriate to use that statement as a basis for defining reasonable alternatives. Nor is it appropriate for the Co-Lead Agencies to defer to the applicant’s purpose and need, as noted above. Then follows the NorthMet Project and Land Exchange Purpose and Need Statement, which presumably applies to all Co-Lead Agencies.⁵³⁸ The first bullet point is: ? For PolyMet to utilize its leased mineral rights and recover commercial quantities and quality of semi-refined metal concentrates, hydroxides, and precipitates from the NorthMet ore body in northern Minnesota, and to process the recovered ore by reutilizing the former LTVSMC processing plant. This is an improper adoption of PolyMet’s purpose and need statement, as described above. This is PolyMet’s purpose and need, not the co-lead agencies. The third bullet point is: ? To extract and process metals in a technically and economically feasible manner, such that there would be sufficient income to cover: operating cost (which includes but is not limited to the cost of mining, processing, transportation, and waste management), capital cost (needed to build and sustain facilities), an adequate return to investors, reclamation, and closure costs and taxes. This is also an improper purpose and need statement for the Co-Lead Agencies. Putting an emphasis on whether PolyMet’s venture is profitable emphasizes PolyMet’s investors over environmental concerns. It is clearly designed to eliminate reasonable alternatives such as underground mining and the West Pit backfill from consideration, rather than to allow neutral assessment of those alternatives. By referencing the company’s plan, the company’s profitability, and the company’s processing plant, the agencies do not allow themselves any alternatives. They certainly do not allow for ore to come from any seam but the one identified by Polymet. DNR’s Purpose and Need statement is essentially a shortened version of PolyMet’s: The Purpose and Need of the Proposed Action is to produce base and precious metals precipitates and flotation concentrates from ore mined at the NorthMet Deposit by uninterrupted operation of the former LTVSMC processing plant. The processed resources would help meet domestic and global demand by sale of these products to domestic and world markets. This is the same Purpose and Need statement in the SDEIS. Thus, The Conservation Organizations repeat the same comments, including those in Section 19.2 of MCEA’s SDEIS comments.</p>	NEPA	S	N	12	Minnesota Rules, part 4410.2300, subpart E, indicates the proposed project must be described with no more detail than is absolutely necessary to allow the public to identify the purpose of the project. Section 1.3.2.4 of the Final EIS addresses this requirement of the rules. Minnesota Rules, part 4410.2300, subpart G, details the types of alternatives that an EIS should address unless reasonably excluded under three specific criteria, including whether the alternative would not meet the underlying need for or purpose of the project. DNR asserts that the project purpose was appropriately defined and did not keep the agency from considering a full range of alternatives, many of which exhibited elements that were adopted and incorporated into the NorthMet Mining Project proposed action. Consideration of alternatives occurred over the entire course of the EIS; see Final EIS Section 3.2.3.3.0.
Erin Mittag	<p>The Conservation Organizations submit that the FEIS is inadequate in a variety of ways, and the Co-Lead Agencies cannot determine that it is adequate based on the existing record. In addition, the Conservation Organizations request a Supplemental EIS on the topics described above, including the alternative of dry stacking the tailings based on new</p>	NEPA	NS	X	1	

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	information from the Mt. Polley Independent Report, as well as the potential for northward flow from the mine based on new information regarding the Peter Mitchell Pit.					
Sandra Wagner	I do not believe the water models are accurate.	WAT	NS	X	1	
Sandra Wagner	I do not believe the cumulative impacts are adequately addressed, particularly continued mining at the Peter Mitchell mine.	CUM	NS	X	1	
Sandra Wagner	That it is acknowledged this mine closure would require perpetual treatment defies Minnesota law on mine closures.	PER	NS	X	1	
Sandra Wagner	I believe this proposal would violate the Treaty Rights of Native Americans.	CR	NS	X	1	
Sandra Wagner	To not consider financial assurance at this phase makes the process flawed by design. To even suggest it is possible to ascribe a number to perpetual treatment is preposterous.	FIN	NS	X	1	
Sandra Wagner	That the DNR has repeatedly failed to enforce exiting rules and regulations, such as the sulfate standard and continued variances at the Dunka mine seriously undermine it's credibility as an effective steward of our Public Resources.	PER	NS	X	1	
Sandra Wagner	I understand the Iron Range is experiencing economic hardship, but the definition of insanity is to do the same thing expecting a different result. I remain convinced this project would do far more economic and environmental harm than any short term gain. The mineral market is collapsing due to the global gambler's greed, not need.	SO	NS	X	1	
Sandra Wagner	There is simply no resource more important than water. It is your duty to insure that it is protected at all cost for all the beings that rely on it for life, not the short term gain of a few.	WAT	NS	X	1	
Andrew Comfort	When assessing Cumulative Effects, Minnesota Rules 4410.0200 states that the preparers of the Polymet FEIS "must consider...whether future development is indicated by historic or forecasted trends..." The FEIS does not consider certain historic and forecasted trends and the resultant northward flow of water and its impact on the Boundary Waters Canoe Area. By ignoring these historic trends, the preparers of the FEIS (including the US Forest Service) are in violation of Minnesota Rules.	CUM	S	N	2	FEIS Sections 6.1.1.1, 6.2.2. DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected. The Final EIS's cumulative effects analysis and

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						<p>treatment of cumulative actions considered (Final EIS Section 6.1.1.2.1) and speculative actions (Final EIS Section 6.1.1.2.2) is consistent with the requirements of Minnesota Rules part 4410.0200, subpart 11a. The FEIS identifies 30 past, present, and/or reasonably foreseeable actions related to mining activity, and also identifies 10 speculative mining-related actions, all of which indicate the potential for future development by historic or forecasted trends.</p> <p>Minnesota Rules, part 4410.0200, subpart 11a, defines "cumulative potential effects" to involve "the incremental effects of the proposed project in addition to other projects in the environmentally relevant area that might be reasonably expected to affect the same environmental resources." The EIS defines reasonably foreseeable as those actions that are included in approved planning documents and have approved funding, are in permitting, or have a currently active federal or state permit or site plan application under review. DNR asserts this approach is consistent with cited rule.</p>
Dave Chambers	<p>Although there have been modifications to the mine proposal from the 2013 SDEIS, there are still a number of issues that have not been adequately addressed. These include: ? The design for the tailings dams still continues the use of outdated and inherently unsafe upstream-type dam construction, even when it is feasible (but more expensive) to employ safer centerline-type dam construction technology; ? The Hydrometallurgical Residue Facility is still being sited on a risky foundation which jeopardizes the long-term integrity of the double-lined containment system; ? The FEIS does not present even a basic analysis of the Financial Assurance required for both mine closure and post-closure water treatment, even though the company is willing to make this information available for public review; ? Even though the rail cars that have been redesigned could still spread as much as 32,000 pounds of ore per year along the railroad corridor, the FEIS considers that there is no potential for impact to either air or water resources; ? The FEIS still makes overly optimistic assumptions about the ability to collect seepage water from the tailings impoundment and Category 1 Waste Rock Storage Area; and, ? The FEIS continues to refuse to consider underground mining as a potential alternative for purely economic reasons, even though it can be demonstrated that underground mining could be economic viable.</p>	GEN	S	O	8	FEIS Section 3.2

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Dave Chambers	<p>The Financial Assurance for the project is not given any detailed analysis in FEIS, even though this information is available from the mining company. The rationale for this decision is given as: The level of engineering design and planning required to calculate detailed financial assurance amounts is not currently available, This is clearly not the case. Any responsible mining company will need to know what the potential financial liabilities of post-closure costs will be in order to provide a proper, and legally-required for the company's investors, financial estimate of the profitability of the proposed project. In fact, PolyMet has stated: Although NEPA and MEPA regulations do not require a discussion of financial assurance, PolyMet has provided an initial estimate of expected financial assurance needs that could be included in environmental review process (Reference (11)). (PolyMet 2015g, p. 35) The problem with presenting at least a preliminary financial assurance calculation appears to be with the agencies, not with PolyMet. The level of detail available from the company is likely more than sufficient to provide a detailed estimate of the financial assurance. This estimate would provide the public with two very important pieces of information: (1) The magnitude of the financial surety amount; and, (2) Most importantly, the methodology which will be used to calculate the final financial surety. It is an important part of the EIS process to know approximately how much money will need to be provided as a financial surety for closure and post-closure requirements, and that appropriate procedures and inclusive items are being used to estimate this amount. The financial surety clearly has the potential to affect the human financial/social environment, and is an estimate for which the information is clearly available at the EIS stage. It is noted in section 1.4.5 Financial Assurance, that: Minnesota Rules, part 6132.1200 requires that before a Permit to Mine can be granted, financial assurance instruments covering the estimated cost of reclamation should the mine be required to close for any reason at any time must be submitted and approved by the MDNR. (FEIS, p. 1-18) Even though a financial analysis is required "before a Permit to Mine can be granted" this critical element is not disclosed in the FEIS. In addition to the claim that this level of detail available is not sufficient – which is clearly not true – this is also justified by asserting: There are no applicable federal financial assurance requirements that would be incorporated into the Permit to Mine,... (FEIS, p. ES-55) The financial assurance for post-closure is a very important financial element of this project because longterm water treatment will be required. If the assumptions used in calculating the financial assurance for long-term water treatment are not inclusive of all potential costs, or if the assumptions for long-term investment return and/or inflation are not conservative enough, then the public will either be saddled with paying for the long-term water treatment with public funds, or the public will suffer the environmental impacts of not treating this</p>	FIN	S	O	8	Foth 2013; SDEIS Theme FIN 03

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	<p>contamination. These are potential significant impacts on the public. A Federal agency must prepare an EIS if it is proposing a major federal action significantly affecting the quality of the human environment (the Army Corps of Engineers and the Forest Service are co-preparers of this EIS). In 40 CFR Chapter V - Council on Environmental Quality, Part 1502 - Environmental Impact Statement § 1502.1 Purpose. The primary purpose of an environmental impact statement is to serve as an action-forcing device to insure that the policies and goals defined in the Act are infused into the ongoing programs and actions of the Federal Government. It shall provide full and fair discussion of significant environmental impacts and shall inform decisionmakers and the public of the reasonable alternatives which would avoid or minimize adverse impacts or enhance the quality of the human environment. Agencies shall focus on significant environmental issues and alternatives and shall reduce paperwork and the accumulation of extraneous background data. Statements shall be concise, clear, and to the point, and shall be supported by evidence that the agency has made the necessary environmental analyses. An environmental impact statement is more than a disclosure document. It shall be used by Federal officials in conjunction with other relevant material to plan actions and make decisions. (emphasis added) In 40 CFR Chapter V - Council on Environmental Quality, Part 1508, Terminology and Index, it states: Section 1508.14 Human environment "Human environment" shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment. (See the definition of "effects" (Sec. 1508.8).) This means that economic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment. (emphasis added) A financial surety that is not adequately calculated could have an impact on the human environment as described in the CEQ regulations, and therefore should have been analyzed in the FEIS. The "preliminary cost estimate for closure" for NorthMet is as large as \$200 million during operation (FEIS, p. 3-142). In addition, it appears that this cost estimate is for closure costs only, and does not include post-closure water treatment. It is typical that post-closure water treatment costs are as large as the direct closure costs, and if this is the case then the amount for the current financial surety is being considerably underestimated.</p>					

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	<p>Environmental Quality, Part 1508, Terminology and Index, it states: Section 1508.14 Human environment “Human environment” shall be interpreted comprehensively to include the natural and physical environment and the relationship of people with that environment. (See the definition of “effects” (Sec. 1508.8).) This means that economic or social effects are not intended by themselves to require preparation of an environmental impact statement. When an environmental impact statement is prepared and economic or social and natural or physical environmental effects are interrelated, then the environmental impact statement will discuss all of these effects on the human environment. (emphasis added) A financial surety that is not adequately calculated could have an impact on the human environment as described in the CEQ regulations, and therefore should have been analyzed in the FEIS. The “preliminary cost estimate for closure” for NorthMet is as large as \$200 million during operation (FEIS, p. 3-142). In addition, it appears that this cost estimate is for closure costs only, and does not include post-closure water treatment. It is typical that post-closure water treatment costs are as large as the direct closure costs, and if this is the case then the amount for the current financial surety is being considerably underestimated.</p>					
Dave Chambers	<p>Category 1 Stockpile Water Containment System and Cover The engineered cutoff wall or “hydraulic barrier” is critical to meeting water quality requirements for the proposed project. Key factors for the cutoff wall will be: (1) How well the cutoff wall can be grouted into the fractured bedrock to avoid contaminants moving under the wall in more permeable sediments; (2) How effective the collection system on the upstream side of the cutoff wall is at removing pressure on this barrier; and, (3) The permeability contrast between the cutoff wall and the adjacent sediments. Cutoff Wall Contact with Bedrock The cutoff wall is to be installed by: • Cutoff Wall – the cutoff wall will be constructed using trenchless in-situ construction techniques whereby a mechanical mixer is inserted into the ground along the cutoff wall alignment. As the mixer ‘walks’ down the cutoff wall alignment, it mixes the soil along the cutoff wall location with bentonite. The soil-bentonite mixing occurs in-situ and an open trench is not utilized. DeWind One-Pass Trenching and Hayward Baker are examples of companies that provide such services. At locations where boulders are encountered that interfere with trenchless construction, the boulders will be removed using conventional excavation methods. Small diameter cobbles and boulders are expelled from the excavation as part of the trenchless construction process. (PolyMet 2015), Attachment G, FTB Containment System Slope Stability Impacts p. 5) It might be difficult for an in-situ mechanical mixer to determine when it is really at the bedrock interface since no geologic logging or permeability measurements are being made. If the mechanical mixer does not reach fractured bedrock, for any reason, an zone of relatively higher permeability for contaminants to escape could be created. Collection System Cartoon diagrams of the seepage collections systems at the Category 1 Waste Rock Facility (Figure 3.2- 11) and the Tailings Impoundment (Figure 3.2-28) are presented on the following pages. If the seepage collection trenches are not extended to bedrock, as is depicted in Figure 3.2-28, or if the “drain pipes” are not placed at or near the bottom of the trenches, there will be more pressure attempting to push fluid through the cutoff wall. In the Geotechnical Data Package, Volume 1 – Flotation Tailings Basin (PolyMet 2015I), the seepage collection trenches for the tailings basin it is noted that: The seepage collection trench and drain pipe depth has not yet been finalized, but we assume an average depth of 8 feet to prevent system freezing and maintain operations through-out winter (exact depth will be determined during final design and construction). (PolyMet 2015I, p. 4) Even though the cutoff wall is designed to be</p>	WAT	S	O	8	Barr 2015b; Barr 2015e. SDEIS Themes WR 017, WR 018, WR 019

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
	<p>low-permeability, more hydraulic pressure on this barrier will mean more seepage through or under the barrier.</p> <p>Permeability Contrast The cutoff wall would have a hydraulic conductivity specification of no more than 1×10^{-5} centimeters per second (cm/sec). (FEIS, p. 3-47) CSP2's comments on DSEIS recommended 1×10^{-6} cm/sec. It's not clear why 10^{-5} is adequate, in that it only provides approximately one order of magnitude difference with some groundwater-carrying sediment units. For example, at the Tailings Basin (PolyMet 2015), p. 13): ? Depth to bedrock ranges from 2 to 47 feet with an average depth of approximately 20 feet. Bedrock was competent, with a near surface fracture zone. ? Groundwater levels were at or just below the ground surface. ? Hydraulic conductivity of the glacial till ranged from 1.5×10^{-3} ft/s (4.6×10^{-2} cm/s) to 1.7×10^{-6} ft/s (5.2×10^{-5} cm/s) with a geometric mean of 5.1×10^{-5} ft/s (1.5×10^{-3} cm/s). ? Hydraulic conductivity of the upper portion of the bedrock ranged from effectively zero (the borehole produced no water) to 2.4×10^{-5} ft/s (7.3×10^{-4} cm/s), with a geometric mean (excluding the zero inflow locations) of 1.9×10^{-6} ft/s (5.8×10^{-5} cm/s) Also see Table 4.2.2-5 Bedrock and Surficial Aquifer Hydraulic Conductivity Estimates at the Mine Site.</p>					

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Dave Chambers	<p>Tailings Basin Reclamation The plan for closure of the Tailings Basin include: The pond would remain in the reclaimed Tailings Basin with a wetland around its perimeter. In general, the pond’s maximum lateral extent would be maintained to be no closer than 625 ft from the interior edge of the Cell 1E/2E dams. ... The pond and wetland would continue to lose water via seepage, but at a reduced rate compared to operations, as a result of the bentonite amendment of the tailings</p>	GT	S	O	8	PolyMet 2015l. This is not a new tailings facility. The site specific technical analysis shows acceptable factors of safety. FEIS pgs. 5-559 to 5-560. SDEIS Themes GT 01, ALT 10

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
	<p>surface. (FEIS, p. 3-133) While the design of the bentonite cap will assist in limiting oxidation of the tailings, it violates one of the critical recommendations of the Mt Polley Expert Panel (2015) – that there be no wet closures” for tailings ponds. The Panel said: For new tailings facilities. BAT (Best Available Technology) should be actively encouraged for new tailings facilities at existing and proposed mines. Safety attributes should be evaluated separately from economic considerations, and cost should not be the determining factor. and; The goal of BAT for tailings management is to assure physical stability of the tailings deposit. This is achieved by preventing release of impoundment contents, independent of the integrity of any containment structures. In accomplishing this objective, BAT has three components that derive from first principles of soil mechanics: 1. Eliminate surface water from the impoundment. 2. Promote unsaturated conditions in the tailings with drainage provisions. 3. Achieve dilatant conditions throughout the tailings deposit by compaction. and; Where applicable, alternatives to water covers should be aggressively pursued. The design for the Tailings Basin at NorthMet meets none of these criteria. Cells 1E & 2E contain a relatively small amount of tailings. It would be feasible to design a new tailings dam, using the Category I waste rock as construction material, based on centerline design that could do away with the dangerous upstream construction method. The Tailings Basin already incorporates a cutoff wall so no additional seepage collection would need to be planned. A centerline dam design could also incorporate enhanced tailings drainage, which would promote the unsaturated conditions recommended by the Mt Polley Expert Panel. While this design might increase the amount of seepage to be treated, the Panel also noted: The Panel recognizes that creating dry tailings may increase the amount of water requiring treatment or storage. In the Panels opinion, the additional water treatment is more than compensated by the long-term stability achieved by maintaining the tailings in an unsaturated state. Upstream Dam Engineering As mentioned above, upstream-type dam construction is the most problematic type of tailings dam construction, and is associated with a majority of tailings dam accidents. Upstream dam construction has been banned as a dam construction practice in Chile as the result of the large number of seismic and other dam failures associated with this type of structure. Three noted experts on tailings dams published “The 10 Rules” for upstream tailings dams in 2002 (Martin et al 2002). They note that: It is also important to note that these rules are not options and are not interchangeable with alternative concepts of soil mechanics. These rules exist based upon the fundamentals of soil behavior, the experience of numerous tailings dam failures and the experience of well-managed facilities that perform as intended. Of the 10 rules, a “score” of 9/10 will not necessarily have a better outcome than 2/10, as any omission creates immediate candidacy for an upstream tailings dam to join the list of facilities that have failed due to ignoring some or all of the rules. Rule number 2 is: 2. A sufficiently wide beach-above-water (BAW), relative to the ultimate height of the dam, must be maintained at all times, to achieve segregation of the coarser tailings sizes and to form a relatively strong, wide, drained (unsaturated), and/or dilatant (non-contractant during shear) outer shell. The dam slope must not be underlain by tailings slimes (beach-below water - BBW), unless the designer has satisfied Rule 4 below. (emphasis added) The shell must be of sufficient width to retain the “bursting pressures” (Casagrande and MacIvor, 1970) of the upstream contractant beach sands or slimes if they liquefy. They further emphasize: The rules for the design of an upstream constructed tailings dam are not optional guidelines for individual designers to randomly select components they can “fit” into their conception of a safe facility. (emphasis added) Even for the proposed upstream-type construction, the proposed dam is violating one of the 10 Rules for upstream dam construction.</p>					

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Dave Chambers	<p>Tailings Basin Reclamation The plan for closure of the Tailings Basin include: The pond would remain in the reclaimed Tailings Basin with a wetland around its perimeter. In general, the pond’s maximum lateral extent would be maintained to be no closer than 625 ft from the interior edge of the Cell 1E/2E dams. ... The pond and wetland would continue to lose water via seepage, but at a reduced rate compared to operations, as a result of the bentonite amendment of the tailings surface. (FEIS, p. 3-133) While the design of the bentonite cap will assist in limiting oxidation of the tailings, it violates one of the critical recommendations of the Mt Polley Expert Panel (2015) – that there be no wet closures” for tailings ponds. The Panel said: For new tailings facilities. BAT (Best Available Technology) should be actively encouraged for new tailings facilities at existing and proposed mines. Safety attributes should be evaluated separately from economic considerations, and cost should not be the determining factor. and; The goal of BAT for tailings management is to assure physical stability of the tailings deposit. This is achieved by preventing release of impoundment contents, independent of the integrity of any containment structures. In accomplishing this objective, BAT has three components that derive from first principles of soil mechanics: 1. Eliminate surface water from the impoundment. 2. Promote unsaturated conditions in the tailings with drainage provisions. 3. Achieve dilatant conditions throughout the tailings deposit by compaction. and; Where applicable, alternatives to water covers should be aggressively pursued. The design for the Tailings Basin at NorthMet meets none of these criteria. Cells 1E & 2E contain a relatively small amount of tailings. It would be feasible to design a new tailings dam, using the Category I waste rock as construction material, based on centerline design that could do away with the dangerous upstream construction method. The Tailings Basin already incorporates a cutoff wall so no additional seepage collection would need to be planned. A centerline dam design could also incorporate enhanced tailings drainage, which would promote the unsaturated conditions recommended by the Mt Polley Expert Panel. While this design might increase the amount of seepage to be treated, the Panel also noted: The Panel recognizes that creating dry tailings may increase the amount of water requiring treatment or storage. In the Panels opinion, the additional water treatment is more than compensated by the long-term stability achieved by maintaining the tailings in an unsaturated state. Upstream Dam Engineering As mentioned above, upstream-type dam construction is the most problematic type of tailings dam construction, and is associated with a majority of tailings dam accidents. Upstream dam construction has been banned as a dam construction practice in Chile as the result of the large number of seismic and other dam failures associated with this type of structure. Three noted experts on tailings dams published “The 10 Rules” for upstream tailings dams in 2002 Martin et al 2002). They note that: It is also important to note that these rules are not options and are not interchangeable with alternative concepts of soil mechanics. These rules exist based upon the fundamentals of soil behavior, the experience of numerous tailings dam failures and the experience of well-managed facilities that perform as intended. Of the 10 rules, a “score” of 9/10 will not necessarily have a better outcome than 2/10, as any omission creates immediate candidacy for an upstream tailings dam to join the list of facilities that have failed due to ignoring some or all of the rules. Rule number 2 is: 2. A sufficiently wide beach-above-water (BAW), relative to the ultimate height of the dam, must be maintained at all times, to achieve segregation of the coarser tailings sizes and to form a relatively strong, wide, drained (unsaturated), and/or dilatant (non-contractant during shear) outer shell. The dam slope must not be underlain by tailings slimes (beach-below water - BBW), unless the designer has satisfied Rule 4 below. (emphasis added) The shell must be of sufficient width to retain the “bursting pressures” (Casagrande and MacIvor, 1970) of the upstream contractant beach sands or slimes if they liquefy. They further emphasize: The rules for the design of an upstream constructed tailings dam are not optional guidelines for individual designers to randomly select components they can “fit” into their conception of a safe facility. (emphasis added)</p>	GT	S	O	8	PolyMet 2015I:This is not a new tailings facility. The site specific technical analysis shows acceptable factors of safety. FEIS pgs. 5-559 to 5-560. SDEIS Themes GT 01, ALT 10

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	Even for the proposed upstream-type construction, the proposed dam is violating one of the 10 Rules for upstream dam construction.					
Dave Chambers	<p>3.2.3.4.1 Underground Mining Alternative In all of the EIS versions the alternative of underground mining has been screened and rejected. Underground mining offers a number of environmental benefits, and would conceivably offer a lesser number of jobs for a similar amount of time as the proposed alternative. As noted by GLIFWC in its comments in FEIS Appendix B: The document states that for an alternative to be evaluated it must meet 5 screening criteria: 1. Be technically feasible 2. Be available 3. Offer significant environmental benefits over the proposed project 4. Meet the purpose and need 5. Be economically feasible As GLIFWC points out, all of these criteria can clearly be met, with the exception of the last. The only rationale that is used to eliminate the alternative is economic feasibility. CSP2 has performed its own analysis of the possible underground mining, assuming an underground room & pillar mining cost of \$44/ton for backfill, and \$39/ton without backfill.1 We disagree with the assumption in AGP 2011 that the recovery rate for room & pillar mining would be limited to 55%. The method can be more flexible than that assumed by AGP. Mining methods tend have site-specific modifications that are made to make the method most flexible and productive at that site. For our purposes we have assumed that the mining method chosen will allow a recovery rate similar to that for open-hole stoping (90%). The assumptions/rationale for these cost assumptions are detailed in the table below: Mining Rate (tpd) Mining Cost (\$/ton) Milling Cost (\$/ton) General (Admin) & Contingency (\$/ton) Total Cost (\$/ton) Pre Production Capital Costs (millions \$) Source 7500 28 12.5 3.5 44.0 225.0 7500 23 12.5 3.5 39.0 205.0 References: AGP 2011 Appendix B Foth 2012 Foth 2013 InfoMine 2009 PEG 2009 Zurowski, Gordon, AGP Mining Consultants, Memo to Jim Tieberg re High Level Underground Costs, November 11, 2011 Appendix B Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange Environmental Impact Statement, September 27, 2013 Bornhorst, Theodore J, LLC, Economic Assessment of Conceptual Underground Mining Option for the NorthMet Project, Subconsultant to Foth Infrastructure & Environment, LLC, October 2012, Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange EIS, Appendix B, Attachment 1 Bornhorst, Theodore J, LLC, Response to USEPA Questions Regarding: Economic Assessment of Underground Mining Report Dated October 2012, Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange EIS, Appendix B, Attachment 2 InfoMine USA, Inc., 2009, Mining Cost Service, Section CM, Cost Models, cited in Foth 2012 Zurowski, Gordon, PEG Mining Consultants, Memo to Jim Tieberg re High Level Underground Costs, July 30, 2009 Similarly, the total operating and total pre-production costs are estimated based on the assumptions/rationale as detailed in the table below: Mining Rate (tpd) Mining Cost (\$/ton) Milling Cost (\$/ton) General (Admin) & Contingency (\$/ton) Total Cost (\$/ton) Pre Production Capital Costs (millions \$) Source 7500 28 12.5 3.5 44.0 225.0 7500 23 12.5 3.5 39.0 205.0 References: AGP 2011 Appendix B Foth 2012 Foth 2013 InfoMine 2009 PEG 2009 Zurowski, Gordon, AGP Mining Consultants, Memo to Jim Tieberg re High Level Underground Costs, November 11, 2011 Appendix B Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange</p>	ALT	S	N	8	Foth 2012. The analysis relied upon for the FEIS provided a reasonable basis for screening the underground mining alternative.

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	<p>Environmental Impact Statement, September 27, 2013 Bornhorst, Theodore J, LLC, Economic Assessment of Conceptual Underground Mining Option for the NorthMet Project, Subconsultant to Foth Infrastructure & Environment, LLC, October 2012, Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange EIS, Appendix B, Attachment 1 Bornhorst, Theodore J, LLC, Response to USEPA Questions Regarding: Economic Assessment of Underground Mining Report Dated October 2012, Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange EIS, Appendix B, Attachment 2 InfoMine USA, Inc., 2009, Mining Cost Service, Section CM, Cost Models, cited in Foth 2012 Zurowski, Gordon, PEG Mining Consultants, Memo to Jim Tieberg re High Level Underground Costs, July 30, 2009 CSP2 NorthMet Underground Mining Cost Estimates Room & pillar with backfill: mining cost from InfoMine 2009 / Foth 2012; p. 9, milling cost from InfoMine 2009 / Foth 2012, p. 11; general & contingency from Foth 2012, p. 8; Pre-production capital costs from InfoMine 2009 / Foth 2012, p. 11 Room & pillar without backfill: mining cost from InfoMine 2009 / Foth 2012; p. 10, milling cost from InfoMine 2009 / Foth 2012, p. 11; general & contingency from Foth 2012, p. 8; Pre-production capital costs from Copperwoodl, MI, 2009 / Foth 2012, p. 11 from: Foth 2012 / Appendix B Extracted Tonnage (million short tons) Underground Daily Rate of Production (tons/day) Productive Life of Mine (years) Total Operating Costs (\$/ton) Total Pre- Production Capital Costs (\$) 18 7,500 6 to 7 44 225,000,000 18 7,500 6 to 7 39 205,000,000 CSP2 Total Operating and Total Pre-Production Capital Cost Estimates With Backfill: Extracted tonnage from AGP 2011 p. 3; underground rate - see Foth 2012, p.9; total operating costs from InfoMine 2009 / Foth 2012, see Foth Cost Estimates; Pre-production capital costs from InfoMine 2009 / Foth 2012, p. 11 Without Backfill: Extracted tonnage from AGP 2011 p. 3; underground rate - see Foth 2012, p.9; total operating costs from InfoMine 2009 / Foth 2012, see Foth Cost Estimates; Preproduction capital costs from InfoMine 2009 / Foth 2012, p. 11 As was done in Appendix B of the FEIS, for comparison purposes both costs and revenue were based on 2012 data. The average net metal value for the amount to be mined, 18 million tons, was calculated based on the average net metal value per short ton developed in Appendix B, Foth 2012. Since a value for 18 million tons was not explicitly stated in Foth 2012, the data was extrapolated (in the graph below) to yield an average net metal value per short ton of \$57.13 (2012 US dollars).CSP2 Estimates of Average Net Metal Value (in blue) based on the data graphed above Economic Analysis of Underground Mining of the NorthMet Deposit The economic analysis of underground mining in the table above indicates that, in 2012, a case for positive net operating profit for underground mining without backfill can be made. Tweaking of assumptions for underground mining with backfill, especially of the operating costs, might also make underground mining with backfill potentially profitable. This is reasonable because all of assumptions made for these analyses are very rough, and if nothing else these calculations suggest that a more detailed analysis of underground mining is warranted. It should not be necessary to show that underground mining is profitable in every circumstance, only that it is possible under some reasonable set of conditions, like the economic climate of 2012, which was not ideal, to operate at a profit. It is also relevant to note that in this section it is stated: This alternative would involve mining the NorthMet Deposit as defined by the proposed open pit boundary. (FEIS, p. 3-159) If the phrase "as defined by the proposed open pit boundary" refers to the horizontal and vertical extent of the proposed pit, then a significant part of the ore body is being left out of the potential ore calculations.</p>					

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Dave Chambers	<p>3.2.3.4.1 Underground Mining Alternative In all of the EIS versions the alternative of underground mining has been screened and rejected. Underground mining offers a number of environmental benefits, and would conceivably offer a lesser number of jobs for a similar amount of time as the proposed alternative. As noted by GLIFWC in its comments in FEIS Appendix B: The document states that for an alternative to be evaluated it must meet 5 screening criteria: 1. Be technically feasible 2. Be available 3. Offer significant environmental benefits over the proposed project 4. Meet the purpose and need 5. Be economically feasible As GLIFWC points out, all of these criteria can clearly be met, with the exception of the last. The only rationale that is used to eliminate the alternative is economic feasibility. CSP2 has performed its own analysis of the possible underground mining, assuming an underground room & pillar mining cost of \$44/ton for backfill, and \$39/ton without backfill.1 We disagree with the assumption in AGP 2011 that the recovery rate for room & pillar mining would be limited to 55%. The method can be more flexible than that assumed by AGP. Mining methods tend have site-specific modifications that are made to make the method most flexible and productive at that site. For our purposes we have assumed that the mining method chosen will allow a recovery rate similar to that for open-hole stoping (90%). The assumptions/rationale for these cost assumptions are detailed in the table below: Mining Rate (tpd) Mining Cost (\$/ton) Milling Cost (\$/ton) General (Admin) & Contingency (\$/ton) Total Cost (\$/ton) Pre Production Capital Costs (millions \$) Source 7500 28 12.5 3.5 44.0 225.0 7500 23 12.5 3.5 39.0 205.0 References: AGP 2011 Appendix B Foth 2012 Foth 2013 InfoMine 2009 PEG 2009 Zurowski, Gordon, AGP Mining Consultants, Memo to Jim Tieberg re High Level Underground Costs, November 11, 2011 Appendix B Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange Environmental Impact Statement, September 27, 2013 Bornhorst, Theodore J, LLC, Economic Assessment of Conceptual Underground Mining Option for the NorthMet Project, Subconsultant to Foth Infrastructure & Environment, LLC, October 2012, Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange EIS, Appendix B, Attachment 1 Bornhorst, Theodore J, LLC, Response to USEPA Questions Regarding: Economic Assessment of Underground Mining Report Dated October 2012, Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange EIS, Appendix B, Attachment 2 InfoMine USA, Inc., 2009, Mining Cost Service, Section CM, Cost Models, cited in Foth 2012 Zurowski, Gordon, PEG Mining Consultants, Memo to Jim Tieberg re High Level Underground Costs, July 30, 2009 Similarly, the total operating and total pre-production costs are estimated based on the assumptions/rationale as detailed in the table below: Mining Rate (tpd) Mining Cost (\$/ton) Milling Cost (\$/ton) General (Admin) & Contingency (\$/ton) Total Cost (\$/ton) Pre Production Capital Costs (millions \$) Source 7500 28 12.5 3.5 44.0 225.0 7500 23 12.5 3.5 39.0 205.0 References: AGP 2011 Appendix B Foth 2012 Foth 2013 InfoMine 2009 PEG 2009 Zurowski, Gordon, AGP Mining Consultants, Memo to Jim Tieberg re High Level Underground Costs, November 11, 2011 Appendix B Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange Environmental Impact Statement, September 27, 2013 Bornhorst, Theodore J, LLC, Economic Assessment of Conceptual Underground Mining Option for the NorthMet Project, Subconsultant to Foth Infrastructure & Environment, LLC, October 2012, Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange EIS, Appendix B, Attachment 1 Bornhorst, Theodore J, LLC, Response to USEPA Questions Regarding: Economic Assessment of Underground Mining Report Dated October 2012, Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange EIS, Appendix B, Attachment 2 InfoMine USA, Inc., 2009, Mining Cost Service, Section CM, Cost Models, cited in Foth 2012 Zurowski, Gordon, PEG Mining Consultants, Memo to Jim Tieberg re High Level Underground Costs, July 30, 2009 CSP2 NorthMet Underground Mining Cost Estimates Room & pillar with backfill: mining cost from InfoMine 2009 /</p>	ALT	S	N	8	Foth 2012. The analysis relied upon for the FEIS provided a reasonable basis for screening the underground mining alternative.

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	<p>Foth 2012; p. 9, milling cost from InfoMine 2009 / Foth 2012, p. 11; general & contingency from Foth 2012, p. 8; Pre-production capital costs from InfoMine 2009 / Foth 2012, p. 11 Room & pillar without backfill: mining cost from InfoMine 2009 / Foth 2012; p. 10, milling cost from InfoMine 2009 / Foth 2012, p. 11; general & contingency from Foth 2012, p. 8; Pre-production capital costs from Copperwoodl, MI, 2009 / Foth 2012, p. 11 from: Foth 2012 / Appendix B Extracted Tonnage (million short tons) Underground Daily Rate of Production (tons/day) Productive Life of Mine (years) Total Operating Costs (\$/ton) Total Pre- Production Capital Costs (\$) 18 7,500 6 to 7 44 225,000,000 18 7,500 6 to 7 39 205,000,000 CSP2 Total Operating and Total Pre-Production Capital Cost Estimates With Backfill: Extracted tonnage from AGP 2011 p. 3; underground rate - see Foth 2012, p.9; total operating costs from InfoMine 2009 / Foth 2012, see Foth Cost Estimates; Pre-production capital costs from InfoMine 2009 / Foth 2012, p. 11 Without Backfill: Extracted tonnage from AGP 2011 p. 3; underground rate - see Foth 2012, p.9; total operating costs from InfoMine 2009 / Foth 2012, see Foth Cost Estimates; Preproduction capital costs from InfoMine 2009 / Foth 2012, p. 11 As was done in Appendix B of the FEIS, for comparison purposes both costs and revenue were based on 2012 data. The average net metal value for the amount to be mined, 18 million tons, was calculated based on the average net metal value per short ton developed in Appendix B, Foth 2012. Since a value for 18 million tons was not explicitly stated in Foth 2012, the data was extrapolated (in the graph below) to yield an average net metal value per short ton of \$57.13 (2012 US dollars).CSP2 Estimates of Average Net Metal Value (in blue) based on the data graphed above Economic Analysis of Underground Mining of the NorthMet Deposit The economic analysis of underground mining in the table above indicates that, in 2012, a case for positive net operating profit for underground mining without backfill can be made. Tweaking of assumptions for underground mining with backfill, especially of the operating costs, might also make underground mining with backfill potentially profitable. This is reasonable because all of assumptions made for these analyses are very rough, and if nothing else these calculations suggest that a more detailed analysis of underground mining is warranted. It should not be necessary to show that underground mining in profitable in every circumstance, only that it is possible under some reasonable set of conditions, like the economic climate of 2012, which was not ideal, to operate at a profit. It is also relevant to note that in this section it is stated: This alternative would involve mining the NorthMet Deposit as defined by the proposed open pit boundary. (FEIS, p. 3-159) If the phrase “as defined by the proposed open pit boundary” refers to the horizontal and vertical extent of the proposed pit, then a significant part of the ore body is being left out of the potential ore calculations.</p>					
Dave Chambers	<p>Theme ALT 10 Rejected Alternative: Paste Tailings Placed on a Lined and Covered Facility It is noted in the FEIS: Industry standard for dry stacking includes the use of a basin liner. Construction of a basin liner on the existing LTVSMC tailings basin has been evaluated and determined not to be feasible.” (FEIS, p. A-315) A liner could be added on top of the existing tailings, and the existing tailings dams (~75 feet high now) would need to be reinforced with a buttress. The reason that it is “not feasible” to put a liner on top of the existing tailings is that the tailings are not stable enough to allow it - which says something about the stability of the proposed impoundment. Cells 1E and 2E have enough capacity to hold the dry tailings, but it is likely that the existing tailings, which are approximately 60 feet thick, could not be compacted enough to provide the necessary stability upon which to build a dry stack. Interesting enough, the Hydrometallurgical Residue Facility is proposed to be built on approximately the same thickness of existing tailings.</p>	GT	S	O	8	SDEIS Theme GT 11

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Dave Chambers	Capture Efficiencies Described for the Tailings Basin It is noted in the FEIS: These new models consider the presence of an upper more-permeable bedrock zone directly below the slurry wall, with hydraulic properties based on 2014 packer tests conducted in five boreholes along the proposed capture system alignment. Sensitivity analyses have included variable bedrock hydraulic conductivity and different upper bedrock zone thicknesses up to 100 feet. The model results predict that the overall groundwater capture efficiencies of the proposed Tailings Basin surface and groundwater seepage containment system would be substantially greater than 90 percent. This analysis supports the conclusion that the assumption of 90 percent or greater groundwater capture efficiency is justified. (FEIS, p. A-546) And from Theme PD 08: The north, west, and east seepage containment systems would capture 100 percent of surface seepage under expected conditions, and 90 percent, 90 percent, and 100 percent, respectively, of groundwater seepage. The Tailings Basin South Seepage Management System would capture 100 percent of surface water (Barr 2015e, as cited in the FEIS). (FEIS, p. 439) Given the proposed method of installing the slurry wall at the tailings impoundment, there is a significant possibility that keying the slurry wall into bedrock, even fractured bedrock, will not be 100% attainable. The modeling described in the statements above assume this is possible. It is not apparent that the modeling took this possibility into account. If the slurry wall is not keyed 100% into bedrock significant leakage could result, especially with the way the seepage collection trenches are designed. We are concerned that the assumed capture efficiencies are too high.	WAT	S	O	8	SDEIS Theme WR 021
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	<p>changed conditions, failed activities, leaks, improvements in available technologies, etc. For example, PolyMet’s EIS Rock and Overburden Management Plan, Section 6.0, Reporting and Adaptive Management, states that Adaptive management is a system of management practices based on clearly defined outcomes and monitoring requirements to determine if management actions are meeting the desired outcomes and, if not, implementing changes that will best ensure that outcomes are met or re-evaluated. Adaptive management recognizes the uncertainty associated with estimates based on exploration drilling for a 20-year Mine Plan. Adaptive management measures will be developed through the Environmental Review process, permitting, and during operations, reclamation, and long-term closure to define when changes are needed. (PolyMet 2014h, p. 38) This seems to be a fairly self-evident definition of adaptive management – promising little more than modification of plans to implement changes in response to failure to meet previously committed outcomes. Adaptive management surely recognizes uncertainty (such as that uncertainty associated with estimates based on exploration drilling) but it requires a substantive process for dealing with that uncertainty and responding to the outcomes from that uncertainty on the ground. Much of the PolyMet plan does not commit to these steps or outcomes in terms of adaptive management – rather it commits to develop adaptive steps in the future. To be properly considered by regulators and the public, these steps should be included at the permitting stage – not as the mine, and its failures, unfold. Adaptive management can be a functional iterative tool for many situations but it could also be misused/misapplied as a means to delay planning or other steps necessary for a complete mine and reclamation plan - both of which are necessary prior to agency approval of a mining permit. The USFS (USDA 2005) has noted “adaptive management does not postpone action until “enough” is known, but acknowledges that time and resources are too short to defer some action” (Lee 1999, p. 5) Specific examples of these types of deficiencies include, but are not limited, to the following sections. Rock and Overburden Management Plan As discussed above, the Rock and Overburden Management Plan establishes a questionable definition of adaptive management. It seems to primarily promise to modify its Plan to accommodate variances from its pre-mine estimates. (See PolyMet 2014h, p. 38). This is insufficient on many levels – the most important being that the Plan identifies only one mitigation measure that could be taken – when actual adaptive management should require considering (with regulators and stakeholders) a variety of reasonable alternatives, considering their effectiveness, and considering their costs (both for analysis purposes and for bonding). These were not done. Adaptive Water Management Plan The Adaptive Water Management Plan contains numerous components of what this review considered essential for adaptive management. An example is contingency planning and review. On the other hand, the Adaptive Water Management Plan states To achieve the specific purpose of treatment for each of the Project phases, the operating configuration and the operating requirements of individual process units within the WWTF or the capacity of the WWTF may need to be modified. Thus, the WWTF is considered an adaptive engineering control. The WWTF treatment processes can be adapted, as necessary, to meet the actual conditions encountered during the Project and estimated by water quality monitoring and continued model updating. (PolyMet 2014d, pp. 32-33) The use of the word “adaptive” in response to the need for modification does not make the plan adaptive management (or adaptive engineering). It means that the plan may need modified in response to deficiencies and the failure to meet plan objectives or regulatory guidelines/requirements. As described above, genuine adaptive management requires more than simple adaptation. The Waste Rock Stockpile Cover system (Section 3) describes select elements that are important to adaptive management. These include specific events/conditions that could trigger change, possible changes that could achieve necessary changes, etc. The discussion is deficient in other important elements such as modeling and stakeholder participation. Similarly Section 4’s Plant Site Adaptive Water Management discussion</p>					

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	<p>includes modeling comparison and modification – which are important adaptive management elements. This section goes further than some, with notable details for the Waste Water Treatment Plant. But it does not go far enough to include elements to differentiate it from traditional, standard mine permitting where actual and modeled conditions are compared so as to guide future modeling and plan adjustment. When discussing the potential for softening pretreatment water to improve the membrane life and process effectiveness the Adaptive Plan states that . Generally, ripple effects from this adaptive management strategy will be small compared to current impacts and could be effectively mitigated. (PolyMet 2014d, p. 84) It is insufficient to simply conclude/promise that adaptive management strategy impacts will be less than current impacts. The EIS should evaluate the components of the adaptive management plan – which will ensure that it is sufficiently robust and afford regulators and the public an opportunity to evaluate it prior to permitting. Moreover, it is insufficient to simply promise that impacts can be mitigated – they must be shown to be mitigatable and/or at a minimum the mine must make clear commitment (backed by a financial surety) that impacts will actually be mitigated or resolved. In the Section 5 discussion of Floatation Tailings Basin Pond adaptive management, the plan describes actual test projects, reporting and modifying the model, modifying the design, circumstances triggering modification, and options for modified performance. (PolyMet 2014d, pp. 94-95). These are important features for adaptive management and do not appear in most of the FEISs “adaptive management” sections. The Adaptive Management plan for Non-Mechanical Treatment Systems describes The Non-mechanical treatment systems are adaptive engineering controls because they will be designed and operated based on site-specific conditions using the knowledge that is gained during the operating and reclamation phases of the Project. The specific adaptive management approach for each non-mechanical system is outlined in the development plans (Sections 6.2.3, 6.3.3, and 6.4.3). (PolyMet 2014d, p. 104) Like the previous section, this section is more akin to normal mine operations where systems are adjusted to improve performance. However this section’s focus on site-specific conditions and using knowledge to guide operations and modifications uses language more common to adaptive management - creating a potential for more robust application. The subsequent sections do not deliver actual adaptive management. Importantly, the Plan includes provisions to help ensure that the Financial Assurance includes the costs of developing non-mechanical treatment for the Category 1 Stockpile, West Pit Overflow, and Floatation Tailings Basin. It is especially critical that adaptive management plans include adequate financial assurance development and modification to ensure that at all times the mine is operating there is sufficient bond for the state to at any time take over the site and fully operate, maintain, and close the mine. Such provision for bonding must be considered in all management planning. Water Management Plan - Mine and Water Management Plan - Plant Even reviewed together with the Adaptive Water Management Plan, as with numerous chapters, what are described as adaptive management plans for the Mines (PolyMet 2015r) and Plants (PolyMet 2015i) water management could be more accurately described as contingencies or responses to deficiencies/failures. They are not unreasonable and include important elements to respond to plan failures - but they do not contain critical elements necessary for actual, meaningful, substantive adaptive management. This includes their mitigation references to the Adaptive Water Management Plan (PolyMet 2015d). By describing plans as adaptive management plans, the EIS raises the bar on what should be included. It is not sufficient to just monitoring activities and commit to possibly implementing from a list of contingencies when a problem is discovered. This is not adaptive management - it is the mine operator responding to a problem without clear commitment to meaningful adaptive process or outcome. Air Quality NorthMet Project Air Quality Management Plan - Mine, Version 4 states 6.3 Adaptive Management The Mine Site FEC (Fugitive Emission Control) Plan includes some adaptive management provisions to address the potential</p>					

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	<p>need for adjustments or modifications to the plan. Data from the meteorological monitoring system will be integrated with the data from the Mine Management System (water/chemical application, road usage, observed dust notifications) along with daily fugitive dust observation forms. These data will be reviewed, at a minimum, on a semi-annual basis to aid in analyzing trends and to determine if FECs are effective. The Mine Site FEC Plan will be modified as needed based on these reviews or other improvements that have been identified. 6.4 Available Mitigations Additional mitigations are available if necessary to achieve compliance, including - revision to Mine Site FEC Plan - planting of trees or other vegetation along unpaved roads or around other potential dust generating activities to aid dust settling before reaching the ambient air boundary. (PolyMet 2014m, pp. 12-13). The concept that “some adaptive management provisions” could constitute adaptive management implies that adopting selected provisions somehow satisfies having a complete plan. These steps do not constitute adaptive management so much as they indicate a willingness to fix problems that evolve. To truly be adaptive management the above, limited provisions need to be part of a full adaptive management scheme. As written it is unclear that the mine will do what it promises or what is necessary for effective implementation. NorthMet Project Air Quality Management Plan - Plant, Version 7, Issue Date December 5, 2014 states that 7.0 Reporting and Adaptive Management One time and periodic reporting will be required by the air emission permit. Specific reporting requirements are dictated by applicable federal and state air quality rules, Attachment A, and any other requirements anticipated in the permit. The subsections below provide a reasonable initial proposal for reporting requirements, based on knowledge of applicable regulations and professional experience and judgment. The final operating and maintenance requirements will be agreed upon between PolyMet and MPCA, during the permitting process and include public comment where applicable. (PolyMet 2014n, p. 31). The Plant plan does not contain or commit to meaningful adaptive management. It appears to be a fairly typical (non-adaptive management) mine regulatory proposal. Flotation Tailings Management Plan As discussed above, review and modification of plans does not alone constitute adaptive management. The Flotation Tailings Management Plan (PolyMet 2015n) describes a list of possible mitigation measures but otherwise fails to include other essential adaptive management components. An essential umbrella over these steps is a clear analysis that the measures proposed can accomplish what they purport to accomplish, an assessment of their likely effectiveness, and the costs associated with their implementation, failure, modification, and related bonding. Without these elements the EIS’s proposed adaptive management is more a plan to plan than an “observational method of adaptive management.” (PolyMet 2015n, pp, 5, 34)</p>					

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	<p>management surely recognizes uncertainty (such as that uncertainty associated with estimates based on exploration drilling) but it requires a substantive process for dealing with that uncertainty and responding to the outcomes from that uncertainty on the ground. Much of the PolyMet plan does not commit to these steps or outcomes in terms of adaptive management – rather it commits to develop adaptive steps in the future. To be properly considered by regulators and the public, these steps should be included at the permitting stage – not as the mine, and its failures, unfold. Adaptive management can be a functional iterative tool for many situations but it could also be misused/misapplied as a means to delay planning or other steps necessary for a complete mine and reclamation plan - both of which are necessary prior to agency approval of a mining permit. The USFS (USDA 2005) has noted “adaptive management does not postpone action until “enough” is known, but acknowledges that time and resources are too short to defer some action” (Lee 1999, p. 5) Specific examples of these types of deficiencies include, but are not limited, to the following sections. Rock and Overburden Management Plan As discussed above, the Rock and Overburden Management Plan establishes a questionable definition of adaptive management. It seems to primarily promise to modify its Plan to accommodate variances from its pre-mine estimates. (See PolyMet 2014h, p. 38). This is insufficient on many levels – the most important being that the Plan identifies only one mitigation measure that could be taken – when actual adaptive management should require considering (with regulators and stakeholders) a variety of reasonable alternatives, considering their effectiveness, and considering their costs (both for analysis purposes and for bonding). These were not done. Adaptive Water Management Plan The Adaptive Water Management Plan contains numerous components of what this review considered essential for adaptive management. An example is contingency planning and review. On the other hand, the Adaptive Water Management Plan states To achieve the specific purpose of treatment for each of the Project phases, the operating configuration and the operating requirements of individual process units within the WWTF or the capacity of the WWTF may need to be modified. Thus, the WWTF is considered an adaptive engineering control. The WWTF treatment processes can be adapted, as necessary, to meet the actual conditions encountered during the Project and estimated by water quality monitoring and continued model updating. (PolyMet 2014d, pp. 32-33) The use of the word “adaptive” in response to the need for modification does not make the plan adaptive management (or adaptive engineering). It means that the plan may need modified in response to deficiencies and the failure to meet plan objectives or regulatory guidelines/requirements. As described above, genuine adaptive management requires more than simple adaptation. The Waste Rock Stockpile Cover system (Section 3) describes select elements that are important to adaptive management. These include specific events/conditions that could trigger change, possible changes that could achieve necessary changes, etc. The discussion is deficient in other important elements such as modeling and stakeholder participation. Similarly Section 4’s Plant Site Adaptive Water Management discussion includes modeling comparison and modification – which are important adaptive management elements. This section goes further than some, with notable details for the Waste Water Treatment Plant. But it does not go far enough to include elements to differentiate it from traditional, standard mine permitting where actual and modeled conditions are compared so as to guide future modeling and plan adjustment. When discussing the potential for softening pretreatment water to improve the membrane life and process effectiveness the Adaptive Plan states that . Generally, ripple effects from this adaptive management strategy will be small compared to current impacts and could be effectively mitigated. (PolyMet 2014d, p. 84) It is insufficient to simply conclude/promise that adaptive management strategy impacts will be less than current impacts. The EIS should evaluate the components of the adaptive management plan – which will ensure that it is sufficiently robust and afford regulators and the public an opportunity to evaluate it prior to permitting. Moreover, it is</p>					

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	<p>insufficient to simply promise that impacts can be mitigated – they must be shown to be mitigatable and/or at a minimum the mine must make clear commitment (backed by a financial surety) that impacts will actually be mitigated or resolved. In the Section 5 discussion of Floatation Tailings Basin Pond adaptive management, the plan describes actual test projects, reporting and modifying the model, modifying the design, circumstances triggering modification, and options for modified performance. (PolyMet 2014d, pp. 94-95). These are important features for adaptive management and do not appear in most of the FEISs “adaptive management” sections. The Adaptive Management plan for Non-Mechanical Treatment Systems describes The Non-mechanical treatment systems are adaptive engineering controls because they will be designed and operated based on site-specific conditions using the knowledge that is gained during the operating and reclamation phases of the Project. The specific adaptive management approach for each non-mechanical system is outlined in the development plans (Sections 6.2.3, 6.3.3, and 6.4.3). (PolyMet 2014d, p. 104) Like the previous section, this section is more akin to normal mine operations where systems are adjusted to improve performance. However this section’s focus on site-specific conditions and using knowledge to guide operations and modifications uses language more common to adaptive management - creating a potential for more robust application. The subsequent sections do not deliver actual adaptive management. Importantly, the Plan includes provisions to help ensure that the Financial Assurance includes the costs of developing non-mechanical treatment for the Category 1 Stockpile, West Pit Overflow, and Floatation Tailings Basin. It is especially critical that adaptive management plans include adequate financial assurance development and modification to ensure that at all times the mine is operating there is sufficient bond for the state to at any time take over the site and fully operate, maintain, and close the mine. Such provision for bonding must be considered in all management planning. Water Management Plan - Mine and Water Management Plan - Plant Even reviewed together with the Adaptive Water Management Plan, as with numerous chapters, what are described as adaptive management plans for the Mines (PolyMet 2015r) and Plants (PolyMet 2015i) water management could be more accurately described as contingencies or responses to deficiencies/failures. They are not unreasonable and include important elements to respond to plan failures - but they do not contain critical elements necessary for actual, meaningful, substantive adaptive management. This includes their mitigation references to the Adaptive Water Management Plan (PolyMet 2015d). By describing plans as adaptive management plans, the EIS raises the bar on what should be included. It is not sufficient to just monitoring activities and commit to possibly implementing from a list of contingencies when a problem is discovered. This is not adaptive management - it is the mine operator responding to a problem without clear commitment to meaningful adaptive process or outcome. Air Quality NorthMet Project Air Quality Management Plan - Mine, Version 4 states 6.3 Adaptive Management The Mine Site FEC (Fugitive Emission Control) Plan includes some adaptive management provisions to address the potential need for adjustments or modifications to the plan. Data from the meteorological monitoring system will be integrated with the data from the Mine Management System (water/chemical application, road usage, observed dust notifications) along with daily fugitive dust observation forms. These data will be reviewed, at a minimum, on a semi-annual basis to aid in analyzing trends and to determine if FECs are effective. The Mine Site FEC Plan will be modified as needed based on these reviews or other improvements that have been identified. 6.4 Available Mitigations Additional mitigations are available if necessary to achieve compliance, including - revision to Mine Site FEC Plan - planting of trees or other vegetation along unpaved roads or around other potential dust generating activities to aid dust settling before reaching the ambient air boundary. (PolyMet 2014m, pp. 12-13). The concept that “some adaptive management provisions” could constitute adaptive management implies that adopting selected provisions somehow satisfies having a complete plan. These steps do</p>					

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	<p>not constitute adaptive management so much as they indicate a willingness to fix problems that evolve. To truly be adaptive management the above, limited provisions need to be part of a full adaptive management scheme. As written it is unclear that the mine will do what it promises or what is necessary for effective implementation. NorthMet Project Air Quality Management Plan - Plant, Version 7, Issue Date December 5, 2014 states that 7.0 Reporting and Adaptive Management One time and periodic reporting will be required by the air emission permit. Specific reporting requirements are dictated by applicable federal and state air quality rules, Attachment A, and any other requirements anticipated in the permit. The subsections below provide a reasonable initial proposal for reporting requirements, based on knowledge of applicable regulations and professional experience and judgment. The final operating and maintenance requirements will be agreed upon between PolyMet and MPCA, during the permitting process and include public comment where applicable. (PolyMet 2014n, p. 31). The Plant plan does not contain or commit to meaningful adaptive management. It appears to be a fairly typical (non-adaptive management) mine regulatory proposal. Flotation Tailings Management Plan As discussed above, review and modification of plans does not alone constitute adaptive management. The Flotation Tailings Management Plan (PolyMet 2015n) describes a list of possible mitigation measures but otherwise fails to include other essential adaptive management components. An essential umbrella over these steps is a clear analysis that the measures proposed can accomplish what they purport to accomplish, an assessment of their likely effectiveness, and the costs associated with their implementation, failure, modification, and related bonding. Without these elements the EIS's proposed adaptive management is more a plan to plan than an "observational method of adaptive management." (PolyMet 2015n, pp, 5, 34)</p>					

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Dave Chambers	<p>5.2.4.2.2 Transportation and Utility Corridor Indirect Effects The FEIS analyzes the effect of spillage & blowoff as dust effects to vegetation (Section 5.2.4.2.1) and potential air quality impacts (minimal – Section 5.2.74.2). However, the primary concern for ore scattered along the transportation corridor is on water quality. At the Flambeau mine a small stream located next to the now-closed ore loading terminal is still contaminated with copper from non-point sources. This contamination is most probably related to dust blowoff from the ore trains, since copper is elevated in the entire sub-drainage (Chambers and Zamzow 2009). According to the FEIS, the ore trains would travel on a: ... railroad, which would generally be used to transport ore from the Mine Site to the Plant Site using three to four trains, each consisting of sixteen to twenty 100-ton, side-dumping ore cars ... (Section 3.2.2.2.4 Use During Operations, p. 3-85, emphasis added) The amount of ore spillage was originally estimated to be 6.14 tons per year for unrefurbished cars (PolyMet 2015q). However, after reworking the door hinges, PolyMet estimates the amount of spillage can be reduced 95% (PolyMet 2014a). The quantity of ore that could potentially spill through the door and hinge gaps of a single refurbished ore car is estimated to be 0.20 tons per year. (FEIS, p. 5-164) The maximum number of cars (see the emphasis added above) is: Four trains x 20 cars per train = 80 cars then: 0.2 tons/yr/car x 80 cars= 400 pounds/yr/car 400 pounds/yr/car x 80 cars (FEIS p. 3-85) = 32,000 pounds/yr 32,000 pounds/yr of ore falling from the modified rail ore cars onto the railroad corridor is still a potentially significant amount. It was also noted in Section 8 – Major Differences of Opinion: GLIFWC does not believe that monitoring of the creeks along the rail line will be effective in preventing or minimizing impacts because once detected in monitoring, the impact will have already occurred. GLIFWC states that cleanup of ore dust in an aquatic environment is a long and difficult process. (FEIS, p. 8-24) and; The rail line between the mine and the processing plant is approximately 8 miles long, 1 mile of which is over wetlands, and crosses over at least 3 creeks. ... Because transport will deposit some level of ore and ore dust along the rail line, methods for control of contaminated runoff from along the rail line must be developed and implemented in the mine plan. (FEIS, Appendix C Tribal Agency Position Supporting Materials) Especially given that it is estimated that as much as 32,000 pounds/yr of ore can fall on railroad corridor, we must agree. Baseline soil sampling along the rail route should be established, and regular soil sampling should be conducted to detect soil contamination before it leads to non-point source pollution of streams.</p>	WAT	S	O	8	The MDNR would require a Spilled Ore Plan as part of the Permit to Mine for monitoring the extent of spillage and identifying appropriate mitigation measures. Larger pieces of ore that are spilled from the cars would be recovered during routine maintenance of the track.
Dave Chambers	<p>5.2.4.2.2 Transportation and Utility Corridor Indirect Effects The FEIS analyzes the effect of spillage & blowoff as dust effects to vegetation (Section 5.2.4.2.1) and potential air quality impacts (minimal – Section 5.2.74.2). However, the primary concern for ore scattered along the transportation corridor is on water quality. At the Flambeau mine a small stream located next to the now-closed ore loading terminal is still contaminated with copper from non-point sources. This contamination is most probably related to dust blowoff from the ore trains, since copper is elevated in the entire sub-drainage (Chambers and Zamzow 2009). According to the FEIS, the ore trains would travel on a: ... railroad, which would generally be used to transport ore from the Mine Site to the Plant Site using three to four trains, each consisting of sixteen to twenty 100-ton, side-dumping ore cars ... (Section 3.2.2.2.4 Use During Operations, p. 3-85, emphasis added) The amount of ore spillage was originally estimated to be 6.14 tons per year for unrefurbished cars (PolyMet 2015q). However, after reworking the door hinges, PolyMet estimates the amount of spillage can be reduced 95% (PolyMet 2014a). The quantity of ore that could potentially spill through the door and hinge gaps of a single refurbished ore car is estimated to be 0.20 tons per year. (FEIS, p. 5-164) The maximum number of cars (see the emphasis added above) is: Four trains x 20 cars per train = 80 cars then: 0.2 tons/yr/car x 80 cars= 400 pounds/yr/car 400 pounds/yr/car x 80 cars (FEIS p. 3-85) = 32,000 pounds/yr 32,000 pounds/yr of ore falling from the modified rail ore cars onto the railroad corridor is still a potentially</p>	WAT	S	O	8	The MDNR would require a Spilled Ore Plan as part of the Permit to Mine for monitoring the extent of spillage and identifying appropriate mitigation measures. Larger pieces of ore that are spilled from the cars would be recovered during routine maintenance of the track.

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Dave Chambers	<p>It was noted earlier in the FEIS that: The inclusion of relatively large zones of finer-grained tailings within this outer shell reduces the drainage ability of the shell, increasing the phreatic surface, and reduces the localized shear strength due to the generally weaker behavior of the finer-grained tailings. There were instances during the operation of the LTVSMC Tailings Basin where significant amounts of fine tailings and slimes settled near the perimeter dams. (4.2.14.2.2 Development of the Existing LTVSMC Tailings Basin, p. 4-427) It is proposed to use Cement Deep Soil Mix (CDSM), and other measures like drains, to stabilize the tailings in order to allow upstream dam construction to continue. Also noted in the FEIS is that the geometry and physical changes to the embankments (such as CDSM) were incorporated into the design so that all computed slope stability Factors of Safety met or exceeded the Factors of Safety required by the NorthMet Geotechnical Modeling Work Plan (PolyMet 2015I, Attachment A). It is also noted in the Geotechnical Data Package for the Tailing Basin (PolyMet 2015I) that: The appropriate approach hinges on the extent, composition and continuity of stringers within the deposit as subsequently described. Several types of evidence support the conclusion that heterogeneity within the deposits is localized, so widespread and continuous stringers of the weakest material (slimes) are unlikely and isotropic parameters are appropriate. (PolyMet 2015I, p. 63, emphasis added) This is a necessary assumption for time-efficient modeling. It is also a critical assumption in terms of keeping the costs of the modeling task in a reasonable range. However, if this assumption is wrong, even in relatively local regions of the dams, then the modeling is wrong. To illustrate the complexity of the tailings near and under the dam structures, Figure 5.2.14-6 for cross section F of the tailings basin, the most critical cross section in terms of potential instability. Cross Section F, which intersects the northern dam of Cell 2E, as shown in Figure 5.2.14-4, was selected to represent the critical cross section for stability analysis purposes as it is the maximum section based on height as measured from the downstream toe to the proposed final crest, some layers of the weaker fine tailings and slimes extend close to the dam, and the original starter dam is underlain by peat. (FEIS, p. 5-657) The dam in the area of Cross Section F (see Figure 5.2.14.6 on the following page) will also require underdrains in order to provide long-term stability (PolyMet 2015I, p. 73). This building complexity only raises the chances for misinterpretation and oversimplification in the modeling. Simpler models are better. The Cement Deep Soil Mix columns are designed to provide more weight bearing capacity in the tailings</p>	GT	S	N	8	As identified in the comment, heterogeneity within the deposit is supported by evidence, therefore not assumed. The placement of the CDSM columns addresses slope stability issues.

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	<p>to attempt to justify further upstream-type dam construction. This is illustrated in (PolyMet 2015I) Figure 5-2. Note also the complexity of the geology illustrated in this figure. Of note is that all of the cross section views of the CDSM the top of the CDSM Zone terminates before the top of the LTVSMC tailings, and bottoms in glacial till, not bedrock. Since this is done consistently we must assume it is intentional, yet there is no explanation in the FEIS or PolyMet 2015I as to why these columns are not extended to the top of the LTVSMC tailings.</p>					
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	<p>2015I, p. 73). This building complexity only raises the chances for misinterpretation and oversimplification in the modeling. Simpler models are better. The Cement Deep Soil Mix columns are designed to provide more weight bearing capacity in the tailings to attempt to justify further upstream-type dam construction. This is illustrated in (PolyMet 2015I) Figure 5-2. Note also the complexity of the geology illustrated in this figure. Of note is that all of the cross section views of the CDSM the top of the CDSM Zone terminates before the top of the LTVSMC tailings, and bottoms in glacial till, not bedrock. Since this is done consistently we must assume it is intentional, yet there is no explanation in the FEIS or PolyMet 2015I as to why these columns are not extended to the top of the LTVSMC tailings.</p>					
Dave Chambers	<p>One of the critical design parameters for the Hydrometallurgical Residue Facility is maintaining the integrity of the liner system. PolyMet plans on building the Hydrometallurgical Residue Facility on top of multiple layers of tailings and peat (see Figure 5.2.14-9). In order to stabilize the underlying material PolyMet is proposing to:</p> <ul style="list-style-type: none"> • Install wick drains (if required); and • Place, monitor, and remove a preload fill in the existing LTVSMC Emergency Basin to preconsolidate existing material, thereby reducing future anticipated settlements to mitigate the potential future strains. (FEIS, p. 5-662) A preload would be placed on the existing LTVSMC Emergency Basin to consolidate the foundation materials before construction of the Hydrometallurgical Residue Facility. Wick drains may be used to help accelerate the consolidation time by increasing the effective hydraulic conductivity of the tailings due to decrease in flowpath length. Some portion of this load would be removed before construction, and the remaining material would be graded to provide sufficient drainage slope and provide a suitable foundation material for the facility. The material would rebound a small amount after the preload is removed. <p>The aggregate settlement at a representative location within the Emergency Basin, considering the maximum anticipated tailings thickness in the foundation, is computed to be 3.9 ft. The material at this location is modeled to consolidate an additional 1.4 ft by the end of operations of the Hydrometallurgical Residue Facility. (emphasis added) ... Strain in the Hydrometallurgical Residue Facility liner system would result from differential settlement in the facility foundation between points along the liner. (FEIS, p. 5-667) Adequate factors of safety should be guaranteed by installing engineered facilities verified by quality control, when possible – not by modeling. A less technologically demanding, and safer, method of insuring the stability of the foundation of the Hydrometallurgical Residue Facility is to remove the problematic material down to bedrock. The material removed could be placed in the tailings basin, and not only would the subgrade be stable, but more room for hydrometallurgical residue would be gained. In the case of the Hydrometallurgical Residue Facility placing the liner on the granite bedrock is possible. Problems with the bottom liners likely could not be fixed without removing all of the waste. Safety, not cost, should drive liner foundation design considerations. The short-term attempt to</p> 	GT	S	O	8	PolyMet 2014c Sections 5.3, 5.4; PolyMet 2014r Attachment H

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	save money by attempting to consolidate the tailings and peat underlying the proposed Hydrometallurgical Residue Facility might backfire in the long run.					
Dave Chambers	<p>One of the critical design parameters for the Hydrometallurgical Residue Facility is maintaining the integrity of the liner system. PolyMet plans on building the Hydrometallurgical Residue Facility on top of multiple layers of tailings and peat (see Figure 5.2.14-9). In order to stabilize the underlying material PolyMet is proposing to:</p> <ul style="list-style-type: none"> • Install wick drains (if required); and • Place, monitor, and remove a preload fill in the existing LTVSMC Emergency Basin to preconsolidate existing material, thereby reducing future anticipated settlements to mitigate the potential future strains. (FEIS, p. 5-662) A preload would be placed on the existing LTVSMC Emergency Basin to consolidate the foundation materials before construction of the Hydrometallurgical Residue Facility. Wick drains may be used to help accelerate the consolidation time by increasing the effective hydraulic conductivity of the tailings due to decrease in flowpath length. Some portion of this load would be removed before construction, and the remaining material would be graded to provide sufficient drainage slope and provide a suitable foundation material for the facility. The material would rebound a small amount after the preload is removed. The aggregate settlement at a representative location within the Emergency Basin, considering the maximum anticipated tailings thickness in the foundation, is computed to be 3.9 ft. The material at this location is modeled to consolidate an additional 1.4 ft by the end of operations of the Hydrometallurgical Residue Facility. (emphasis added) ... Strain in the Hydrometallurgical Residue Facility liner system would result from differential settlement in the facility foundation between points along the liner. (FEIS, p. 5-667) Adequate factors of safety should be guaranteed by installing engineered facilities verified by quality control, when possible – not by modeling. A less technologically demanding, and safer, method of insuring the stability of the foundation of the Hydrometallurgical Residue Facility is to remove the problematic material down to bedrock. The material removed could be placed in the tailings basin, and not only would the subgrade be stable, but more room for hydrometallurgical residue would be gained. In the case of the Hydrometallurgical Residue Facility placing the liner on the granite bedrock is possible. Problems with the bottom liners likely could not be fixed without removing all of the waste. Safety, not cost, should drive liner foundation design considerations. The short-term attempt to save money by attempting to consolidate the tailings and peat underlying the proposed Hydrometallurgical Residue Facility might backfire in the long run. 	GT	S	O	8	PolyMet 2014c Sections 5.3, 5.4; PolyMet 2014r Attachment H

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Dave Chambers	Both the Hydrometallurgical Residue Facility (PolyMet 2014c, p. 11) and the Tailings Basin (PolyMet 2015I, p. 66) use a design earthquake event with a peak ground acceleration of 0.024g (2,475 year return period). The choice of a 2,475-year return design earthquake is not adequate for a structure that must hold in perpetuity. The Maximum Credible Earthquake, not the 2,475-year return event – which is significantly less than an Maximum Credible Earthquake – should be used for the design event for all permanent structures, both dams and waste rock. The Maximum Credible Earthquake is recommended to be a 10,000-year return period earthquake (ICOLD 2001). That using the 2,475-year return significantly underestimates the effect of an earthquake on a tailings dam or water rock pile. This can be seen by looking at the horizontal accelerations (g) in Table 6-2 Summary of Probabilistic Seismic Hazard Analysis Results (PolyMet 2015I). The 975-year return period earthquake has a maximum acceleration of 0.025g. The 2,475-year return period earthquake has a maximum acceleration of 0.055g, over twice that of the 975-year event. The maximum horizontal acceleration from a 10,000-year event would be significantly larger than that for a 2,475-year event. Even if the legal requirement is only for a 2,475-year return design earthquake, from an engineering and safety standpoint PolyMet and its consultants should not accept the minimum required. They should do what safety and conservative management requires.	GT	S	N	11	
Dave Chambers	Both the Hydrometallurgical Residue Facility (PolyMet 2014c, p. 11) and the Tailings Basin (PolyMet 2015I, p. 66) use a design earthquake event with a peak ground acceleration of 0.024g (2,475 year return period). The choice of a 2,475-year return design earthquake is not adequate for a structure that must hold in perpetuity. The Maximum Credible Earthquake, not the 2,475-year return event – which is significantly less than an Maximum Credible Earthquake – should be used for the design event for all permanent structures, both dams and waste rock. The Maximum Credible Earthquake is recommended to be a 10,000-year return period earthquake (ICOLD 2001). That using the 2,475-year return significantly underestimates the effect of an earthquake on a tailings dam or water rock pile. This can be seen by looking at the horizontal accelerations (g) in Table 6-2 Summary of Probabilistic Seismic Hazard Analysis Results (PolyMet 2015I). The 975-year return period earthquake has a maximum acceleration of 0.025g. The 2,475-year return period earthquake has a maximum acceleration of 0.055g, over twice that of the 975-year event. The maximum horizontal acceleration from a 10,000-year event would be significantly larger than that for a 2,475-year event. Even if the legal requirement is only for a 2,475-year return design earthquake, from an engineering and safety standpoint PolyMet and its consultants should not accept the minimum required. They should do what safety and conservative management requires.	GT	S	N	11	
Ruth Starks	I greatly oppose the PolyMet mine because of the health risks for the citizens in the area, and the long range, costly effects on the environment (which will eventually be left to the taxpayers). We need to preserve Minnesota's clean water legacy and all the great benefits that go with it.	GEN	NS	X	1	
Abby Tofte	I know how important taconite mining and processing is to our community and our state, but this is a different type of mining. A VERY very different type of mining with horrible possible outcomes. We really, really need to take a look at this type of mining and especially the companies coming in to carry out the process. We can not afford to risk polluting the largest fresh water supply in the world. When water scarcity is a real global threat, we must seriously look at this and realize, it's NOT worth the risk. I am pro-taconite mining but VERY much so against sulfide mining in northern Minnesota.	GEN	NS	X	1	

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Hans Casperson	Will there be a vehicle weed wash system In place to control the spread of invasive species to and from the mine sight. It is common practice on large incidents to wash all incoming and outgoing vehicles when there are resources from out of town. A vehicle weed wash system or weed wash contractor would prevent the spread of noxious weeds from incoming and outgoing vehicles during the construction phase.	WAT	NS	X	1	
Daniel Westholm	The financial assurances of the company are not suitable for the time and geographical scale of the project. At some point in the future, a catastrophic weather event or economic collapse may destroy our ability to contain the legacy pollution.	FIN	NS	X	1	
Daniel Westholm	After decades of effort in cleaning up pollution in the St. Louis River estuary left by long vanished industries, this project will essentially do the same thing to coming generations of this state, this time in full awareness of the risks and at the very headwaters of the same river. Knowingly bequeathing a serious environmental problem for at least the next 500 years worth of Minnesotans is morally wrong.	FIN	NS	X	1	
Daniel Westholm	The land exchange sets a precedent for the waves of mines that may follow if Polymet is approved.	LAN	NS	X	1	
Daniel Westholm	Wild rice in the Partridge and St. Louis Rivers will not be protected by the mine discharges.	VEG	NS	X	1	
Kristine Vesley	Along with so many others, I have studied the issues and now whole-heartedly oppose the proposed PolyMet NorthMet copper-nickel sulfide mine. In fact, it sickens me that the project has come as far as it has, because the momentum generated and the money invested always seems to favor "moving forward." But please, Governor Dayton and other decision makers within the Department of Natural Resources and other governmental agencies, do not just go with the flow on this. Instead, consider the much more precious flow of our northern Minnesota waters. There are times and places where "risk analysis" is not enough, because our relatively pristine environment is not worth ANY risk for these products at this point in time. I feel that the assumptions in the proposal are inadequate and frankly, wishful thinking. Let's get real about the potential for horrible consequences of this mine. I beg you: Please do not sell out our state's environment and future generations for a few jobs. Be leaders. Be examples for other states.	GEN	NS	X	1	
Kristine Vesley	I too would love a nice job up north, but I would not seek it at the expense of our irreplaceable natural resources. What is more important? Painfully extracted copper? Or water? And peace of mind? We have to stop the destruction sometime. Why not here and now? Minnesotans are tough. We will figure out new economic solutions.	SO	NS	X	1	
Kristine Vesley	I also strongly object to the proposed NorthMet Mining Project Land Exchange in the Superior National Forest because it conflicts with federal policy to protect wetlands, resulting in direct destruction of 913 acres of wetlands and destruction or impairment of up to 8,264 acres of wetlands. It would degrade surface and groundwater, violating the Superior National Forest plan and state, federal and tribal water quality standards. It would harm endangered, threatened and species of concern, including the northern goshawk, great gray owl, lynx and moose.	LAN	NS	X	1	

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Kristine Vesley	I oppose any federal Clean Water Act permit for PolyMet discharge and wetlands destruction because PolyMet discharge of pollutants and wetlands destruction and impairment would have adverse impacts on municipal water supplies, aquatic life, wildlife, human health and welfare, environmental justice and special aquatic sites. The PolyMet proposal fails to quantify or provide mitigation for indirect loss of up to 8,264 acres of wetlands, and provides wholly inadequate mitigation for direct destruction of 913 acres of wetlands within the Lake Superior Basin.	WET	NS	X	1	
Daniel Westholm	The financial assurances of the company are not adequate for the time and geographical scale of the project. At some point in the future, a catastrophic weather event or economic collapse, may destroy our ability to contain the legacy pollution.	FIN	NS	X	1	
Daniel Westholm	After decades of effort in cleaning up pollution in the St. Louis River estuary left by long vanished industries, we will then essentially do the same thing to coming generations of this state, this time in full awareness of the risks and at the very headwaters of the same river. Knowingly bequeathing a serious environmental problem for at least the next 500 years worth of Minnesotans is morally wrong.	FIN	NS	X	1	
Daniel Westholm	The land exchange sets a precedent for The waves of mines that WILL follow if PolyMet is approved.	LAN	NS	X	1	
Daniel Pauly	the FEIS continues to outline a plan of action that will almost certainly be in significant violation of allowed mercury discharge levels, which will allow for increased methylation of mercury, and which will require far higher expenditures of funds for site revision and/or remediation than would otherwise be necessary.	MERC	S	O	8	SDEIS Theme MERC 01
Daniel Pauly	The FEIS assessment of Tailings Basin mercury contamination conditions is fraught with systematic data integrity problems that include mathematical errors in key formulas, improper selection of data sets, and suspected sample collection errors. These same errors were present in the SDEIS, but have NOT been remedied in the FEIS.	GEN	NS	X	1	
Daniel Pauly	The errors and omissions in the Tailings Basin dataset have permeated the FEIS (as they had with the SDEIS) and its supporting reports, resulting in incorrect fundamental conclusions as to current and future mercury discharges at the Tailings Basin and Waste Water Treatment Plant. In particular, the Tailings Basin and Waste Water Treatment Plant as proposed are likely to significantly increase total mercury, and especially methylmercury, loading in the Embarrass River watershed.	GEN	NS	X	1	
Daniel Pauly	In view of the data integrity issues and improper mercury discharge conclusions, the NorthMet FEIS should review previously discarded Tailings Basin alternatives.	ALT	NS	X	1	
Daniel Pauly	The Tailings Basin has four active NPDES monitoring locations that are positioned to intercept Tailings Basin seepage. NorthMet documents state that these monitoring locations provide the best data for determining Tailings Basin discharges. Inexplicably, the FEIS relies almost exclusively only on data from one of these discharge locations – the one that appears to show seepage below 1.3 ng/L. All three of the other discharge locations, including one that is better positioned relative to the likely flow of NorthMet discharges, were essentially ignored. The result is an improperly skewed assessment that mercury levels will be lower than 1.3 ng/L. Correction of this error shows mercury discharges above 1.3 ng/L. 2. Looking beyond NPDES monitoring sites, a comprehensive review of mercury seepage data collected over time at the Tailings Basin	WAT	S	O	3	FEIS Table 4.2.2-29 and 4.2.2-33. DS006 is not expected to be impacted by the Proposed Project.

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	also shows that Tailings Basin seepage will exceed Great Lakes Initiative mercury levels of 1.3 ng/L. Despite the availability of this information, it is essentially ignored in the FEIS.					
Daniel Pauly	The FEIS also relies upon a faulty mercury sequestration test that predicts remarkably low mercury levels in Tailings Basin seepage, while ignoring a superior test that does not predict significant sequestration. Specifically, the FEIS gives great weight to a very flawed 8 hour experiment with NorthMet tailings in a flask, while never even mentioning in the FEIS a much more comprehensive test prepared for the NorthMet site that showed mercury levels are likely to be significantly above Great Lakes Initiative standards.	MERC	S	N	8	Research is available noting decreased mercury concentrations from taconite tailings in field measurements. Seepage from taconite tailings basins was measured at concentrations lower than precipitation and surrounding waters.
Daniel Pauly	The FEIS includes an "Assessment of Existing Pond Water and Groundwater Quality at the Tailings Basin" that shows mercury seepage at nearly six times the Great Lakes standard for mercury discharges. This result is inexplicably not discussed further in the FEIS.	WAT	NS	X	1	
Daniel Pauly	A combination of errors and faulty analysis cause the FEIS to erroneously conclude that Tailings Basin mercury discharges will be below 1.3 ng/L. These errors result in numerous misstatements and faulty conclusions in the FEIS. Two of these deficiencies lead to notable flaws: 1) failure to design and test a Waste Water Treatment Plant (WWTP) that will adequately determine viability of mercury removal;	PD	NS	X	1	
Daniel Pauly	2) design of a discharge capture system that incorporates a wetland that will receive the majority of the mercury and sulfate from the Tailings Basin, and which will meaningful increase mercury contamination in the Embarrass River watershed.	PD	NS	X	1	
Daniel Pauly	The WWTP will use reverse osmosis to remove contamination from Tailings Basin seepage. The FEIS discusses a pilot test for the WWTP that was conducted in 2012. Unfortunately, the WWTP pilot test never evaluated mercury removal using reverse osmosis. In fact, as the Pilot Test report itself states, the WWTP designers don't know how much mercury can be removed by the WWTP. The report states that maybe as little as 20 percent, or maybe as much as 99 percent, of mercury might be removed. One guestimate is given by a salesperson for PolyMet's membrane manufacturer of "about 70 percent" for mercury removal. Even then, according to the FEIS documents, removal of methylmercury does not appear possible using the planned WWTP design. In other words, removal of the most hazardous species of mercury, the one that bio accumulates in fish and humans, has not even been considered in the WWTP design.	PD	S	N	12	FEIS Section 5.2.2.3.4. PolyMet 2015q App. F
Daniel Pauly	The FEIS seeks to address these concerns with a proposed "adaptive engineering" approach for the WWTP design and operation. An "adaptive engineering" approach is inconsistent with best practices in the literature for removal of contaminants using reverse osmosis, because each location and system has unique problems and challenges. Due to the relatively complex design of the NorthMet project water flows, including significant seasonal variations of likely methylmercury flows, the WWTP will need to remove disparate contaminants from quite variable influent streams. By approaching critical issues and long term challenges with an adaptive engineering approach, the NorthMet project risks decades of uncertainty, contaminant release violations, and unforeseen costs because the analysis will be undertaken long	WAT	S	O	8	SDEIS Themes PD 06, MERC 15, WR 137; PolyMet 2015d

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	<p>after the mine is in operation, and some of analysis won't be undertaken until after the mine is closed. This approach fails to provide decision makers with adequate information to assess what the treatment costs will be. For example, it is possible that mercury removal alone could add significant costs to WWTP as currently envisioned, because the various species of mercury are removed by different types of technology. Inexplicably, the WWTP and Pilot Test never even consider mercury removal as an issue, and so no site-specific costs for mercury removal can be calculated.</p>					
Daniel Pauly	<p>The second problem that has been overlooked relates to changes in the NorthMet proposed Tailings Basin since the DEIS was prepared. Specifically, the currently proposed NorthMet Tailings Basin has been modified since the DEIS to create a containment system outside of the Tailings Basin. The containment system will include an up to 160 acre wetland that will be receiving the mercury and sulfate laden waters from the combined LTV/NorthMet tailings. These seepage flows will increase relative to the current LTV tailings basin, and create a much larger wetland than currently exists. The NorthMet project's own model data shows in great detail that most mercury and sulfate will be delivered directly to this wetland, and not to the containment system drains.</p>	PD	NS	X	1	
Daniel Pauly	<p>Contemporary research, including important research recently conducted in Minnesota, shows that this wetland, with its mixture of mercury, sulfate, and organic matter, is a prime environment for methylation of mercury. In fact, recent research by government investigators in Minnesota in the last few years has shown shockingly high levels of methylmercury in wetlands, including methylmercury spikes at the toe of taconite tailing basins. The FEIS never asks what will happen to that methylmercury. It is likely that some of it is going to be carried to the WWTP, but as the WWTP pilot test itself reports, there is no plan for removing it. What happens to the rest of the methylmercury, which might be the majority? Current research shows it will be absorbed by everything from mosquitos to earthworms, and will then travel up the food chain throughout the Embarrass River watershed.</p>	MERC	S	N	12	<p>In preparing the FEIS, the Co-lead Agencies concluded that a quantification of methylmercury and its subsequent bioaccumulation cannot be made, given the limitations of today's scientific understanding of the complex processes contributing to methylation of mercury in the environment and introduction into fish tissue. The analysis in the FEIS acknowledges this scientific uncertainty. Methylmercury produced in wetlands is not necessarily incorporated into food chains and concentrated to levels of concern. The potential small incremental addition of mercury to wetlands from the NorthMet Project Proposed Action is within the variability of background deposition estimates and is not expected to have any measurable effect on the mercury methylation process in wetlands in the NorthMet Project Proposed Action area. The Co-lead Agencies acknowledge that there could be water quality effects on wetlands and propose a comprehensive monitoring approach during operations, reclamation, and closure to identify such effects (if any). If effects are identified, adaptive mitigation measures would be invoked to remediate the situation and assure that water quality standards are met.</p>

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Daniel Pauly	<p>As detailed in the attached comments, and previously raised in my SDEIS comments, the present plan for the NorthMet Tailings Basin is to reuse LTV's 60 year old unlined tailings basin that contains decades of heavy mercury loadings. The existing LTV tailings basin has been drying out since 2001, and seepage volumes have declined. As noted in the FEIS with reference to the No Action Alternative, the LTV tailings basin should continue to dry out in coming years, with a concurrent drop in contaminated discharges. The NorthMet recommended action is to essentially build another unlined Tailings Basin on top of the current unlined and inactive tailing basin, but this time with tailings that are likely to be higher in sulfates than the existing mercury-rich tailings. Water from the new Tailings Basin will seep through the old taconite tailings, and then be discharged out the bottom into a large wetland area. In the wetland mercury methylation is likely to occur, and the methylmercury will bio-accumulate in the wetland life forms, before being carried out into the Embarrass River watershed by everything from bugs to birds. Some of the mercury, whether methylated or not, will travel to the NorthMet proposal Waste Water Treatment Plant. However, the FEIS has no plan to remove that mercury, and the FEIS documents indicate removal may not even be possible with the reverse osmosis technology planned for the waste water treatment plant. In view of the information available, two alternatives, at a minimum, should have been considered more thoroughly to see if they could have avoided the problems of perching a new unlined basin on top of an old unlined basin: either (a) putting a liner between the basins; or (b) locating the new basin somewhere other than on top of an old unlined basin. Both of these alternatives offer significant improvements in regards to preventing release of mercury from the existing LTV tailings basin, avoid the interaction of seepage water between two different types of tailings, and allow for what will likely be a significantly less complex and less expensive waste water treatment facility. These two proposals would require a much more significant up-front capital cost, but would reduce long term costs and accompanying uncertainty. To the extent long term costs are an issue to project approval, consideration of these options should be undertaken to remove that uncertainty. Overall, it seems quite possible that either of these two options could offer the mutual benefit of lower costs and improved environmental protection. These two alternatives were dismissed very early in the EIS process. From my review of the DEIS and FEIS, I believe these alternatives were prematurely dismissed because DEIS and FEIS preparers overlooked the fact that that mercury contamination would be an issue. The thorough review of these (and other) alternatives is obviously beyond the scope of these comments. However, at the end of these comments I provide a simplified matrix showing how these two alternatives compare in effectiveness and cost relative to the proposals in the FEIS. Further note that viable implementation of either of these options is really only available now, before the NorthMet project proceeds, because neither can be "retrofitted" onto the project once it has gone forward. In other words, it will be too late in 10 or 20 years, once the Tailings Basin has been filled, to find out that there might have been a better and cheaper way. Should the "adaptive engineering" approach to the WWTP prove unworkable for long term water treatment, it will be too late, or at least unfathomably expensive, to segregate the NorthMet tailings and LTV tailings.</p>	ALT	S	O	4	SDEIS Theme ALT 10; PolyMet 2015d Section 4.2.4.3.1
Daniel Pauly	<p>Mercury is one of the most significant potential water contaminants from the NorthMet Project. Contamination of local surface and groundwater from the Tailings Basin is of particular concern. As noted in the FEIS, the proposed NorthMet Tailings Basin will have significant levels of water seepage indefinitely, and the volume of discharge water will be increasing significantly compared to current conditions. The level of mercury in that seepage water is critical to evaluating the environmental impacts of the NorthMet project, as well as the financial viability of seeking to remove the mercury.</p>	MERC	NS	X	1	

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Daniel Pauly	Table 4.2.2-4 was prepared using information in SDEIS and FEIS appendix Barr 2006f, which I received from Ms. Lisa Fay of the Minnesota Department of Natural Resources. Barr 2006f allows for reconstruction of the mercury contamination calculations for each of these sample locations. Despite the fact that Barr 2006f includes significant errors, it is still relied upon in the FEIS. In reviewing the data in Barr 2006f, I identified a fundamental mistake in the summary results: The calculations had a major error because the sample data was presented in two units: nanograms per liter (ng/L) and micrograms per liter (ug/l), yet the calculations ignored these different units. I pointed out this error in my SDEIS comments, but it is clear that the drafters of the FEIS did not consider this issue, and clearly did not correct it. Reproduced below is a portion of page 113 of Barr 2006f, showing the table heading for columns of mercury discharge data for Cell 1E: Data in the left hand column is presented in ng/L, while data in the right hand column is presented as ug/L. For reference, the data on the right can be expressed as "<200 ng/L". Unfortunately, the FEIS preparers interpreted this data as "<.2 ng/L". What was being expressed in the right hand column is that the minimum detection level (mdl) for these samples was less than 200 ng/L. In other words, the analysis did not seek to measure low level mercury concentrations. The problem is that the FEIS preparers thought that the data indicated a minimum detection level of 0.2 ng/L. In other words, the SDEIS and FEIS preparers incorrectly thought this data indicated mercury levels were spectacularly low.	MERC	S	N	8	The comment correctly observes that mercury concentration units were not converted to ng/L (which they should have been) to produce Final EIS Table 4.2.2-4. DNR subsequently converted the mercury data and re-evaluated the resulting data set. After this correction, mercury levels still remain below the GLI standard of 1.3 ng/L. DNR believes that this correction does not materially affect the characterization of mercury concentrations in the Tailings Basin. SDEIS Theme MERC 01, WR 018
Daniel Pauly	Not only is the mean total mercury concentration incorrect in Table 4.2.2-4 FEIS, but it is important to note that FEIS Table 4.2.2-4 also dramatically overestimates the number of non-detect samples for mercury. The error is that the minimum detection levels were far above the actual Great Lakes Initiative levels, so a non-detect in many cases means only that the mercury levels were below the very high 200 ng/L, rather than a modern detection level of 0.5 ng/L. Non-detects for such high minimum detection levels should not be considered to be non-detects when the regulated target level for mercury is 1.3 ng/L. I pointed out this exact problem with regard to the SDEIS, but the drafters of the FEIS appear to have entirely ignored my comment because no changes or corrections have been made. The problem is that someone reviewing Table 4.2.2-4 would mistakenly conclude that the number of samples with detectable levels of mercury was very, very low. This presentation of the data is profoundly misleading, because in fact almost all of those non-detects came from analysis that had very high minimum detection levels. A person reviewing Table 4.2.2-4 is likely to be misinformed about the data, and reach the erroneous conclusion that almost all of the samples at the ten sample locations were below a modern detection level of 0.5 ng/L.	MERC	S	N	12	SDEIS Theme MERC 04
Daniel Pauly	The NorthMet Tailings Basin assessment improperly underestimates mercury discharges by disregarding data from three out of four of the NPDES monitored surface discharge locations at the Tailings Basin. In addition to the erroneous calculation with regard to water quality at numerous Tailings Basin locations, the FEIS has improperly selected a subset of NPDES water sampling locations that has also resulted in a meaningfully inaccurate assessment of current conditions at the Tailings Basin. The Tailings Basin has four active seeps that have been monitored since the closing of the LTV plant site. In the PolyMet water quality analysis, which is an appendix to the FEIS, PolyMet's water quality scientists state that "NPDES surface discharges from the Tailings Basin serve as the best proxy for concentrations of mercury seepage from the existing Tailings Basin". PolyMet 2013j at page 271. SD006 is in the southeast corner of the Tailings Basin, SD001, SD004, and SD005 are in the northwest corner of the Tailings Basin; and SD002 is in the north central portion of the Tailings Basin. There was apparently never an SD003, so there is no data. Also, SD005 has essentially been dry and not sampled for most of the last 13 years. That leaves four NPDES sample locations to review: SD001, SD002, SD004, and SD006 consistent with the opinion of	WAT	S	O	3	FEIS Table 4.2.2-29 and 4.2.2-33. DS006 is not expected to be impacted by the Proposed Project.

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	PolyMet’s water model that these discharges are the best proxy for concentrations of mercury seepage from the existing Tailings Basin”. Despite the fact that this seepage data is so critical to assessing mercury contamination, only Tailing Basin data from SD004 is used to support the determination that mercury levels will be below Great Lakes levels. This was a clear error in the SDEIS, and the error has been carried forward in the FEIS. SD0026, which is at the plant site and not the Tailings Basin, is also used, but it gives no indication of likely Tailings Basin discharges. In fact, it is not located in the Embarrass River watershed like the Tailings Basin. In order to evaluate whether this single sampling point should be the primary empirical assessment of groundwater conditions, I obtained NPDES sampling data from the Minnesota Pollution Control Agency for all four of the Tailings Basin NPDES surface discharges. I then evaluated total mercury in the Tailings Basin for each of these sample locations, but with more up to date information through 2006 to be consistent with most FEIS data sets. Based upon this MPCA data, I calculated total mercury levels for each of the four NPDES locations, plus average of all samples regardless of which location was sampled (basically a weighted average), and further an average of the four sites (basically a weighted average). My spreadsheets with calculations are available upon request, but should be easily reproducible without them because the data is readily available from the MPCA. My results are provided graphically below, and are also summarized in the accompanying table. The graph indicates that rather than SD004 being a representative sample of conditions at the NorthMet Tailings basin, SD004 is an outlier – the one location that isn’t above the Great Lakes standard of 1.3 ng/L. All three of the other locations were above Great Lakes standards, as were averages weighted by sample number and location.					
Daniel Pauly	the mercury modelling for the Tailings Basin mercury data should be recalculated to include data from all four surface discharge locations at the Tailings Basin site.	MERC	NS	X	1	
Daniel Pauly	A comprehensive review of Tailings Basin surface discharges confirms that mercury discharges are likely to be above Great Lakes standards, and also confirms that SD004 is not a representative of Tailings Basin seepage.	MERC	NS	X	1	
Daniel Pauly	No matter how the samples are interpreted, it is clear that the FEIS has a profound shortcoming in relying almost exclusively on data from SD004 as a supposedly “representative” sampling location. SD004 is not representative of water discharges at the Tailings Basin, but rather is an anomaly. The unfortunate decision by FEIS preparers to select SD004 as foundation of the Tailings Basin mercury analysis results in flawed arguments, erroneous conclusions, and unexamined Project alternatives.	MERC	NS	X	1	
Daniel Pauly	Different conclusions on mercury concentrations at SD004 in the DEIS and FEIS reveal the problem of over reliance on a narrow subset of discharge data: The over-reliance on just a small set of data points, especially from just one or two locations at the Tailings Basin, is problematic because a change in just a couple of samples can completely change the results, and lead to completely different actions. A good example of this statistical phenomena can be demonstrated by looking at how NPDES surface discharge SD004 lead to completely different conclusions between the DEIS and the FEIS. Reproduced below are Table 4.1.31 from the original DEIS, and Table 4.2.2-4 from the FEIS. These two tables show the same datasets for 11 sample locations at the Tailings Basin. Note that almost every location has very similar results between the DEIS and FEIS (with the exception of some errors in the FEIS, mentioned earlier). The one exception to this consistency is SD004, where the mean has gone from 1.9 ng/L from 15 samples in the DEIS, to a mean of 1.2 from 14 samples in the FEIS. I highlighted in red the DEIS data for SD004, which is above the Great Lakes Initiative level; and highlighted in green the FEIS data for SD004, which is below the Great Lakes Initiative level. How can the averages be so radically different? It appears,	MERC	NS	X	1	

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	from the limited data I was able to independently obtain from the Minnesota Pollution Control Agency, that one or two of the samples in the DEIS was considered to be erroneous, and corrected in the FEIS.					
Daniel Pauly	As noted elsewhere in these comments, the FEIS reaches incorrect conclusions about mercury seepage from the Tailings Basin. Generally those incorrect conclusions can be traced to improper “cherry picking” of sample locations, as well as errors in calculations.	MERC	NS	X	1	
Daniel Pauly	As explained at page 4-126 of the FEIS, the assessment summarized on Table 4.2.2-23 is useful to show the effect of passage of water seeping through the Tailings Basin. The first paragraph of Page 4-111 states as follows: Comparing existing pond water quality with water quality at the toe of the Tailings Basin helps define the effect passage through the existing LTVSMC tailings has on seepage water quality. Based on the parameters that were monitored in the Cell 2E pond, it appears that passage through the LTVSMC tailings reduces the average concentrations of arsenic, fluoride, and molybdenum, although it is difficult to determine to what extent these reductions are simply attributable to the effects of dilution. The concentrations of several other parameters, such as calcium, manganese, nickel, and TDS, increase as they seep from the tailings pond to the toe of the Tailings Basin. The preparers of the FEIS commented on how calcium, TDS, and manganese all increased when passing through the Tailings Basin; and how fluoride, arsenic, and molybdenum go down. However, there is no mention or analysis whatsoever of the most significant data point: mercury has gone from 1.4 ng/L in pond water to 4.9 ng/L after passing through the Tailings Basin. I have highlighted these respective contaminants in yellow, green and red. These results should be considered in the FEIS, because they directly conflict with the conclusions that mercury is not a contaminant of concern at the NorthMet Tailings Basin.	MERC	S	N	8	A simple arithmetic comparison of means does not represent the processes impacting mercury concentrations as water flows through the tailings: the mean well data are from a different time period (2007 - 2013) than the mean pond data (2001 - 2004), and therefore a direct relationship between the two cannot be drawn. The well data also represent greater temporal coverage, including measurements from a greater number of years and seasons, than do the pond data and thus encompass a greater range of variability. The values measured in the Cell 2E pond (3 samples from 0.7 to 3.6 ng/L) fall within the range of values measured in the toe wells (72 samples from <0.5 to 153 ng/L), and both groups of samples have median (50th percentile) values of 1.0 ng/L. As described by several researchers (Helsel 2011; EPA 2009; Reimann et al. 2008), the median is often a better descriptor of environmental data sets than is a mean value because a small number of data points can skew the mean to be larger while most of the data points are less than the mean value. Therefore, although more extreme values, including several particularly high outliers, were measured in the wells, overall measurements do not suggest a difference in concentration between the Cell 2E Pond and the seepage water at the toe of the Tailings Basin. It should also be noted that the pond sampling for mercury occurred from 4 to 11 years before the toe well sampling and, depending on hydrologic properties of the tailings, may not represent the

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						starting pond composition of the water collected in the toe wells, and the simple comparison being made is implying a relationship between the data when there may be none because of the different time frames involved.
Daniel Pauly	The FEIS relies upon a faulty mercury sequestration test that predicts remarkably low mercury levels in Tailings Basin seepage, while ignoring a superior test that does not predict significant sequestration. At numerous points in the FEIS and supporting documents, reference is made to a bench study conducted by NTS in 2006 that purports to show “[T]he concentration of dissolved mercury in a treatment flask containing process water and NorthMet tailings decreased from 3.3 ng/L to 0.9 ng/L over an eight hour period.” FEIS at page 5-229, As discussed below, this test had obvious flaws and glaring mischaracterization of the collected data. In contrast, the FEIS entirely fails to even mention that a second carefully designed mercury sequestration test was performed. This test concluded that there was no observable diminishment when mercury-laden water passed through the simulated LTV/NorthMet tailings combination. If anything, the test showed a slight increase in mercury levels. This thorough study, despite having tremendous potential to quantify likely mercury discharges from the combined Tailings Basin, is never so much as mentioned at any point in the FEIS itself. This is a situation where a very low-quality test with favorable results was prominently presented in the FEIS, while a high-quality test with unfavorable results was not even mentioned. In view of the fact that mercury is the most serious contaminant in the St. Louis River	MERC	S	N	8	Research is available noting decreased mercury concentrations from taconite tailings in field measurements. Seepage from taconite tailings basins was measured at concentrations lower than precipitation and surrounding waters.

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	watershed to public health, the basis of this important research warrants further examination. The tests are also important because the level at which the Tailings Basin discharges mercury affects numerous other conclusions and design choices, in particular a large number of alternatives that should be considered if mercury will be leaching from the NorthMet Tailings at levels above 1.3 ng/L.					
Daniel Pauly	6.3 The SRK test that showed no mercury sequestration should have been included in the FEIS, because it is on its face far more probative than the NTS eight hour test. The NorthMet FEIS asserts that one of the fundamental long-term mechanisms for mercury control at the NorthMet Tailings Basin is removal of mercury by the pre-existing LTV taconite tailings. This mechanism is relied upon repeatedly in the FEIS itself, as well as the supporting documents. This mechanism was also proposed in the original DEIS, but was objected to as lacking scientific integrity by the EPA, which requested that further analysis be provided to support this mercury removal mechanism. See page 11 of the "EPA Detailed Comments to the NorthMet Project DEIS". Despite the EPA's express request for further support of this theory, the FEIS fails to provide further support, and merely restates the previously challenged analysis. To correct this deficiency, the FEIS should address why preparers believe the 8 hour shake test is a better predictor of long term tailings basin mercury sequestration than the year-long column testing.	MERC	S	N	8	SDEIS Comment #2996. SDEIS Theme MERC 02, MERC 06, MERC 24
Daniel Pauly	The site-specific sampling of mercury at the Tailings Basin is consistent with prior taconite tailings seepage research. At various points in the FEIS, reference is made to prior research by Minnesota Department of Natural Resources scientist Michael Berndt that looked at mercury releases from mining operations in Minnesota, including from stack emissions and tailings basin seepage. The FEIS relies especially on a 2003 paper by Mr. Berndt entitled "Mercury and Mining in Minnesota", submitted as a final report to the Minerals Coordinating Committee in June of 2003, and revised in October of 2013. FEIS reference Berndt 2003. As discussed below, the interpretation that NorthMet Tailings Basin seepage will be above Great Lakes Initiative standards is consistent with the data and conclusions of the 2003 report.	MERC	NS	X	1	
Daniel Pauly	Even if the NorthMet Tailings Basin reduces the concentration of mercury in the seepage, that seepage can still exceed Great Lakes Initiative standards, and would still be in violation of the Great Lakes Initiative levels. There is discussion in the FEIS that the Tailings Basin mercury discharges will not be an issue because the discharge concentrations will still be less than the levels in either precipitation or the tailings basin pond water. This statement seems to apply that reduction in mercury levels in the Tailings Basin is sufficient, as opposed to actually meeting the Great Lakes Initiative requirements.	MERC	S	O	8	SDEIS Theme MERC 01
Daniel Pauly	Even if the Tailings Basin mercury concentrations are reduced relative to influent, the increased flow of water through the Tailings Basin will significantly increase total mercury discharges. The NorthMet Tailings Basin is expected to have at least twice as much seepage water discharged during operations than is currently seeping from the Tailings Basin. Even if one assumes the concentration of mercury in the Tailings Basin seepage will not change, the total mass of mercury discharged	MERC	S	O	8	SDEIS Theme MERC 20

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	will be significantly increased, likely by double or more.					
Daniel Pauly	Efforts to reduce atmospheric precipitation, especially from coal burning sources, will likely diminish background mercury loading dramatically in coming years, leaving the NorthMet Tailings Basin as a larger relative source of mercury to the Embarrass River and St. Louis River watersheds. At the present time significant mercury loading into the Embarrass River and St. Louis River watersheds occurs as a result of atmospheric deposition, much of it from coal plants. In fact, an estimated 70 percent of atmospheric mercury deposition in Minnesota comes from anthropogenic sources, including burning coal and improper disposal of fluorescent lights. Efforts are underway in Minnesota, the broader United States, and outside the U.S. to reduce mercury emissions. Reductions in coal burning will likely lead to significant reductions even in the near term as increasing amounts of electricity generation switches from coal to natural gas. It is likely that atmospheric mercury deposition reductions will continue for many decades, and the amount of atmospheric deposition of mercury in the Embarrass River will decline. What may not decline, due to the tremendous amounts of mercury now held within the existing tailings basin at the NorthMet site, is the amount of mercury discharged from the Tailings Basin in coming centuries. Without adequate efforts to prevent mercury seepage and release at the Tailings Basin, the likely result will be a circumstance where in coming decades and centuries the NorthMet project becomes a larger and larger share of mercury contamination in the Embarrass River and St. Louis River watersheds.	AIR	S	O	8	SDEIS Section 6.2.6.4.3
Daniel Pauly	The Water Treatment Pilot Test data shows profound sampling irregularities that raise serious concerns about the adequacy of the protocols implemented and the accuracy of the test results obtained.	WAT	NS	X	1	
Daniel Pauly	However, I would be remiss in not pointing out that there appears to have been a very serious, repeated error in the collection and analysis of sulfate data from the WWTP Pilot Test. The evidence is quite strong that a serious sampling or analytical breakdown occurred during the Pilot Test as it relates to sulfate levels in the test influent, and perhaps other contaminants of concern. Figures 5 and 6 from the Pilot Test Report are reproduced below, and reveal the reasons for serious concern: First, in looking at Figure 5, notice that surface discharge SD004 has relatively constant levels for the three measured parameters: Sulfate, Total Hardness, and TDS. In contrast, a new well installed in 2011 for the pilot test showed remarkable variation in sulfate levels, fluctuating almost exactly by 400 percent – either at about 100 mg/l, or 400 mg/l. There is essentially nothing in between. TDS and Total Hardness fluctuate on the same days, but at different ratios that are closer to 200 percent. Such readings are inexplicable from a groundwater well. Second, looking at Figure 6, the issue becomes even more concerning, because on the same exact dates that sulfate, total hardness and TDS were changing, the iron and manganese concentrations remained all but constant from the same sources.	WAT	S	N	8	SDEIS Theme WR 143. In the Co-lead Agencies' judgment, wastewater treatment plant discharges can meet mercury water quality standards; (Barr 2013f; PolyMet 2015d Section 4.2.4.3.1). The Final EIS identifies contingency mitigation that can be applied for the WWTP's treatment of process water and treatment performance issues that could occur from changes in influent quality. At times throughout the year, it is expected that the WWTP would have excess hydraulic capacity, which can be used to improve treatment performance.
Daniel Pauly	As stated elsewhere in these comments, I strongly recommend that an independent third party be retained by PolyMet Mining, Inc., or the lead agencies, to audit the data. This will be a significant undertaking, but would allow regulatory bodies the ability to make decisions with confidence that at least the information used for the decision making was sound. I would be willing, at the request of the MDNR or other NorthMet project participants, to undertake a further initial review of other FEIS datasets to assist a third party audit.	WAT	S	O	8	SDEIS Theme PER 01

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Daniel Pauly	In view of the identified serious errors in NorthMet data sets as they relate to the Tailings Basin site, a comprehensive audit of NorthMet data should be undertaken.	WAT	S	O	8	SDEIS Theme PER 01
Daniel Pauly	The Tailings Basin mercury contamination calculations confused nanograms and micrograms. As noted above, the Tailings Basin mercury contamination calculations confused nanograms and micrograms. The result is a profound misstatement of mercury seepage levels at nearly half of the Tailings Basin sample locations. The error was of serious significance because it calls for a revision of Tailings Basin discharges from being below Great Lakes Initiative levels to above Great Lakes Initiative levels.	WAT	S	O	8	The comment correctly observes that mercury concentration units were not converted to ng/L (which they should have been) to produce Final EIS Table 4.2.2-4. DNR subsequently converted the mercury data and re-evaluated the resulting data set. After this correction, mercury levels still remain below the GLI standard of 1.3 ng/L. DNR believes that this correction does not materially affect the characterization of mercury concentrations in the Tailings Basin. SDEIS Theme MERC 01, WR 018
Daniel Pauly	The Waste Water Treatment Plant influent water has a serious error in either sample collection or data analysis. The FEIS relies upon a WWTP Pilot Test that shows serious errors in testing of the influent water. At a minimum these errors prevent analysis and operation of the Pilot Test system because the influent was not properly characterized. In a worst case scenario, other samples were also erroneously collected or analyzed, but those errors have not (and possibly cannot) be identified.	WAT	S	N	8	In the Co-lead Agencies' judgment, wastewater treatment plant discharges can meet mercury water quality standards; (Barr 2013f; PolyMet 2015d Section 4.2.4.3.1). The Final EIS identifies contingency mitigation that can be applied for the WWTP's treatment of process water and treatment performance issues that could occur from changes in influent quality. At times throughout the year, it is expected that the WWTP would have excess hydraulic capacity, which can be used to improve treatment performance.
Daniel Pauly	Due to the critical nature of the NorthMet FEIS, and the centuries-long impacts of the NorthMet Project, an audit is necessary. A thorough review of the datasets and collection details should be undertaken to confirm integrity and accuracy. A third party competent to perform such a review should be retained, because an independent review is more likely to find serious errors than having the existing team of consultants review their own work. I would be willing, at the request of the MDNR or other NorthMet project participants, to undertake a further initial review of other FEIS datasets to assist a third party audit.	WAT	S	O	8	SDEIS Theme PER 01
Daniel Pauly	In view of the foregoing comments with regard to mercury contamination, statements made in the NorthMet FEIS that the Tailings Basin is expected to discharge mercury at levels below Great Lakes Standards should be removed from the FEIS. The following statements, among others, should be modified as below (or in accordance with alternative language that is accurate): 10.1 At ES-36, in the Executive Summary, edit as follows, or with other language to make the statement accurate and complete (this same point was raised in my SDEIS comments, but was not adopted): Mercury is another constituent of concern, primarily because many of the lakes and rivers in the area are currently classified as "impaired waters" by the MPCA due to elevated mercury content in fish tissue. The NorthMet Project Proposed Action is located within the Lake Superior Basin and would be subject to the Great Lakes Initiative (GLI) mercury discharge standard of 1.3 nanograms per liter (ng/L). . . . The mercury concentration in seepage from the Tailings Basin is anticipated to be above below the GLI standard. . . . 10.2 At Page 5-10 of the EIS, edit as follows or with other language to make the statement accurate and	MERC	S	N	8	SDEIS Theme MERC 01. In the Co-lead Agencies' judgment, wastewater treatment plant discharges can meet mercury water quality standards; (Barr 2013f; PolyMet 2015d Section 4.2.4.3.1). The proposed project would be required to meet sulfate and mercury effluent limits and not impede the Statewide Mercury TMDL goals that aim to reduce mercury contamination in fish.

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	complete, and follow up with review of Tailings Basin alternatives in view of this correction (this same point was raised in my SDEIS comments, but was not adopted): There would also be mercury in the tailings, although about 92 percent of the mercury in the ore is predicted to remain in the ore concentrate. However, and the mercury concentration in seepage from the Tailings Basin is expected to be greater than less than the standard. 10.3 At page 5-230 of the EIS, edit as follows or with other language to make the statement accurate and complete, and follow up with review of Tailings Basin alternatives in view of this correction (this same point was raised in my SDEIS comments, but was not adopted): Therefore, the total mercury concentration in seepage from the Tailings Basin is expected to be greater than less than the Great Lakes Initiative standard of 1.3 ng/L.					
Daniel Pauly	The underestimation of mercury contamination in Tailings Basin seepage water resulted in design and testing of a WWTP that has no demonstrated ability to economically remove mercury from the seepage water. In 2012 PolyMet's consultants undertook a pilot test with the objective of demonstrating that the WWTP can collect sufficient information to demonstrate that a cluster of technologies, focused on reverse osmosis (RO), can demonstrate reliable satisfaction of water quality objectives, support the design of the WWTP, refine capital and operating costs, and support performance guarantees and system warranties. As discussed below, the Pilot Test should have addressed all four of these objectives as it relates to mercury, but unfortunately the Pilot Test failed to provide even a rudimentary test and analysis of mercury removal.	MERC	S	N	8	SDEIS Theme WR 143. Mercury removal would be a function of membrane treatment (RO or similarly performing technology), greensand filtration pre-treatment, and potentially other systems. In the Co-lead Agencies' judgment, wastewater treatment plant discharges can meet mercury water quality standards; (Barr 2013f; PolyMet 2015d Section 4.2.4.3.1).
Daniel Pauly	Mercury removal could be between 22 and 99.9 percent, but no one knows and no one has asked. We know that mercury might be removed by the WWTP. Or it might not be removed. There are two ways to find out, either do Comprehensive Pilot Test based upon more realistic conditions, or wait to see what comes out of the WWTP in a couple decades when the maximum discharges start to occur.	MERC	S	N	8	Mercury removal would be a function of membrane treatment (RO or similarly performing technology), greensand filtration pre-treatment, and potentially other systems. In the Co-lead Agencies' judgment, wastewater treatment plant discharges can meet mercury water quality standards; (Barr 2013f; PolyMet 2015d Section 4.2.4.3.1). The Final EIS identifies contingency mitigation that can be applied for the WWTP's treatment of process water. For example, treatment performance can be improved by reducing the recovery rates for the membrane separation processes or delaying the installation of the additional equipment that is planned for the expansion of the WWTP.
Daniel Pauly	Mercury contamination is highly dependent upon species, and PolyMet's own vendor states that methylmercury cannot be removed across an RO membrane. Methyl mercury is, far and away, the most dangerous form of mercury. It is the form that is most bio-available, and most likely to accumulate in the tissue of fish and infant humans. According to the best information assembled by PolyMet, the WWTP as designed will not remove methylmercury. Instead it will simply be going out with the discharge water, where it will be part of the "makeup" water directed into the Embarrass River. Most disturbing about this issue is the fact that if the WWTP selectively removes colloidal or particulate mercury (as at least one reference predicts), then what will be left will be the methylmercury, which won't be removed. The result is the potential for technical satisfaction of the Great Lakes Initiative standard of 1.3 ng/L of mercury in WWTP discharges, while having this	MERC	S	N	8	Mercury removal would be a function of membrane treatment (RO or similarly performing technology), greensand filtration pre-treatment, and potentially other systems. In the Co-lead Agencies' judgment, wastewater treatment plant discharges can meet mercury water quality standards; (Barr 2013f; PolyMet 2015d Section 4.2.4.3.1). The proposed project would be required to meet sulfate and mercury effluent limits and not impede the

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	1.3 ng/L of mercury be disproportionately methylmercury. Under such a scenario the WWTP will be in compliance with regulatory standards while actually discharging the most toxic form of mercury in abundance.					Statewide Mercury TMDL goals that aim to reduce mercury contamination in fish.
Daniel Pauly	The RO membranes that best remove mercury also have unacceptably low system recovery rates. A Supplemental Comprehensive WWTP Pilot Test is also necessary because PolyMet’s own literature review shows that even if an RO membrane can remove mercury, it may not do it with adequate system recovery. Specifically, the Final Pilot Testing Report includes Table 29, which shows a summary of Metals Removal Literature Review Summary. Note that mercury removal is reported to be greater than 98 percent in Reference 16, but the system recovery is just 50 percent, which means that only about half the water is recovered as permeate, with a very high volume of high-mercury retentate. Even this is measured only using a pilot level test. These issues, such as rejection rate and system recovery are non-trivial, and can dramatically impact long term performance and cost of mercury removal. For example, if system recover rates are low, a two-phase system might be needed, which would significantly increase capital and operating costs. Alternatively, it may be necessary to have different systems for mercury removal and sulfate removal if a single treatment system cannot be found that adequately removes both contaminants. In summary, we simply do not have enough information to evaluate a multi-century waste water treatment plant, either from a technical or financial point of view. A comprehensive pilot test should be performed, and it should be directed both to technical viability, as well as financial predictions. In view of the known seasonal variations in contaminant streams (see, e.g., report of Michael Berndt discussed below, showing large seasonal fluctuations in methyl mercury discharges at the toe of a taconite tailings basin), I recommend that such test run for at least from the start of one summer through the end of a following summer.	MERC	S	N	8	Mercury removal would be a function of membrane treatment (RO or similarly performing technology), greensand filtration pre-treatment, and potentially other systems. In the Co-lead Agencies’ judgment, wastewater treatment plant discharges can meet mercury water quality standards; (Barr 2013f; PolyMet 2015d Section 4.2.4.3.1). The Final EIS identifies contingency mitigation that can be applied for the WWTP's treatment of process water.
Daniel Pauly	The WWTP Pilot Test report also indicates serious flaws in the sulfate pilot testing. In an earlier comment I expressed serious concern over the integrity of the data set from the WWTP Pilot Test. The reported influent levels for sulfate concentrations show that error was introduced into sample collection and/or analysis process. The error seems to be on the order of 400 percent, but isn’t clear if influent levels have been overstated by 400 percent or understated by 400 percent. In other words, no one really knows what the influent sulfate levels were. In addition, just as alarming, is the potential that the effluent results may have the same errors, or even other unidentified errors. This is not a trivial question, in particular because the final step of water treatment, VSEP process, had permeate level reported to be above 10 mg/l, and about 6 to 60 mg/l. See Figure 12 of the WWTP Pilot Test report. So, should those levels be 24 to 240 mg/L? Or maybe they should be about 1.5 to 15 mg/l. Preparers of the FEIS should review sample records, analytical data, and related material to ascertain the accuracy and integrity of the data set.	WAT	S	N	8	Sulfate removal would be a function of membrane treatment (RO or similarly performing technology), chemical precipitation, and potentially other systems. In the Co-lead Agencies’ judgment, wastewater treatment plant discharges can meet sulfate water quality standards; (Barr 2013f; PolyMet 2015d Section 4.2.2.3.1). The proposed project would be required to meet sulfate effluent limits. The Final EIS identifies contingency mitigation that can be applied for the WWTP's treatment of process water. For example, treatment performance can be improved by reducing the recovery rates for the membrane separation processes or delaying the installation of the additional equipment that is planned for the

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						expansion of the WWTP.
Daniel Pauly	<p>A Comprehensive WWTP Pilot Test should be conducted in a manner that provides meaningful information as to likely costs. As noted above, the WWTP Pilot test failed to even look at mercury as a substance to be removed from the NorthMet site, and also failed to even properly monitor sulfate levels in the influent. Other contaminants, such as aluminum, were also not properly analyzed during the Pilot Test. The need for a supplemental WWTP pilot test is clear from a technical viability standpoint, but is also necessary from a financial viability standpoint. The RO literature is clear that each site is different, and the costs of systems really can't be estimated with insufficient information about feed water and likely membrane performance. A good example of that information is a 2013 Report from the U.S. Department Of Energy entitled Reverse Osmosis Optimization (available from comment author upon request), which states as follows: The cost of optimizing an RO system is influenced by many parameters that are specific to the application and operation of the system, such as feed water quality, membrane type, system configuration, and purity requirements. Therefore, to determine the costs and financial benefits of optimization options, the financial analysis must take into account the site-specific nature of the technology. Reverse Osmosis Optimization, by Pacific Northwest National Laboratory, page 19 (emphasis added). These are non-trivial issues for which the FEIS contains inadequate information, which is quite problematic for a WWTP that is expected to process 630,000 gallons per day of water for hundreds of years.</p>	WAT	S	N	8	<p>Mercury removal would be a function of membrane treatment (RO or similarly performing technology), greensand filtration pre-treatment, and potentially other systems. In the Co-lead Agencies' judgment, wastewater treatment plant discharges can meet mercury water quality standards; (Barr 2013f; PolyMet 2015d Section 4.2.4.3.1).</p>
Daniel Pauly	<p>The FEIS incorrectly states that the Pilot-testing has indicated that treated effluent from the Plant Site would meet water quality standards for all regulated constituents. As discussed above, the WWTP Pilot Test did not determine whether mercury would be removed by the WWTP. The FEIS should be updated to reflect this fact. A partial list of suggestions is provided below: 14.1 Table 5.2.2-29 should be modified to include mercury as a target. Table 5.2.2-28 provides the WWTF preliminary water quality targets. Mercury is not included but should have been included. After mercury is added as a target effluent, design of the WWTF should be evaluated for mercury removal, and a review should be made of FEIS analysis and conclusions that presumed mercury did not need a WWTF water quality target. This review should include evaluation of alternatives that were prematurely eliminated. 14.2 Page 5-147 should be modified to clarify that mercury removal was not tested in the pilot plant. Suitable language could include: "Table 5.2.2-29 presents the target WWTF effluent concentrations for the different mine phases. Pilot-testing of a WWTF with RO demonstrated that all of the target closure effluent concentrations could be achieved with the planned WWTF design, with the possible exception of mercury, for which no pilot</p>	MERC	S	N	8	<p>Mercury removal would be a function of membrane treatment (RO or similarly performing technology), greensand filtration pre-treatment, and potentially other systems. In the Co-lead Agencies' judgment, wastewater treatment plant discharges can meet mercury water quality standards; (Barr 2013f; PolyMet 2015d Section 4.2.4.3.1). The proposed project would be required to meet sulfate and mercury effluent limits and not impede the Statewide Mercury TMDL goals that aim to reduce mercury contamination in fish.</p>

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	<p>testing has been undertaken and for which significant disagreements exist on viability of removal by RO processes.” 14.3 Page 5-226 of the FEIS should be amended to include statements from the Pilot Plant Test that removal of mercury using RO technology is uncertain. Potential language to consider is: “It should be noted that the West Pit overflow would be treated by the WWTF using RO technology prior to discharge, and the RO process is known to remove mercury. However, as indicated in the Pilot Test Report, there are disagreements in the literature about how much mercury can be removed, and the most dangerous form of mercury (methylmercury) has been reported as unremovable using RO methods.” 14.4 Table 5.2.2-51 should be modified to provide correct information of estimated mercury concentration of the combined inflows to the Plant Site WWTP Table 5.2.2-51 describes Mercury Concentration from Tailings Basin seepage water and Runoff (not interacting with tailings) to be 1.0 ng/L, which is below Great Lakes standard levels. In fact, mercury levels for these two sources will likely be higher than these estimated levels. NorthMet FEIS Comment – Daniel Pauly – Page 42 Correcting this error is essential because these two sources of inflows are expected to account for over 80 percent of the water inflows into the WWTP, and will impact feasibility and design of the WWTP, as well as long term costs to operate the WWTP.</p>					
Daniel Pauly	<p>The FEIS proposes a perimeter wetland that will receive sulfate and mercury, and has the potential to lead to significant methylmercury production and transport into the Embarrass River watershed. One of the most significant changes in the Tailings Basin since the DEIS was prepared is a proposal to construct a perimeter cutoff wall and drainage system around the north and west sides of the Tailings Basin. The objective of capturing discharges from the Tailings Basin has merit, but the proposed plan is seriously flawed because the cutoff wall and drain pipe are set back over 250 feet from the edge of the Tailings Basin, so as to form a large perimeter wetland of up to 160 acres in size. As discussed below, due to the nature of the soil in this wetland, the majority of mercury and sulfate laden seepage will be delivered into the wetland, as opposed to going directly to the drain pipe system. The potential extent of this perimeter wetland is shown in the figure below, which is from Barr 2013F, but has been highlighted in yellow to show the perimeter area between the Tailings Basin and drainage pipe.</p>	WAT	S	N	8	<p>The project does not propose creation of significant wetland acreages at the Plant Site. Methylmercury is created by bacteria in highly organic portions of aquatic systems, such as the sediment of lakes and wetlands. Relative to the wetland area between the tailings basin and the Embarrass River, there would be minimal wetland areas between the toe of the tailings basin and the seepage containment system, which is where such methylation could potentially occur. See FEIS Figure 5.2.3-18.</p>
Daniel Pauly	<p>Wetlands have been known for some time to be prime locations for methylation of mercury from its inorganic form to its far more hazardous organic methylmercury form. Recent research in Minnesota has shown that some of the highest methylmercury levels ever recorded have been observed in restored wetlands. In addition, recent Minnesota DNR research at tailings basins has shown that seepage water from tailings basins has particularly high methylmercury concentrations during seasons of heightened biological activity. As discussed below, the proposed Tailings Basin capture system has the potential to create very high levels of methylmercury. Once created, the methylmercury will be able to exit the capture area either by 1) biological transport into the Embarrass River watershed, or 2) passing through the Waste Water Treatment Plant, which has not been designed or tested to remove it.</p>	MERC	NS	X	1	

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Daniel Pauly	The unique nature of the soils at the NorthMet site result in delivery of tailings seepage to the wetlands, rather than to the drainage pipe. The Containment System called for in the FEIS is shown in cross section below, which is taken from Figure 4 of reference PolyMet 2013f. This figure is a useful one for evaluating containment system flow during mine operations because it is taken on the north end of the Tailings Basin where the greatest amount of discharge is predicted. The black lines show the flow path of the seepage according to NorthMet Project Modeling. Notably, according to the model, 78 percent of the seepage water is delivered to the wetlands, while only 22 percent of it is delivered to the Containment System Drain Pipe. The reason for this flow path, according to FEIS documents, is that the relatively low hydraulic conductivity of the soils forces the water to the surface, where wetlands will likely expand and proliferate. Within these large perimeter wetlands, the ideal conditions for mercury methylation are likely to occur: abundant mercury, sulfate, dissolved organic compounds (DOC), and water. The FEIS entirely fails to consider what will happen when the mercury, sulfates, DOC and water combine in these perimeter wetlands.	WET	S	N	8	The project does not propose creation of significant wetland acreages at the Plant Site. Methylmercury is created by bacteria in highly organic portions of aquatic systems, such as the sediment of lakes and wetlands. Relative to the wetland area between the tailings basin and the Embarrass River, there would be minimal wetland areas between the toe of the tailings basin and the seepage containment system, which is where such methylation could potentially occur. See FEIS Figure 5.2.3-18.
Daniel Pauly	A recent Minnesota study showed concentrations of methylmercury in restored wetlands had some of the highest in published literature, suggesting creation of wetlands to receive a mercury and sulfate mixture is a serious concern for the Embarrass River ecosystem and downstream inhabitants.	MERC	S	N	8	SDEIS Theme MERC 08. PolyMet 2015d Section 6.4.3. The proposed project would be required to meet sulfate and mercury effluent limits and not impede the Statewide Mercury TMDL goals that aim to reduce mercury contamination in fish.
Daniel Pauly	Recent DNR research also shows that taconite tailings basins can have particularly high methylmercury releases that coincide with times of greatest biological activity in wetlands. This research should be considered in evaluating impact of wetlands positioned between the Tailings Basin and containment system drain pipe. Another very serious issue as it relates to methylmercury releases is that recent MNDR research shows that discharges from a taconite tailings basin had a seasonal spike in methylmercury discharges during the summer months when most wetland biological activity occurs. This research is compiled in "Sulfate and Mercury Cycling in Five Wetlands and a Lake Receiving Sulfate from Taconite Mines in Northeastern Minnesota", Berndt and Bavin, 2011. Reproduced below is a portion of Figure 9 of Berndt and Bavin, showing the seasonal changes in total mercury and methylmercury from May to October. The excerpt above shows how total mercury was essentially constant from May to October, but the amount of methylmercury increased significantly during summer months. It is not clear if more methylmercury is being produced during the summer months, or if it is simply being released in greater quantities, but this increase should be of great concern to anyone proposing a Tailings Basin perimeter wetland. Should this effect also hold true at the NorthMet Tailings Basin, levels of methylmercury must be contemplated, especially during summer months. A further concern raised in Berndt and Bavin with regard to the examined wetland, at a taconite tailings basin toe similar to the NorthMet Tailings Basin, is that the mechanism for the increases in methylmercury are not obvious nor necessarily fully understood. Berndt and Bavin at page 13. It may be that increases in sulfate reduction in summer months lead to accelerated methylmercury production. It appeared that the methylmercury increased across a backdrop of continuous amounts of sulfate reduction and DOC release. In evaluating the containment system as proposed, evaluation of increased methyl mercury loading should be evaluated. Inquiry should be made to assess how much of the methylmercury can be expected to bioaccumulate in organisms in the wetland and how much will go to the WWTP. Based on Figure 4, above, it would appear that most seepage from the toe of the Tailings Basin will be delivered to the wetlands. This is of great concern because summer is the time of greatest biological activity, and the time when greatest bio absorption can be inferred to occur.	MERC	S	N	8	SDEIS Themes MERC 08, MERC 09, PD 08. PolyMet 2015d Section 6.4.3. The containment system alignment crosses a number of wetlands. As documented in the Wetlands Data Package, anticipated wetland impacts have been accounted for between the FTB and the FTB Containment System and downgradient of the FTB Containment System. PolyMet 2015b as cited in FEIS, Section 5.1.5 (direct wetland impacts) and Section 5.2 (indirect wetland impacts).

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Daniel Pauly	<p>This methylmercury is likely to be transported out of the containment system wetlands by biological activity. That which remains and is captured, will go to the WWTP where no plans have been made for it to be captured and removed. One potential major impact of the newly proposed containment system is that in addition to creating a large wetland where methylmercury can accumulate and form, the wetland will provide a biological pathway for transport of the methylmercury to the Embarrass River watershed and then into the St. Louis River. Current research (available from the comment author upon request) shows that everything from mosquitos to earthworms can accumulate methyl mercury in high doses. These simple life forms will likely either simply fly out of the containment system (in the case of insects) or be consumed by other mobile organisms (such as great blue herons, egrets, pipers, gulls, ducks, raccoons, etc.) that will allow transport of the mercury up the food chain in the Embarrass River watershed, where it will eventually accumulate in fish and humans. Whereas this avenue of transport totally avoids the drainage pipe collection system and the WWTP, it is a problem for which no solution has been proposed. Note that with 78 percent of mercury being delivered to the wetlands, along with potential methyl mercury spikes that are known to occur at taconite tailings basins, the potential for this bioaccumulation is significant. It is also likely to continue for hundreds, if not thousands of years, and will be far greater than would occur with the lower water flows of the No Action Alternative or the other Tailings Basin alternatives discussed below.</p>	MERC	S	N	8	<p>The project does not propose creation of significant wetland acreages at the Plant Site. Methylmercury is created by bacteria in highly organic portions of aquatic systems, such as the sediment of lakes and wetlands. Relative to the wetland area between the tailings basin and the Embarrass River, there would be minimal wetland areas between the toe of the tailings basin and the seepage containment system, which is where such methylation could potentially occur. See FEIS Figure 5.2.3-18.</p>
Daniel Pauly	<p>The failure to appreciate the potential for groundwater mercury impacts from the NorthMet Tailings Basin resulted in alternatives being improperly dismissed in the DEIS and FEIS that should have been considered. NEPA and MEPA require consideration of alternatives, as summarized below in one of PolyMet’s ERM reports: NEPA and MEPA have slightly different requirements for considering alternatives. NEPA describes the consideration of alternatives as the “heart of the environmental impact statement.” NEPA requires the consideration of all reasonable alternatives and a discussion of alternatives which were eliminated from further study. The decision maker must consider all reasonable alternatives and cannot consider alternatives not discussed in the EIS. MEPA (Minnesota Rules, part 4410.2300, subpart G) states that an alternative may be excluded if “it would not meet the underlying need for or purpose of the Project; it would likely not have any significant environmental benefit compared to the Project as proposed; or another alternative, of any type, that will be analyzed in the DEIS would likely have similar environmental benefits but substantially less adverse economic, employment, or sociological impacts.” (ERM Report, Emphasis added). In the present case, as discussed in related comments, the failure of the DEIS and FEIS process to consider mercury impacts from the NorthMet Project has resulted in potentially superior alternatives being prematurely dismissed.</p>	ALT	S	O	4	SDEIS Theme ALT 13
Daniel Pauly	<p>The failure of the FEIS to consider non-compliant mercury discharges resulted in improper elimination of alternative tailing basin covers during the ERM process. In December, 2010 the ERM presented recommended alternatives for the NorthMet Mine Tailings Basin Cover Options, including both an evaluation and recommendation. In that 12/2010 report the ERM stated, correctly, that: The Tailings Basin cover system is a very important environmental component of the overall NorthMet Project At least some seepage is expected to occur long term (e.g. centuries) from the Tailings Basin after closure, so the quality of that seepage is of critical importance and will largely determine the need for long-term operation, maintenance, and/or treatment. (ERM at Page 1, emphasis added) The report then states, incorrectly, that: Based on the analysis of the DEIS, the current PolyMet Proposal (i.e. referred to as the Tailings Basin Alternative in the DEIS) was predicted to generally meet groundwater standards with the primary exception of sulfate. . . . [but] no long-term operation, maintenance, or treatment would be needed for the Tailings Basin as currently modeled for any other parameter because</p>	MERC	S	O	3	SDEIS Theme MERC 20

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	they are predicted to meet groundwater standards. (ERM at page 17). The ERM report subsequently evaluated five different alternatives on the basis of sulfate loads, with no mention or consideration of potential for mercury release from the Tailings Basin. In fact, this key planning document discusses sulfate 50 times on its 22 pages, but not once does the word mercury even appear. This is a prime example of why the NorthMet Project should be reevaluated to consider alternatives that will satisfy the NEPA and MEPA screening requirement for mercury. In this case, the NorthMet Project has identified the criticality of the Tailings Basin cover to groundwater seepage, but FEIS entirely disregards likely mercury impacts, even though mercury release is the single biggest threat of public health from the NorthMet Project.					
Daniel Pauly	Deficiencies in Tailings Basin mercury characterization have resulted in failure to evaluate two viable, and potentially superior, Tailings Basin alternatives. In particular, TBM-3 and TBM-21 should be evaluated as better performing alternatives. During the DEIS process, two specific Tailings Basin alternatives were proposed that have the potential to meet all environmental requirements and also be less expensive than the proposed NorthMet alternative. The first of these alternatives, TBM-3, would have included a full liner between new and existing tailings. The second of these alternatives, TBM-21, would have called for an alternative location of a new basin. Both of these mitigation measures were deemed to address all four of the issues identified in the Tailings Basin mitigation process (See DEIS at pages 3-56 to 3-58), but were dismissed as being economically inferior to the recommended proposal. Specifically, it should be noted that each design would meet the purpose and need, would be technically feasible, and would be regulatorily feasible. When TBM-3 and TBM-21 were dismissed, the economic viability was being compared to the original DEIS proposal, which did not include the containment system or WWTP as proposed, both of which increase the cost of the presently proposed design relative to the prior DEIS proposal. In addition, the now apparent need to also remove mercury from Tailings Basin seepage, as well to prevent it from entering wetlands surrounding the Tailings Basin, will add additional cost to the proposed Tailings Basin plan. The failure to properly conduct a WWTP pilot test adds even greater uncertainty to the potential costs of the proposed Tailings Basin alternative. In aggregate, these changes in the Tailings Basin options since the DEIS eliminated TBM-3 and TBM-21 indicate that the dismissed alternatives should be reconsidered. On the following page I have a brief summary of distinctions between the proposed NorthMet Tailings Basin Alternative compared to TBM-3 and TBM-21	ALT	S	O	3	SDEIS Theme ALT 10
Elizabeth K Larsen	As a resident of Northeastern Minnesota I care about the welfare of the people who live here and the people downstream from us. As such I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal.	GEN	NS	X	1	
Elizabeth K Larsen	I oppose the planned exchange of land that enables Polymet to circumvent the law that protects the lands it hopes to dig into and destroy. Those lands are protected by the Weeks Act, an Act that has as its intent to protect the headwaters. It is the duty of our elected leaders to protect the land and the people of the United States, this is in my opinion an attack by a corporation on the health, safety and well being of the people of NE Mn and any who eat from or drink from the waters of Lake Superior. The value of the St. Louis River watershed seems incalculable to me? An immense and powerful river, tea-stained with natural tannins, lush wetlands, silvery fish, buzzing bees, and lands where ancient trees lay cool in the earth. The river flows from a shallow wild rice lake near our home, past abandoned and struggling modern mining towns, through a tribal community with roots in the region thousands of years old. The St. Louis River pours into a rare freshwater estuary, then into Great Lake Superior; all along the way it gathers water from an area of about 2.4 million acres in northern Minnesota. Its benefits to all living things seem countless.	LAN	NS	X	1	

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Elizabeth K Larsen	From the headwaters to the estuary, we can see historical and modern evidence of strong desire to protect our valuable river. A century ago, the United States purchased the forested lands in the headwaters region of the St. Louis River to protect the watershed. The deed to the land, purchased under the Weeks Act, prohibits open-pit mining and demonstrates the value of the headwaters of this river. In recent decades, hundreds of millions of dollars have been spent to clean up industrial pollution created in the estuary over the last century. Yet right now, the St. Louis River headwaters are threatened by sulfide-ore copper mining that will pollute this special place which we have sought to protect and heal.	WAT	NS	X	1	
Elizabeth K Larsen	Development of the proposed PolyMet mine is contingent upon eliminating the protections of the Weeks Act. As a result, a ?land swap? or exchange has been devised that circumvents laws protecting the headwaters of the St. Louis River from the enormous proposed strip mine. The exchange will sacrifice nearly 1000 acres of wetland directly, with indirect impacts extending much farther. It is as if the value of the headwaters, along with the effort and money spent to restore the health of the river, has been forgotten in the rush to extract minerals from the earth in this watery place, for the benefit of a few.	WAT	NS	X	1	
Elizabeth K Larsen	A recent study by Earth Economics details the economic benefits of ecosystem goods and services provided by the St. Louis River watershed. In the study, only those factors with rigorous scientific valuation were included in the tally; those lacking careful study were omitted. Therefore, the present valuation must be considered a very conservative estimate of the economic value of the benefits provided by the St. Louis River and its watershed. In total, the river?s ecosystem goods and services are valued at \$5 to \$14 billion annually. One of many factors considered in this evaluation, carbon sequestration, is of enormous concern to human kind, and much of the St. Louis headwaters area is a large and complex peatland. The study values the carbon sequestration capacity of this area between \$57 billion and \$95 billion over the course of the next seven generations. Recreation and tourism alone generate \$12,843 per acre per year in this watershed. According to a recent directive from the White House Office of Management and Budget, the hundreds of values that have been identified in Earth Economics? Report must be included in any analysis of benefit and cost related to the proposed PolyMet project. I ask that the plan itemize the values of the lands that will be taken and calculate them for the entire duration of the period that this mine proposes to ooze pollution into our ecosystem. We have the right to expect our government to consider the costs of their decisions, not just the benefits that are touted by corporations.	WAT	NS	X	1	
Gedicks AI	I oppose the proposed PolyMet NorthMet copper-nickel sulfide mine because PolyMet's Final EIS provides no scientific evidence that metallic sulfide mining can be done in the water rich environment of Northern Minnesota without polluting our waterways for centuries to come.	GEN	NS	X	1	
Gedicks AI	The FEIS asserts that containment and mechanical treatment of all but 10 gallons per minute of the mine's runoff is possible. Furthermore, such containment and treatment can and will be maintained "in perpetuity" for at least the next 200 years at the Mine Site and 500 years at the Plant Site. Such assertions have no basis in fact or in the history of modern mining,	WAT	S	O	3	SDEIS Theme WR 035
Gedicks AI	The FEIS fails to analyze the cumulative effects of opening a sulfide mining district in the heart of Superior National Forest, and in the headwaters of both the Lake Superior and Rainy River watersheds.	CUM	NS	X	1	
Gedicks AI	The land was originally purchased for watershed protection. Changing ownership of the land from public to private would	LAN	NS	X	1	

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	result in a subsequent loss of Federal protections.					
Chris Parthun	Lastly, I want to remind you that the Waters of the State belong to the public. In an era where we are realizing increasing groundwater contamination, questions over water use and sustainability, and changing weather patterns, decisions about our water resources are more important than ever. No amount of money will ever replace a compromised water resource!	WAT	NS	X	1	
Bruce Ludewig	I do not believe the proposed plan goes far enough to ensure that the St. Louis River watershed will not be significantly polluted in the future. This enterprise would unearth caustic materials on a large enough scale as to require hundreds of years of monitoring and treatment. The proposal does not provide enough assurance that this monitoring and treatment would actually occur as long as would be necessary, given the unpredictable nature of politics and the economy.	GEN	NS	X	1	
Bruce Ludewig	I do not believe the cumulative effects on the landscape of this proposed precedent-setting mining operation (considering all of the similar projects that would likely follow) have been fully addressed in this proposal. Similar sulfide mining operations located to the north of the Laurentian Divide would put the BWCAW watershed directly at risk. And the increased industrial activity, freight transport, and general development would permanently destroy the rare, still mostly pristine character of this area, doing irreparable harm to the tourism industry, and to one of the last great places on Earth where retreat from urbanization, commercialization, industrialization, and technology can be found.	CUM	NS	X	1	
Bruce Ludewig	I do not believe the effects of the proposed land swap with the U.S. Forest Service have been properly acknowledged or addressed in this proposal. The land swap would effectively reduce the size of the Superior National Forest since the lands traded to the Forest Service are already effectively protected from development due to their scattered locations within the National Forest. The land to be given up by the Forest Service is on the perimeter of the forest, and would effectively reduce the size of the forest in terms of the protections it provides to the overall landscape.	LAN	NS	X	1	
Bruce Ludewig	the lands to be given up for the NorthMet project are high quality ancient wetlands, thousands of years old, that once destroyed can never be replaced with anything equivalent. Even if a land swap could be justified, I do not believe the Forest Service, in this proposal, gets nearly enough in exchange for these precious wetlands.	WET	NS	X	1	
Karen Williams	The track record of sulfide mining puts surface and ground water at risk. Therefore, human health impacts, wildlife, fish and other aquatic life, wild life, and other living things are also at risk.	PER	NS	X	1	
Karen Williams	The loss of protected wetlands, including peat bogs, is unacceptable.	WET	NS	X	1	
Karen Williams	This "bust and boom" industry puts the economy in danger, especially the billion plus dollar tourism.	SO	NS	X	1	
Karen Williams	Glencore's financial responsibility is unsure, especially for the necessary 500+ years of water treatment that is necessary.	FIN	NS	X	1	

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Karen Williams	The PolyMet FEIS is inadequate under both federal and state standards. I oppose the US proposal to exchange Superior National Forest land for the PolyMet proposal and oppose any federal permit that allows PolyMet to destroy wetlands and impair water quality.	LAN	NS	X	1	
Karen Williams	this includes risk from air pollutants, mineral particles similar to asbestos, methylmercury, arsenic, lead, and manganese.	AIR	NS	X	1	
Karen Williams	The FEIS does not evaluate the impact of polluted seepage north of the mine site on the 100 Mile Swamp, the Rainy River basin, and the Boundary Waters. Water modeling data conflict, and these assumptions have not been independently verified.	WAT	NS	X	1	
Karen Williams	This is the largest wetlands destruction ever approved by the US Army Corps of Engineers (St. Paul district) and is unacceptable.	WET	NS	X	1	
Karen Williams	It is obvious that copper sulfide mining should not be permitted in the Land of 10,000 Lakes without a perfect guarantee that ALL water quality standards can be met during mine operation and in perpetuity after closure. This guarantee is impossible so PolyMet as well as any other sulfide mines cannot be allowed.	PER	NS	X	1	
Janelle Carlson	Copper mining poses a possible threat. What an understatement. Kind of makes it sound like if it goes bad five surrounding homes would be negatively impacted. The reality is if it goes bad, and I would bet it's a matter of when not if, it would be an irreversible disaster; not just for northeastern MN but for the whole state. Opponents call it sulfide mining because to mine for copper you unearth sulfide.	GEN	NS	X	1	
Janelle Carlson	Sulfur compounds are extremely toxic to humans, animals, and the environment. They are caustic and burn. I know first hand of its toxicity because I was prescribed a sulfa antibiotic and have never recovered from the long term side effects it caused. The sulfamethoxazole, the synthetic product used in the antibiotic is a sulphur-based compound much of which is recovered from stockpiles of toxic waste from oil refineries, chemical plants and metal smelters. It can cause damage to the liver, thyroid, immune system, adrenals, and the list goes on and on.	HU	NS	X	1	
Janelle Carlson	I feel that's exactly what is happening with copper mining; deception. Deceiving talking points like "We support Mining" are deployed on a region and people that are in need of jobs. I've seen this strategy utilized before by many corporations wanting to bring a dangerous industry to a region by continually downplaying the risks and confusing and distracting the public with their promises of jobs. The bottom line for any corporation is making money and they've proven time and time again that they seem to have little regard for the well being of humans, animals, the environment, or even the planet. They take short cuts and risks if it will save them a nickel. To take such a risk with our precious water and environment is totally insane to me. We need environmentally progressive jobs and we can find much better ways to employ people. I will never be convinced that this type of mining is safe and can't believe that the state is even considering this. This gives added meaning to the phrase "risky business".	SO	NS	X	1	

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Pamela Walhovd	WE AND YOU ARE THE STEWARDS OF THE LAND WE ALL MUST STAND UP AND PROTECT THE LAND, WATER AND OUR NATURAL RESOURCES. YOU CAN NOT FIX NATURAL RESOURCES AFTER DAMAGE THAT IS WHY THEY ARE CALLED NATURAL. PLEASE DO NOT ALLOW POLYMET OPERATE ANYTHING IN OUR STATE...YOU CAN NOT FIX DAMAGES IN THE FUTURE FROM A COMPANY THAT MAY NOT EVEN BE IN BUSINESS IN THE FUTURE AND WHY WOULD THE PEOPLE OF MINNESOTA WANT TO FOOT THE BILL FOR DAMAGES BY A COMPANY THAT PROFITED OFF OF THE DAMAGE TO OUR LAND AND WATER. PLEASE STOP POLYMET. DON'T ALLOW IT. STOP BEFORE IT IS LOST AND DESTROYED OUR LAND CAN NOT BE REPLACED. DO THE RESPONSIBLE THING AND PROTECT OUR STATE.	GEN	NS	X	1	
Steve Brodigan	By not incorporating a Health Impact Assessment (HIA), as requested by the Minnesota Department of Health, the Minnesota Nurses Association and Minnesota Health Professionals, the FEIS strikes me as insufficient. The Human Health addendum on the DNR website indicates that the Co-Lead Agencies, along with the MN Dept of Health, eventually determined a HIA isn't required but would be "a tool that can help inform the public about potential health impacts from a proposed project." Presumably, this is in addition to recently added section 7.3.4. If doctors, nurses and even public health professionals believe that incorporation of such a study is in our best interest to "do mining right" why in the world would we forego it, even if it takes a bit more time and effort?	HU	S	O	10	SDEIS Theme HU 01
Gary Swanson	I have huge concerns about the accuracy of the PolyMet FEIS data that they are trying to basically ram down the state of Minnesota's throat.	GEN	NS	X	1	
Gary Swanson	Specifically I'm concerned that the PolyMet- NorthMet project and it's all too real pollution effects that threatens not just the entire BWCA but would also flow north into the Rainy River watershed too because of hydraulic connection or conductivity between the proposed mine site and the Dunka River. I'm not an engineer or a hydrologist but anyone with a map of the area and a basic knowledge of which direction the rivers flow up there would be able to figure this out.	WAT	S	O	8	MDNR et al. 2015c
Janice Ann Smith	The BWCWA is a priceless, one of a kind, natural resource that must be preserved for generations to come.	WILD	NS	X	1	
Janice Ann Smith	The plans for containing mining waste have not been shown to be environmentally sound.	PD	NS	X	1	
Janice Ann Smith	There is no guarantee that the corporations involved would be able to sustain the required waste containment for the number of years required.	PD	NS	X	1	
Janice Ann Smith	Once the mines run out of ore, it is highly likely that the state of Minnesota would be left with the responsibility for the high cost of containment and clean-up.	FIN	NS	X	1	
Janice Ann Smith	The market for copper and nickel is down and will not sustain the costs required to mine responsibly.	NEPA	NS	X	1	
Janice Ann	The number of people to be employed by the industry does not outweigh the risk for severe and permanent environmental	SO	NS	X	1	

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Smith	damage.					
Amy Schwarz	The Final EIS clearly demonstrates that the land exchange and proposed mine will not meeting state or federal environmental standards.	GEN	NS	X	1	
Amy Schwarz	The land exchange is not in the best interest of the state and to move forward with it contradicts the mission and responsibility of the Forest Service.	LAN	NS	X	1	
Amy Schwarz	Indefinite treatment of water and tailings is in violation of Minnesota rules. It is not possible to ensure that a company or even a government can keep up with this treatment indefinitely, even if sufficient funds are provided, which is highly unlikely.	FIN	NS	X	1	
Amy Schwarz	I also encourage you to look into ethical conflicts of interest between the Head of the Division of Lands and Minerals and NorthMet and its environmental consultant.	NEPA	NS	X	1	
Amy Schwarz	I encourage you to reject this proposal and protect our state's most valuable and irreplaceable resource--water.	WAT	NS	X	1	
John Lapham	According to the EIS Polluted water produced by the mine will need to be actively treated indefinitely - like 500 years.	WAT	NS	X	1	
John Lapham	The tailings basin that PolyMet proposes to use is already leaking into the groundwater.	WAT	NS	X	1	
John Lapham	The financial assurances mandated by state law haven't been adequately addressed. 200 to 500+ years of active treatment will require hundreds of millions of dollars in financial assurances to ensure that the taxpayers of Minnesota are not stuck with the costs of cleaning up this potential superfund site.	FIN	NS	X	1	
Jack Ray	I oppose this project. It is unsound economically, environmentally and socially. It stands to be an economic drain on the people of Minnesota for generations.	SO	NS	X	1	
Jack Ray	Keep these minerals in the ground, They will become more valuable over time and perhaps one day, will be valuable enough to be extracted profitably and pay for adequate remediation. That is not possible today.	NEPA	NS	X	1	
Kyle Lind	Poly Met North Met as currently Drafted is Bad for Minnesota, bad for Iron Rangers, and should not be allowed to proceed as currently proposed.	GEN	NS	X	1	
Kyle Lind	We moved here to be surrounded by clean water full of fish. We moved here for the abundant wild rice beds, for the unique wild life that is absent from most of the continental United States , and for the clean air. We are proud to call North East Minnesota home. It is one of the most unique and economically valuable ecological regions in the entire United States of America. The Boundary Waters Canoe Area Wilderness (BWCAW) is the most visited Wilderness (by tens of thousands) anywhere in the entire Nation. The St Louis River is the largest tributary to our Nations greatest Lake, Lake Superior. As	GEN	NS	X	1	

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	Minnesotans, we are so privileged to have these amazing jewels right out our back door! With great privilege comes great responsibility. As Minnesotan's we hold all the power to protect these invaluable resources upon which all Americans depend.					
Kyle Lind	All across the nation in environmental studies class rooms, and natural resource agency headquarters Minnesota is looked to as a leader in natural resource science and conservation. As my friend and ecological mentor in Montana always says "Minnesota is ten years ahead on environmental issues". That is because we care about our natural inheritance. In 2008 Minnesotan's voted overwhelmingly for the Clean Water, Land and Legacy Amendment. The Legacy Amendment is the largest state conservation measure taken in US history. It only happened because Minnesotans, even during a recession and economic crisis, voted to raise their own taxes to protect the things that make our state unique and special. Not only do we care enough about our natural inheritance to back it up with increased taxes during hard economic times, we understand that a clean and healthy environment is a fundamental driver of our economy.	PER	NS	X	1	
Kyle Lind	Minnesotan's are smart, countless studies name Minnesota as one of the smartest and healthiest states in the entire nation. Hard rock mining for copper nickel in sulfide bearing rocks utilizing techniques that have proven over, and over, and over again to fail to protect the environment as laid out in countless environmental impact statements is a kick in the face to all Minnesotan's. As Minnesotan's we demand responsible use of our natural resources, and projects that protect our cherished and valuable natural heritage.	PER	NS	X	1	
Kyle Lind	Poly Met's mine plan and the lead agencies Environmental Impact Statement is based on faulty water flow data. It openly admits that water treatment of the waste rock piles will be necessary on an indefinite basis, 100's of years. TELL ME, HOW MUCH IS THE ELECTRICITY TO TREAT THIS WATER GOING TO COST IN 100 YEARS, 200 YEARS, 500 YEARS, LONG AFTER POLY MET IS OUT OF THE PICTURE? IS THE COPPER FROM THIS MINE GOING TO BE USED TO CREATE THE "GREEN ENERGY" NECESSARY TO TREAT THIS SITE 500 YEARS FROM NOW? IF SO WHY EVEN EXTRACT IT? USING THIS COPPER OR ANY OTHER COPPER EXTRACTED IN THIS WAY, TO TREAT TOXIC WASTE ROCK PILES CREATED GETTING THE COPPER KIND OF DEFEATS THE ALTRUISTIC PURPOSE OF EXTRACTING IT TO CREATE GREEN ENERGY, RIGHT? This mine's only purpose is to generate profits and coincidentally a few local jobs by robbing the public blind.	WAT	NS	X	1	
Kyle Lind	THE POLY MET NORTH MET PROJECT IF ALLOWED TO GO FORWARD AS CURRENTLY DRAFTED IS GOING TO BE AN ENVIRONMENTAL DISASTER AND A DRAG ON THE STATES ECONOMY FOR HUNDREDS IF NOT THOUSANDS OF YEARS. This FEIS's adaptive mitigation strategies for stopping the very likely scenario that polluted water from the waste rock piles will flow down hill to the north and the BWCAW ecosystem are a joke at best (again the water flow data is all wrong, and the water table is going change significantly when a mine pit lake to the north is drained in the coming years). The problems with this FEIS are glaring, the most important fundamental parameters for determining ground water flow on the Poly Met site are incorrect, AND MOST ALARMINGLY THERE IS NO WAY OF CLOSING THIS MINE DOWN. LONG AFTER THE MINE CEASES TO PRODUCE COPPER AND NICKEL AND FALSE PROFITS (VIA EXTERNALIZED COSTS PASSED ON TO MINNESOTAN TAX PAYERS) MINNESOTANS WILL BE PAYING FOR THE ENVIRONMENTAL AND HEALTH EFFECTS OF THIS MINE. Not to mention the lost potential of sustainable jobs and resources forever lost to 20 years of irresponsible resource extraction that	WAT	NS	X	1	

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	primarily benefits multi-national big wigs and shareholders.					
Kyle Lind	It is clear to me as a clear headed Minnesotan that the Poly Met North Met mine as currently drafted is a raw deal for Minnesotan's and the US at large, for all the reasons, and more, stated above by me, and below by Mining Truth Officials. It is our duty as citizens of this great Nation and the State of Minnesota to do everything in our power to get this mine right or to not do it at all. Poly Met chose from the very beginning to not make this an environmentally responsible project by proposing an open pit mine rather than an underground mine.	GEN	NS	X	1	
Kyle Lind	There are known safer alternatives for operating this type of mine and Poly Met chose not to use this alternatives because Poly Met does not care about Minnesotans, Iron Rangers, or our environment. Poly Met has taken shortcuts at every step of the process to making this mine a reality. For example, despite numerous warnings from scientists and hydrologists representing the Lake Superior Chippewa that the stream flow and ground water flow data that Poly Met officials were gathering was an incorrect picture of reality due to extended drought and associated drastically reduced water flow Poly Met and the Lead Agencies used this uncharacteristic water flow data anyway. Later on when the Tribes hydrologists were proven right, the lead agencies and Poly Met Officials claimed it did not matter, as they could take adaptive mitigations strategies like filling cracks in rocks to deal with any unanticipated flow of polluted water from the mine, and waste rock sites. These adaptive mitigation strategies are not an adequate response to faulty data, and SHORTCUTS LIKE THESE WILL ENSURE THAT THE POLY MET NORTH MET MINE AS CURRENTLY DRAFTED WILL BE AN ABYSMAL FAILURE. THE COST OF WHICH WILL NOT ONLY LEAVE MINNESOTANS WITH HUGE ENVIRONMENTAL AND HEALTH RELATED CLEAN UP COSTS, BUT WILL ALSO TARNISH THE FUTURE OF HARD ROCK SULFIDE, COPPER NICKEL MINING IN MINNESOTA.	WAT	NS	X	1	
Kyle Lind	IF IRON RANGE WORKERS AND THEIR OFFICIALS, DNR COMMISSIONERS, AND NATIONAL FOREST REPRESENTATIVES WANT TO SEE A VIBRANT COPPER NICKEL MINING FUTURE IN MINNESOTA THEY MUST NOT ALLOW THIS FEIS TO PASS AS ADEQUATE. If the Poly Met North Met project proceeds as currently drafted it will be an environmental and economic disaster that will forever tarnish the copper nickel industries name and the people who supported it. Minnesotan's despite their overwhelming support for a clean environment, and many fears over this new kind of mining on the range, seem very hesitant to oppose this mine, because they understand how badly the range needs jobs, good paying jobs, and they want to trust the people appointed to protect our health, economy, and environment. However, I assure you that if this mining project is allowed to take place as it is currently drafted it will soon become clear to all Minnesotan's that Poly Met's promises to protect the environment, public health, and boost our economy are lies, and that the predictions of the lead agencies FEIS are completely and utterly wrong.	GEN	NS	X	1	

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Kyle Lind	A LIE CAN NOT LIVE FOREVER, AND THE GOOD PEOPLE OF MINNESOTA WILL NOT HESITATE TO PUT AN END TO ALL COPPER NICKEL MINING IN MINNESOTA WHEN THIS MINE AS CURRENTLY PROPOSED FAILS. THAT MEANS ANY FUTURE COPPER NICKEL MINES NO MATTER HOW WELL DRAFTED OR HOW SAFE WILL BE JEOPARDIZED BY THE FAILURE OF POLY MET AND THE LEAD AGENCIES TO GET THIS PROJECT RIGHT BY BEING HONEST WITH MINNESOTANS, AND DEMANDING NOTHING BUT THE BEST FOR MINNESOTA, INCLUDING EMPLOYING THE EXPERT RECOMMENDATIONS BY THE COMMITTEE ANALYZING THE RECENT MOUNT POLLEY DISASTER. The future of copper nickel mining on the Minnesota Iron Range is riding entirely on the shoulders of Poly Met, a company that has never operated a mine before, a company that knowingly used bad data in assisting the lead agencies in preparing their Environmental Impact Statement, a company that knows damn well the atrocious environmental and public liability record, that hard rock copper nickel mines just like the one they are proposing have had every single time they have ever been constructed.	PD	NS	X	1	
Kyle Lind	Approving this FEIS and the general mine plan as currently drafted is the biggest mistake any politician, or public representative could ever make if they want to see a vibrant hard rock copper nickel mining industry in North East Minnesota. Just ask Canyon Resources a Colorado Based Mining Company that wants to open an open pit hard rock (Sulfide) gold mine in Montana's Blackfoot River Watershed. Unlike Minnesota, Montana has a long history of hard rock (sulfide) mining for copper and the environmental legacy has been devastating, thus Montanan's (who are generally pretty pro industry) passed a ballot initiative in 1998 I-137 banning all hard rock mining-in this case cyanide leach mining- which exposes sulfide bearing rocks just like the kind found at Poly Met to air and water, resulting in acid mine runoff, and leaching of things like arsenic.	PER	NS	X	1	
Kyle Lind	Minnesotan's like Montanan's will not hesitate to ban copper nickel hard rock mining. All they need is a little push. Many of us are already skeptics -note 98% of the 58,000 comments submitted to the lead agencies for Poly Met's DEIS were opposed to this project as currently drafted, or completely no matter how it is drafted. The Poly Met North Met project as currently proposed and the economic, environmental, and health legacy it leaves will give us that push, I guarantee it! That is not good for anyone, and Iron Rangers for whom this mine is being billed as a sort of salvation will be hit the hardest.	PER	NS	X	1	
Kyle Lind	Let's not let our enthusiasm over this exciting opportunity to bring good paying jobs to the Range cloud our judgement. The writing is on the wall, all available evidence points to Poly Met and their proposed open pit hard rock copper nickel mine being a huge mistake. That is why Rebecca Otto our state auditor, and our leading health professionals have been so critical of this project. The metals lying below the surface are only valuable to the state of Minnesota and it's citizens if they can be removed responsibly (aka not how Poly Met is proposing) and once they are removed only if the mine operation can be closed down in perpetuity by the mining company with no additional input or perpetual treatment.	SO	NS	X	1	

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Kyle Lind	While I am adamantly opposed to the Poly Met North Met Project as proposed, and though am severely disappointed at the inadequacy of the lead agencies FEIS- and their dismissal of so many of the public's, the tribes, and the environmental organizations concerns, I do realize that there is a strong possibility that this Mine Plan and FEIS will be deemed adequate by people whose vision is blinded by the industries false promises, and their own desires to reign in a new era of prosperity to the Range despite all signs pointing to this being a sad new era in Minnesota's environmental legacy. Therefor, I would like to end the personalized segment of this message by discussing Financial Assurances. Based on what has happened, or is happening, at other Sulfide bearing Hard Rock mines throughout the world, such as the Gilt Edge Mine in South Dakota, Mount Polley in Brittish Columbia, the EPA disaster in Colorado, numerous mines in Montana like those at Butte, and at Lac Du Flambeau in Wisconsin among many others, I know that not only do these mines pollute continuously, and indefinitely. I also know that these mines and the systems put in place to protect the environment from them commonly fail catastrophically. Therefore, I feel very strongly that if our elected and appointed officials in Minnesota and at the Federal level do approve this FEIS and the necessary permits for this or any other Hard Rock copper nickel mine Minnesotan's deserve at the very least strong financial assurance from Poly Met and it's backers that Poly Met is going to foot the bill to clean up the mess, not Minnesotan's or federal tax payers via the Super Fund Site option. History tells us that \$500,000,000 five-hundred million dollars is not at all an unreasonable level of financial assurance to demand from Poly Met or any other similar project. The tax payers are sick and tired of the rampant corporate welfare taking place in this state and the country in general. Furthermore, if Poly Met is unwilling to provide adequate financial assurances of at least \$500 million then clearly they are not serious about protecting Minnesota tax payers and our environment.	PER	NS	X	1	
Mark Lauderbaugh	Land exchange proposed does not adequately delineate exact parcels to be established as new wetlands. This is a poor policy decision for Minnesota . Where can you establish 6000+ acres of new wetlands in Minnesota?. Man made wetlands are not environmentally possible and the impacts from newly created wetlands on surrounding communities have not been adequately addressed.	WET	S	O	8	FEIS Figure 5.2.3-30 and Table 5.2.3-17, pg 5-361
Claire Vanderslice	PolyMet's sulfide mining proposal is inadequate. One of the target metals (stated or not) in the project are the platinum group (PGM). They require very fine grinding of ore. The sulfides present in the ore are much more quickly mobilized the finer the particles. This makes the acid mine tailings and the acid mine drainage much more potent to dissolve the toxic elements present in the ore like arsenic and lead etc. I understand that PolyMet's proposed mine would be the first of its kind in Minnesota. Its approval risks polluting the headwaters of unique places with toxic metals and acid mine drainage for hundreds of years, contaminating fish, killing wild rice, sickening people and wildlife. The waters of this area must not be sacrificed and wasted for copper and gold and etc. The water is more valuable by far to life as it is known in this area of Minnesota.	GEN	NS	X	1	
Jack Ray	no to Polymet	GEN	NS	X	1	
Kathy Glover	There are so few places left that don't have the mark of human greediness and shortsightedness. Please, please stop the Polymet plan. Take a stand to protect the priceless resources in the North country. You know, and I know, mistakes will happen. Accidents will happen. And the fallout will be devastating. Let us do the right thing... leave the the land be. Humans are so shortsighted. Stop this plan now!!	GEN	NS	X	1	

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Jeanette and Jack Curphy	We are very much against the Polymet Project, for the following reasons: The Partridge River is very close to the Polymet Project. That river runs into the St. Louis River. The St Louis River flows into Lake Superior. There us also the Mississippi watershed to consider. Cleanup of any sulphide getting into the water is near impossible. Has the investors in Polymet put sufficient funds to mitigate, should any pollution problems occur? In one of last weeks Duluth News Tribune, there was an article about a copper mine closing in either Arizona or Colorado because the price of copper was down. So why are we risking our environment when there are so many unknowns?	GEN	NS	X	1	
Niki Roussopoulos Geisler	we urge decision makers to be certain that the following clean water and environmental protection principles can be guaranteed: 1. BWCAW waters and nearby lakes and rivers remain safe and clean	WILD	NS	X	1	
Niki Roussopoulos Geisler	we urge decision makers to be certain that the following clean water and environmental protection principles can be guaranteed: 2. Strong safeguards are in place in the event anything goes wrong	PD	NS	X	1	
Niki Roussopoulos Geisler	we urge decision makers to be certain that the following clean water and environmental protection principles can be guaranteed: 3. Mining companies must leave the site maintenance free (in accordance with existing MN mining rules)	PER	NS	X	1	
Niki Roussopoulos Geisler	We are also concerned that one of our camps, YMCA Camp Warren, operating for 87 years on Half Moon Lake south of Eveleth, is within the downstream catchment zone of the proposed PolyMet Mining NorthMet Project Site. We	LU	NS	X	1	
Brian Hanson	In my assessment, the correct steps have been taken to move the PolyMet NorthMet Mine to permitting. The Minnesota Department of Natural Resources, U.S. Army Corps of Engineers and U.S. Forest Service have determined that PolyMet's mine can comply with strict state and federal environmental standards, while protecting Minnesota's land and water. Their work is detailed in the FEIS and concludes more than 10 years of diligent study and review. The project's economic significance to northern Minnesota brings hope to the region and entire state. APEX is excited that this project is one step closer to creating thousands of construction jobs and hundreds of new family-sustaining mining jobs in our region. Let's get on with it! I am confident in the strength of the project environmental review process. The FEIS is a culmination of the dedicated efforts of many agencies, with significant public input. Thousands of comments and questions submitted during the review periods for the draft and supplemental draft environmental impact statements have been addressed and incorporated in the FEIS. The agencies considered the project's potential effects on air and water quality with respect to human health and identified no adverse health risks. Water modeling shows that PolyMet's treatment and mitigation plans will meet all water quality standards and prevent damage to waterways. The FEIS also concludes that any possible groundwater flow will be prevented. The level of detail included in the FEIS is astounding. It is clear the document meets all state and national environmental requirements. The state of Minnesota can model responsible mining practices and innovative environmental protection technologies for the rest of the nation and the world. Our country needs these strategic metals. Northeast Minnesota has the innovative know-how, the workforce, the infrastructure, the environmental ethic and the community support to ensure this project will serve our state in a legal and ethical manner. It is imperative	MEPA	NS	X	1	

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	that we move forward with all haste to rebuild our mining economy and stem job losses on Minnesota’s Iron Range. All mining activities bring both risks and rewards. PolyMet will bring significant rewards to the entire state, and the FEIS proves that the risks of copper-nickel mining have been mitigated. Simply put, the rewards far outweigh the risks. The FEIS is more than adequate, and the DNR should affirm this fact so permitting can get underway.					
Charles And Nancy Bagley	The PolyMet FEIS is inadequate under federal and state laws and regulations because it does not evaluate the impacts of polluted seepage north of the mine site on the 100 Mile Swamp and the Rainy River (Boundary Waters area) Basin. WE CANOE CAMP EVERY SUMMER IN THE BOUNDARY WATERS. WE DRINK THE LAKE WATER. WE OBJECT TO ANY DEVELOPMENT THAT MIGHT POLLUTE THOSE LAKES!	WAT	S	O	8	MDNR et al. 2015c
Charles And Nancy Bagley	The Plan FAILS TO NOTE that the mine tailings must be kept from leaking FOREVER! Can PolyMet supply proof that this can be done? They need to post a ONE BILLION DOLLAR BOND to provide cash for perpetual maintenance of tailings storage.	FIN	NS	X	1	
Anthony Runkel	The content of the FEIS dealing with bedrock hydrogeology is improved over the SDEIS in a number of ways. The inclusion of a higher hydraulic conductivity layer corresponding to shallow bedrock conditions, and adjustments to conductivity parameters in the models, are positive additions. The FEIS also more clearly and consistently acknowledges the potential for enhanced flow along fractures that have yet to be identified at the mine and plant sites. Another improvement is the addition of possible mitigation strategies should such enhanced flow be recognized during mining, or post-mining operations. Other approaches suggested in my (and other) 2014 SDEIS comments to improve the NorthMet site characterization were not employed. These include the use of routine techniques such as depth discrete head measurements, water chemistry (for residence time), borehole geophysical logs, and packer tests; all targeted towards identification of enhanced flow through fractures. The FEIS justifies the exclusion of these and related techniques mostly by suggesting that the current level hydrogeologic characterization for the NorthMet site is adequate, and that it is based on techniques and assumptions that are “standard approaches” or “common practice” in the mining industry. While it is not the role of a non-regulatory agency such as the Minnesota Geological Survey (MGS) to determine what is “adequate” in a permitting process, the MGS does have a responsibility to inform the process as an unbiased source of Earth Science information when we have the expertise to do so. In that spirit, the remainder of this FEIS comment provides what I consider to be a scientifically current perspective on “standard approaches” in the field of hydrogeology that would improve the ability to predict impacts of the proposed mining at the NorthMet site. If the approach used to characterize the hydrogeologic conditions at the NorthMet site is indeed consistent with standard practice, it might be beneficial to reconsider the standard, or if that standard is appropriate for a project of this magnitude. A standard that might be	WAT	S	O	8	SDEIS Themes WR 007, WR 012

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	<p>sufficient for basic water budget (quantity) predictions may not be a sufficient standard for an activity such as nonferrous metal mining, where transport of contaminants (water quality) is of equal importance to water quantity. The latter should require a more comprehensive hydrogeologic understanding of a site. The techniques described in the Runkel 2014 SDEIS comment, such as depth discrete head measurements, borehole geophysical logging, packer tests, and discrete interval water sampling for residence time information, have been used to improve our understanding of hydrogeologic conditions in this region for nearly two decades. Government agencies that have used these approaches include the Minnesota Department of Health, Pollution Control Agency, Department of Natural Resources, and the Minnesota and Wisconsin Geological Surveys. Industry groundwater consultants have also used many of these approaches for remediation of contamination sites. As a specific example, the DNR Division of Ecological and Water Resources routinely uses information from these techniques to depict hydrogeologic conditions at county-scale, as part of the County Geologic Atlas program. The widespread and longtime use of these approaches to hydrogeologic characterization could therefore be considered common practice. A more systematic approach to identifying enhanced flow along fractures that included routine techniques such as those described here would have reduced uncertainties inherent in the predictions of water-related impacts at the NorthMet site. For example, identification of enhanced flow along fractures would lead to significantly shorter predicted travel times than currently estimated in the FEIS. The unrecognized presence of especially high conductivity fractures can also lead to miscalculation of flux predictions. Current predictions of flux described in the FEIS are based on a conceptual model in which the bedrock fracture network is deemed to be sufficiently well-connected at site-scale to behave as equivalent porous media, and that a low bulk hydraulic conductivity is representative of the entire site. The bulk hydraulic conductivity, and thus the flux, will be greater than currently estimated if high conductivity fractures are present, but remain unidentified. The limited number of boreholes and manner in which those holes were tested at the site greatly reduced the odds of identifying any such fractures. In summary, the FEIS is improved over the SDEIS, but a considerably more complete understanding of the hydrogeologic conditions could have been achieved by including information derived from a number of well-established, common practice techniques that provide greater insight into transport through fractured bedrock. These improvements would decrease the odds of unanticipated environmental impacts, and, if the proposed project moves forward in the permitting process, lead to more robust water protection and monitoring strategies.</p>					
Laura Carrero	I understand that the waste produced by this project will be in the ground for 500 years. Given that is such a long time period, I am not convinced that Polymet can guarantee that absolutely no hazardous waste will seep into the BWCA.	WAT	NS	X	1	
Laura Carrero	I have read that the nearby water level measurements used by Polymet in its study were wrong and, had accurate data been employed, the results would have showed a possibility of waste water flowing into the BWCA.	WAT	NS	X	1	
Laura Carrero	No number of jobs, which are only temporary (perhaps 30 years worth), are worth the possibility of pollution in the Boundary Waters.	SO	NS	X	1	
Laura Carrero	Also, if something happens, like the mining waste that flowed into rivers in New Mexico this year, there will be countless jobs lost when tourism decreases as a result.	SO	NS	X	1	

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David Reisenweb er	it is impossible to know where it might go given our fractured bedrock	WAT	NS	X	1	
David Reisenweb er	unusual precipitation events have caused dams to fail, many on rivers and built by the best efforts of the Army Corps of Engineers. Our water-rich area is not the place to risk exposing sulfide ore.	GT	NS	X	1	
Susan Lynn	I'm writing to call attention to your primary responsibility as elected leaders that you hold in trust the common property shared by the people of Minnesota. It is your duty to use scientific information to disallow pollution, resource destruction, chemical introduction and other harm to our resources. You cannot allow risk to be taken unless and until conclusive proof exists that such practices will not pose harm.	PER	NS	X	1	
Susan Lynn	Sulfide mining carries tremendous risk to the water and to the people of our state and the continent. The risk is well documented.	WAT	NS	X	1	
Susan Lynn	We citizens quite literally allow you to take food from people's mouths by permitting mining companies to leak, ooze, pour or gush sulfide and other chemicals into the water. Sulfide interacts with mercury to produce methylmercury, the kind that lingers in the body, literally indefinitely, and harms babies in their mother's womb. Mercury is a byproduct of mining. Mercury harms neurological development. Presently 1 in 10 babies born on the North Shore of Lake Superior have abnormally high levels of mercury in their bodies at birth. The St Louis River has such high levels of mercury at present that no plan can be formulated to remove it, and make the fish safe to eat.	HU	S	O	2	SDEIS COOP Response #2878. SDEIS Themes HU 02, HU 05, HU 07
Susan Lynn	The levels in mercury in the fish are such that those in our state who seek to sustain their lives eating the fish cannot do so.	MERC	NS	X	1	
Susan Lynn	Half a billion dollars have been spent of the people's tax money to clean the waste that mining has heftily contributed to in the St Louis River, and still it remains polluted beyond health. It is further endangered now by plans for sulfide mining in the Duluth Complex which stretches from north of Ely to south of Aitkin.	CUM	NS	X	1	
Susan Lynn	We have treaties with tribes that we must honor, that grant them the right to hunt and to fish. If we render the fish inedible we dishonor and eviscerate that treaty.	CR	NS	X	1	
Susan Lynn	We would like to protect fishing, wild rice harvesting and farming for all citizens of Minnesota and surrounding areas of the Midwest. I ask you to honor the responsibility you have to the people now and in the future.	GEN	NS	X	1	
Susan Lynn	We are being put at risk by decisions to allow risk to our water from Sulfide Mining in the Northeast of Minnesota. Lake Superior holds 1/10th of the nation's fresh surface water and every person on the continent has a right to that water. It is not something the people can allow you, as the trustees of our lands and water and air, to permit it to be destroyed. We ask that until such time as there is a means to extract the disseminated body of minerals without risk to the water; that you not allow it. Please, uphold your duty to the people to hold their lands in safe trust, with the gravity due, to that duty.	WAT	NS	X	1	

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Larissa Hindman	Indefinite water treatment to waste water/tailing pond and piles is bad science. Sulfide mining is not good for Minnesota.	PD	NS	X	1	
Phillip Larson	It would be appropriate in this section to make specific reference to Minnesota Statutes section 93.001 (Policy for Mineral Development), which reads: It is the policy of the state to provide for the diversification of the state's mineral economy through long-term support of mineral exploration, evaluation, environmental research, development, production, and commercialization. The Purpose and Need for the Proposed Action should be amended to reflect that the Proposed Action advances the policy of the State of Minnesota, as codified in Minn Stat § 93.001.	NEPA	S	N	12	SDEIS Theme NEPA 02. The Co-lead Agencies' purpose and need statements are based on their respective mandates, other legal guidance, and the proposal before them for review. The Co-lead Agencies believe that their roles are accurately described and fulfill their respective responsibilities under state and federal law.
Rick Fry	It is not logical to assume that this endeavor will not leak. It is not a matter of if it will leak, but when it will leak. There should be no leakage at all. They claim it will only leak a little which is acceptable according to the EIS. No leakage is acceptable.	PD	NS	X	1	
Rick Fry	The prospect of the destruction of the environment for jobs that may last 20 years is ludicrous.	SO	NS	X	1	
Rick Fry	500+ years of monitoring. Do you really think that the public won't get stuck with the bill? It will take every penny of the value of the removed minerals plus quite a few more dollars to maintain the system.	FIN	NS	X	1	
Harold Nordin	Despite almost ten years of debate, discussion and delays, together with the tens of thousands of comments received in opposition to this project, the latest PolyMet NorthMet sulfide mining proposal has changed very little and remains incomplete and inadequate. When one considers the pollution caused by virtually all similar projects of this type (around the world) one can only assume this will be no different. The potential for pollution of ground and surface water cannot be underestimated or disregarded, and any project that has the potential to compromise that quality should be held to a higher standard of operation and accountability.	GEN	NS	X	1	
Harold Nordin	It relies too heavily (almost exclusively) on information and model data provided (or conducted) by PolyMet rather than independent sources;	O	NS	X	1	
Harold Nordin	It relies too heavily on the premise that unforeseen or unexpected issues can be adequately addressed in a timely manner by PolyMet employing locally available resources in close proximity to the mining site;	GEN	NS	X	1	
Harold Nordin	It fails to sufficiently address the controls to be implemented to control risks from asbestos (and similarly related) particles and mercury released into the environment during and subsequent to mineral extraction;	AIR	NS	X	1	
Harold Nordin	It fails to accurately predict (and independently confirm) the flow rate and dispersion area for pollutants from the project site;	GEN	NS	X	1	
Harold Nordin	It fails to accurately assess the risks associated with the storage of vast quantities of mine waste and toxic liquids in a holding facility (dam or basin) over 40 years old – and which is similar to the relatively recent Mt. Polley mine disaster);	WAT	NS	X	1	

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Harold Nordin	It fails to present detailed plans for providing monetary support or insurance sufficient to cover costs associated with a long-term clean-up in the event of a pollution event, and it fails to insulate taxpayers of the state against a massive clean-up expense;	FIN	S	O	2	SDEIS Theme FIN 03
Harold Nordin	It fails to address issues and costs associated with long-term treatment and monitoring of polluted water from the site after termination of operations—forever is a long time;	FIN	S	O	2	SDEIS Theme FIN 03
Harold Nordin	It fails to address the possibility of pollution to the St. Louis River watershed and Lake Superior	WAT	S	O	2	SDEIS Theme WR 081
Harold Nordin	It fails to adequately address the financial costs associated with post-operational site restoration and clean-up and long term monitoring of the site.	FIN	S	O	2	SDEIS Theme FIN 03
Harold Nordin	I would ask that the Minnesota Department of Natural Resources reject the PolyMet FEIS as inadequate.	MEPA	NS	X	1	
Bruce Harten	Dancing around the "Elephant in the room" in this instance is RIDICULOUS !!! I did the electrical work on the Forbes tac plant in 1965 and again in 1978 ! I spend a lot of time flyfishing the St Louis river and all the Nor shore streams....Putting One Sulfide Creating Monster right on top of an abandoned 'Poluter" is "THE DUMBEST DAMN THING MINNESOTANS EVER PUT ON THEIR PLATE"	GEN	NS	X	1	
Vicki Andrews	I am writing to express my strong concern about the proposed PolyMet open pit mine to be built in northern Minnesota, on Superior National Forest lands at the headwaters of Lake Superior. The potential of disaster to our beautiful lakes, rivers, and woodlands is too great to be ignored. I live in Grand Rapids and have camped in the Boundary Waters a number of times. I love northern Minnesota and I want it to be protected from environmental disaster for people living now and all future generations. Economic gain is important to our area but not at the expense of our beautiful land and waters.	GEN	NS	X	1	
Michael Rota	In addition, I oppose any federal Clean Water Act permit for PolyMet discharge and wetlands destruction.	COE	NS	X	1	
Adam K. Wilke	I oppose the FEIS as it is currently written. Specifically, the FEIS fails to assess: Data available for projected precipitation ? Capacity of the facility to handle large (100-year and 500-year statistical probability) storm/precipitation events	WAT	S	O	8	SDEIS Theme PD 22
Adam K. Wilke	I oppose the FEIS as it is currently written.	GEN	NS	X	1	

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Adam K. Wilke	"While climate change may occur in the future, it cannot be stated at this time if in the long-term there would be more or less rainfall." This assumption is false. Data provided by the Minnesota Department of Natural Resources State Climatology Office (Figure 1), National Oceanic and Atmospheric Administration (NOAA) National Climatic Data Center (http://www.ncdc.noaa.gov/cag/) (Figure 2) , United States Geological Survey (http://www.usgs.gov/climate_landuse/clu_rd/nccv/viewer.asp), and National Climate Assessment (Figure 3) indicate otherwise. Why is projected precipitation data not incorporated into the FEIS? Further, I take great concern with this statement: "If over time, climate change causes a gradual increase in annual rainfall, the 100 year storm event would be redefined to a larger value and mine facilities would be upgraded to handle a larger design storm" (page A-670). It is simply not okay to wait for an extreme precipitation event to upgrade facilities to handle such events. This facility should be capable of handling not only 100-year storm events, but 500-year storm events. Why is the facility not designed to handle large (100-year and 500-year statistical probability) storm events?	WAT	S	O	8	SDEIS Themes PD 22, WR 077, WR 180
Michael McCormick	I oppose IN THE STRONGEST POSSIBLE WAY the current PolyMet NorthMet sulfide ore copper-nickel mine proposal. The Superior National Forest is the wrong place to permit destructive and dangerous hard rock mining to occur. I moved to Minnesota, and several of my family members followed me, in large part because of the natural environment of our state, especially the North Woods, Lake Superior and Boundary Waters areas. Allowing mining to occur at PolyMet, for the spurious short-term benefit of a few boom-and-bust jobs, while creating permanent devastation to the landscape for generations to come and further tying norther Minnesota to a cycle of destructive short-term natural resource extraction economics, with pollution flows into the St. Louis River, Lake Superior and very likely the Boundary Waters and Voyageurs National Park, would be a legacy that should prevent any responsible official from sleeping at night.	SO	NS	X	1	
Jim Pounds	There is no rationale basis for allowing this mine to exist. Period.	GEN	NS	X	1	
Jim Pounds	Long term survival depends upon having a clear water supply. Do not threaten our existence in order to make a few SOB's even richer than they are now.	WAT	NS	X	1	
Steven Gammon	I do not agree that the NorthMet Mining Project should be aloud to be mined in the Northeastern Minnesota area because of the threat of possible long lasting pollution to the water, wildlife, land, air, and any other part of the environment and to the present and future generations of the human race !!	GEN	NS	X	1	
Martin Cooney	I believe that the tenuous and transient economic relief that the PolyMet project offers to the Iron Range, even under the rosiest projections, does not begin to compensate the State, including the residents of northern Minnesota, for the immeasurable risks to what is clearly emerging as Minnesota's most valuable resource: abundant, clean waters and the fragile northern Minnesota ecosystems that produce them. For this reason, I urge the State to deny PolyMet's permit application, as well as all applications to pursue sulfide mining at the expense of degrading Minnesota's environment and water resources.	SO	NS	X	1	
Martin Cooney	However, if the DNR decides that PolyMet's application merits a Permit to Mine it must ensure that the precedents it establishes in connection with the conservatism and prudence of the design, oversight, and enforcement of the financial	PER	NS	X	1	

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	assurance requirement are rock-solid and impervious to political pressure and the instinct to accommodate the Permittee.					
Martin Cooney	Properly structured, the financial assurance requirement will force PolyMet to pay the full cost of mining in Minnesota. This requirement is by definition onerous to the mining venture. Setting aside millions of dollars requires significant additional investment on the part of PolyMet's parent company. This will depress rates of return, just like any other cost of doing business. To keep faith with Minnesota taxpayers the DNR must resist pressure by PolyMet and mining advocates on the Range and their lobbyists or elected political representatives to compromise on the rigor and objectivity required to protect the environment. If the mining companies cannot make money by bearing all of the costs arising from their mining operation, they should not be mining in Minnesota. Period. Fortunately, the Minnesota legislature can profit from other states' bitter experience with regulating non-ferrous mining activities. In 2008, Minnesota passed a financial assurance law specifically requiring non-ferrous mining companies such as PolyMet to provide a bankruptcy-proof pool of high quality guarantees and/or financial instruments under the control of the commissioner of Minnesota's Department of Natural Resources ("DNR") to ensure that all requirements of non-ferrous mining permits, including the cost of reclaiming the mine and any environmental damage arising from the mining activities are paid for by the mining concern and not the Minnesota taxpayer. Barring a denying PolyMet's application, the next best alternative is to make sure that the financial assurance put up by PolyMet is ironclad and in an amount sufficiently conservative as to deal with any actual or potential environmental damage arising from PolyMet's mining activities.	FIN	NS	X	1	
Martin Cooney	1. Formally Incorporate the Financial Assurance Detail into the EIS Process In its online Financial Assurance Fact Sheet1, PolyMet states that "It is not typical for financial assurance to be included in an EIS as it is in the PolyMet environmental review." If this is the case, this is a deficiency in Minnesota's EIS process. The DNR should make financial assurance a mandatory component of all future draft and final EISs. Doing so will ensure that the "purpose and requirement of financial assurance, including the rules and criteria that would be used in determining financial assurance and the risk analysis involved, as well as how [an applicant] would calculate financial assurance during the permitting process"2would be clearly specified for the benefit of the applicant and rigorous public review. The number of public comments complaining of the lack of detail in connection with all aspects of the financial assurance requirement, as described in the draft environmental impact statement ("DEIS") is evidence of the need for this modification in the EIS process. The FEIS refers all comments on the DEIS's financial assurance section to Section 3.2.2.4 in the FEIS. This section consists of "available detail" related to financial assurance, which does not begin to provide sufficient detail on the specifics of the financial assurance to permit informed comment. As it stands right now, financial assurance remains a "black box" to the Minnesota public. The FEIS states that "additional details on the cost estimates and calculations that would be required for the project would be addressed during permitting". These additional details are critical. Given the importance of the financial assurance to safeguard the taxpayer, the DNR must assure the public that the permitting process will be transparent enough to allow for thoughtful public comment on PolyMet's financial assurance requirements prior to the finalization of the permit, if the DNR is disposed to grant the permit. Financial assurance is the taxpayer's most important insurance policy against natural disaster, incompetence, malfeasance, negligence, and plain bad luck in connection with this mining venture.	PER	S	O	11	SDEIS Theme FIN 13

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Martin Cooney	<p>2. Make the Financial Assurance Detail for the PolyMet Permit Available for Public Review and Comment Prior to Completion of the Permitting Process PolyMet is the first of many sulfide mining permit applications pending for consideration by the DNR. The DNR should establish a public review of each project’s financial assurance details as standard operating procedure for every permit. The PolyMet application, as first in line, is setting precedent for future non-ferrous mining applications. Both the DNR and PolyMet are assuring the public that the detail will be addressed in the permitting process that follows completion of the FEIS. To satisfy the public interest in this crucial piece of the mining permit application, details of the plans for PolyMet’s and all other non-ferrous mining venture’s financial assurance should be available for public review and comment prior to the finalization of each Permit to Mine. The publicly available detail should include: ? detailed scope of costs covered; ? the methodology and assumptions employed in the financial calculations; ? the minimum standard for publicly available credit ratings of any bank, insurance company, surety, financial instrument, or other component of the financial assurance fund; ? provisions for the termination, (if any) and/or replacement of the component instruments or sureties of the financial assurance; ? detail on the timing and amounts of contributions to and withdrawals from the financial assurance fund; and, ? ongoing participation of qualified financial advisors on matters of increases or reductions of the amount of financial assurance stemming from the annual review. Given the risk of extensive environmental damage to the State and the track record of financial irresponsibility of similar sulfide mining ventures in the past elsewhere, the public is putting more stock in the availability of bulletproof financial assurance to clean up a potential environmental mess than in PolyMet’s ability to police itself, or the DNR’s ability to effectively oversee this project given the project’s scope and the DNR’s lack of institutional experience in regulating and monitoring sulfide mining operations.</p>	PER	S	O	11	SDEIS Theme FIN 13
Martin Cooney	<p>3. The Financial Assurance Amount Must Include Provisions for Unanticipated Corrective Actions The purpose of financial assurance is to eliminate the risk that the Minnesota taxpayer will ever be required to pay the bill for environmental damage caused by the PolyMet mining operation, a for-profit venture. The residents of the Iron Range certainly do not want to be held solely responsible for the cost of cleaning up an environmental mess even though they would benefit directly from PolyMet’s activities. Neither should the Minnesota taxpayer at large have to pay for cleaning up a mess stemming from activities that benefitted the Iron Range directly. These financial assurance rules are the only insurance that the Minnesota taxpayer has that these costs will be borne by the mining venture and not the taxpayer. The Minnesota Administrative Rules related to financial assurance³ require the Applicant (PolyMet) to annually adjust its financial assurance amount, reflecting all the risks entailed in the mining operation at that point, and to report these estimates to the DNR in its Annual Report. These reported cost estimates include: ? The Contingency Reclamation Cost Estimate, which is intended to cover the cost of closure and post closure activities associated with an orderly wind-up of the mining operation within one year, including the ongoing expenses of limiting environmental damage from the residue of twenty-years of sulfide mining for an indeterminate period – estimated to be as short as 200 years, or as long as forever; and, ? The Corrective Action Cost Estimates, which include the estimated cost of implementing corrective actions of known deficiencies in compliance with the permit. The Corrective Action Cost Estimates, should include not only the cost of implementing corrective actions of known deficiencies, but also make provisions for the costs of correcting and mitigating the environmental damage associated with the plausible failure scenarios that the DNR must certainly have considered in the formulation and evaluation of the EIS and other facets of the permit application. Diligent monitoring of the mining operation would be expected to include the identification of, and costing out of, potential accidents or material failures of the processes and structures that are put in place to mitigate environmental damage. While it is not possible to know with certainty what the cost of one or more potential serious</p>	PER	S	N	11	As part of the Permit to Mine, the Final SDD indicated that financial assurance estimates will be developed on an annual basis for reclamation of mining activities that have occurred and are anticipated to occur during the upcoming year. The financial assurance estimates will include costs for reclamation in case of a premature shut down of mining operations. An evaluation of reclamation costs and its effect on facility design, construction and closure will be discussed in the EIS. This evaluation will include an assessment of reasonable closure maintenance costs to prevent release of reactive runoff into the environment. Although mineland reclamation rules allow for financial assurance for corrective action, the amount of financial assurance cannot be developed until the needed corrective action is known. For this reason financial assurance estimates associated with corrective action will not be included in the EIS. However, the EIS will describe the corrective action procedure and how financial assurance will be addressed in case a corrective action is needed.

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	<p>system failures may be, it should be possible to develop a probabilistic estimate of the correct addition to the financial assurance Corrective Action Cost Estimates that will consider the frequency and magnitude of plausible failure scenarios identified by the DNR. The purpose for securing financial assurance in advance of planned or potential expenditures is to ensure that the projector's funds⁴ are available to protect the State's taxpayers at all times, even in the face of a PolyMet bankruptcy. If the financial assurance amount only includes funds in an amount equal to expected costs, unexpected or unplanned contingencies would likely exhaust the financial assurance fund and expose the taxpayer, thus frustrating the legislature's intent. To be effective, the financial assurance amount must cover estimated costs of planned corrective activities; an orderly wind-up of the mining operation; and, the cost of correcting and cleaning up the environmental damage caused by one or more plausible, but unanticipated, failures at the mining site. The financial assurance amount must also assume that PolyMet will be unable, and the parent company (Glencore plc) will be unwilling or unable, to make up any deficiencies in the financial assurance fund. Were this to happen, ant shortfalls would have to be covered by the taxpayer, which is precisely what the legislature and the DNR rulemaking process intended to avoid by requiring financial assurance. Anything less than a financial assurance amount included for unanticipated contingencies will be insufficient.</p>					
Martin Cooney	<p>The Financial Assurance Amount Must be Reviewed By Completely Independent Financial and Engineering Experts The Minnesota Administrative Rules 5 provide that the permittee, PolyMet in this case, shall submit an estimate of the components of the financial assurance amount to the DNR commissioner as part of an annual report on the project. Estimating the sufficiency of the financial assurance amount, including funds for unplanned contingencies involves two fundamentally different activities. After the commissioner establishes the objectives required to comply with the Permit to Mine, the first process is to assess the necessary material handling, construction, and mining costs required to achieve these goals. This assessment will ultimately drive the amount and timing of the expenditures. The second process entails determining the timing and amount of the delivery of the financial assurance funds. This must be conducted by finance professionals, expert in the application of financial mathematics to problems of this nature. They should be retained and supervised by the commissioner and selected on the basis of fitness for the task. These experts should be free of any connection with the mining industry, PolyMet, or its affiliates, or any other relationship that could suggest a conflict of interest. The DNR must make every effort to ensure that their choice of experts cannot be criticized for a real or imagined conflict of interest, as occurred with the selection of Crowell and Moring by the Governor's Office to defend the State against potential lawsuits pending the decision on PolyMet's permit application as reported by the Star Tribune in early December, 2015.</p>	PER	S	N	11	<p>As part of the Permit to Mine, the Final SDD indicated that financial assurance estimates will be developed on an annual basis for reclamation of mining activities that have occurred and are anticipated to occur during the upcoming year. The financial assurance estimates will costs for reclamation in case of a premature shut down of mining operations. An evaluation of reclamation costs and its effect on facility design, construction and closure will be discussed in the EIS. This evaluation will include an assessment of reasonable closure maintenance costs to prevent release of reactive runoff into the environment. Although mineland reclamation rules allow for financial assurance for corrective action, the amount of financial assurance cannot be developed until the needed corrective action is known. For this reason financial assurance estimates associated with corrective action will not be included in the EIS. However, the EIS will describe the corrective action procedure and how financial assurance will be addressed in case a corrective action is needed.</p>
Martin Cooney	<p>Disclosure of the Details of the Financial Assurance Fund Requirement For Public Comment Must Clearly Explain the Gap Between PolyMet's Estimated \$200 million Maximum and Estimates Produced by the Public Prior To a Final Decision on the Issuance of the Permit The lack of clarity in connection with the size of the financial assurance fund has generated a wide range of estimates. Not surprisingly, that of PolyMet is lower by half than many of those produced independently by advocates opposed to permitting the project. PolyMet estimates in Table 3.2-15 Preliminary Cost Estimate for Closure of the</p>	PER	S	N	11	<p>As part of the Permit to Mine, the Final SDD indicated that financial assurance estimates will be developed on an annual basis for reclamation of mining activities that have occurred and are anticipated to occur during the upcoming year. The financial assurance estimates will include costs for</p>

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	<p>FEIS that the fund requirement for financial assurance to cover closure and reclamation will peak within a range of somewhere between \$160 and \$200 million in Year 11. This requirement is exclusive of the cost of treating the water for anywhere between 200 years and perpetuity (?!). PolyMet estimates the annual cost of this last requirement to be between \$3.5 and \$6 million per year. If these annual recurring costs are capitalized and added to the PolyMet estimate for closure and reclamation, the total estimated financial assurance amount still falls significantly short of the amount posited in an analysis prepared by Messrs. Sternal, Thometz, and Gappa employing PolyMet’s publicly disclosed information⁶. In their analysis, these finance professionals conservatively estimated the minimum financial assurance funding requirement at \$350 million. The DNR must find a way to publicly describe the essentials of its estimation methodology and publish a draft computation for a preliminary financial assurance requirement. This would include addressing obvious questions, for example: ? the length of time, post closing the mining facility, that the DNR assumes that polluted water must be filtered and monitored before it can be released; ? the methodology it employs to estimate the amount required for unplanned contingent costs; ? the discount rate and earnings credit applied to securities included in the fund; and, ? the assumptions related to the cost of financial assurance provided by third parties (banks and sureties) as these must come out of the fund earnings. Finally, if the DNR’s estimate of the required fund amount submitted for public comment diverges materially from the many plausible good faith estimates of the required fund amount by various environmental organizations and concerned citizens, it should be prepared to provide a generally accessible reconciliation between its preliminary calculation and these higher independent estimates. The release of this information must be done in such a way as to protect PolyMet’s essential confidential financial and engineering information. However, the principal objective is to allay the public’s suspicions and the criticisms that inevitably arise from a lack of transparency. A project of this import, touching upon jobs and the environment, must be absolutely above-board and free from the taint of double-dealing. Despite opposition on principle to sulfide mining in Minnesota, or specific perceived deficiencies of the project, opponents may feel that their concerns are mitigated if the DNR demonstrates unambiguously that the financial assurance amount is very conservatively estimated and that it is sufficient to meet the costs of any plausible unforeseen environmental catastrophe caused by PolyMet. This is a complex area that lends itself to easy obfuscation. The DNR should be mindful of this risk and exert itself to deliver this information clearly and transparently, including taking comments prior to the finalization of the financial assurance amount.</p>					<p>reclamation in case of a premature shut down of mining operations. An evaluation of reclamation costs and its effect on facility design, construction and closure will be discussed in the EIS. This evaluation will include an assessment of reasonable closure maintenance costs to prevent release of reactive runoff into the environment. Although mineland reclamation rules allow for financial assurance for corrective action, the amount of financial assurance cannot be developed until the needed corrective action is known. For this reason financial assurance estimates associated with corrective action will not be included in the EIS. However, the EIS will describe the corrective action procedure and how financial assurance will be addressed in case a corrective action is needed.</p>

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Martin Cooney	<p>6. The Financial Assurance Fund Must be Structured to Ensure Seamless Protection For Minnesota Taxpayers There are various risks associated with accepting anything but US government securities to fill the financial assurance fund. Alternatives to securities included in the financial assurance administrative rule are: A letter of credit (“LOC”), which is a promise by a commercial bank to pay the beneficiary (the State of Minnesota) if a clearly defined event occurs, such as PolyMet’s failure to meet the terms of the permit. Banks, like corporate bonds, also subject the beneficiary to credit risk and, if they become insolvent, cannot meet their obligation to pay the State. A surety bond, which is very similar to a bank LOC, and bears many of the same risks, including the surety’s inability to pay due to insolvency. In addition, conditions under which the State may call on a surety often present more execution risk than does drawing on a bank LOC; Basic types of financial risk inherent in a long-term financial assurance requirement: Credit risk: the credit quality of mortgage-backed, corporate, municipal, and state securities may fluctuate. Deteriorating credit quality adversely affects the market value (realizable price of the security if it must be liquidated by the commissioner) of the security because of increased risk of default; Interest Rate Risk: The market value of a fixed rate security, even a “risk-free” security like US Treasury bonds, can drop if market interest rates rise above the level they were at when the security was purchased. While not affecting the ultimate principal amount deliverable at maturity, interest rate risk does affect the value of the security if it must be liquidated prior to maturity. The longer the period to maturity, the greater the volatility in the security’s value. Recent statements by the Federal Reserve suggest that interest rates are due for a gradual secular rise, meaning that it more likely than not that the value of fixed rate securities will be adversely affected over the foreseeable future. ? Rollover (replacement) risk: There is no rollover risk in a security as it converts to cash upon maturity. The security matures, but the cash paid at maturity remains in the fund until the moneys are reinvested. Protection continues. However, once a bank LOC or surety agreement expires, there is no funding event. The protection offered by these institutions simply ceases to exist. Without adequate safeguards, the State is vulnerable to PolyMet finding a replacement guarantor or failing to come up with the cash itself. Such replacement is occasionally unavailable, leaving the beneficiary exposed. The purpose of financial assurance is to avoid this risk altogether. Due to regulatory restrictions, bank LOCs and surety bonds are never issued in perpetuity. Bank LOCs are seldom issued for terms in excess of five years. PolyMet will tend to propose these instruments to the State because paying a fee to the bank or surety for a guarantee is significantly less expensive to than locking up funds in a low-risk/low-yield security, such as US Treasury bonds, for twenty years or more. The DNR must be mindful of the credit and rollover risk associated with third party guarantors. There are structuring options that permit a draw on the guarantees/LOCs if a replacement cannot be secured within a given period prior to expiration, or a the credit rating trigger that permits a draw on the guarantee if the guarantor’s credit rating declines below a specified level. However, these arrangements must be entered into with the advice of financial professionals, with expertise not only the financial engineering, but drawing up legal documentation to ensure the objectives of the financial assurance are met. Guarantors will want to maximize their flexibility and PolyMet will want to minimize its cost. Both objectives work to the detriment of the taxpayers and their agent, the DNR. Retaining experienced independent advisors will compensate for the DNR’s lack of experience in these matters.</p>	PER	S	N	11	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Martin Cooney	<p>As stated at the outset, I am utterly opposed to the PolyMet application, and all pending sulfide mining applications, on the grounds that the ephemeral benefits of these projects to all the residents of Minnesota, including those of the Iron Range and all other citizens of the United States as a whole, do not begin to outweigh the potential cost of an environmental debacle of tragic proportions. Such a tragedy could easily pollute our drinking water, lakes, rivers, streams, and aquifers for generations to come. At a time when drinking water is being poisoned by fracking and phosphate runoff from industrial agriculture, forests in western states are burning up square miles at a time and cities on the Pacific Coast are rationing water consumption, we are seriously considering risking polluting our principal natural resource in perpetuity. And all for a limited economic benefit that will come calling again in twenty years to further erode our precious water. There can be no justification for this intentional despoilment. We have a one hundred and thirty year history of relatively successful iron ore mining in Minnesota. In over a century, we have learned, by and large, how to regulate this mining process. Sulfide mining is a completely different proposition. Can we believe that we can regulate these mining companies effectively, when we do not have the institutional memory or resources in our regulatory bodies to stay ahead of the mining companies' natural propensity to embrace expediency? There is no contest. If the provisions for financial assurance fail to impose the full cost of the externalities of the PolyMet mining venture on the prime beneficiary of this project, PolyMet's shareholders, this Permit to Mine should never be issued. We will never have more negotiating power over PolyMet, and by implication, all other sulfide mining ventures waiting in the wings, to protect the environment and ensure that sulfide mining is conducted responsibly than we do at this very moment. If this project must move ahead, the DNR must make up for its lack of experience in sulfide mining by hiring the best independent advisors available and structure a model financial assurance design, implementation and management process. In addition, financial assurance must become an integral part of the EIS process. Specific to PolyMet, the public must be made aware of the details of the determination of the financial assurance amount and how its integrity will be maintained over the life of the project, after the spotlight has moved on. The public must also be allowed to comment on the detail prior to the issuance of the permit. I particularly urge you to avoid all appearance of back-room dealing by fully disclosing for public comment prior to permitting, the financial assurance details.</p>	GEN	NS	X	1	
Gary Glass	<p>The Final EIS document, all 3576 pages, appears to have not benefited from my previous two submissions of review comments on the SDEIS and DEIS. I identified forty data gaps, defects in methodology, and missing relevant knowledge needed to make the FEIS complete, but none of these requested improvements are evident in the FEIS document. None of the specific comments have produced improvements to fill critically important gaps in the data presented. Nor are there added improvements (identified in my DEIS and SDEIS comments) in the knowledge base needed for this proposed project to mine reactive ores in the midst of a highly sensitive freshwater forest ecosystem. See my previously submitted comments in Sections B. SDEIS and C. DEIS, below.</p>	O	NS	X	1	

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Gary Glass	Rather than doing the additional relevant work to generate critically needed data (see my comments on the NorthMet SDEIS & DEIS, enclosed), the authors of PolyMet 2015 references, along with agency staff who participated in creating the data gaps by reviewing and approving flawed, incomplete work plans, have chosen to leave important data gaps in the FEIS document. These data gaps were produced by 1) not setting the detection limits for analysis of samples sensitive enough to measure the analytes of interest for hazard and environmental impact assessments; 2) not requiring representative numbers of solid samples to be analyzed to adequately characterize the solids proposed to be mined, or including NBS certified solid samples to document the accuracy of analyte measurements; 3) selecting methodology and procedures for laboratory studies that produced results not consistent with the true characteristics and nature of actual conditions (omitting freeze-thaw and temperature cycles/ variations, and bacterial actions) that will occur when mining is conducted and bedrock exposed to the Northern Minnesota environment; and 4) not presenting the knowledge base of relevant information where acid mine drainage has sterilized thousands of miles of streams in Pennsylvania, for which no remedy for successful remediation and recovery has yet been found.	WAT	S	O	8	SDEIS Themes MERC 04, WR 008, WR 014, WR 023, WR 025
Gary Glass	The FEIS must be strengthened by selecting adequate samples to be representative of the solids proposed to be mined, and properly measured to provide credible results for the required assessments, and gathering more information relevant to existing acid mine drained landscapes in comparable environments. Mercury data for solids to be mined is very sparse and inadequate in the FEIS. The mercury content data for chemical reagents, especially sulfuric acid, proposed to be used in processing the ore and ore extracts are absent altogether. These and other data gaps when filled will give a more complete picture necessary for assessing and reducing the proposed project's impacts, including the fish-mercury hazard present in the adjacent and downstream waters.	MERC	S	O	8	SDEIS Theme MERC 04
Gary Glass	Many of the mine/ore processing issues are understated with the gaps in data where hazardous components have seemingly been purposely omitted from data tables to minimize the consideration of the future hazards that are to be expected from the handling of millions of tons of reactive sulfide ores and reactive sulfide waste rock containing many elements/substances known to be toxic to humans and wildlife. The underlying, unarticulated strategy seems to be that omission, and/or minimization by comparison with larger regional or global quantities, i.e., mercury emissions, should be instead substituted for scientifically, valid component characterization data which accurately and completely characterizes the solids to be mined. To illustrate this point, and contrary to what is presently in the FEIS, significant quantities of the element mercury are present in the solids to be mined, and is measured in 20 of 92 rock samples (22%) at the 1 part per million concentration level (Comment #8 SDEIS, SRK2007b). The element uranium is also present at significant quantities, and is measured in five of 92 rock samples (5.4%) at the 10 parts per million concentration level (SRK2007b). These samples may or may not be indicative of the highest concentrations in the ore body to be mined. Many more samples (more than 18,800) were analyzed for sulfide to accurately characterize the solid volumes to be mined and processed. Parts per million concentration levels means for every million tons containing the measured toxic component there is one ton of toxic component present, and should be accounted for in the FEIS. The FEIS makes the assumption that some toxic components will be of little or no concern, and if they were to show up in future monitoring, they would be properly dealt with. The fatal flaw in this approach is that by not properly characterizing the ore body, there will be no justification for a monitoring program to detect these hazardous component hot spots and no action will be triggered to properly isolate and treat the resultant hazardous emissions. The citizens of Minnesota will end up paying the price for improperly or untreated hazards	HAZ	S	O	8	SDEIS Themes HAZ 01, MERC 04, WR 025

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	by experiencing worker illnesses or in the cases of the 62 AOCs at the LTVMC site or the 1300 barrels of toxic compounds hidden on the RMC mining site, having to deal with hazardous, polluted land areas and/or paying taxpayers money for remediation (see my comment #9 DEIS). These and other examples demonstrate the current Minnesota rules and regulations are not protective of the environment and therefore reactive sulfide ores should not be mined.					
Gary Glass	The land exchange (also see Comment #2 SDEIS) requested is larger in area than needed for the project to be conducted, and is apparently to be used to push out the property boundaries to greater distances so that the hazards of pollution expected to be generated by the proposed project are more diluted before crossing the property lines and will take more time to travel before being detected, and trigger some sort of alarm that harm is on its way off the project property. This apparent strategy is inconsistent with Minnesota Rules for dealing with reactive mine ores and reactive wastes to make them non-reactive, and prevent water from flowing through or over wastes, and collect and treat that which does to meet state and federal standards. Property line boundaries should not be used as test points for pollution on the move, but rather, the proposed project's source points/areas releasing the hazardous substances should be where the test points are to be located and monitored/measured. More accurate measurements may be made BEFORE any dilution takes place due to instrument calibration and sensitivity requirements. Mercury, EMFs, uranium, and other hazardous components should be monitored in all air and water potential releases from the proposed project sources. EMF = elongated mineral fibers.	LAN	S	O	8	SDEIS Themes LAN 01, WR 039, WR 090, AIR 13
Gary Glass	Additional Alternatives are needed to address need for a new tailings disposal site which does not leak water into the ground water aquifer, does not prevent future beneficiation of existing iron ore tailings currently located on the chosen plant site; a new site that is capable of not contaminating the existing iron ore tailings and preventing their future extraction for useable iron ore (see my Comment #18 SDEIS). The same may be true for the new Cu/Ni ore tailings that, in future, may be reprocessed to recover additional elements, and should be stored separately (see my Comment #19 SDEIS).	ALT	S	O	4	SDEIS Theme ALT 10
Gary Glass	Additional Alternatives should be proposed to accelerate, not retard, the chemical reactions of the reactive sulfide ore components with oxygen, water, and heat, and thus neutralize the reactive sulfide components. The present approach is to delay the reactions and store the reactive hazardous producing material in containment structures that can leak, and push treatment of toxic reaction products into long-lasting future care, requiring constant monitoring at greater expense, and creating a threat of probable damage to future aquatic resources. By speeding up the reactions of sulfide to creating sulfate, the acid can be neutralized and the resultant waste products, such a gypsum, might be recoverable and converted into a useful products, assuming the acidic and toxic components are removed. The amounts of sulfide to be mined are fairly well determined and no less than 1.5 pounds of sulfate will be produced for every pound of copper extracted, as a minimum. And more likely, up to ten pounds of sulfate will be produced for every pound of copper extracted, if solids are left mainly to convert to sulfuric acid over the long term. This will result in a Additional Alternatives to the permanent storage of all reactive sulfide-containing ores and related solid materials should be given to being stored in containment structures that do not leak water under any circumstances. The proposed mine pits are not leak-proof structures and are expected to allow some flow of groundwater, at will, regardless of the wishes of the owners. Existing pit lakes show direct	ALT	S	O	4	SDEIS Themes ALT 06, ALT 08

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	water flow connections to ground water aquifers out to several thousand feet. The thousands of blasts of explosives used to pulverize the ore body will surely cause structural damage to the adjoining, adjacent rock structures making up the mine pit walls. Then add air and water exposure, and freeze-thaw cycles for the number of years planned before being filled with waste rock, soil, and finally water. In addition, the numbers of drill holes used to sample the ore body will surely also facilitate the movement of groundwater through the mine pit walls and adjacent areas allowing the flow of ground water to be in contact with the reactive sulfide in the pit walls, and waste rock; all to be flushed out by gw flows into the adjoining watersheds, i.e., the Partridge and Embarrass Rivers. This is one of the major flaws in the approach to permanently store the reactive sulfides in mine pit lakes where it is not possible to control gw water flows.					
Gary Glass	Additional Alternatives for meeting the objectives in the Statement of Purpose and Need for the NorthMet Project. If the need for the metal copper is the primarily driving force behind the proposed project, and if this need could be fulfilled by an alternate approach, then the project as proposed should be revised to process more available sources of copper. The value of copper used in the underground mining assessment is \$3.56 per pound, and that the underground mining cost for its recovery would exceed that value. The market price for gathering used copper is today ranges from \$1.56. to \$1.65 per pound(Azcon Metals, Bayshore Recycling Corp., both Duluth Mn). If the re-processing costs add a few more cents to used copper price, then the re-processed, recycled copper would be the best way to satisfy the present and future needs for this commodity, and not by a proposed project that produces copper costing more than two times the cost of recycled copper. The best way to satisfy the stated need is to pursue different objectives, those focused on improving the gathering and recycling all copper containing products, and leave the forests and wetlands to support their present productivity - lumber and firewood production, hunting, fishing, wild rice gathering, and recreational activities on the 7,600 acres to continue to be productive forever.	ALT	S	O	4	SDEIS Theme ALT 16. FEIS Section 3.2.3
Gary Glass	Comment #1: Gaps in completeness and coverage are identified throughout the various eight chapters and executive summary of the SD EIS. Data and informational gaps must be corrected using accepted scientific procedures, data collection and analyses techniques. Errors of omission, flaws in data and procedures used in leaching tests, and suggested alternate approaches are identified below. The chapters and executive summary must be rewritten to fill the gaps in coverage and reflect the content in the comments on omissions, errors, flaws and suggested improvements provided as 20 new specific comments on the SD EIS document. In addition, the original 20 comments on the DEIS previously submitted Feb. 3, 2010, are included at the end of this memo since they identify additional continuing deficiencies.	GEN	NS	X	1	
Gary Glass	The Land Exchange facilitates the project's implementation and permanent conversion of the forest and wetland areas into unusable waste lands of toxic drainage generating waste rock piles, a pit-lake lagoon which could become a chemo-stratified, toxic water waterfowl trap, and a pit-filled with millions of tons of reactive sulfide-containing rock capable of generating millions of pounds of toxic chemical concentrations. Uncertain hazards are to be left stored in and on site lands with no future productive use planned or possible. If worse case conditions were to develop, toxic metal concentrations and toxic gasses including hydrogen sulfide would seep into surface and ground water aquifers of tributaries to the Saint Louis	LAN	S	O	8	SDEIS Comment #11725. SDEIS Theme LAN 01

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	River polluting the river and waters of Lake Superior. No recovery plans are presented for the most impacted land areas, and no provisions are provided to protect against any probable or worse-case water pollution scenarios. Proper plans to address probable scenarios and related resources must be provided.					
Gary Glass	The West Pit lake most certainly will become stratified with a chemocline and/or themocline.. When that happens, oxygen will be depleted from the bottom waters and toxic metal concentrations and toxic gasses including hydrogen sulfide will be generated and will seep into adjacent water aquifers, and, over time, move off site into tributaries of the Saint Louis River. The East Pit burial site could also become major source of toxic metals, acid reactants, and toxic gas including hydrogen sulfide, through both chemical and biotic mechanisms, and similarly pollute surface and ground waters. All bore holes, wall and bottom fissures, cracks and crevasses must be sealed against water escape through pit walls and bottom surfaces as a precaution to limit seepage out of the pits.	WAT	S	O	8	SDEIS Comment #11728. SDEIS Theme WR 002, WR 173
Gary Glass	The land exchange should not be done unless and until the major flaws in the project design are remedied and the land surface area is entirely planned (with the required funds set aside) to be reclaimed for future productive uses. Major improvements in the proposed plan are suggested.	LAN	S	O	8	SDEIS Comment #11725. SDEIS Themes LAN 01, PD 01
Gary Glass	The first chapter sets out eleven major "constituents of interest" (pages 1-19- 20) for the proposed project. Many more constituents are needed to properly deal with the actual and potential impacts from 355 million tons of mined rock to the environment including humans. Critically important characteristics and essential components of the proposed project are omitted and missing from this chapter, and the eight chapters that follow. Major, essential components of the proposed project are NOT included or evaluated in this SD EIS or in the DEIS, and must be added and completely evaluated.	GEN	NS	X	1	
Gary Glass	Mercury as a major "constituent of interest" is covered in four of the eleven bullets: Hazardous Air Pollutants, Mercury, mercury compounds (Hg), Metals/Metaloids, and Methylmercury. With this emphasis, however, the quality of the data presented to document and evaluate the impacts is majorly flawed and lacking. Sampling protocols providing adequate numbers of samples to represent 355 million tons are inadequate. Specific details of what has been done are incomplete, lacking documentation, lacking certified sample analysis, lacking normal reporting of quality assurance checks and controls, and are unacceptable for scientific use and administrative evaluation. Mercury as a major "constituent of interest" is not adequately addressed in any of the chapters, and must be corrected by producing adequate and sufficient data of known high quality using quality assured techniques and procedures.	MERC	S	O	8	SDEIS Comment #11736. SDEIS Theme AIR 10
Gary Glass	Modeling and mass inventory results in various chapters of this SD EIS are significantly flawed by the omission of mercury and mercury compounds, oxygen and anoxia, sulfide-metal complexes, hydrogen sulfide, and the resultant impacts in the mathematical modeling and inventory of all mercury- and sulfide- containing components. Mercury is one of the most studied elements and data are available for modeling in the same fashion that other metals of less know character are modeled. The use of the model output, however. is highly subjective and where actual field measurements are available, those field results should be used and relied upon more fully.	MERC	S	O	8	SDEIS Comment #16763. SDEIS Themes MERC 04, MERC 11, MERC 13

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Gary Glass	Testing methodology for rock sample analysis appears to be flawed, preventing accurate results from being obtained due to inadequate quality control and quality assurance procedures, see SRK 2007b. The data set reported in Appendix D.4 pg 419 omits lines of data, reagent blank data omitted, and omits certified sample analysis data. Of the seven replicated samples, all pairs are identical in every reported parameter (chance happening >10 exp 6) all indicating inadequate and missing quality control and assurance. ICP-MS mercury analysis show 20 samples out of 92 have mercury at 1 ppm with the rest at < 1 ppm. These data have a mean of 0.6 ppm Hg using half the detection limit to represent the less than values. The mean is 0.22 ppm Hg using zero for the blank values. These rock values can be compared with the MEQB 1978 Regional Cu-Ni Study reported mercury in ore at 0.08 ppm. If the 92 samples are representative of the 533 M tons mined, and the mercury content 0.22 ppm Hg, then the annual total quantity of mercury mined would be 7,810 pounds per yr, or 21.4 pounds Hg per day. These estimated values are substantially larger than those sighted in the various chapters. In order to resolve this difference, more careful work and quality assured analysis must be done on the saved splits of samples to quantify the mercury content accurately for the 92 rock samples selected to represent the 355 million tons of ore and waste rock to be mined. Mercury levels and hazards from mercury exposure are significantly understated in the present SDEIS and DEIS, and must be corrected.	MERC	S	O	8	SDEIS Comment #11738. SDEIS Theme MERC 04
Gary Glass	The lack of quality data pertaining to the mercury content of the ore and waste rock also pertains to the other solid earth and soil components of the proposed project. In the absence of quality assured mercury data, little can be concluded with confidence. Even a separate test of mercury content using low level analyte mercury testing procedure can not be relied upon (SRK 2007b Appendix G.2) because of the 6-day air drying treatment, see Comment #10. This test was conducted using Week 43 of the weekly leach-testing series of rock samples, and showed that 104 of the 105 samples were above detection at 2.0 ppt in the one liter leachate, apparently indicating continued release of mercury from all of the solids being leach-tested. The 92 solid samples were selected to represent the 533 million tons of waste rock and ore, and all show a positive mercury release during the leach testing. However, additional tests must be made to assure accurate in order to be used in the evaluation of impacts and the assessment of their contributions to present and future contamination of the fisheries resources of the tributaries to and of Lake Superior. The lack of quality data is a very serious problem and must be corrected by deliberate actions to collect sufficient, accurate, quality-assured documented scientific data.	MERC	S	O	8	SDEIS Ccomment #16768. SDEIS Theme MERC 04
Gary Glass	The leach-testing methodology for rock sample leaching treatment appears to be seriously flawed and resultant sampling could underestimate volatile mercury and mercury compounds because the air-drying steps used during 6 days of every 7 days of each treatment cycle in the test procedure. There is no indication that precautions were taken to assure mercury analyte was not being lost during the 6 days of air drying cycles used in the "humidity test" procedure. Mercury compounds are known to sublime and have a positive vapor pressure that would facilitate their volatilization and loss from the solid sample surfaces during the air-drying and air-humidifying cycles (CRC Handbook of Chemistry and Physics, 69th Edition, 1989 CRC Press, pg. D-194). Loss of analyte is highly probable and would result in a systematic sampling error for mercury and mercury compounds caused by the air cycles removing vapors containing mercury compounds directly from the sample solids surfaces before the water volume sample is poured through and collected once per week (reference SRK 2007b, pgs 158-170). Tests must be done to determine if gaseous mercury compounds are being lost during the 6 days of air-drying cycles. Post leach-test solid samples should be analyzed for mercury depletion to confirm mercury content change.	MERC	S	O	8	SDEIS Comment #16769. SDEIS Theme MERC 04

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Gary Glass	Post-test sample analysis were not conducted to determine the "depletion" of constituents or the degree of reactive sulfide consumed during the leach testing, as provided for in the test protocol. The need for this is especially true for the reactive components of the solids to validate the extent of the reaction process that occurred during the time period of the tests, and to confirm possible mechanisms of dissolution. Measurements of chemical oxygen demand on the solids before and after the leach testing should be done to determine the degree of reactive sulfide "depletion." Without actual measurements of post-test solids indicating the degree of element "depletion," no time predictions can be made. (SRK 2007b, pg 97).	WAT	S	O	8	SDEIS Comment #16774. SDEIS Themes WR 001, WR 025, WR 034
Gary Glass	The "humidity test" leaching chamber conditions simulate rock pile air-rain exposures, and do not simulate in-lake or in-ground saturated conditions. Because of this the results are "procedure specific" and not meaningful other than qualitative predictions, given the limits of dry-air, and wet-air cycling in laboratory plastic ware under conditions imposed by the ASTM procedure. None of the leach-testing solid sample conditions impose anoxic conditions or biotic exposure expected to be present in the East-pit disposal volume, or in the West-pit lake under probable stratified conditions (Aquatic Chemistry W. Stumm & J. Morgan, 3rd Ed., Wiley-Interscience 1996, 1022 pp.)	WAT	S	O	8	SDEIS Comment #16777. SDEIS Themes WR 002, WR 034, WR 173
Gary Glass	Assessments for impacts of mercury emissions are understated because local washout and dry deposition uptake due to foliar uptake by plants and trees seemingly were not considered (Glass et. al, 1991 WASP 56: 235-249). The original estimate of emissions understated the amount of mercury in both the total mass of rock being mined and the amounts processed. Reliable numbers for mercury content and mercury emissions have not been presented or evaluated for the impact assessments.	MERC	S	O	8	SDEIS Comment #16778. SDEIS Theme MERC 17
Gary Glass	Comment #14: Sulfide Sulfur in the ore and waste rock is reactive and makes this proposed mining project different from previously approved mining projects. Measurements of sulfide reactivity including chemical oxygen demand are mostly missing from the characterization studies and leachate studies used for impact analyses. Sulfide sulfur is the single most abundant reactive constituent, millions of tons, and should be evaluated from this perspective. Sulfide sulfur reactivity influences most all of the dissolution processes that can cause environmental concern and harm. Yet no measures of reactivity have been elevated to a "constituent of interest." Sulfide sulfur reacts with oxygen in air producing sulfuric acid which mobilizes metals to toxic concentrations and can adversely affect fish and aquatic life.	WAT	S	O	8	SDEIS Comment #16779. SDEIS Theme WR 060
Gary Glass	Sulfide sulfur is also acted on by natural bacteria, Acidithiobacillus ferrooxidans (syn. Thiobacillus ferrooxidans) which lives in pyrite deposits, and is capable of metabolizing iron and sulfur, and producing sulfuric acid (http://en.wikipedia.org/wiki/Thiobacillus_ferrooxidans). This natural process seems to have been ignored in the recommended testing protocol and study results omitted in this SD EIS. Sulfide sulfur once oxidized by abiotic or biotic processes is soluble, acidic, and can move long distances in surface and ground water aquifers. In contact with stream and lake sediments oxidized sulfur is converted back to sulfide sulfur forming solid metal sulfides and dissolved, gaseous hydrogen sulfide which is as toxic as cyanide to aquatic plants (see Sulfide as a soil phytotoxin—a review Leon P.M.Lamers, et. al Frontiers in Plant Science PlantPhysiology July 2013 Volume 4 Article 268) and to aquatic animals (USEPA Gold Book 1986). Measures of sulfide sulfur reactivity including toxic gaseous hydrogen sulfide should be identified as significant constituents of interest for this SD EIS.	HAZ	S	O	8	SDEIS Comment #11745. SDEIS Theme HAZ 01

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Gary Glass	Because millions of tons of sulfur compounds are being proposed to be processed, a common, neutral, and gaseous form of sulfur, hydrogen sulfide, should be identified as a constituent of interest because of its roll in the processing of the ore, and its toxicity and probable contributions the aquifers of the proposed project site. Modeling work should have included anoxic conditions and the parameters controlling sulfide sulfur reactivity, especially where hydrogen sulfide is stable and will be present. In general, anoxic conditions are where hydrogen sulfide is found in the environment, in pore and ground waters, and in the proposed West-pit lake, the East-pit waste rock disposal dump where conditions are expected for the formation of hydrogen sulfide, as well as in Hydromet ore processes, and the subsequent waste disposal areas(Aquatic Chemistry W. Stumm & J. Morgan, 3rd Ed., Wiley-Interscience 1996, 1022 pp.). Toxic lethal responses to hatching fish by hydrogen sulfide have been documented in Minnesota waters (USEPA Gold Book 1986). Water quality criteria and standards are available for the protection of aquatic life from hydrogen sulfide toxicity (2.0 micrograms per liter hydrogen sulfide in fresh water protects from chronic effects in fish) and should be applied and evaluated by the Fisheries Division of the Mn DNR for the protection of the fisheries resource in the tributaries possibility affected by this proposed project.	WAT	S	O	8	SDEIS Comment #11748. SDEIS Themes AQ 12, WR 060. FEIS Section 5.2.2.1.1
Gary Glass	Metals/Metaloids also omitted Selenium, Manganese, and Iron, all of which play important rolls in assessing toxic exposure and responses of the proposed project, and should also be included in the significant "Constituents of Interest."	WAT	S	O	8	SDEIS Comment #16782. SDEIS Theme WR 204
Gary Glass	Hazardous Substances and Hazardous Waste Generation. These omitted constituents of interest are conspicuous by their absence in chapter one; denied in section 4.2.13, but admitted to in section 5.2.13. There is no specific approved disposal site identified for the permanent disposal of hazardous wastes generated as described in section 5.2.13. Clearly this is a major omission and must be corrected in detail for each and every hazardous waste created. Hazardous Wastes are omitted as a primary focus and must be added because of high levels of toxic metals and cancer causing materials present in the ore, tailings, and waste rock, including mineral fibers, dust containing high levels of nickel, chromium, and arsenic exceeding levels mandated protective controls.	HAZ	S	O	8	SDEIS Comment #16783. SDEIS Theme HAZ 03
Gary Glass	The existing LTVSMC Tailings Basin is an important component of the proposed project and should be identified as a significant constituent of interest for several important reasons: 1. hundreds of millions of tons of LTVSMC tailings containing 13% iron are available for re-processing using the techniques developed by Magnetation LLC, a Minnesota company (102 NE 3rd Street, Suite 120 Grand Rapids, MN 55744) on the Western Iron Range which reprocesses spent iron ore tailings for valuable mineral resources of the State of Minnesota; 2) the existing tailings basin is build on peat soil and is not stable and leaks into the ground water aquifer requiring a yet-to-be proven "slurry-wall" sealed to bedrock to prevent ground water leakage necessary if reactive sulfide mine tailings are deposited as well. This "slurry wall" is a major undertaking and has not been proven or shown to be cost effective; 3) the known hazards from toxic dust generated from moving and building dams from LTVSMC tailings which are known to contain hazardous asbestiform mineral fibers should be avoided.	PD	S	O	8	SDEIS Comment #16784. SDEIS Theme PD 10
Gary Glass	4) the responsible party for the LTVSMC tailings basin should be required to deal with the existing problems and final closure and recovery of the tailings basis area for productive future uses, and not used to deposit sulfide tailings which most likely will create an acid-generating source of sulfuric acid increasing the leaching of toxic metals from BOTH sulfide mineral tailings and LTVSMC taconite tailings, causing environmental pollution.	LU	S	O	8	SDEIS Theme LU 02

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Gary Glass	The potential future recovery of residual mineral resources from NorthMet tailings must be protected and maintained for re-processing to recover residual metals expected to be in the tailings (Ni, 510; Cu, 547; Cr, 310; Zn, 548; Mn, 1400; all ppm), uncontaminated by mixing with LTVSMC tailings. NorthMet tailings require a more secure and leak-proof basin, and should not be located in an area of uncertain dam stability or where aquifers are connected or at risk. The NorthMet tailings basins should be kept isolated in their own specifically designed enclosure to assure all possible future acid and toxic generation of sulfuric acid and resultant metal mobilization including gaseous emissions are permanently captured to prevent any possible exposure outside of secured containment areas. Other safer, proper, more controllable and less hazardous options must be found and evaluated.	ALT	S	O	4	SDEIS Comment #16785. SDEIS Theme ALT 10
Gary Glass	Mining 355 millions of rock in 300,000 ton blocks, blasting through layers of minerals and non-minerals with explosives using an open pit approach will undoubtedly mix small amounts of high sulfide inclusions with rock categorized as "waste." Tests of mixtures of small amounts reactive minerals with waste rock were not done but the expectation is that small quantities of reactive minerals will dominate and determine the chemistry of the pore water, and result in higher than expected metal and acid concentrations in, and from, the waste rock storage areas than are predicted from tests of lower reactivity rocks. The resultant drainage and runoff must be completely collected and treated everywhere mined reactive solids are deposited and stored exposed to air and precipitation, including areas where dust will collect along the haul roads and tracks. Tests show reactive sulfides are capable of acid formation for centuries(SRK 2007b, pg 97) and must be treated with appropriate caution to prevent structural and environmental damage by minimizing any possibility of exposure.	PD	S	O	8	SDEIS Comment #16786. SDEIS Theme PD 15
Gary Glass	The draft EIS document fails to mention the wealth of information in the US and Canada on the observed negative impacts to aquatic resources from mining activities where sulfide containing minerals were mined and the disturbance of the soil and aquifers resulted in 2,500 miles of permanently acid-polluted streams draining sulfide-containing coal mines in Pennsylvania, and 10,000 acid-contaminated sulfide-mineral mine sites in Canada. In Minnesota, where acid-forming sulfide minerals were encountered and buried at the Dunka Mine area in the 1970s, acidified runoff is still being observed to this day from the reactive sulfide-containing rock, and the treatment plant that once was operated to mitigate the problem is no longer running, resulting in continuously contaminated surface water runoff from that source of acid-forming sulfide-containing rocks. The Dunka Mine pit case of omitted information and data should be added to the final EIS, along with an assessment of past and present resultant impacts, and the necessary requirements for permanent mitigation.	WAT	S	O	8	SDEIS Theme WR 023. DEIS Comment #18342; DEIS Theme WR 3D
Gary Glass	The magnitude of the current problem in Pennsylvania is exactly what will happen in Minnesota unless totally protective measures are implemented. Sulfide mineral mining without regard to sulfide-air reactivity and resultant acid-drainage has resulted in continuous on-going environmental problems dating from the early 1900s, and before. Federally funded research (overseen by the Duluth EPA lab) from 1970 focused on identifying the origin of the problem: sulfide-containing mineral-air oxidation to sulfuric acid, and the resultant mobilization of soil/rock components, (primarily iron, manganese, and aluminum) which caused the acute and chronic toxicity to aquatic life in streams receiving acidified groundwater and acidified-surface water containing toxic levels of mobilized metals. Pennsylvania's acid-drainage mitigation program, The Science of Acid Mine Drainage and Passive Treatment, Pennsylvania Bureau of Abandoned Mine Reclamation, is on-going and information may be found on the web address: http://www.depweb.state.pa.us/abandonedminerec/cwp/ or by contacting: Bureau of Abandoned Mine Reclamation Director: Roderick A. Fletcher, P. E. Rachel Carson State Office Building	WAT	S	O	8	DEIS Comment #18343. DEIS Theme WR 1E

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
	<p>P.O. Box 8476 Harrisburg, PA 17105-8476 Phone: 717-783-2267 FAX: 717-783-7442. See WEB reference below. Relevant information from this state's extensive experience has been omitted from the DEIS, and the relevant information and data should be added to the final EIS, along with assessments of resultant impacts, requirements for permanent mitigation, and the methodology presently being tested and implemented.</p>					
Gary Glass	<p>The DEIS omits the information and data from Canada relevant to describing and assessing the proposed mining project. The magnitude of the current problem in Canada originating from sulfide-minerals that have been mined in more than 10,000 sites were described in a Geology Dept. seminar at UMD on Nov. 8, 2007, A Canadian professor from the University of Waterloo, Dr. David Blowes, summarized over 20 years of research on more than 10,000 mines in Canada. All Canadian mine operations Dr. Blowes studied and summarized have exhibited contaminated the groundwater at each of the sites, to greater or lesser extents, from the oxidation of sulfide-containing minerals, rock-wastes, and mine tailings, and the subsequent leaching of metals and sulfuric acids into groundwater. If any sulfide minerals are present, they are oxidized and leach toxic acid and metals in toxic concentrations. Prof. Blowes presented detailed data and information, and his conclusions were: 1) Immediate oxidation of sulfides by gaseous air is the major mechanism causing toxic components to be leachable. The first five-to-ten years or mineral exposure to air are the most important to control and prevent oxidation and leaching; 2) Groundwater is the major recipient and conduit for toxic leachate from waste sulfide-containing piles to surface waters down stream. Water travel-times of 2-200 meters per day are typical for contaminated groundwater streams containing toxic acids and metals; 3) Permanent maintenance funds should be required for all sulfide mineral mine, rock pile, and tailings deposits before mining is allowed to begin. Funds must be permanent and by "bankrupt proof" to assure they will be available in future time when groundwater pollution becomes evident and mitigation is required, and: 4) Permanent methods for the collection and treatment of all runoff, run-through, and leachate are required if downstream water quality is to be protected. Different types of prevention and remediation mechanisms are being studied, but no "best methods" are available at this time. Further study and research are underway. The DEIS omitted relevant information from the University of Waterloo Department's efforts that should be summarized and included in the final EIS for use in evaluation, assessment, and mitigation of the known negative impacts from mining sulfide containing, acid-forming, toxic-metal mobilizing minerals.</p>	WAT	S	O	8	SDEIS Theme WR 023. DEIS Comment #18344. DEIS Themes WR 1A, WR 2E

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Gary Glass	<p>It is instructive to compute the approximate total masses of the important components being proposed for extraction, processing, storage, and disposal to be able to assess the magnitude of the proposed project's potential for environmental problems. The quantities of rock to be mined, moved, stored and processed are listed on page 1-1 as 228 million tons of base and precious metal ore, and an additional 394 tons of waste rock and lean ore over the life time of the mine, 20 yrs. On a daily rate basis, the tonnages are 32,000 and 91,200 tons per day, respectively. The finished product annual yield from the proposed effort are stated on page 3-2, in tons, as 38,821 copper, 9037 nickel, 400 cobalt, and, in ounces, 22,184 platinum, 87,129, palladium, and 13,824 gold. Comparing the annual ore tonnage to the copper yield gives a beginning ore percentage of copper, 0.33%, and nickel, 0.077%. Assuming CuS and NiS as the predominant chemical forms for each, the mass of sulfide in the ore calculates to about 24,000 tons annually, with a potential to form about 72,000 tons of sulfuric acid. It is not at all clear where and to what fate the sulfide annually processed mass will be become or whether of not it will be neutralized. Assuming the extraction process to be 99% effective this would leave residual copper and nickel concentrations of 33 and 7.7 ppm, respectively, in the extracted sludge. If the waste rock and lean ore were one-tenth the concentrations of the metal sulfide ore being processed, then the potential for sulfuric acid formation by air oxidation in the piles 1-4 would be potentially 24,000 tons x 0.1 x 1.7 = 4,080 tons sulfide, and the potential for 12,000 tons sulfuric acid, added annually, (but not necessarily formed or released annually, since reaction times can take several years). Since there would be no metal extraction, the copper and nickel concentrations if 10 % of the processed ore would be, 330 and 77 ppm, respectively, in the waste rock and lean ore. Clearly these concentrations of metals in conjunction with oxygen reactive sulfide-containing lean ore would be of great concern from the potential for environmental damage to the aquatic environment from the piles containing 394 million tons of waste rock and lean ore. The calculations illustrated above for total mass quantities, using actual known values for metal and sulfide content of the ore, waste rock and lean ore, should be added to the final EIS, with the assessment and interpretations necessary to evaluate and mitigate probable environmental impacts.</p>	PD	S	O	8	DEIS Comment #18345. DEIS Theme PD 2
Gary Glass	<p>All sulfide-containing mined rock, ore, and sulfide-containing material is capable of reacting (Piles 1 - 4) with atmospheric oxygen and results in generating toxic sulfuric acid which then absorbs water from the air, mobilizes and transport toxic metal concentrations, and causes groundwater and surface water pollution. Data are absent for measured reactivity and predicted acid formation as functions of times of extraction, particle size, and exposure to various concentrations of oxygen in air vs. depth of cover and precipitation. The entire mining site can become a toxic acid-toxic metal solution generator where ever sulfide containing materials are deposited when mined, transported, handled, crushed, stored, processed, shipped, and their resulting wastes are finally disposed of. Long times of reaction will result in toxic acid and toxic metal solutions being generated over decades of time from when these reactive sulfide-containing minerals, ores, and wastes are exposed to atmospheric oxygen, extracted by precipitation, resultant runoff and groundwater displacement. Mine disposed of mineral extraction wastes in semi-pervious cells, build upon and within leaky iron-ore tailings basins are unacceptable and do not meet the specific requirements described in Minn. Rule 6132.2200 for REACTIVE MINE WASTES. Contaminated water collection systems must be put in place and all runoff water collected and treated at the WWTF for completion of mine waste reaction times to consume all reactive sulfide present, probably several decades into the future, post-closure. This information needs to be generated and added to the final EIS.</p>	WAT	S	O	8	DEIS Comment #18346. DEIS Themes WR 1E, WR 3I, AQ 4, AQ 5

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Gary Glass	All mine waste piles exceeding nickel concentrations of 1 part per million and other components exceeding specified concentrations in M.R. 7045.0214 EVALUATION OF WASTES should be handled and treated as hazardous wastes under Minnesota Rules. Any waste solid or liquid samples with concentrations exceeding the ppm values given in MR 7045.0214 are classified as hazardous wastes and must be properly treated and disposed of as such. The following components and concentrations in ppm (mg/kg) exceeding these values are defined as hazardous waste: antimony, 0.10 ppm; arsenic, 0.50 ppm; barium, 7.6 ppm; beryllium, 0.010; cadmium, 0.050 ppm; chromium (total), 0.33 ppm; cyanide (total), 1.8 ppm; lead, 0.15 ppm; mercury, 0.009 ppm; nickel, 1.0 ppm; selenium, 0.16 ppm; and silver, 0.30 ppm; thallium, 0.020 ppm; and zinc, 70 ppm, respectively. Any and all expected wastes predicted to exceed these concentrations must be properly disposed of in a properly designed, licensed, hazardous waste facility, according to Minnesota laws and regulations, with permanent monitoring to assure compliance, and the protection of present and future health and welfare. Specific components predicted to be present in the various mine wastes need to be added to the final EIS.	PD	S	O	8	DEIS Comment #18348. DEIS Theme PD 2, HM 2
Gary Glass	The remaining ore and waste rock (from section "Rail Transfer Hoppe Demolition and Reclamation," page 3-37), including Category 1, 2, 3, & 4 piles of sulfide-containing rock, and including ore spillages along all rail tracks and haul roads that are expected to contain acid-forming sulfide rock and dust accumulations must be collected and placed in approved, lined disposal areas where all surface and ground water runoff is collected and treated in the WWTF for elevated concentrations of acid and metals including H2SO4, Cu, Ni, Co, Mn, Fe, Al, and others toxic components. Any of these reactive sulfide-containing materials remaining after the mining operations are completed must be located in protective enclosures where all water leachate is collected and treated at the WWTF, on a permanent basis, for the foreseeable future, otherwise toxic acid and toxic metal pollution will result and downstream river reaches and Lake Superior will be adversely affected. These considerations need to be used to strengthen the technical design approach, and added to the final EIS	PD	S	O	8	DEIS Comment #18349. DEIS Theme PD 5, PD 7
Gary Glass	As stated in section (pg 3-37): covering acid-forming sulfide-containing ore and waste rock with two feet of soil and vegetated according to Minnesota Rules, parts 6132.2700 and 6132.3200 is not an acceptable treatment for reactive, acid-forming sulfide-containing ore and waste rock and will lead to acid and metal contaminated surface and ground water runoff, and eventually led to acid and metal polluted streams and lakes. These reactive mine wastes must be properly contained and treated to mitigate any remaining reactivity as indicated by the presence of sulfide-containing materials and comply with the specific provisions of M.R. 6132.2200 for reactive mine waste. Measurements of total sulfide, and correlations with measurements of chemical oxygen demand (COD) are absent and would be useful in determining the total quantities of oxygen capable of reacting with atmospheric oxygen for the different categories of ore, waste rock, and mine tailings as a function of particle size and condition. This information should be generated, evaluated and added to the final EIS.	PD	S	O	8	DEIS Comment #18350. DEIS Theme PD 2
Gary Glass	Proper disposal as stated on page 3-38 for "Nuclear sources" and "Partially used paint, chemical, and petroleum products" must include complete inventories, safe packaging, and be shipped off-site to an approved, licensed hazardous waste disposal site. Disposal on-site is unacceptable and will lead to surface and ground water contamination and pollution. The final EIS must identify the specific approved, licensed hazardous waste disposal site for these residue waste containers and mixtures of materials containing these hazardous components. The public does not want a repeat of the fiasco on the Reserve Mining Co. site where hundreds of barrels of hazardous wastes were disposed of in an unacceptable manner which	PD	S	O	8	DEIS Comment 18351; DEIS Theme PD2

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
	could have caused irreparable harm to Lake Superior, and did cost the Minnesota taxpayers more than \$10 million for cleanup and proper disposal because company went bankrupt.					
Gary Glass	The Waste Water Treatment Facility (WWTF) if operated properly will generate solid wastes containing the extracted components from water contaminated with toxic metals and other dissolved and suspended particulates. This solid sludge must be properly disposed in an approved, licensed solid waste landfill suitable for handling this waste. The cost for operation and disposal of contaminated sludge is absent from page 201 showing Closure Costs Estimate Summary Tab. 3.1-14 and omits the post-closure costs of continuing operation of WWTF and disposal costs for contaminated sludge. Both costs during the time of mine and plant operation (20 yr) and continuing after mine site closure for the several decades need to be specified and planned for, because of the remaining reactivity of the sulfide-containing rock present in the 294 million tons of waste rock and mine tailings generated by the proposed project. The costs for these operations need to be described and added to the final EIS.	PD	S	O	8	SDEIS Themes FIN 01, FIN 05. DEIS Comment #18352. DEIS Theme PD 3
Gary Glass	The reaction times for the reactivity of atmospheric oxygen and sulfide-containing mineral and other substances to form sulfuric acid, and the subsequent reactions caused by newly formed sulfuric acid, itself, acting as a reagent, reacting to cause toxic metals to be mobilized and leached from mineral and soil particles must be determined. This information is presently missing from the DEIS, and is absolutely necessary to evaluate the time frames for observing environmental impacts and devising methods for their possible mitigation. It is a requirement of M.R. 6132.2200, Subp 2, B. (1) to determine when the reactive mine waste "is no longer reactive." The time frames for the various types of solid and liquid wastes to become non-reactive for both sulfuric acid formation and sulfuric acid reactivity in mobilizing metals must be measured and known, and added to the final EIS and used to determine the total scope and magnitude of the treatment and potential mitigation necessary for the proposed project. The time frames for surface and groundwater movements must also be known, and in combination with the inputs due to the reactivity of the mine and mine wastes, and added to the final EIS.	WAT	S	O	8	DEIS Comment #18353. DEIS Theme WR 1E, PD 2
Gary Glass	The use of impermeable liners to collect and control all infiltration into and through the piles, layers, and storage of reactive solids containing reactive sulfide mined ore and waste rock is absolutely critical that these liners do not leak. And if for any reason that water should contact the acid laden sulfide-containing particles resulting in leaching toxic concentrations of metals, the supporting structure under the storage piles must be constructed to collect all contaminated water and conduct it to the WWTF without any contact with the natural soil surface or be allowed to contaminate the ground water aquifer directly underlying the foundations of the storage piles. Liner leakage is referred to on page 209, and ditches to convey contaminated leachate water is not acceptable under any circumstances. Safeguards must be build into the plan to make sure it is impossible for any leakage what-soever to escape the second or third barrier to catch any highly concentrated toxic aqueous condensate, leachate, or storm water resulting from blowing rain or snow which may contact the reactive acid-sulfate containing bulk storage materials such that leakage will never occur. These additional considerations need to be included in the final EIS.	PD	S	O	8	DEIS Comment #18355. DEIS Themes PD 2, PD 5, WR 2D

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Gary Glass	The same is true for liners (described about in 10) used in mine waste storage cells constructed on the iron-ore tailings basin which was not constructed to retain all water and a significant quantity leaks out of the basin into the ground water and subsequently contaminates the surrounding surface waters. This condition of leakage must not be allowed for any water present in the mine-waste storage cells. These cells must be sealed for all time upon closure, and no precipitation or water through-put may be allow to occur, otherwise severe contamination of the ground water aquifer will occur and down-flow surface waters will be polluted, requiring very high cost mitigation and cleanup. These additions are needed in the final EIS.	WAT	S	O	8	DEIS Comment #18357. DEIS Theme WR 2D, PD 2
Gary Glass	The mine itself will leave exposed surfaces of reactive, acid-forming, sulfide-containing copper and nickel minerals which, like described above, will continuously form sulfuric acid and toxic concentrations of copper, nickel, aluminum, iron, and manganese, and mimic the acid-mine drainage problems observed in Pennsylvania for over 100 years. The final size and condition of the porosity of the mine wall surfaces will control to some extent the surface and groundwater flows into and out of the final mine pit. There is little question that the water contacting the solid surfaces of the sulfide-containing minerals making up the mine walls will change composition by leaching sulfuric acid and toxic metal concentrations into the otherwise potable water observed in iron-ore mines, absent exposed sulfide-baring minerals. Contaminated polluting acid mine drainage will have to be collected and treated through the WWTP requiring the probable permanent post-closure operation of such a mitigation process. These post-closure operations and costs need to be added to the final EIS.	WAT	S	O	8	SDEIS Theme FIN 05. DEIS Comment #18359. DEIS Themes WR 1E, WR 3I
Gary Glass	Human, animal health risk from airborne mineral fibers and mineral dust. A continuous program of air monitoring for mineral fibers (especially during times of high dust exposures during blasting, crushing, and conveying powdered minerals) is warranted to protect workers and the general population (City of Hoyt Lakes and the Boys Scout Camp, within 4 miles) given the positive identification of cancer-causing mineral fibers in test samples (Sec 4.6.5.1., pg. 4.6-60).) A program to continuously monitor the health risk from intermittent air exposure to mineral fibers is an absolute requirement given the positive identification in test samples and the un-sampled exposure conditions which will occur over the life-time of the mine, and ore processing, from non-homogeneous pockets of fibrous minerals which will be encountered in the ore body over the lifetime of the mine. These concerns and precautions need to be added to the final EIS.	AQ	S	O	8	SDEIS Themes AIR 03, WR 025-6. DEIS Comment #18360. DEIS Theme AQ 4C
Gary Glass	Accumulative Economic and Social Cumulative Effects (Tab. 4.10-14) omits at least three potential probable negative impacts from the potential health and safety hazards associated with the proposed project. Probable human exposures and negative impacts known (4.6-57) to be caused from exposure to mineral fibers in air may led to increases in lung cancer, asbestosis, and mesothelioma over the present baseline numbers, as well as increases in asbestosis over current known numbers of cases. This increased exposure most likely will lead to increased mortality and higher incurred health-care costs in the working population, and may well produce a number negative and cumulative impacts which are presently omitted from this analysis. These omissions must be corrected, and reasonable assumptions for probable and possible exposure-cause-effect impacts presented and evaluated. In addition, giver the predicted direct increases in mercury emissions, and the increased methyl-mercury conversion rates from increased sulfate concentrations from the proposed project in downstream St. Louis river reaches and reservoirs where high concentrations of legacy mercury have been deposited in surface sediments, including the St. Louis river estuary and the Western Arm of Lake Superior, will cause increased in mercury exposures and toxicity due to increased mercury exposures in the general fish-consuming population and	SO	S	O	8	SDEIS Themes MERC 02, MERC 10. DEIS Comment #18361. DEIS Theme SE 5

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	populations of Native Americans whose subsistence diets depend on much higher diets of wild animals including freshwater fish, than the general fish-eating populations. These increased exposures may lead to poorer health conditions and higher health-care costs, as well as higher costs from alternative diets should fish-mercury concentrations reach levels judged unsafe for human consumption. The high probability for these negative condition and negative impacts to occur are presently omitted from this DEIS and must be added to the final EIS given the certainty of the predicted increases in both mercury emissions and methyl-mercury rated of conversion and increased toxicity and potential health impacts from the proposed project.					
Gary Glass	Hazardous wastes and Hazardous Materials (4.12). The section 4.12.2 Impact Criteria gives four bullets stating conditions where "a significant environmental impact" would occur. The impression given is that small quantities of substances necessary for the project would be used and are classified as hazardous, and if for some reason or accident, some escaped would cause a (small) amount of environmental damage "if not recovered in a timely manner." (4.12.2). Omitted, and not found else where, is the fact that the object of the project - the Cu/Ni ore itself, is classifiable by its own chemical properties, as a reactive, hazardous mine waste, by the content of at least several components (see # 5 above). This information should be generated and added to the final EIS.	HAZ	S	O	8	DEIS Comment #18362. DEIS Theme HM 2
Gary Glass	The section 4.12.4 Cumulative Effects states these effects "...could not be predicted." This is because of the narrow definition used for "hazardous materials" and focusing of the relatively small quantities of these substances while ignoring the real threat from the 294 million tons of reactive, oxygen-consuming, acid-generating, toxic-metal mobilization and transport from within the natural environment's atmospheric oxygen and forces of the hydrologic cycle of water (pg. 4.12-15). The larger view and scope of the impacts should be added to the final EIS, and in comparison with negative wide-spread impacts observed in other states and provinces.	HAZ	S	O	8	DEIS Comment #18363. DEIS Theme HM 2
Gary Glass	Comparison of Anticipated Impacts for Each Alternative, Tab. 5.1-1. Fish and Macroinvertebrates (pg 5-11) entry in the table states "no significant effect." is incorrect and a significant omission do to the admission that increased mercury emissions and concentrations would be created further contributing to contaminated waters (4.1-24, -29, - 30, -31) (pg. 5-8) and mercury mobilization and methylation rates would be increased by further sulfate increases (5-12), the causative reactant in methyl-mercury formation and mobilization (Tab. 5.1-1 Mercury and Bioaccumulation (pg 5-12). Mercury in precipitation exceeds state water quality standards and reflects unacceptable, polluting sources of emissions from upwind sources including mining operations and constitutes the major source of contamination for Minnesota surface waters and fishery resources. All mercury additions from the proposed project will contribute to increasing the contamination already at unsatisfactory levels, and every means possible must be taken to reduce existing conditions and not add increases directly or through mobilization to methyl-mercury by sulfate concentration increases. Impact from mercury additions and sulfate-stimulated methylmercury in receiving waters from the proposed project should be computed and added to the final EIS.	ALT	S	O	4	DEIS Comment #18364. DEIS Theme ALT 6

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Gary Glass	Financial assurance, 3-48. Add to the final EIS: given the proposed project would leave behind a massive quantity of reactive mine wastes, it is reasonable and good public policy that a portion of the finished product from the proposed project be left behind to guarantee financial assurance that any future needs and all remaining and developing problems are properly mitigated and attended to. The problems experienced by other states (Pennsylvania acid mine drainage lasts greater than 100 years/mine) and provinces indicate that 15% of the gross annual profit would not be out of line for guaranteeing financial assurance. An annual deposit for financial assurance should be paid from the annual metals production, in native Minnesota gold, silver and platinum, and be deposited and held in the North Shore State Bank of Duluth for as long as is necessary to assure permanent protection of Minnesota's aquatic resources of the Lake Superior watershed from the impacts of the proposed project.	FIN	S	O	8	DEIS Comment #18365. DEIS Theme PD 4
Don Brown	1.Minnesota law is clear that clean up/reclamation after mining activity cannot be perpetual. It appears that the proposed post PolyMet mine cleanup would be perpetual under any common/reasonable understanding of that term. That is, the Final EIS does not and apparently cannot indicate when the proposed cleanup with end. Absent an end date, any proposed cleanup must be presumed to be perpetual. Moreover, it appears that the materials used in allegedly protecting the environment, eg., liner of the mine waste storage pit would need to last forever (perpetually) in order to protect the water resource. Similar concerns exist with respect to other processes (reverse osmosis) and materials such as containment pits. What proof is there that these processes and materials will last until cleanup is finished (perpetual)?	PER	S	O	2	SDEIS Themes WR 037, FIN 05
Don Brown	2. The Final EIS does not seem to adequately address issues concerning the health and safety of human resources such as those who would be employed and/or living in or near the proposed mine and those living in or near the relevant watershed area. What substances will be released into the air, water or otherwise and what effect will that have on human (and non-human organisms)?	HU	S	O	2	SDEIS Theme HU 01
Don Brown	3. The Final EIS does not appear to address the effects of releasing heavy metals brands other than mercury into the environment. There appears to be no doubt that certain other heavy-metal released into the environment including but not limited to magnesium.	WAT	S	N	2	FEIS Section 5.2.2
Don Brown	4. There appears to be no real cost-benefit analysis, or cumulative effects analysis, for the total cumulative impact area – in both the Lake Superior and Rainy River Watersheds.	CUM	S	O	2	SDEIS Theme WR 081
Don Brown	5. There is no analysis of the very real possibility of catastrophic analysis.	GEN	NS	X	1	
Don Brown	1.Minnesota law is clear that clean up/reclamation after mining activity cannot be perpetual. It appears that the proposed post PolyMet mine cleanup would be perpetual under any common/reasonable understanding of that term. That is, the Final EIS does not and apparently cannot indicate when the proposed cleanup with end. Absent an end date, any proposed cleanup must be presumed to be perpetual. Moreover, it appears that the materials used in allegedly protecting the environment, eg., liner of the mine waste storage pit would need to last forever (perpetually) in order to protect the water resource. Similar concerns exist with respect to other processes (reverse osmosis) and materials such as containment pits. What proof is there that these processes and materials will last until cleanup is finished (perpetual)?	PER	S	O	2	SDEIS Themes WR 037, FIN 05

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Don Brown	2. The Final EIS does not seem to adequately address issues concerning the health and safety of human resources such as those who would be employed and/or living in or near the proposed mine and those living in or near the relevant watershed area. What substances will be released into the air, water or otherwise and what effect will that have on human (and non-human organisms)?	HU	S	O	2	SDEIS Theme HU 01
Don Brown	3. The Final EIS does not appear to address the effects of releasing heavy metals brands other than mercury into the environment. There appears to be no doubt that certain other heavy-metal released into the environment including but not limited to magnesium.	WAT	S	O	8	Evaluation criteria are based on applicable water quality standards, which includes 19 metals other than mercury that were assessed in the water quality modeling. Evaluation criteria can be found in Section 5.2.2.1. Where a water body is classified as Domestic Consumption (1B) or for groundwater, USEPA primary drinking water standards apply. The USEPA primary drinking water standards set mandatory maximum contaminant levels for drinking water to protect the public from consuming water that presents a risk to human health.
Don Brown	4. There appears to be no real cost-benefit analysis, or cumulative effects analysis, for the total cumulative impact area – in both the Lake Superior and Rainy River Watersheds.	CUM	S	O	2	SDEIS Theme WR 081
Don Brown	5. There is no analysis of the very real possibility of catastrophic analysis.	GEN	NS	X	1	
William Robbins	Polymet's final EIS is full of general information, but very short on details, especially details relating to control of water pollution and airborne dust pollution and hydrogen sulfide pollution in air. I suggest that the lack of details would not allow a decision maker to know and understand enough to make an informed decision on this project.	GEN	NS	X	1	
William Robbins	Reverse osmosis (RO) is given lip service in the final EIS as the "cure" for water pollution. RO could help improve the situation, but only if the RO system is properly engineered, properly operated, constantly monitored and rigorously maintained. Of course, RO only separates the water into a cleaner stream and a more concentrated waste stream. Choice of operating pressure in the RO sets the ratio of flow of cleaner water to flow of wastewater. Without knowing the design operating pressure, a decision maker would not know the following: 1) How much wastewater will have to be stored or treated by secondary methods. 2) The intended size and cost of the RO system, including pre-filtration equipment. 3) Costs of long-term maintenance, monitoring and repair of the RO system. Without adequate maintenance, monitoring and repair, the cleaner water stream will soon cease to meet even minimum water quality standards.	WAT	NS	X	1	
William Robbins	There seems to have been a focus on controlling water effluent from tailings. This is important, to be sure, but the huge amount of water, both meteoric and ground source water from the mine will likely dominate water flow that needs to be treated, so sizing of the RO system needs to accommodate large, erratic flows from storm runoff.	WAT	NS	X	1	
William Robbins	I understand that agencies that write permits and regulations often are expected to resolve many questions relating to operational details, but I suggest that such details are often overlooked by such regulating agencies.	PER	NS	X	1	

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William Robbins	Here is a link to the following article: http://punapono.com/docs/Legator.pdf "Health Effects from Chronic Low-Level Exposure to Hydrogen Sulfide" Marvin S. Legator, et al, Archives of Environmental Health March/April 2001 [Vol. 56 (No.2) pp 123-131 The link above shows about eight times the incidence of anemia with low levels of of hydrogen sulfide exposure, parts per million, when compared to control subjects. Various other illnesses are also reported.	AIR	NS	X	1	
William Robbins	All the following generate airborne dust: Removing overburden, mining, transportation, milling to reduce size preparatory to froth flotation, and tailings storage. I found little mention in the final EIS of sources of dust, design of equipment and engineering processes to minimize dust generation and remediation procedures to contain and dispose of dust.	AIR	NS	X	1	
William Robbins	By planning for a 30 to 35-year period of mining, rather than a 20-year period, the removal rate of copper/nickel would need to be reduced. I understand that the up-front costs would be recovered more slowly, and this would generate reduced profits. Benefits would result, however, to the long-term economy, the people in the area, and the environment. The longer period of extraction would decrease uncertainties associated with the long-term needs of maintaining the site after active mine operations cease.	PD	NS	X	1	
Gina Byrne	Permanent loss an fragmentation of wetlands is unacceptable even with the proposed "compensatory mitigation". The local wildlife does not understand that the destruction of their habitat would attempt to be mitigated and its insane to think that we can rebuild or restore what Mother Nature made once it has been destroyed.	WET	NS	X	1	
Gina Byrne	if Polymet really wants this exchange to happen then its not enough for them to just remove the infrastructure and tray the water when they are finished. They propose to take something out of the the earth so it only seems right that they should be responsible to not just reclaim but improve the area when they are finished. I think that they should be responsible for addressing existing environmental conditions for lands associated with previous LTVSMC operations outside of the NorthMet project area.	PD	NS	X	1	
Lori Andresen	Man has gone and done it once again. Just when you think you can develop a modern, safe, environmentally pleasing copper-nickel/precious metals mine the whole thing falls apart and sends a flood of toxic waste downstream. We sure can convince ourselves that we're smart enough to mine copper-nickel disaster free. We so smart. In the upper watershed of the Fraser River in British Columbia, which happens to be the largest sockeye salmon fishery in Canada, a batch of lead and cadmium and other heavy metals was let loose after an unexpected August 2014 rain event swelled the waste basin to the brim. The earthen dam was simply overwhelmed and that fishery will now have to deal with the stigma that the fish may be contaminated now and into the future. Oh, the supporters of copper-nickel mining in Minnesota finally acknowledged the disaster in very trim words and said they wouldn't allow that to happen here in this state. Not here. Even though the same waste containment regimes have been proposed. We're smarter than that here. Our regulations are tough. Real tough. We won't let that happen in Minnesota, they say. Project supporters said the same thing in Canada, according to scientists assessing the damage for EnvironmentCanada, that nation's EPA. The waste basin was engineered to withstand the harsh northern British Columbia weather but a rain event like those rain events we're seeing more and more often these days doomed their predictions of a safe, clean mine in a place where people value the environment more than, say, the Chinese. Mining supporters are always picking on the Chinese or some other less developed nation with the red herring argument that we should mine in Minnesota where the environment will be protected, not devastated, when everybody knows that	O	NS	X	1	

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	<p>those global mining giants will mine wherever there's money to be made and a willing ore body is available. In other words, they aren't going to suspend mining operations across the developing world just because they've decided to zero in on the Duluth Complex in northeastern Minnesota. We just think we so smart. We so smart we might even believe we can mine copper-nickel without harming the environment even a little bit. We so smart. This smart thinking has happened forever, of course, especially since the industrial revolution kicked in. We so smart, we can handle the byproducts of a very smart society. First, we dump it into a hole in the ground or into the rivers, lakes and oceans. When that hole fills up or the river catches fire or the fish die and people start getting sick move to Plan B. Smart societies always have Plan B. In the meantime, Superfund sites are all over the countryside. There may be a Superfund site near you. Of course there is. A majority of Americans now live within 20 miles of a nationally recognized Superfund site. We so smart. We so smart, nuclear energy was developed based on the fact that we so smart, of course we'll figure out a way to deal with plutonium and its million-year half life. In the meantime, entomb those spent fuel rods in concrete and whatever you do don't take one of those fuel rods out of the water even for a minute. Be smart. Don't so that. We so smart, here we are 60-70 years later and still without a clue of what to do about radioactive waste. We so smart. We so smart we've now succumbed to a farming model that poisons the very soil we grow our food in. Man, that smart! Put poison in ground along with seeds, grow that food or food product and then eat it keeping fingers crossed that bad food doesn't harm the population. We so smart. We so smart we can pump chemicals into deep wells to force crude oil out of shale and be energy independent and not see any potential side effect at all! Pump chemicals into the ground and nothing bad will happen now and in the future. Amazing. We so smart. We just so darn smart we can fool ourselves into thinking that we can do anything as long as there's money involved. Money, money, money. Money just money. Can't take it with you. Money not smart. We dumb.</p>					
London Bresette	<p>Be it that there is a permitting process in place, Red Cliff could only trust that the Co-lead Agencies were working in good faith along with the Cooperating Agencies. However, it has been clear for some time that the validity of scientific methodology utilized by the applicant for the proposed PolyMet Mine, has been legitimately called into question by the Cooperating Agencies (Grand Portage and Fond du Lac Bands as well as GLIFWC) throughout the various stages of the Environmental Impact Statements for the NorthMet Mining Project and Land Exchange. Conversely, the Cooperating Agencies scientists have presented Ground Water Hydrology Modeling that utilized historically accurate site data that more accurately reflected current conditions, with more of a likelihood of accurately predicting future conditions. Unfortunately, those findings were not adequately considered by the Co-lead Agencies (US Army Corp of Engineers, Minnesota DNR and US Forest Service).</p>	WAT	NS	X	1	

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London Bresette	<p>Throughout this process the Cooperating Agencies have warned that the flawed scientific methodologies utilized by the applicant would lead to faulty conclusions as to the actual environmental impacts that the proposed mine would cause if ever allowed to operate. However; definitive findings were uncovered by GLIFWC scientists and the Cooperating Agencies experts, communicated no later than July of 2015 and were summarized in a letter to the Co-lead Agencies on August 11 1 h, 2015; (This GLIFWC Letter with its Documents was addressed to Michael Jimenez Minerals NEPA Project Manager, Doug Bruner USACE Project Manager and to Lisa Fay EIS Project Manager). Despite this high profile notification, the Co-lead Agencies failed to properly factor and address how the PolyMet Engineers utilized flawed scientific methodology and cherry picked data, which then supports an invalid conclusion that at mine closing; contaminants from the NorthMet Mining Project would exclusively discharge in a south and southeast flow path (south/easterly). Whereas the findings from GLIFWC and the Cooperating Agencies experts clearly demonstrate that both a south/easterly and northerly flow of contaminants would occur at mine closing. Even though it seems as the Co-lead Agencies concede the fact of a " ... northward flow of pit water from the proposed NorthMet pits to the Northshore pits" on 5-240 of the FEIS; on page 11 of Fond du Lac Band's Predecision Referral to the CEQ they point out the Co-lead Agencies contradictory conclusion, "based on their view of the flow paths that result from the applicant's incorrect identification of post-closure adjacent pit water levels, disagree with the Fond du Lac Band, and take the position that the relevant cumulative effects have been evaluated." This exchange is actually hard to discern because there is absolutely no mention in FEIS Chapter 8 Major Differences of Opinion of the competing conclusions of an exclusive southerly flow path at mine closing or that both a primarily northern and south/easterly flow path would occur. The Co-lead Agencies seem to lean on the exclusive southerly flow as they state on 5-7 of the FEIS: "It is estimated that more than 98 percent of affected groundwater seepage from the Category 1 stockpile would be captured by the containment system or would migrate as groundwater into the West Pit and East Pit (PolyMet 2015h) ... Following closure, once the West Pit is fully flooded, the treated water would be discharged, as necessary, to the West Pit Outlet Creek that flows into the Partridge River ... After project operations, the only appreciable non-treated mine water leaving the Mine Site would be about 10 gpm of groundwater seepage in the surficial aquifer that would migrate south and eventually be released to the Partridge River." Instead of directly addressing the environmental impacts, flushed out of the scientifically sound conclusion that flow paths at mine close also travel northward; they chose to simply ignore the grave implications of these findings. On one hand they totally refute its conclusion and yet on the other hand concede to its finding. This concession is convenient for their reconciliation of these findings, in order to justify their inadequate response of dealing with any of these concerns through future monitoring and mitigation efforts. This is seen as totally unacceptable and completely objectionable in how these definitive scientific findings were manipulated. Despite PolyMet engineers selecting an unusually high water elevation year and coupling that with improperly selected Hydrology Data that was gathered from an entirely different decade and scale of operation; the Co-lead Agencies still accepted their flawed scientific methodology. Although this was not the only flawed data PolyMet engineers calculated into this; their epically faulty conclusion that at the end of the mining operation there would only be contaminants flowing south/easterly is irrefutably proven false by GLIFWC and other scientists. The Cooperating Agencies experts utilized Ground Water Modeling and valid criterion with proper principles of scientific methodology, which supports their most recent findings.</p>	WAT	S	N	2	<p>MDNR et al. 2015c. There is no definitive means to address the issue raised in the comment because the EIS was not scoped to address how future activity at the Peter Mitchell Pit might influence the closure conditions at the NorthMet site. The modeling satisfies Final SDD Section 6.2, which required the groundwater flow model to predict inflows at various stages of pit development (i.e., year 1, year 5, year 10, year 20) and include operation, closure, and post-closure. DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected.</p>

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London Brette	This most important discovery advanced by the Cooperating Agencies goes beyond what had been originally brought to the attention of the Co-lead Agencies; (See March 2, 2012 GLIFWC Letter on page 2949 in Appendix C of the FEIS) however, some of the previous concerns of the improper XP-SWMM modeling utilized by the applicant resulting in base flow predictions which were greatly understated, also factor into PolyMet's conclusion that there would be no northerly flow of contaminants. Given the gravity of this most recent and conclusive finding, it can only be reasonably deduced that the entire applicant's contested declarations of hypothesis, would have to be circumspect.	WAT	S	O	8	MDNR et al. 2014b
London Brette	The Co-lead Agencies being aware of this most important discovery forwarded by the Cooperating Agencies, proceeded in a manner that invalidates the application process by failing to properly address the environmental implications of sound scientific findings. No technical discussion exists throughout the FEIS adequately addressing these grave environmental impacts. This is tantamount to completely ignoring the issue and is contrary to NEP A Regulations and CEQ guidelines. Given the applicant is requesting permits for an open pit sulfide mine~ where its Swiss based partner Glencore-Xstrada will be extracting damage in Indian Country while exporting the copper to China, just underscores the necessity of good faith disclosure and diligent scientific transparency.	NEPA	S	N	8	MDNR et al. 2015c; Although not identified as an issue for assessment in the EIS, DNR considered potential future operations at the Northshore Mine against information that is available. The agency acknowledges it cannot rule out that future operations at the Northshore Mine could induce northward groundwater bedrock flow from the NorthMet Mine Site. See Final EIS Section 6.2.2.3.1. This might happen if there is insufficient natural downward leakage into bedrock from the overlying wetlands and surficial materials between the proposed NorthMet Mine (in closure) and the Northshore Mine (in future operations and closure. If there is sufficient downward leakage, then there would be groundwater flow divide between the two mines where there is no continuous one-way flow between the facilities. If natural leakage is insufficient to maintain a groundwater flow divide between the two facilities, then the possibility a northward groundwater flowpath is present. DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected. The possibility of northward flow between the proposed NorthMet Mine and Northshore Mine is speculative and is not reasonably foreseeable with current information. There is no potential for northward flow until mining

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						in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When this might occur is not known, but it is most likely to occur after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. There would be ample opportunity to collect necessary data, and complete applicable environmental review and/or permitting prior to the development of a northward flowpath. The Final EIS appropriately discloses the issue consistent with the EIS rules.
London Bresette	However, what seems to be evident is a prevailing disposition from the Co-lead Agencies towards permitting the Poly Met Mine; despite the undeniable fact that evidence shows this mine will indeed cause Unreasonable Consequences and Adverse Effects. This is unconscionable on every level and is contrary to every environmental goal the EPA has for the Great Lakes Region as well as every environmental goal the State of Minnesota portends is their desire in cleaning the St. Louis River.	GEN	NS	X	1	
London Bresette	The Red Cliff Band should not withstand silently, especially with the specter of the PolyMet Mine being permitted through a tainted process. The Red Cliff Band is aware with special concern that Knight-Piesold engineers, who designed the Mt. Polley Tailings Storage Facility that resulted in last year's mining disaster in British Columbia; is also planning on constructing on top of the old LTV tailing basins for Polymet, utilizing similar flawed design technology that a B.C. Independent Review Panel concluded was the cause of that breach.	GT	NS	X	1	

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London Bresette	It is also our belief as a Sovereign Nation, that the PolyMet Mine activities as proposed, significantly disrupts the Cultural Heritage of our tribe and every tribe that is part of the Six Bands of the Anishinaabeg Territory Watersheds and Waters of Lake Superior as well as all the tribes represented by the Cooperating Agencies and the 1837, 1842 and 1854 Treaties. The Red Cliff Band has are-cultivation of wild rice, just 70 miles downstream from the mouth of the St. Louis River, yet believes the devastation of wild rice beds just from the former LTV Steel Mining Company tailings basin and Area Pit 5 MW Operations already demonstrates an institutionalized disregard for the sanctity of precious tribal cultural resources. Our cultural beliefs include the sanctity of precious resources. It is our experience that when consideration for their sacredness is ignored, that spiritual consequences manifest in harmful and unforeseen ways. Our migration story and spiritual beliefs are based on our historical ancestry and when better understood, form the basis of practical principles of preservation. Many tribal members suffered the ill effects of being disconnected to our cultural heritage and that disconnect cannot also be separated from the sociological challenges that are often associated with "Reservation Life".	VEG	NS	X	1	
London Bresette	The Red Cliff Band of Lake Superior Chippewa is also aware that Lake Superior now has the highest concentration of mercury in Lake Trout of any of the other Great Lakes. Given that present conditions already compel dire warnings for fish consumption levels throughout the regions of Lake Superior where our tribal members fish, it disproportionately affects Tribal Members who count on fishing for their livelihood and the families who count on the availability of this resource for survival and a staple diet. Any increase in mercury concentration is just a step closer to the defacto removal of a treaty right, albeit at a cost of destroying the sanctity of that resource for everyone else as well. This clearly does not just affect tribal members; it places ever increasing risks for any individual of the world community who consumes the fish of Lake Superior. It is already a travesty that the lake's namesake would no longer hold true, yet how could a cavalier handling of scientific facts from the NorthMet Mining Project ever be acceptable in light of these present conditions.	MERC	NS	X	1	
London Bresette	Due to these most pressing concerns, from our vantage point we stand in solidarity with the Fond du Lac Band of Lake Superior Chippewa, Grand Portage, as well as all the tribes that GLIFWC is authorized to represent within their mission in tribal assistance. Unfortunately with the Red Cliff Band's awareness of these matters also includes fears that; with the current status of affairs concerning this, it is likely that adverse effects will harm Red Cliff directly.	GEN	NS	X	1	
Martha Morse	The EIS on the North Met proposal does not appear to take into account the effects on air quality and grid load that will be impacted by the energy needed to support the reverse osmosis system. Reverse osmosis systems use so much energy that the NorthMet Project may require its own power plant and related infrastructure to provide the necessary energy.	AIR	S	O	2	SDEIS Theme AIR 02
Lori Andresen	The agencies involved are pushing the PolyMet FEIS forward, even with known deficiencies. One of the largest of them is the lack of cumulative analysis that would take into account the impacts of opening a sulfide-mining district in the heart of Superior National Forest, and in the headwaters of both the Lake Superior and Rainy River watersheds. Both Teck (formerly Teck Cominco) and Twin Metals have claimed deposits adjoining those of PolyMet, and could foreseeably use PolyMet's excess mining capacity. The pollution potentials of a sulfide mine district, exuding acid mine drainage (AMD) and toxic heavy metals into two watersheds, could replace a wilderness environment with an industrial mining zone. Cumulative health risks to downstream communities, including Duluth, Superior and Fond du Lac, are also excluded in the FEIS. These include contaminated drinking water, mercury in fish, and release of asbestos-like particles. Issues concerning loss of fish and wild	CUM	S	O	7	FEIS Section 6.1.1

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	rice as local food are also not addressed.					
Lori Andresen	<p>When reviewing PolyMet's documents, the Great Lakes Indian Fish and Wildlife Commission (GLIFWC) found major discrepancies in groundwater modeling. GLIFWC used the same modeling program as that used by Barr Engineering for PolyMet. But GLIFWC found that, upon closure, water from PolyMet would flow north into the Rainy River watershed. This is a conclusion that PolyMet has consistently denied, as the mining company finds it politically correct to pollute the Lake Superior watershed, but not the Rainy River, which flows into the Boundary Waters Canoe Area Wilderness. As reported in the Timberjay ("Tribes: FEIS water model still flawed," Dec. 2), "DNR officials ... revised model runs using the water level inputs suggested by GLIFWC, and the results confirmed GLIFWC's conclusions that groundwater from NorthMet's east pit would flow to the north." But rather than conduct an independent review, the DNR proposes to meet any such problems as they arise, using the catch phrase "adaptive management." The DNR chooses such adaptive management techniques throughout the FEIS, since it is impossible to anticipate the amount of pollution or the efficacy of run-off containment on the grandiose scale of such mining.</p>	WAT	S	N	8	<p>MDNR et al. 2015c; DNR disagrees with GLIFWC's application of the EIS Mine Site MODFLOW model because that agency modified the model outside its intended purpose as defined in Final SDD Section 6.2. The Final SDD required the groundwater flow model to predict pit inflows at various stages of pit development (i.e., year 1, year 5, year 10, year 20) and include operation, closure, and post-closure. The model satisfies this condition of the final scoping decision. GLIFWC changed the EIS Mine Site MODFLOW model to include future mining activity at the NorthShore Mine Peter Mitchell Pits, which is outside the scope of the EIS. If the EIS scope were defined to assess of how future activity at the Peter Mitchell Pit might influence the closure conditions at the NorthMet site, then additional data would be required north of the Mine Site on which to refine the EIS Mine Site MODFLOW model for : 1) vertical hydraulic conductivity for wetlands and surficial deposits; 2) horizontal hydraulic conductivities in bedrock (e.g., Virginia Formation; BIF); 3) variability of hydraulic conductivities within the bedrock units, and 4) the hydrologic significance of 100 Mile Swamp in providing a source of water for downward leakage. Each of these refinements is important to quantitatively assess the likelihood and potential magnitude of a northward bedrock flowpath. Modeling would also have to reconcile uncertainty regarding the sequence and timing of future Northshore mining operations, including the depth of pit excavations and development of pit lakes relative to NorthMet-related pit conditions during operations and closure. Absent these changes, the results of GLIFWC's modeling is unreliable for impact assessment. Although not identified as an issue for assessment in the EIS, DNR considered potential future operations at the Northshore Mine against information that is available. The agency</p>

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						<p>acknowledges it cannot rule out that future operations at the Northshore Mine could induce northward groundwater bedrock flow from the NorthMet Mine Site. See Final EIS Section 6.2.2.3.1. This might happen if there is insufficient natural downward leakage into bedrock from the overlying wetlands and surficial materials between the proposed NorthMet Mine (in closure) and the Northshore Mine (in future operations and closure. If there is sufficient downward leakage, then there would be groundwater flow divide between the two mines where there is no continuous one-way flow between the facilities. If natural leakage is insufficient to maintain a groundwater flow divide between the two facilities, then it is possible a northward groundwater flowpath would be present. DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected. The possibility of northward flow between the proposed NorthMet Mine and Northshore Mine is speculative and is not reasonably foreseeable with current information. There is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. There would be ample opportunity to collect necessary data, and complete applicable environmental review and/or permitting prior to the development of a northward flowpath, including preparation of an EIS supplement if the conditions of Minnesota Rules, part 4410.3000, subpart 3 are met.</p>
Lori	The DNR also glosses over modeling that shows the proposed plant site would need to be treated for pollutants for at least	WAT	NS	X	1	

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Andresen	500 years.					
Lori Andresen	If the DNR were to follow Minnesota state law — Chapter 6132.3200 Closure and Postclosure Maintenance: "the mining area shall be closed so that it ... is maintenance free" — PolyMet would not be permitted.	FIN	S	O	8	SDEIS Theme PD 02
Lori Andresen	Tailings basin stability is also marginalized in the FEIS. Collapse of the tailings basin at British Columbia's Mount Polley gold and copper mine in August of 2014 is the largest mining waste spill in Canada's history. While analyzing the disaster, engineers made the case for the use of dry stacking of tailings, rather than wet basins. Because of high costs, PolyMet refuses to consider this alternative, and the DNR concurs. For more information on the Mount Polley disaster, see Gary Kohl's "An Open Letter to Governor Dayton, the Minnesota EPA, the DNR and Every Thinking Minnesota Citizen."	GT	S	O	8	SDEIS Theme ALT 10
Lori Andresen	The November 2015 tailings basin disaster at the Samarco iron ore mine in Brazil resulted in the loss of life, homes, and livelihood. The Brazilian government is now suing the two major mining companies for \$5 billion in damages. PolyMet's FEIS does not address financial assurance issues that would apply to unpredictable mine spills or post-closure pollution. Instead, the FEIS is being pushed out before incorporating any analysis from the most recent and costly mine disasters.	FIN	NS	X	1	
Lori Andresen	Since the opening of a sulfide mine district in the Arrowhead Region of the state is highly controversial, politicians would like to see the issue resolved before next fall's major elections. Since the commissioner of the DNR is appointed by the governor, the process is not one simply of scientific analysis. And since the DNR Lands and Minerals Division actively promotes mining activity, the FEIS is not a neutral process.	O	NS	X	1	
Lori Andresen	The PolyMet FEIS is lacking in pertinent analysis of significant impacts that will change the quality and character of Minnesota's north woods area — for us and the next 25 generations. These are not matters to be taken lightly. The poisoning of our waters is simply not acceptable. Voice your opposition and objection to this flawed project and review process. Check out www.sosbluewaters.org for more information. Call the governor at (651-201-3400 or 800-657-3717) and submit an email on his website form.	O	NS	X	1	
Karen Katz	Choosing whether or not to permit this mine is the pivotal decision of the environment in northern Minnesota. If it is allowed to go through, I fear that it will be the opening of floodgates for more mining companies to step in and set up shop, ravaging the forests and lakes more and more. Usually, I take great pride in the decisions my state makes surrounding natural resources. I am especially reminded of how our state voters voted for the Legacy Amendment in 2008, when voters willingly allocated a tax increase to support environmental and cultural resources. The PolyMet mine does not reflect the values of Minnesotans and a decision in favor of the mine would jeopardize those values and the natural resources we have worked so hard to preserve. The BWCAW and the Superior National Forest are invaluable resources to people locally, statewide, nationwide, and even worldwide. The BWCAW receives more than 250,000 visitors annually, generating income and offering opportunity for thousands of people to experience the wilderness. This recreation opportunity is critical to children growing up in a world far different than the world that PolyMet owners and current DNR, Forest Service, Army Corps of Engineers, the EPA, and Minnesota State Government lead decision-makers grew up in. Access to nature is becoming harder to find and children are growing more and more disconnected from the earth. Recreation in the Boundary Waters, the forests of Northern Minnesota and on Lake Superior, is an essential opportunity to preserve for future	GEN	NS	X	1	

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	generations, and I think the PolyMet mine puts this resource in jeopardy. I am skeptical that the opening of the mine will create sustainable jobs. Mines are boom and bust operations – once the minerals are out of the ground, the operation is over, and only those lucky folks in superior positions get to keep on. I expect the un- or under- employed people looking for work on the Iron Range will be without a job in twenty years. Twenty years isn't even long enough to see a child through college, let alone be stable employment for future generations. So how can this mine be smart development for our economy? I think we would be better off initiating clean energy industries in the same location and training these individuals to learn those skills, instead of training them to learn the new skills needed to work on a sulfide mine. I do not think the Final EIS sufficiently addresses the security and sustainability of PolyMet jobs for Minnesota.					
Karen Katz	The Final EIS does not sufficiently addresses how PolyMet will manage to remain in business for 500+ years to ensure maintenance and containment of the site. And I do not think it is acceptable for them to abandon the site to be maintained by taxpayers.	FIN	NS	X	1	
Karen Katz	Climate change is expected to affect Minnesota severely. Situated at the intersection of three major biomes, our state will be subject to significant changes in climate – affecting our precipitation and temperatures – which will put large amounts of stress on our ecosystems. Plants and wildlife will not be able to handle additional pressure from mining pollution and habitat disruption as they face the challenge of quickly adapting to a new climate. Additionally, increased chances of extreme weather, including large precipitation events, blowdowns, and forest fires that are expected with climate change in Minnesota will increase the chances of damage to the proposed PolyMet mine and threaten the capability of any wastewater holdings tanks to contain pollution. The flow of groundwater and surface water could easily change as climate change puts pressure on natural and human systems, which means that any decision based on water flows is insufficient data in the FEIS. Our climate has been changing and is going to continue to change significantly over the next 100 years, and I do not think the Final EIS for PolyMet sufficiently addresses how PolyMet will operate responsibly under those changing conditions.	WAT	S	O	8	SDEIS Theme PD 22
Karen Katz	The PolyMet mine under current proposal is not the right decision for Minnesota. I request that the Minnesota Department of Natural Resources reject the PolyMet FEIS as inadequate. I request that the EPA and Army Corps of Engineers veto or deny and permit to the PolyMet Corporation.	NEPA	NS	X	1	
Lego Lord	How can Minnesota's elected officials and publicly funded agencies, including the MPCA and DNR, even consider allowing foreign corporate interests to pocket the profits derived from extracting Minnesota's natural resources, laughingly heading to their banks while leaving us, and 20-some future generations of Minnesotans, a 500 year (at best) legacy of toxic pollution?? How can anyone, especially any Minnesotan, including our Governor and Senators, even consider allowing any sulfide mining near the BWCA? Can the relatively short-term profits be a fraction of the value of the clean water, air, and land in and near Minnesota's precious Superior National Forest.	GEN	NS	X	1	
Josh Gregorich	I am writing this letter to you today, to request you to oppose and stop the Polymet/Northmet project proposed on the Iron Range of NE Minnesota.	GEN	NS	X	1	

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Josh Gregorich	I am pleading with you for the sake of our children's, children's children and Minnesota to stop Polymet!	GEN	NS	X	1	
Josh Gregorich	I've spent a significant amount of time reviewing the SDEIS, FEIS for the Polymet/Northmet project, along with existing or previous open pit copper/sulfide mining operations throughout the Western and Southwestern United States. For a prime example of the downfalls associated with open pit copper mining in the United States, please lookup Berkeley Pit in Butte, Montana. Nearly every open pit copper/sulfide mining project has had some breach or acid mine drainage during or post mining activities.	GEN	NS	X	1	
Josh Gregorich	I would like to ask you, is approximately 25 years of minerals and jobs (for a few hundred people) worth the risk of decades or centuries of water treatment and/or acid mine drainage into our ecosystem? I think not.	SO	NS	X	1	
Josh Gregorich	My background is Mechanical Engineering and too often the financial gain for a few, outweighs the greater good for many. Engineers have said that Polymet can handle this project with minimal risk because many engineering controls will be put in place (i.e. geomembrane, water treatment, etc....) to protect the ecosystem. Engineering controls fail throughout our world continuously.	GEN	NS	X	1	
Josh Gregorich	What do the people of Minnesota and the rest of the United States have to lose if any engineering control fails? This is a risk too great and the stakes too high. This risk is not only the surrounding and nearby ecosystem and people who reside there, but also the greatest fresh water lake in the world; Lake Superior. Again, for the sake of Minnesota's future, please do not be one of Minnesota's government agencies that allow activities in the Polymet/Northmet project to commence.	WAT	NS	X	1	
Sarah Elizabeth	As an environmental scientist (specializing in soil science, wetland ecology, and spatial analysis), I find the FEIS inadequate under both federal and state standards. There are many weaknesses in the scientific and economic analyses for the Northmet proposal and EIS, including: inadequate statistical and spatial analyses, and, related, insufficient geologic and groundwater sampling complete failure to properly implement the MODFLOW model and address its limitations failure to address well-established shortcomings in acid generation tests and models insufficient analysis of potential impact of freeze-thaw conditions on the hydraulic conductivity of barriers, barrier caps, and natural sediments insufficient analysis of the potential impacts of climate change on water flow and acid generation models vague economic projections	GEN	NS	X	1	

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Sarah Elizabeth	<p>I grew up on the Iron Range, about 30 miles away from the proposed Northmet site. Taconite mining is a core part of my identity. My father and grandfather both spent decades of their lives working for Minntac and Reserve Mining Co., respectively. I completely support safe and manageable modes of mining. Taconite mining put food on the table every day of my childhood and a summer job at Minntac helped me pay for college. I'm very grateful for the opportunities that mining made possible for me, and I want similar opportunities to be available to my niece and nephew and future generations. But sulfide mining, in my estimation, is drastically different from and much more dangerous than taconite mining. I think a 2008 US Fish and Wildlife-commissioned study of mining operations with acid-forming minerals best sums up why moving forward with the Northmet project would be a foolish and short-sighted decision.</p> <p>http://www.pebblescience.org/pdfs/Final_Lit_Review_AMD.pdf They studied the environmental impact statements and outcomes of hundreds of sulfide mining operations and found the following: "Based on review of the acid mine drainage literature it is clear that severe world-wide ecological consequences, especially for aquatic resources, have resulted from mining ore deposits with acid-forming minerals. Multiple complex geochemical, biological and hydrologic factors create a daunting task for mining engineers to profitably recover mineral resources while preventing discharges of metals and acidity to surface and ground water." I know there are many economic challenges in northern Minnesota and I don't have the perfect answer but I think there are other options that can bring numerous, skilled jobs to the Range for the long term and won't threaten to turn the state's freshwater ecosystems into Superfund sites. Instead of mining, one possibility is mineral reuse and recycling. The current percentage of copper supplied by recycled materials is approximately 30%. That percentage is expected to double in the next several decades. In other words, most of the world's copper supply will soon be derived from copper recycling. Why not be forward-thinking and build copper (and other precious metal) recycling facilities in northern Minnesota? These could supply quality jobs for an indefinite amount of time with a drastically reduced level of environmental risk. The Northmet EIS fails to address alternatives to the Northmet project for improving the economy of Minnesota's Iron Range.</p>	GEN	NS	X	1	
Sarah Elizabeth	<p>I implore the MNDNR to reject the Northmet FEIS as inadequate. Northmet has simply failed to establish that its project can adequately mitigate the extensive and well-known risks associated with the mining of ore deposits with acid-forming minerals. Please do not risk adding northern Minnesota to the long list of acid mine drainage disasters.</p>	MEPA	NS	X	1	
Sarah Elizabeth	<p>There is no indication that the groundwater or geologic sampling design is supported by a proper spatial analysis. What types of interpolation were used? Were the effects of spatial autocorrelation considered? Not even the basic geostatistics of the proposed project are addressed. This is a particularly troubling aspect of the proposal and EIS.</p>	WAT	S	N	3	Final SDD Section 3.3.4 required hydrogeologic field investigations to support the water quantity and quality impact assessments for the EIS. These were codified in the data submittals for RS 02, RS 10, and RS 10A. The DNR reviewed and approved the work plans for each study, thus determining that completion would provide information sufficient to satisfy the requirements of the Final SDD. This information in turn supported EIS-related water resources impact modeling, which is adequate for the purposes of identifying potential adverse impacts and mitigation to avoid or minimize these effects.

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Sarah Elizabeth	Why wasn't the hydraulic conductivity of the Biwabik formation re-tested even though it is expected to have the highest permeability?	WAT	S	N	3	<p>Available drilling data and subsequent interpolation of geology between the drill holes does not indicate any contact between the NorthMet project and the Biwabik Iron Formation. The final phase of development would retain an approximate 130 to 150 foot separation between the proposed mine pits and the bedrock unit. Because of this, the EIS did not require collection of new data on the Biwabik Iron Formation, but relied on existing estimates of hydraulic conductivity from a reliable source, in this case Siegel and Ericson (1980). DNR's Final SDD (section 3.3.4 Water Appropriations) identified: Mine Site - The amount of water that must be discharged to dewater the mine pit is a significant issue that will be included in the EIS. The following information will be used to better estimate this amount of water:</p> <ul style="list-style-type: none"> • A report on the design and effectiveness of diking and trenching to prevent surface runoff into the pit. • A wetland hydrology study. • Hydrogeology studies of the NorthMet Deposit including the potential for water to enter the pit from the Virginia Formation. • A water balance model to estimate the quantity of water entering the pit from various sources (including direct precipitation into the pit) with consideration of seasonal changes and pit size. <p>Available data satisfies the impact assessment needs of the EIS.</p>
Sarah Elizabeth	No mention is made of the effect of the MODFLOW model's limitations on the accuracy of the EIS predictions. For instance, MODFLOW's inability to incorporate non-orthogonal anisotropies, such as those expected from flow in faults and fractures.	WAT	S	O	8	SDEIS Theme WR 012

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Sarah Elizabeth	In addition, Northmet's flawed parameterization of the Peter Mitchell pits water levels and the fact that the MNDNR did not independently test Northmet's water flow models is extremely troubling and indicates that much further analysis is needed to adequately assess the proposal's impact. For instance, the EIS states that "Site specific groundwater monitoring data and the measured lack of surface water effects near the dewatered Northshore pits are consistent with the conceptual model that downward leakage from surficial deposits into bedrock could create a groundwater mound. This would prevent the formation of a northward bedrock flowpath from the proposed NorthMet pits to the Northshore pits." The proposal that a barrier groundwater mound would be created is unsupported by any physical models. In addition, the nature of the 'site specific groundwater monitoring' is not specified and is critical to the outcome of the model. In addition, the EIS acknowledges that a northward flow is possible, yet the proposed 'adaptive mitigation measures' – which would at that point be the last safeguard to protect ecosystems such as the BWCA – are not specified. I am troubled by the inadequacy of the model implementation by Northmet, the failure of the DNR to test the model, and the complete lack of response to these points in the FEIS.	WAT	S	N	8	MDNR et al. 2015c; DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected.
Sarah Elizabeth	Large uncertainties exist in the long-term prediction of acid generation, and the track record of accurate AMD predictions is appallingly poor. This warrants exceedingly rigorous analyses of risk and measures to prevent risk. That has not been achieved in the Northmet EIS. See, for instance, Kuipers et al. (2006) who conducted a detailed study of 25 mining operations involving ore with acid-bearing minerals. They found that nearly all (89%) of the mines that ultimately developed acid drainage predicted in their EIS that there was low or no potential for acid production in their operation. It is clear that, historically, EIS predictions of acid production potential are not trustworthy. 6. Kinetic tests of acid generation are variable and unreliable. See, for instance, Moring and Hutt (2000). Over a 3-7 year period, there is a 50% chance of stabilization of acid generation. Significant fluctuation was observed in half of the cells throughout the test period. 7. Lab tests of acid generation do not adequately predict long-term field acid generation. 8. Detailed considerations of mineralogy and particle size are critical for accurate interpretation and prediction of acid production. This has not been addressed in the EIS.	WAT	S	O	3	PolyMet 2015q
Sarah Elizabeth	The effects of periodic and intense freeze-thaw conditions on the hydraulic conductivity of barriers, barrier caps, and natural sediments are inadequately addressed. See Kim and Daniel (1992) who found that the hydraulic conductivity of clays that had undergone freezing increased 100-fold.	WAT	S	N	8	PolyMet 2015j; PolyMet 2015m; response to themes GT 12 refers to PolyMet 2014c which addresses consideration for freeze and thaw on the HRF liner system. Response to SDEIS comment theme WR 060-2 discuss the integrity of bentonite affected by freeze and thaw cycles that would be applied at the Tailings Basin. Response to SDEIS comment theme WR 198 generally notes the industries ability to manage in cold climates include freeze and thaw conditions. Performance of the liners and containments system would be monitored and if performance is less than expected, the project includes adaptive mitigation to improve that performance. PolyMet 2015d Sections 3.0, 4.0 and 5.0.

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Sarah Elizabeth	Northmet's economic projections are disturbingly vague. What is the breakdown of the 360 direct operations jobs? How many of those are expected to be skilled, full-time positions that would draw from local applicants? How certain are the predictions for number of jobs?	SO	S	N	8	BBER 2012. SDEIS Theme SO 06.
Sarah Elizabeth	Accurate prediction of the onset and aggressiveness of low-quality acidic water discharge is perilously difficult using the best available science.	WAT	NS	X	1	
Carol Iwata	PolyMet argues that the environmental disasters are unlikely to happen. We only need for one accident to occur to ruin our water resources.	WAT	NS	X	1	
Carol Iwata	Polymet's financial backer and sole marketer Glencore has been implicated in environmental disasters, labor violations, and human rights abuses around the world.	PER	NS	X	1	
Carol Iwata	Minnesota is blessed with access to a good safe supply of water, and the PolyMet NorthMet project would put our water resources at great risk. 18% of the world's population lack access to safe drinking water, and 42% lack access to basic sanitation. More than 2.2 million people die each year from diseases associated with these conditions. As water scarcity grows, so will these numbers. By 2025, it is estimated that two thirds of the world's population will live in areas facing moderate to severe water stress..	WAT	NS	X	1	
Matthew Norton	I have a personal connection to and interest in the purity of water in the BWCAW. I have hunted and taken deer in the BWCAW, and consumed venison from those BWCAW bucks, and I have concrete plans to do so in the future. I have on many occasions gone fishing in the Boundary Waters Canoe Area Wilderness, and caught and consumed fish there on many occasions. I have consumed BWCAW lake water on thousands of occasions. Likewise, I have gone fishing in Lake Superior and the tributaries of Lake Superior on many occasions. My enjoyment of these activities would be greatly diminished as a result of the Northmet Polymet project being approved, because of the knowledge of the project's production of acid mine drainage (AMD), and the knowledge that that drainage would leach into and migrate with bedrock groundwater through fissures over time into either or both the BWCAW or/and the St. Louis River and its tributaries, and from there to Lake Superior; and the knowledge that that AMD leachate would continue to leach into the water for more than - possibly many hundreds of years more than - 500 years. No Minnesota mine should be permitted if it would require ongoing, i.e., perpetual or indefinite, treatment after the cessation of mining. May your heads never again rest easy on your pillow if you approve, or participate in the approval, of such a mine.	GEN	NS	X	1	
Don Schreiner, Mary Negus, Marina Schreiner	I am writing along with my wife and daughter to oppose the land exchange between the USFS and PolyMet. I find it hard to believe the USFS is giving in to a mining company to avoid potential litigation. IF the litigation occurs and the protection allowed by the Weeks act is decreased then the public can and should weigh in and attempt to fix the act, not avoid using it! This area is one of the most pristine in the country and it would be irresponsible for the USFS to assist PolyMet in their wanton destruction of this important natural resource and the long term consequences on water quality in the BWCA, this area of MN, and the country. Specifically I propose that: ? The Final Record of Decision should reject the Land Exchange as it conflicts with federal policy to protect wetlands. More than 900 acres of intact and high quality wetlands will be excavated, with thousands of acres more subject to drainage. The land exchange proposes to provide wetlands of a variety of types not	LAN	S	O	2	SDEIS Themes LAN 02, WET 15, WET 16

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	within the impacted watershed. The net result of this proposed exchange will be a large loss of wetlands in northeastern Minnesota.					
Elanne Palcich	TMM-PFS-Update-Laurentian-Vision-Partnership-Jan.pdf	CUM	NS	X	1	This coding is for the presentation slides.
Elanne Palcich	We respectfully submit these comments, reiterating our position that sulfide mining cannot be done in water rich northeast Minnesota without severely damaging and polluting our environment into perpetuity. No amount of data manipulation on paper will change that outcome in the environment. At this time, the technology is not available to mine the highly disseminated, low-grade ores of the Duluth Complex without causing severe and significant environmental impacts for this generation, and for those to follow. The PolyMet FEIS is inadequate and should be rejected.	MEPA	NS	X	1	
Peter Shulman	The aspect of the FEIS that I'm concerned about is how PolyMet threatens the BWCA because of hydraulic conductivity between the mine site and the Dunka River. The FEIS response to public comments is absurd. They are implying that a line on a map which is the continental divide as it crosses a body of water prevents flow of water in the body of water from one side of the divide to the other. That's ridiculous, and the type of response someone would make that if they were expecting that no one was paying any attention.	WAT	S	O	2	SDEIS Theme PD 38
Peter Shulman	The FEIS treatment of movement of water in the One Hundred Mile Swamp has other incorrect statements. The Partridge River does not provide a sink for pollution from the mine site. Instead it completely disappears into the One Hundred Mile Swamp and groundwater contours in the One Hundred Mile Swamp indicate that water exchanged with the Partridge River will be pulled towards Langley Creek.	WAT	S	O	2	SDEIS Theme PD 38
Peter Shulman	The sensible answer to the issues of polluted water moving through the swamp is to measure th hydraulic conductivity and test waters in Langley Creek.	WAT	S	O	2	SDEIS Themes WET 19, WR 081
Peter Shulman	Langley Creek water now is pure without sulfate, it should stay that way, and if anything happens to change that, there should be a cessation of mining activities until a corrective action plan can be made and put into practice.	WAT	S	O	2	SDEIS Theme WR 021
Peter Shulman	If the BWCA becomes contaminated and polluted, not only will it become a natural disaster, the adjacent communities will suffer economically.	SO	NS	X	1	
ME Reiersen	I love the BWCA. I know it will provide jobs to the area, but at what long-term costs? The history of mining in general and in MN in particular is that mining operations provide jobs WHEN OPERATING, but when shut down leave a legacy of pollution and abatement that we, the taxpayers and state/ federal government have to pay for. Lets not risk one of the most unique natural areas in the world for a short-term gain for a few hundred people!!! PLEASE DO NOT APPROVE this project.	SO	NS	X	1	

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Audrey Cullen	I OPPOSE THE OPENING UP OF THE LAST GREAT WATERSHED IN THE U.S. TO MINING.	GEN	NS	X	1	
will land	Kindly act to halt mining in NE MN so as to halt poisoning its water and air. Up into 1950s, Lake Superior had the world's largest fresh water herring, most delicious. In 50s, I worked on Sivertson fishing boats out of Duluth. Also in 1950s, I worked as carpenter tender in building docks in Two Islands, Beaver Bay, Silver Bay on No. Shore Lake Superior when the port and docks were beginning to be built to put taconite pellets into ore boats for shipment to steel mills. Sadly the poisonous metal sulfides that flowed from the Silver Bay Taconite plant into Lake Superior killed the herring.	O	NS	X	1	
Jon Auel	I believe Minnesota should require a higher standard and demand actual proof BEFORE issuing any mining permits.	PER	NS	X	1	
Jon Auel	Historically, the environmental review process has been unable to predict the actual impacts of sulfide mining in water rich environments and has underestimated the impacts, as well as the cost of clean up.	NEPA	NS	X	1	
Jon Auel	I believe we should focus our efforts on supporting the growth of an already thriving tourist industry, and related service industry jobs, instead of trading the millions of dollars this clean and sustainable industry currently adds to Minnesota's economy each year instead of trading it for a potentially eternally damaging and short-term mining project. It is a huge mistake to believe the Superior National Forest area can support both.	SO	NS	X	1	
Mary Erickson	Many of the graphs have a timeline for long term management as 200 years and it is stated on page 3-72 that water models are "not designed to predict the duration of treatment nor do they capture all the factors that influence the duration of treatment...models cannot be used to predict when treatment would end". If we do not know when treatment will end how can we determine the Financial Assurance needed to cover the cost of monitoring as well as treatment and unforeseen incidents? Such as possible costs of an environmental disaster such as recently happened at the Gold King Mine in Colorado?	FIN	S	O	3	SDEIS Themes FIN 05, FIN 06, FIN 08
Anita Tillemans	How would a land exchange void the responsibility vested in USFS as the steward of public lands presently in their care? With the proposed land exchange, USFS would be forfeiting its authority to mining interests over lands that were set aside for protection. The Forest Service would be trading, not only lands, but a trust that these ecosystems would be protected from exploitation for generations to come. Polymet will be mining water resources, destroying wetlands, by their own admission; and, in effect, degrading natural resources, flora and fauna, with its lease to continuously extract metals in an open-pit mine. They will be requiring permits to do all of this, including permits to take endangered species on lands that the Forest Service was given in trust, lands that USFS would need to trade in order for mining to occur. In addition, this would help establish precedent that could facilitate more land exchanges of this type. By trading these lands, USFS would, essentially, be demonstrating a lack of will in exercising its authority. This land exchange, essentially, would create a barter system that conflicts with the USFS' role as steward and allows exploitation. By any reasoning, the land exchange cannot be reconciled with this public trust.	LAN	S	O	2	SDEIS Theme LAN 02

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Anita Tillemans	The fact that the NorthMet Project prospect lies within the boundary of the Vermilion Moraine, along with the BWCAW and Ely, makes this even more difficult. The potential of water traversing aquifers through fractured metamorphic bedrock, sight unseen, is heightened. No one spot duplicates another, essentially with variations in depth to bedrock by hundreds of feet, coverage of waterlogged vegetation and lakes, and a diversity that is like no other on earth. Like faults, aquifers can be inferred invariably through their effects. Observe the copious discharge of water from the Big Stoney along the north shore of Minnesota. Observe the waters that so readily flow from the area of the Mesabi Widjiu, in rivers like Prairie River and Swan River from the Hill of Three Waters, the Vermilion River, St Louis River, Rainy River, and the great Mississippi. All one needs to do is observe. As faults and fractures allow water to disperse in bedrock, these aquifers eventually find outlet in rivers, streams, fens, wetlands, falls, ponds and lakes at varying distances and directions from the site of recharge in the Laurentian Uplands. According to the FEIS, surficial aquifers surrounding the mine site have a low conductivity, though not as low as bedrock in the same area, which supposedly decreases with depth. In this environment, then, it took thousands of years for glacial waters to make their way to the basin of Lake Superior. These waters can be seen dispersing in rich wetlands and rivers throughout; and they continue to nourish land in the Arrowhead supporting a vast and intricate ecosystem. Does it make ecological sense to place a copper mine where it can do so much harm to water resources, with the potential of collecting into highly toxic sludge, polluting more and more of the surficial aquifers of the region, as waters are made stagnant and dead over the years? There will be floods. There will be upheavals, as history proves ... waters will disperse, as it is the nature of water to do. What will be left after the mine extracts precious reserves of water from aquifers, seen and unseen, confined or not, to process metals that serve its profit margin? Will there be any wild areas left, named or unnamed, categorized or not when the pollution from concentrates, waste rock and filters have found their way through this valuable ecosystem and the watersheds of the Arrowhead? Our national security depends upon protection of freshwater resources, and the Arrowhead stands as a source of one of the largest fresh water reserves on earth. No copper mine is worth the risk of degrading this precious resource.	WAT	S	O	2	SDEIS Theme WR 007
Anita Tillemans	The FEIS notes, that approximately 1,535 acres (58 percent) of mature forest would be lost at the mine site alone, that the species of greatest conservation need (SGCN) found at the mine site would be birds from Table 4.2.5-1 and that they would be "displaced." The FEIS goes on to state that it is likely these birds would not be injured or killed, though nesting birds could be affected. The FEIS states that the mine would not likely affect individual migratory songbirds or other bird species protected under the MBTA; but would likely affect habitat and nest sites used by them. How does one "affect" another's home, without affecting the individual; and, as a matter of course, disturb nesting sites without disturbing the propagation of a species? With time, more species than those cited by the FEIS would be "affected" in the course of their reproductive cycles; and this, in turn, would naturally affect survival of a number of species in the area.	WI	S	O	2	SDEIS Theme WI 01
Anita Tillemans	Recycling metals is on the upswing and processes for this type of recovery are being more fully developed as the North Met Project is being pondered. This could make mining for copper less profitable in a very short time. The price of commodities will vary, and markets are fickle. As a consequence, copper cannot guarantee a secure future, and certainly not a green economy in the Arrowhead.	PD	S	O	2	SDEIS Theme NEPA 06
Anita Tillemans	Statistics abound concerning the wealth of wilderness tourism; and it cannot be reconciled with a mining scenario. When the copper mines are gone, what will be left? The choice is truly between wilderness and mining. Transport down scenic	SO	S	O	2	SDEIS Theme SO 02

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	highways to and from the NorthMet Project will weave a web far beyond the sites that FEIS reviewed. Tourists will be traveling down the Superior National Forest Scenic Byway, along highways and roads to Hoyt Lakes, Embarrass, Ely, Babbitt and Silver Bay. These potential long-term customers will see the effects of mining and it will affect the tourist industry. The sounds of blasting, trucks and drilling are not conducive to wilderness by any stretch; and neither is the potential of streams and waterways polluted with sulfuric acid and other toxins from mining copper. Atmospheric conditions are unpredictable and Polymet will not be able to control these. The sounds of drilling from exploratory wells for copper and other metals can be heard in the BWCAW at this time. If Polymet gets permission to pollute and take lands in the Laurentian Uplands, there will be little peace for these areas, no chance of true wilderness experience and tourism.					
Anita Tillemans	The FEIS did not adequately address the potential effects of fossil fuels on the atmosphere surrounding the NorthMet Project. Fossil fuel needs will escalate at LTV and the mining site, fuel and coal needs for the plant and mine, fuel for the vehicles, the crushers, the earthmovers and trains. Acid rain will emerge as an even greater problem, and the FEIS did not address this issue sufficiently. Repercussions will be felt in the Boundary Waters Canoe Area Wilderness, most certainly, from atmospheric effects alone. Coal fired plants have provided energy to mines along the Mesabi Range for decades and, in the last 50 years, signs of acid rain have degraded foliage and forests in the path of their plumes. Witness dying birch, and mountain ash (that have all but entirely disappeared along the North Shore of Minnesota). The effects of a copper mine in this fragile ecosystem will reach far beyond the boundaries of the plant and mine sites with potentially devastating effects.	AIR	S	O	2	SDEIS Theme AIR 02
Anita Tillemans	This FEIS does not address known fractures, fault lines within the project site, and those along the Range. What of the Waasa and Camp Rivera Faults? What of the Vermilion Fault? The effects of faults and fractures have been downplayed in models, which were made to inform the FEIS. The connectivity of bedrock with surficial aquifers assumed to be low, and the upper surface of fractured metamorphic bedrock assumed to be fractured more heavily at the top than down under. This conclusion seems convenient and arbitrary, since these structures cannot be truly known, sight unseen. Is there some reason that Polymet did not use the available information on inferred faults for more in depth field study on these particular areas? Details and independent, in depth fieldwork is still needed concerning bedrock aquifers, faults and fractures in the area because of their potential for being conduits of pollution into ground water reserves, sight unseen. Polymet admits seepage will occur, but it continues to minimize the risks through assumptions concerning the conductivity of fractured metamorphic bedrock and sand and gravel aquifers throughout the area. Water will most assuredly traverse aquifers and find the path of least resistance. The FEIS minimizes and leaves these pathways open to conjecture with promises that all will be handled, in time.	WAT	S	O	2	SDEIS Theme WR 007
Anita Tillemans	Potential effects that can be caused by drawdown in artesian springs, are given little review and field study, limited by assumptions and documents supporting the FEIS conclusion that bedrock geology plays a small part in hydrology of the area. At the same time, we are assured that if there are, indeed, fractures, faults and confined aquifers found during operation, or that drawdown becomes a problem, these issues will be dealt with at the time. Of course, once an artesian has been drawn down, the chances of drawing it back up are limited. At this point, there does not appear to be any technology that can guarantee the renewal of an aquifer, or restoration of ground waters fouled?	WAT	S	O	2	SDEIS Theme WR 087

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Anita Tillemans	In the process of review, some of the most relevant information appears to be missing from the FEIS, or discounted, much of the obvious geological and hydrological evidence that would prove a no action alternative best for the environment and for the habitants upstream and downstream of the proposed mining project. For instance, significant evidence on the fractured metamorphic nature of these lands, inferred and actual fractures and faults that have been named, the prospect of artesian springs, other faults and fractures in bedrock that may conduct water from the site, the potential that water inflows are much greater by many accounts have been given short shrift in deference to a computer model fed with data chosen, in particular, for this study. It all seems quite arbitrary, and these omissions are significant. The area that includes Babbitt, Hoyt Lakes and the transportation corridor are covered with sand and gravel surficial aquifers, which run the possibility of overdevelopment in irrigated areas. This region also includes igneous and fractured metamorphic bedrock aquifers, where water can be found in cracks, joints and fractures within otherwise solid rock formations. Hoyt Lakes is a land of sand and gravel buried aquifers, which can be a major source of water (eg the Biwabik formation). Further down the St Louis River, in addition to sand and gravel surficial, and buried aquifers, igneous and fractured metamorphic bedrock aquifers, there are also sedimentary bedrock aquifers. Even though yields from these sedimentary cretaceous deposits are supposed to be low, the possibility that ground water discharges in lowlands from sand and gravel and fractured aquifers, also in the area, certainly exists.	WAT	S	O	3	SDEIS Theme WR 007
Anita Tillemans	As noted, FEIS confirms that due to low permeability of the bedrock, discharge could take thousands of years... and so it seems that polluted waters could do the same. Polymet would be long gone before the consequences of copper mining could be fully assessed.	FIN	NS	X	1	
Anita Tillemans	The FEIS avoids much discussion on differentiating major geologic areas, although Ely, Babbitt, Hoyt Lakes, Embarrass, the BWCAW and the whole of Giants Ridge are encompassed in a single one of these regions. The FEIS avoids in depth review of the existence of confined aquifers (extremely important in the security of the groundwater), avoids discussing in particular dissimilarities in surface composites and bedrock as relates to their conductivity and connectivity, specifics on the variability of depth to bedrock, inevitable flooding scenarios, weather anomalies, likely spills and exposures, drumlin fields, watershed anomalies (for instance, the fact that the tailings pond at the Minntac plant has outgrown what was once the boundary of the Vermilion Watershed, redrawn on maps to put it within the St Louis Watershed). Polymet's NorthMet Project will increase the size of this tailings pond and so it is crucial to understand fully the hydrology of both surficial and bedrock aquifers directly underlying this tailings pond in particular.	WAT	S	O	2	SDEIS Theme WR 012
Anita Tillemans	Metamorphic rock is mentioned very little in the FEIS, as it fails to note that most of the Arrowhead is covered by fractured metamorphic rock, and in the area of the project, that sand and gravel surficial aquifers are prevalent as well, major omissions in outlining the geology of the area. Through these errors of omission, the probability of surficial and bedrock transport appears minimal at best. Is it possible to make a valid review of the project's feasibility without details like this?	WAT	S	O	2	SDEIS Theme WR 071
Anita Tillemans	Of course, a model cannot take into consideration all of the factors in this extremely complex area of the North Met Project prospect, and so, I wonder, why experiential data from over 100 years of mining was not favored over probabilistic prognostications and limited field study prepared specifically for the NorthMet Project? The Mississippi is now polluted; the St Louis River, and waters off the North Shore are imperiled. One hundred years is so little time in the course of a	WAT	NS	X	1	

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	history like the Arrowhead, but much damage has already been done. What would be the result after 500 years of seepage from the degraded rotted and rusted infrastructure of a copper sulfide mine? Studies that fail to use extensive fieldwork and data available from mining experience of the Mesabi Widjiu over the past one hundred years since the late 1890's are likely to misrepresent the risks involved with a copper mine in the Arrowhead.					
Anita Tillemans	If water seepage and inflow has not been predicted realistically for this study, then, the potential for harming watersheds of the St Louis River, Vermilion River and the Rainy River is great. Tribes inform the co-lead agencies that inflows are considerably higher than suggested by the EIS. How has related data from this observation informed the FEIS?	WAT	NS	X	1	
Anita Tillemans	Exploratory wells have been made well past the northern boundaries of the St Louis River Watershed, into the Rainy River Watershed, and on the boundary of the BWCAW. As a consequence, if the North Met project for a copper mine is granted, this will create the potential of a succession of mining pits and wells that move from the NE of Giants Ridge into the domain of the BWCA Wilderness. Consequently, the NorthMet Project prospect has the potential of affecting a larger area than the study proposes. Elevated levels of arsenic can be found in the BWCAW along with brackish waters from exploratory wells. These details cannot be overlooked because it foretells the real possibility of pollution from Polymet's mine pits traversing aquifers and connecting the St Louis Watershed to the Rainy River Watershed. The potential of surficial and bedrock connectivity from the mine site to this highly diverse geology of the BWCAW region through fluid and interconnected wilderness waterways, glacial moraine and diverse geology is relevant to the discussion.	WAT	NS	X	1	
Anita Tillemans	Relying on probabilistic outcomes that narrow the view and minimize the prospect of pollution reaching downstream seems unrealistic. The potential of downstream contamination throughout the St Louis River Watershed should be given full consideration in any responsible environmental study concerning the prospect of a copper mine in this ecologically important area at the headwaters of the greatest body of freshwater on earth.	WAT	S	O	2	SDEIS Theme PER 07
Jon Schubbe	The EIS does not state how long cleanup will take. At least 500 years is not consistent with MN clean water legacy.	PD	NS	X	1	
Jon Schubbe	If approved, Polymet should pay for all cleanup costs up front before any profit can be taken. Otehrwise they will just file for bankruptcy and leave taxpayers on the hook.	FIN	NS	X	1	
Jon Schubbe	The EIS states no on the ground surveys specific to the project occurred. The area proposed for the mine is in an extremely remote and relatively undeveloped area of the state. It is unlikely comprehensive surveys for T&E species have occurred in these areas and for this reason the list included in the EIS is likely incomplete. The EIS should be modified to include a comprehensive list of state protected species otherwise it is possible the EIS does not consider impacts all T&E species occurring in the project area, regardless if habitat is considered disturbed.	WI	S	O	2	FEIS Sections 5.2.5.2.1, 5.2.5.2.2

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Jon Schubbe	EIS does not adequately address impacts to northern long eared bat (NLEB). Sudan Mine is located within XX miles of the proposed facility, which is the largest know hibernacula in the state. The mine is within the migratory range of NLEBs hibernating at Sudan mine, which make it likely this species could experience habitat loss as a result of tree clearing associated with the project. Furthermore this species was documented by the EIS as a relatively common in the project area. The EIS should address impacts to the population of NLEB at Sudan Mine. Will the population be imperiled as a result of habitat loss? Do NLEBs which hibernate at Sudan Mine utilize the project area during the maternity season? All tree clearing associated with the project should take place between October 1 and April 31 when this species is likely to be hibernating, unless a qualified biologist confirms the lack of NLEB in the area proposed for clearing. Habitat loss should be mitigated for; most appropriate mitigation would be conservation of privately held mature mixed forest in the vicinity of sudan mine and the project.	WI	S	O	8	FEIS Sections 4.2.5.1.1, 5.2.5.2.1, 6.2.5.4.3
Jon Schubbe	The EIS does not adequately address impacts to state listed plants, such as Clatha natans. Makes no mention of how state populations in the project area would be affected or avoided, especially in the vicinity of the rail corridor. Will mitigation take place in the event of take?	VEG	S	O	8	FEIS Sections 4.2.4.2.3, 5.2.4.2.1, 6.2.4.4.2
Jon Schubbe	EIS states habitat will be restored, which is misleading. Many ecosystems in the project area cannot be restored after they have been disturbed, such as spruce bogs. How will the project avoid dewatering wetland habitats associated with Hundred Mile Swamp, Mud Lake and Yelp Creek.	VEG	S	O	8	SDEIS Theme VEG 02
Jon Schubbe	Do bog specialists such as Malaxis paludosa occur in this area? How will the project avoid impacts to these species.	VEG	S	O	8	FEIS Sections 4.2.4, 5.2.4
Jon Schubbe	Non-native seeds should not be used during restoration.	VEG	NS	X	1	
Jon Schubbe	Wood turtles are known to occur downstream from the project. What is this species tolerance level to sulfide pollution. How is reproduction affected by pollution. How will the project protect downstream habitat such as Partridge River.	WI	S	O	8	FEIS Sections 4.2.5.1.1, 5.2.5.2.1, 6.2.5.4.3
Jon Schubbe	The project will fragment lynx habitat and create corridors where snow packing is likely to occur, making them unsuitable for canada lynx, and lead to habitat loss.	WI	S	O	8	FEIS Section 5.2.5.2.1
Kevin Viken	I am writing because I have concerns regarding the FEIS for the Polymet hard rock mine (copper-nickel). It is clear to me the FEIS does not address all of my concerns with this project.	GEN	NS	X	1	
Kevin Viken	Wild rice in the partridge and St. Louis Rivers will not be adequately protected from mine waste.	VEG	NS	X	1	
Kevin Viken	Financial assurances for the plan are far from adequate. Over the millennia that this waste will be sitting there slowly discharging it toxic leachate we will be virtually assured of a flood that will overwhelm all measures covered by the FEIS and to pollute the surrounding area and all downstream bodies of water including lake superior. The financial assurances need to be much greater and more protection from political interests.	FIN	NS	X	1	

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Kevin Viken	The land exchange for this project does not exchange land of equal value in utility.	LAN	NS	X	1	
John Herbst	My comment is this: If pilot studies, i.e. ongoing experimental methods both unproven and undocumented over the long-term (up to 500 years or more), are to be used to replace proven technology (mechanical treatment), what agencies or governmental bodies will be the judge of these new, unfounded and unproven (over the long-term) non-mechanical water treatment methods?	PER	S	N	9	The FEIS identifies in several places (FEIS page 3-8, responses to SDEIS Theme PD 06, and others) that switching to non-mechanical treatment would have to be approved by regulatory authorities and that consideration of this would only occur if the Proposer proves it would work. The State of Minnesota would be the governmental body, through its regulatory agencies determining if or when a transition to non-mechanical treatment would be permissible. The NorthMet Project Proposed Action relies on mechanical treatment for as long as necessary. FEIS Chapter 3 states that PolyMet has committed to conducting pilot and other feasibility studies on the use of non-mechanical treatment as an adaptive management measure if proven effective and cost efficient. The possible future use of non-mechanical treatment is stated as a long-term goal, but the details of how such systems would operate would be determined once operations begin and site specific data could be used for pilot/feasibility studies, and if eventually proposed would be addresses in future permitting. The WWTF would continue to treat water until water quality monitoring demonstrates that effluent would achieve water quality standards under non-mechanical treatment. Similarly, the WWTP would continue to treat Tailings Basin seepage until non-mechanical treatment would be demonstrably appropriate.
John Herbst	2. In Figure 7, Plant Site Layout, NorthMet Mining Project and Land Exchange FEIS, there appears to be substantial reductions in rock buttressing at the south end of the Tailings Basin compared to the north end. Is there a reason for this? Perhaps higher elevations between the south end of the tailings basin and Colby Lake impeding water drainage to the south, or solid bedrock (impervious to water flow) just south of the tailings basin, preventing any drainage towards Colby Lake?	GT	S	N	2	The size of the buttress is driven by the Factor of Safety (FS). A large buttress is needed on the north side due the height of the proposed dam (250 feet), the existing materials the dam is built upon (peat in the base), and the thickness and characteristics of the materials of LTV dams that Polymet will be built upon. The large buttress is needed to bring the FS up to the required standards. On the north side the dam will be about 250 feet at final height while on the south side, the height will be closer to 150. The dam on the north will be built on softer peat and tailings while the dam on the south will be built on a mixture of high ground and a rock stockpile used to

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						support the railroad. The base on the south is also much wider than the base on the north. Therefore, a smaller buttress is needed to meet the Factor of Safety requirements. PolyMet 2015n NorthMet Project Flotation Tailings Management Plan, Section 2.0 FTB Design addresses the buttresses. PolyMet 2015L NorthMet Project Geotechnical Data Package - Flotation Tailings Basin, Section 6.3.2. FTB Design and Section 6.3.2.2 Buttress Design.
John Herbst	On p. ES-31 it states: "All of the non-federal lands except Tract 4 have severed mineral and surface ownership, which means that the mineral resources would not be acquired with the surface." My comment is: Does this mean that PolyMet has mineral rights to tracts 1-3 and 5 (Hay Lake, Lake County, Wolf, and McFarland Lands respectively), into the foreseeable future, even though there aren't any mining activities proposed on the non-federal lands as part of the Land Exchange Proposed Action at this time?	LAN	S	O	2	SDEIS Theme LAN 04
John Herbst	On p. ES-36 it states: "At the Mine Site, about 10 gallons per minute of untreated water would be released during closure...At the Tailings Basin, about 20 gallons per minute of untreated water would be released during closure." My comment is: This comes out to >70,000 tons of untreated water per year entering the water table/aquifer, due to groundwater seepage and seepage bypassing the groundwater containment system. This still seems quite enormous an amount of leakage of potent mining process contaminants, and I can't see that there's no build-up of certain compounds/elements in the soil which will linger there and not move on for the long-term (500+ years), causing problems down through the years.	WAT	NS	X	1	
John Herbst	On p. ES-50 it states: "913.8 acres of wetlands in NorthMet Project area would be directly affected and 6,568.8 to 7,694.2 acres of wetlands in NorthMet Project area could be indirectly affected" My comment is: Studies by wetland professionals published by academics in peer-reviewed reputable journals have repeatedly demonstrated overall reductions of 30% or more in wetland values for hydrological function, hydrophytic vegetation, and wetland wildlife, for mitigated/restored wetlands vs. original undisturbed wetlands, across the board for all wetland types studied in many different geographical locales.	WET	S	O	2	SDEIS COOP Comment #3002
Deborah DeLuca	Consistent with Resolution #7 -14, the DSPA is now writing in support of the adequacy of the Final Environmental Impact Statement (FEIS) on PolyMet Mining's proposed NorthMet mine project in northeastern Minnesota. The DSPA also supports the U.S. Forest Service proposal to exchange Superior National Forest lands to support the proposed NorthMet project.	GEN	NS	X	1	
Deborah DeLuca	The PolyMet EIS has adequately met federal and state and standards: It evaluates risks to drinking water, fish, and wild rice using realistic assumptions relative to, and responsible analysis of contaminant transport.	GEN	NS	X	1	

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Deborah DeLuca	It adequately analyzes human health risks. As per the judgment of the Commissioners of the Minnesota Pollution Control Agency (MPCA), the Minnesota Department of Natural Resources (MDNR), and the Department of Health (MDH): the human health implications have been fully addressed through the 10- year review process. Those organizations who oppose the mine can always identify individual "expertise" who will raise contradictory opinions, not necessarily in the interests of pursuing the best science, but because they are set on blocking the mining project. The MPCA, MDNR and MDH staff who have reviewed these documents are likely at best ambivalent about the actual mine project - their review of the FEIS is conducted from a neutral viewpoint and can be trusted. The FEIS specifically assessed potential human health implications of the proposed project due air- and water- quality impacts; the FEIS identified no adverse human health effects.	HU	NS	X	1	
Deborah DeLuca	While submitted negative comments speak to a perceived failure to evaluate the potential for groundwater flow to the 100 mile swamp and the Rainy River Basin, this issue has been addressed through the cumulative EIS process, with special attention during the FEIS.	WAT	NS	X	1	
Deborah DeLuca	We support the proposed NorthMet Mining Project Land Exchange in the Superior National Forest that has been arranged to enable the proposed NotihMet surface mining operation. The land exchange summary information provided by the MDNR indicates a general gain in the federal estate in relation to ecological services and socioeconomic value.	GEN	NS	X	1	
Lori Andresen	The PolyMet final Environmental Impact Statement (FEIS) was released to the public November 6th, 2015. How did PolyMet ever get this far? And why? In 2010, the U.S. Environmental Protection Agency (EPA) rated PolyMet's draft EIS as EU-3, Environmentally Unsatisfactory-Inadequate. Here are some quotes from the comments: "The EPA believes that the project will exceed water quality standards because of discharges during the life of the mining operation and on a long-term basis, including the post-closure period. These water quality impacts are largely related to water that contacts acid-generating waste rock ... and to wastewater escaping the tailings basin through seeps and in ground water. ...the analyses of the hydrogeological profiles at both the mine and processing site are inadequate to determine the full extent of impacts or to justify mitigation options. Consequently we believe that the DEIS likely underestimates water quality impacts and the project is likely to have additional unmitigated long-term discharges. EPA has identified information gaps relating to groundwater impacts, groundwater-surface water interaction, tailings basin stability and containment, and groundwater discharges to surface water. Furthermore, EPA does not agree with the compensation described for wetlands impacts... The DEIS did not provide information on financial assurance..." The above are the same concerns brought forth by environmental groups as they made their way through hundreds of pages of the DEIS. These concerns included: "There is inadequate analysis. There is no substance to conclusions that claim there will be no water pollution. The scale of the mining operation is such that it will be impossible to contain water pollution. The tailings basin purchased from the former LTV Mining Company by PolyMet is already leaching sulfates and other pollutants into the watershed and is not designed to contain the amount or type of tailings that would be produced by PolyMet. The wetland loss at PolyMet's NorthMet mine (nearly 1,000 acres direct/ 6,500 acres indirect) would be the single largest loss ever permitted by the St. Paul Army Corps of Engineers. The US Forest Service could deny an open pit mine operation on our public lands within Superior National Forest, rather than negotiating a land exchange that would privatize 6,500 acres of Superior National Forest lands, impacting wildlife and wildlife corridors. Acid Mine Drainage (AMD) and heavy metal pollution will be a problem for hundreds to thousands of years."	O	NS	X	1	

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Lori Andresen	<p>The PolyMet project should have been shelved in 2010. Instead, the Supplementary Draft EIS was released in December of 2013. In preliminary documents circulated prior to the SDEIS, environmental groups noticed that water treatment would be needed for at least 200 years at the mine site and at least 500 years at the plant site. PolyMet’s plan for perpetual treatment at its sulfide mine should not have been allowed to proceed, as long term treatment goes against Minnesota state law (CHAPTER 6132, NONFERROUS METALLIC MINERAL MINING, 6132.3200 CLOSURE AND POSTCLOSURE MAINTENANCE. Subpart 1. Goal. 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.) But instead, the agencies relegated the water treatment statement to one mention within the depths of the SDEIS, claiming that only passive water treatment would be needed at the mine site, and relying on Reverse Osmosis (RO) water treatment at the plant site, post closure. The Dunka mine site, where LTV Mining Company removed some layers of sulfide-bearing rock in order to extract the taconite underneath, is a clear indication that passive water treatment is not enough. Toxic heavy metals continue to drain from the Dunka mine waste rock into Bob Bay of Birch Lake. The passive water treatment proposed by the DNR appears to be dilution, as the contamination seeps into wetlands and eventually into a larger body of water. Active water treatment proved too expensive for the mining company, and the DNR has allowed the use of man-made wetlands as a stop gap solution to the ongoing pollution; these wetland materials need to be periodically dredged, removed, and then replaced with new material. (For more information, see "Mining Vs Water, Dunka site exposes breakdown in mine regulation," Timberjay 10-7-15.) The reverse osmosis (RO) pilot test that was prepared for PolyMet by Barr Engineering does not reflect the quantity or quality of water that would need to be treated upon mine closure. It is known that RO is not effective on a large mining scale, as it is too costly, and because the concentration trapped in the RO filters is highly toxic and needs special containment. The Minnesota Pollution Control Agency exempted Mesabi Nugget from using RO as "not technically feasible" and because it "would cause the discharger undue hardship." In other words, RO was rejected due to the uncertainty of its effectiveness and its prohibitive cost. (Mesabi Nugget Delaware, LLC NPDES/SDS Permit No. MN0067687, pages 6-9, October 12, 2012) In addition, RO might be a moot point. If sulfate standards to protect wild rice are weakened by agency and legislative initiatives, or mining companies are given a variance from meeting existing standards, RO need never be installed.</p>	WAT	S	O	8	SDEIS Themes WR 023, WR 143,WR 195
Lori Andresen	<p>Muddying the Toxic Waters. The SDEIS should have been the end of PolyMet. But instead, the final EIS (FEIS) has been publically released. Already, in preliminary documents reviewed over the summer, the Great Lakes Indian Fish and Wildlife Commission (GLIFWC) has found major discrepancies in the water modeling. GLIFWC's results using the same water modeling program done for PolyMet by Barr Engineering found that, upon closure, and due to the proximity and interconnectedness of PolyMet and the Peter Mitchell taconite mine at Babbitt, water from PolyMet would flow north into the Rainy River watershed. This would increase pollution to both the Rainy River and Lake Superior watersheds; while adding pollution to the Rainy River watershed, water would be drained from the Lake Superior watershed, leaving the pollution there more concentrated. In its faulty final EIS process, the DNR is circumventing this information, and rather than running its own modeling, is relying on something called "adaptive management," a concept that allows them to adapt to a problem as it comes up. But the DNR record shows limited success in problem solving. Right now, all six taconite mines are operating under expired permits or variances--whereby the mine can continue polluting while claiming it will comply with standards somewhere down the line. In effect, the taconite mines have been allowed to continue mining and to expand without meeting existing environmental standards. For example, the issue of mercury and sulfates impacting our fish and</p>	WAT	S	O	8	SDEIS Themes WR 023, WR 106

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	wild rice has not been resolved. The DNR is attempting to figure out how to control ongoing sulfate pollution from Minntac's tailings basin, while at the same time allowing Minntac to add more tailings as it expands. Meanwhile, the Minnesota Pollution Control Agency is being pressured by legislators to lower or adjust the sulfate standard in order to accommodate mining expansion. Proposed adjusting of the standard to fit various waterways would be basically impossible to monitor or enforce--thus perpetuating the problems caused from mining pollution. Yet the same agencies that have failed to control taconite pollution are now set to permit higher polluting sulfide mining.					
Lori Andresen	Agency Bias and Political Influence. The Lands and Minerals Division of the Minnesota DNR is responsible for permitting our mines. If the agency stopped promoting mining, the agency division would basically put itself out of business. Political leaders would also like to see PolyMet permitted and ready to go before the 2016 elections. Copper-nickel sulfide mining has become a hot-button issue, splitting the Democratic Party in Minnesota. Governor Dayton is trying to play the middle by calling for "Community oversight" that would ensure that PolyMet is meeting pollution control standards. If our agencies can't (or won't) enforce mining companies to meet standards, how will an "Independent Citizens Group" have the knowledge and authority and will to do so? Conversely, the call for a Citizen's Authority acknowledges that our current regulatory agencies, such as the DNR Lands and Minerals Division, are ineffective and need to be replaced.	NEPA	S	O	8	SDEIS Theme NEPA 18
Lori Andresen	Major Mining Disasters. Agencies and politicians would like to permit PolyMet before any more environmental disasters involving hard rock sulfide mining hit the news. In August of 2014, a breach in the tailings basin at the Mount Polley Mine in British Columbia became the largest mining waste spill in Canada's history. Despite approval to restart, there are still no long-term plans regarding site clean-up costs, water treatment, and mining wastes management. ("No Reason to Celebrate One Year After Mt. Polley Disaster" Mining Watch Canada, July 31, 2015) After the Mount Polley disaster, a panel of experts recommended using a filtering process to dry stack tailings, which would be much less of a risk for dam failure than the current wet tailings. Mining companies in Canada are resisting this improvement as being too costly in a wet environment. PolyMet has also rejected using such a system at their proposed NorthMet Mine. All six of Minnesota's taconite tailings basins are wet, potentially placing them at risk for breaches. NorthShore Mining's Milepost 7 tailings basin is particularly precarious, as a dam break would send the tailings downhill and directly into Lake Superior. On February 2, 2012, HibTac discovered a crack on the Western Dam South, which extended approximately 1,000 linear feet, resulting in discharges into adjacent wetlands, as reported by the Army Corps of Engineers, 2012 -00623-DWW. The former LTV Steel Company tailings basin purchased by PolyMet has already been faulted for being unstable. In PolyMet's case, the problem is more serious due to the low grade nature of the copper-nickel mineralization (less than 1%) and the great amount of waste material (99%) and the heavy metals and contaminants associated with the sulfides that would be added to the existing taconite tailings basin. As further evidence of ongoing sulfide mining pollution, a U.S. mining disaster occurred in August of 2015 when 3 million gallons of wastewater and sludge from the dormant Gold King Mine poured into a tributary of the Animas River in Colorado. Workers for the EPA were trying to install a pipe to drain water from the abandoned mine so that they could	GT	S	O	8	SDEIS Theme GT 01

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	eventually plug the mine and prevent contaminated water from seeping out. Instead, the force of the water broke through the existing dam, turning the entire river a bright orange with mine waste pollution. Unfortunately, this whole western region is riddled with abandoned mines, all seeping into ground and surface waters, while the EPA is lacking in money to clean up these super-fund sites.					
Lori Andresen	What kind of financial assurance would PolyMet need to post in order to cover potential tailings basin failure, as well as covering over 500 years (virtually forever) of water treatment? This issue isn't even addressed in PolyMet's FEIS. Instead it will be negotiated between the DNR Division of Lands and Minerals and PolyMet--both with immediate and direct interest in the permitting of PolyMet.	FIN	S	O	5	SDEIS Theme FIN 01
Lori Andresen	Market Weakness. Of further concern are weak market conditions for metals. Glencore, the major investor in PolyMet, has lost 60% of its share value over the past year. The company over-expanded when the market was high, taking on a debt load that has now become a burden. Any delay or problems in PolyMet's NorthMet project might mean that Glencore would pull out of the project in an attempt to further dump its debt. See "Counterpoint: PolyMet's Minnesota copper-nickel project is risky business," Star Tribune, October 28, 2015 for more information.	O	NS	X	1	
Lori Andresen	Summary. Decisions are being made right now that will likely impact the next 25 generations to inhabit this area. We are placing our immediate desire for metals above the long-term need for clean water. Decision makers are swallowing the philosophy of mass consumerism that requires ever-expanding consumption of goods--a concept which is out of balance with the natural world and resources of the planet. We currently do not have the technology to mine highly disseminated low grade metals out of sulfide ores without degrading and polluting our environment for the next 500 years (or longer). Nor do we have the technology or the political will to clean up the pollution that is already here. Northeast Minnesota contains the headwaters of three great watersheds--north to Rainy River, east to Lake Superior, and south to the Mississippi. The Arrowhead has been known as one of the most magnificent areas of the state, for its majestic forests, wetlands, and waters. Superior National Forest is a treasure for the citizens of this state and nation. We all bear responsibility for what we will leave behind for the generations ahead. Clean water is a valuable resource in its own right. It is time to say "No" to PolyMet for once and for all. Take the time to submit a comment on the PolyMet FEIS, which was released on November 6. No public meetings have been scheduled during the comment period, ending on December 14. Check www.sosbluewater.org or other environmental sites for more information.	O	NS	X	1	

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Brad Sagen	<p>Great Lakes Indian Fish and Wildlife Commission (GLIFWC) has notified the lead agencies that groundwater from the NorthMet east pit is predicted to flow northward into the Rainy River Basin upon closure of the Northshore Peter Mitchell Mine. The agencies acknowledge this possibility but have refused to conduct necessary additional analysis. According to an interagency memo of 10/12/15, "the well data and the NorthMet Mine Site MODFLOW model do not exclude the possibility of a future northward bedrock flowpath from the proposed NorthMet pits to the Northshore pits." The point central to an evaluation of the adequacy of the FEIS is that because of the level of risk involved, the possibility of northward east pit groundwater flow must be addressed in the FEIS.</p>	WAT	S	N	8	<p>MDNR et al. 2015c. DNR disagrees with GLIFWC's application of the EIS Mine Site MODFLOW model because that agency modified the model outside its intended purpose as defined in Final SDD Section 6.2. The Final SDD required the groundwater flow model to predict pit inflows at various stages of pit development (i.e., year 1, year 5, year 10, year 20) and include operation, closure, and post-closure. The model satisfies this condition of the final scoping decision. GLIFWC changed the EIS Mine Site MODFLOW model to include future mining activity at the NorthShore Mine Peter Mitchell Pits, which is outside the scope of the EIS. If the EIS scope were defined to assess of how future activity at the Peter Mitchell Pit might influence the closure conditions at the NorthMet site, then additional data would be required north of the Mine Site on which to refine the EIS Mine Site MODFLOW model for : 1) vertical hydraulic conductivity for wetlands and surficial deposits; 2) horizontal hydraulic conductivities in bedrock (e.g., Virginia Formation; BIF); 3) variability of hydraulic conductivities within the bedrock units, and 4) the hydrologic significance of 100 Mile Swamp in providing a source of water for downward leakage. Each of these refinements is important to quantitatively assess the likelihood and potential magnitude of a northward bedrock flowpath. Modeling would also have to reconcile uncertainty regarding the sequence and timing of future Northshore mining operations, including the depth of pit excavations and development of pit lakes relative to NorthMet-related pit conditions during operations and closure. Absent these changes, the results of GLIFWC's modeling is unreliable for impact assessment. Although not identified as an issue for assessment in the EIS, DNR considered potential future operations at the Northshore Mine against information that is available. The agency acknowledges it cannot rule out that future operations at the Northshore Mine could induce northward groundwater bedrock flow from the NorthMet Mine Site. See Final EIS Section 6.2.2.3.1. This might happen if there is insufficient natural downward leakage into bedrock from the overlying</p>

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						<p>wetlands and surficial materials between the proposed NorthMet Mine (in closure) and the Northshore Mine (in future operations and closure. If there is sufficient downward leakage, then there would be groundwater flow divide between the two mines where there is no continuous one-way flow between the facilities. If natural leakage is insufficient to maintain a groundwater flow divide between the two facilities, then it is possible a northward groundwater flowpath would be present. DNR asserts that it is possible to detect and prevent any northward flowpath before any impacts are realized. Final EIS Section 5.2.2.3.6 details specific monitoring requirements, including expansion of the existing system of bedrock groundwater monitoring wells. The goal of the monitoring would be to determine future bedrock flow direction immediately north of the NorthMet pits to identify any need for engineered preventive mitigation measures. Final EIS Section 5.2.2.3.5 identifies known measures that could be applied if a potential for northward flow was detected. The possibility of northward flow between the proposed NorthMet Mine and Northshore Mine is speculative and is not reasonably foreseeable with current information. There is no potential for northward flow until mining in the Northshore pits results in water levels (at Northshore) below the water levels of the proposed NorthMet pits. When this might occur is not known, but it is most likely to occur after the proposed NorthMet Mine East Pit (of particular interest) has been reclaimed in mine year 20. There would be ample opportunity to collect necessary data, and complete applicable environmental review and/or permitting prior to the development of a northward flowpath, including preparation of an EIS supplement if the conditions of Minnesota Rules, part 4410.3000, subpart 3 are met.</p>
Brad Sagen	The FEIS relies upon “contingency mitigation” where water quality is “worse than expected” or as a result of “compliance issues” (FEIS, 5-239 to 5-240). The FEIS provides no information that mitigation is feasible or would be effective. The FEIS states, “The exact type, location, scale, and timing of mitigation measures are not known at this time.” (FEIS, 5-240).	ALT	S	N	8	MDNR et al. 2015c
Brad Sagen	Contingency mitigation may be considered a strategically chosen alternative phrase to “adaptive management.” The latter, while undefined in the SDEIS, is part of USFS regulations and policy, and would have subjected the FEIS to more systematic	ALT	S	N	11	

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	scrutiny. FEIS pronouncements about contingency mitigation should be subjected to analysis using USFS guidelines about adaptive management.					
Brad Sagen	EPA, as well as several environmental organizations, have called attention to the absence of virtually any information regarding the need for financial assurance and the capacity of the proponent firm(s) to provide that assurance. While a detailed financial assurance plan may not be required prior to permitting, the capacity of proponents to provide such assurance should be considered part of a determination of FEIS adequacy.	FIN	NS	X	1	
Brad Sagen	NorthMet environmental analysis has failed since virtually it's beginning to consider the potential impact of mercury and especially of methylmercury being released and created from air deposition and sulfate mine seepage. Additional analyses are required to correct this shortcoming.	MERC	NS	X	1	
Brad Sagen	The FEIS fails to acknowledge the potential for a catastrophic tailings dam failure, even after the spectacular failure of the Mt. Polley Tailings Dam in BC about a year ago. The current tailings dam proposal would build on top of an existing tailings waste facility with attendant instability from the waste and seepage. Best management practices that would have created a new tailings waste facility were ignored. This must be considered in a 'revised' or supplementary FEIS.	GT	NS	X	1	
Rick Billmeier	I am writing to let you know that I am strongly against allowing any copper nickel mining in or near BWCA or the Superior National Forest. I have researched sulfide mining trying to understand how anyone that cares about the future of Minnesota can seriously consider allowing such a risky proposal. I do not think the FEIS can claim that it has done an "intensive, scientific examination of environmental, social and economic aspects of the proposed project," by using, or relying in any way, on the self-interested "water model" or any other claims made by PolyMet or its consultants. I believe Minnesota should require a higher standard and demand actual proof BEFORE issuing any mining permits!	GEN	NS	X	1	
Rick Billmeier	I support the creation of a Minnesota Statute similar to Wisconsin's 1997 "mining moratorium" law. Minnesota should adopt a similar statute that prohibits the granting of a mining permit unless the permittee can show: 1) that an existing mine has operated in a sulfide ore body for 10 years without polluting the ground or surface water; and 2) that a mine that operated in a sulfide ore body and has been closed for 10 years has not completed the ground or surface water. Historically, the environmental review process has been unable to PREDICT the actual impacts of sulfide mining in water rich environments and has underestimated the impacts as well as the cost of clean-up. At the very least, Minnesotans should require proof, in the form of documented actual prior experience, that Poly Met has been able to do the proposed sulfide mining somewhere else without creating sulfuric acid or Acid Mine Drainage in toxic levels.	PER	S	O	6	SDEIS Themes CU18, CU19
Faye Topliff	We have a 40 acre parcel in the area of Polymets proposed EXTRACTION PIT. We also live downstream in Duluth and this project could mess up the whole area. My kids, relatives, others love the BWCA. So we follow with great interest any proposed swap. With everything I have been able to find out, it seems as though the Polymet project is a poorly thought out project. To deposit toxic waste in a pit that already leaks is a bad idea to start with and then looking at the published maps it would seem as though Polymet is not disclosing their exact Dump site. Why would anyone want to swap land for a project that has engineers that designed a pit in British Columbia that failed terribly. There is NO room for error on this extraction project. Polymet will have many toxic chemicals in their waste. My family was here for the big Reserve Mining	GEN	NS	X	1	

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	screw up in Lake Superior. Remember Asbestos! It cost us private citizens much time and money to get the dumping out of the lake. The lake still suffers. Also what Polymet wants to do is not iron ore mining or taconite. It is extraction with too much waste to handle. Why would we think that we would have the right to contaminate Minnesota far into the future? Would tourists come by the planeload to canoe, swim and recreate in our fouled waters? Our necessities for life are clean air and clean water. There are already places that do not have either of these. They are priceless.					
Ashlee Kveton	However, I must admit I have serious doubts about the copper nickel mine that Poly Met has proposed. Further, I have serious doubts about the integrity of the lead agencies Environmental review process and it's subsequent EIS's and their predictions/conclusions. First of all, I lived in Montana for quite some time where the environmental, and public health consequences of mines just like the one proposed by Poly Met induced Montanan's who are largely Pro Industry- to pass a ballot Initiative I-137 in 1998 banning -cyanide leach mining- which in all reality poses the exact same dangers that the copper nickel mine Poly Met is proposing. See the cyanide goes away but what is left is the same thing we have to worry about with Poly Met's Proposed project- sulfide bearing waste rock (like what Poly Met is mining) that reacts with air and water to produce acid runoff and also all kinds of nasty toxins like Arsenic that destroy down stream aquatic ecosystems.	WAT	NS	X	1	
Ashlee Kveton	I fear that like the mines in Montana, the Gilt Edge mine in Lead South Dakota, Poly Met cannot stop the toxic runoff from their waste rock piles from seeping into groundwater, being flushed downstream, or even entering the BWCA watershed via groundwater flow and movement in the 100 mile swamp-which looks to flow into the St. Louis river/Lake Superior Watershed, as well as, the Rainy River/Hudson's Bay Watershed. As I understand it the stream flow data that Poly Met gathered is a very inaccurate representation of what is actually happening at the Poly Met site. This of course is the same data that The lead agencies used to predict the flow of water, and toxins into the environment. This is unacceptable. Also, the Environmental Review process should be taking into account changes in ground water flow and tables, relating to other mining related disturbances/influences on the flow of water during and after the life of the Poly Met Mine. Such as a draw down of 200-300 feet in a mine pit lake north of the Poly Met site-which arguably will cause the groundwater from Poly Met to flow North into the Rainy River watershed instead of south into the St. Louis River system.	WAT	NS	X	1	
Ashlee Kveton	Further, I am outraged when I read the shear volume of untreated polluted water that will by the lead agencies own admission be leaving the mining operation and entering the environment, whether it goes to the BWCA or the Lake Superior. The St. Louis River deserves every protection that a river flowing into the BWCA does. For one thing alot more people live down stream of the St. Louis River than down stream from the Rainy. I personally rely on fish from both watersheds-and am a woman of child bearing age. I should not have to worry about my elected public and appointed public officials making it more dangerous than it already is to consume an important source of calories and nutrition that helps me get by on a lower income.	HU	NS	X	1	
Ashlee Kveton	When it comes to copper nickel mining on the Iron Range we only get one chance to do it right. We have to ask ourselves do we really want to stake the future of copper nickel mining in Minnesota on the Shoulders of a company like Poly Met. Poly Met has never run a mine before, a Poly Met is not Minnesota based, a Poly Met seem more than happy to supply suspect data to the public agencies tasked with protecting our environment, Poly Met chose to propose the cheapest (and,	PD	NS	X	1	

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	also the most environmentally damaging) type of mine to open (aka open pit mine) despite safer alternatives being known, and also while knowing full well that the technology/type of extraction/processing/waste this mine will produce has proven unsafe for the environment repeatedly.					
Ashlee Kveton	Poly Met claims they can remove these metals and all that waste rock containing sulfides safely and yet, the lead agencies predict that the site will require expensive water treatment for at least 500 years.	PD	NS	X	1	
Ashlee Kveton	Is 20 years of mine life and the associated jobs really worth 500 years at least of water treatment from this site, Is it worth the massive plumes of untreated water from this site contaminating ground water, and eventually surface water resources, when the plumes reach the lakes and rivers we swim in and eat from? By approving this FEIS and the associated known- and possible effects of this mine Tom Landwehr and the rest of the lead agency staff is sending the message to Minnesotans that anyone with a lot of money can come into Minnesota and take whatever they want from us at the expense of our communities, our environment, and those Minnesotan's who will come after us.	WAT	NS	X	1	
Ashlee Kveton	I say Iron Rangers and Minnesotan's deserve better. We deserve clean water, and we should not give it away for the price of boom and bust economics, that leave our communities destitute and polluted. The lead agencies need to reject this FEIS as inadequate and demand Poly Met give Minnesotans what we deserve. If Poly Met wants the Metals in our ground they need to prove that they can remove it safely and leave Minnesota with a site that does not require treatment 500 or more years into the future. So far Poly Met has failed miserably to earn my trust. I simply do not believe they care one little bit about Minnesota or it's Iron Rangers. They disrespect us if they think they can come here and do any kind of resource extraction that requires indefinite treatment for 100's of years into the future, and pollute the resources we cherish most as Minnesotan's, our lands, our waters, and our outdoor heritage. Our elected officials need to pull their proverbial heads out of their proverbial %\$^&%^&, Yes jobs on the range are needed, but not at this cost. The writing is on the wall, Rebecca Otto, the state auditor, looked at this project entirely from an economic stand point and concluded it was a bad deal for Minnesota. We do not have to say No to all future developments, but we need to examine them thoroughly and objectively. Poly Met as currently drawn up is bound to be an environmental and economic blunder, there is no available evidence, aka other mines of this type to show that it can be done responsibly. It is a no brainer. say no to POLY Met	GEN	NS	X	1	
Karen Graham	The safety of this mine is based on the assessment by the requesting corporation. Numerous reports from independent scientific organizations focused on evaluating environmental impact have submitted reports	GT	NS	X	1	
Karen Graham	This report and it's recommendations continue the deep denial about the critical conditions of our lakes and the responsibility our officials and citizens share in their demise. Maintaining fresh water should have higher importance to our state than other considerations on the agenda. Our abundance of water has led to gross neglect of maintaining this essential resource. Frequent headlines in the news lead with issues of water poisoned due to runoff from mining, farming, development, yard maintenance.	WAT	NS	X	1	
Karen Graham	Not to mention the mercury contamination due to drift from burning coal for power.	MERC	NS	X	1	

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Karen Graham	I oppose the PolyMet NorthMet copper-nickel sulfide mine. The environmental safety of this mine is based on the assessment by the requesting corporation. Do you advise your family, children or friends to buy based on the used car sellers report? Famous last words, "trust me -- it's safe."	GEN	NS	X	1	
Karen Graham	In return, we are promised: - 20 years of jobs mostly during the construction period - 500+ years of water filtration to prevent the worst of the pollution to enter our waterways. Over 2x longer than the US has been a country. Just think you're basing decisions on maintaining a vital system for twice the span of our nation's existence. I ask you to step back and reconsider your decision making process. Glencore Corporation formed in 2013 through a merger with Xstrata founded in 1926 in Switzerland. As of Oct 2015, the CEO Ivan Glasenberg is trying to calm investors from fleeing due to the company's high debt load. Such confidence building for this venture. Their primary interest commodity trading, secondarily mining.	GEN	NS	X	1	
Karen Graham	The conclusions issued by numerous independent scientific agencies find the PolyMet environmental evaluations inadequate and unsubstantiated on many points listed below. These agencies focus on evaluating environmental impact. The safety to our environment and the long term impact is based on project on faulty information. With the caveat of promises to maintain a vital filtration system for 500 years and we'll put money aside.	FIN	NS	X	1	
Karen Graham	We are exchanging our health, our safety, our precious water, our forests and marshes for 20 years of mining operation. This report and it's recommendations continue the deep denial about the critical conditions of our lakes and the responsibility our officials and citizens share in their demise. Out of 30,000 comments, 98% are against the mine.	GEN	NS	X	1	
Brian Harrington	The environmental safety of this mine is based on the assessment by the requesting corporation. Do you advise your family, children or friends to buy based on the used car sellers report? Famous last words, "trust me -- it's safe."	GEN	NS	X	1	
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Brian Harrington	Maintaining fresh water should have higher importance to our state than other considerations on the agenda. Our abundance of water has led to gross neglect of maintaining this essential resource. Frequent headlines in the news lead with issues of water poisoned due to runoff from mining, farming, development, yard maintenance. Not to mention the mercury contamination due to drift from burning coal for power.	WAT	NS	X	1	
Karen Graham	The environmental safety of this mine is based on the assessment by the requesting corporation. Do you advise your family, children or friends to buy based on the used car sellers report? Famous last words, "trust me -- it's safe."	GEN	NS	X	1	
Karen Graham	In return, we are promised: - 20 years of jobs mostly during the construction period - 500+ years of water filtration to prevent the worst of the pollution to enter our waterways. Over 2x longer than the US has been a country. Just think you're basing decisions on maintaining a vital system for twice the span of our nation's existence. I ask you to step back and reconsider your decision making process.	GEN	NS	X	1	
Karen Graham	Glencore Corporation formed in 2013 through a merger with Xstrata founded in 1926 in Switzerland. As of Oct 2015, the CEO Ivan Glasenberg is trying to calm investors from fleeing due to the company's high debt load. Such confidence building for this venture. Their primary interest commodity trading, secondarily mining.	O	NS	X	1	
Karen Graham	The conclusions issued by numerous independent scientific agencies find the PolyMet environmental evaluations inadequate and unsubstantiated on many points listed below. These agencies focus on evaluating environmental impact. The safety to our environment and the long term impact is based on project on faulty information. With the caveat of promises to maintain a vital filtration system for 500 years and we'll put money aside.	GEN	NS	X	1	
Karen Graham	We are exchanging our health, our safety, our precious water, our forests and marshes for 20 years of mining operation.	WAT	NS	X	1	
Karen Graham	This report and it's recommendations continue the deep denial about the critical conditions of our lakes and the responsibility our officials and citizens share in their demise. Out of 30,000 comments, 98% are against the mine.	GEN	NS	X	1	
Karen Graham	Maintaining fresh water should have higher importance to our state than other considerations on the agenda. Our abundance of water has led to gross neglect of maintaining this essential resource. Frequent headlines in the news lead with issues of water poisoned due to runoff from mining, farming, development, yard maintenance. Not to mention the mercury contamination due to drift from burning coal for power.	WAT	NS	X	1	
Alex Spitzer	#StopPolyMet	GEN	NS	X	1	
Andrew Sinykin	The Future > the present	O	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Audrey S Royer	Please don't ruin the Boundary Waters. Wilderness can never be recovered.	GEN	NS	X	1	
Barb Senty	Please don't allow this - once destroyed its too late!!!	GEN	NS	X	1	
Beth Darey	Stop Polymet save lake Superior!	GEN	NS	X	1	
Bob McNattin	We must stop this!!	GEN	NS	X	1	
Bryan Forbes	Silly to risk one of our best natural resources for short term gain. Especially given the track record of mine incidents + cleanups.	SO	NS	X	1	
Celia Hemmerich	Please avoid polluting our pristine BWCA and Lake Superior!	WAT	NS	X	1	
Charlie Carlson	We do not need mines to pollute MN water ways. Need cleaner, more sustainable job growth.	SO	NS	X	1	
Chris Blaisdell	God Bless our H2O	WAT	NS	X	1	
Colles B Larkin	Bravo Water Legacy & Paul Maccabee for taking on Giants - We need all we can to preserve the quality and quantity of our Water Resources - which are not guaranteed forever -	WAT	NS	X	1	
Cynthia Tande	No Mining in BWCA	GEN	NS	X	1	
David Garren	Don't do it. The economics don't balance out be long term risks	GEN	NS	X	1	
David Robert Ott	Please reject this project. A couple hundred jobs are not a fair trade of for our irreplaceable water and wilderness resources.	GEN	NS	X	1	
Denise R Marlowe	I want an independent assessment of PolyMet health threats	HU	NS	X	1	
Douglas R Thomas	Independent data & assessments are critical to a proper EIS	NEPA	NS	X	1	
Ellen Bruner	I'm very concerned about saving the Boundary Waters from pollution-b??? Water & noise. It is a unique pristine area where thousands come to enjoy nature and to ref???? + rejuvenate	WILD	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Eric Anders	Thank you.	O	NS	X	1	
Evans L Edwards	How can ??? Not do Independent assessments rather than j??? Polly Matt ?? ????	GEN	NS	X	1	
Gerri Wilhams	Sulfide mining has a 100% record of polluting. Polymet's "predictions" that they could contain tailings that pollute water is unproven by any current science in a water-rich environment such as Northern MN. This proposed mine should not be approved.	GEN	NS	X	1	
Gina Alberti Chase	Keep these mines, out of MN!	GEN	NS	X	1	
Gregory Klave	Studies show this is a bust boom for economy and is not sustainable. Also threat to ground and surface waters and wild rice environment.	SO	NS	X	1	
Isaac Fuhr	The EIS doesn't address all concerns adequately, or completely	MEPA	NS	X	1	
Jacqueline Moen	Once this natural resources is ruined it is gone forever-there's lots of way to make jobs that are not destructive	GEN	NS	X	1	
Janet White	Please do not contact me w/ updates or opportunities	O	NS	X	1	
Jedidiah Krauss	There is a way to get yourself off the political hot seat regarding this proposal. Make it a condition of approval that the CEO, CFO, COO and all members of the board of directors of Polymet as well as those of it's parent corporation, must sign as being personally liable for any and all environmental clean up expenses upon any and all infractions of the MPCA's and the EPA's Pollution Regulations or any and all infractions of the conditions of the permits for the mine regardless of corporate solvency or insolvency. Thus it will be manifestly clear that if those who stand to profit from this venture are unwilling to risk their money then the tax payers should not risk their money either.	O	NS	X	1	
Jessica Wiens	BWCAW is one of Minnesota's finest resources. Protect it, please.	WAT	NS	X	1	
Joe Sturm	Please stop PolyMet!	GEN	NS	X	1	
John Buschette	The inevitable spill of sulfuric acid and toxic metals will cost thousands of tourism related jobs for hundreds of years. This is a job killer not a job creator.	SO	NS	X	1	
Judith Albertson	Do not believe that this project will not pollute the wilderness and rivers!	WILD	NS	X	1	

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Julie Pavelich	I also live in Ely and do not want this!!	GEN	NS	X	1	
Karen Peters	Is it true PolyMet threatened to sue Forest Service if didn't turn over lands? (What country am in?)	LAN	NS	X	1	
Kathleen A Brandt	Preserve the Boundary Waters! Say no to mining!!	GEN	NS	X	1	
Leah Prussia	Protect our water!	WAT	NS	X	1	
Logan Spader	There are very few places on Earth that humans haven't destroyed due to greed. Please leave the remaining ones alone.	GEN	NS	X	1	
Louis B Asher	The FEIS from PolyMet is an insult to our intelligence!	O	NS	X	1	
Mark Arneson	Water treatment for centuries should be a non-starter! Mining is not a strategic sustainable job creator.	GEN	NS	X	1	
Mary Boranian	BWCA is unique in the world!	GEN	NS	X	1	
Mary Lou Wilm	The DNR is not fulfilling its mandate to protect MN's natural resources--unless H2O does not equal natural resources. Let's revamp an agency by fixing these--the minerals div. must not work for the mining companies.	O	NS	X	1	
Mary Theresa Downing	No independent analyses have been done to prove PolyMet's claims. The alternatives to a less than perfect result have not been explored, even though a perfect result is very highly unlikely. And the likelihood of drinking water pollution is much too high to risk.	ALT	NS	X	1	
Mary Weitz	Water not dirty mining - you can't live without clean water	WAT	NS	X	1	
Maureen Skelley	Protect our waters!!	GEN	NS	X	1	
Michael Benson	Very sad/we had a river in Co. that was polluted by poor mining practices.	WAT	NS	X	1	
Name Illegible	Water's important esential	WAT	NS	X	1	

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Nancy Feldis	Save the Boundary Waters!!!	WAT	NS	X	1	
Naomi Snoozy	Please honor our waters by saving them from this horrible pollution design plan. This will destroy our wetlands and watersheds.	WET	NS	X	1	
Noelyn Porter	No phone solicitation	O	NS	X	1	
Paige Tighe	Please stop Polymet from starting this project.	GEN	NS	X	1	
Pat Collins	Please stop Polymet	GEN	NS	X	1	
Pat Tammen	Leave the ore in the ground-for less than 1% copper, 99% waste-digging up the earth for this + less than 350 jobs-the mine is not worth it ruiing our water, wetlands, fish and all living things that need clean water. Thanks for reading this!	GEN	NS	X	1	
Paul Mandell	FEIS supposedly used reverse osmosis to test but I'm told they don't even use sulfide in the test but taconite. They can't even use the proper technology.	GEN	NS	X	1	
Philip Mesteahaus	Please save our waters for future generations!	WAT	NS	X	1	
Quentin Ikuta	Stop	GEN	NS	X	1	
R Nicholas Rowse	I am also very concerned with the noise impacts from the proposed mining activities.	N	NS	X	1	
Ralph Karsten	the fact that the rules were changed by the state smacks of corruptions--money passing from Polymet to the officials in the state.	GEN	NS	X	1	
Ratih Sutrisno	20 years for 500 years of damage? Seriously?	GEN	NS	X	1	
Rita Mays	thunder Lake, Cass Co cabin owner	O	NS	X	1	
Ron Brand	Require independent health risk assessment. Increase tailing seepage protection. High risk for watershed damage/wetlands harm. Environmental impact is perpetual; corporate responsibility is limited and therefore needs to be carefully regulated in the public interest.	GEN	NS	X	1	
Shelley	Please re-open for comments Thank you!	NEPA	NS	X	1	

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Rothstein						
Susan Amis	I object to the PolyMet mine due to the lack of independent Assessments of Health & Environmental Risks	HU	NS	X	1	
Suzanne Damberg	Please also consider the negative financial impact. The thousands of dollars & tax revenue that would be lost if seasonal homes, lost their value and if commercial loss if those seasonal homeowners left.	SO	NS	X	1	
Suzanne Damberg	Please also consider how challenging it would be to truly put in escrow sufficient funds to cover potential hundreds of years of cleanup	FIN	NS	X	1	
Suzanne L Stennes-Rogues	No mining in the BWCAW!	GEN	NS	X	1	
Tiamat Gustafson	Sulide mining for never	GEN	NS	X	1	
Tom Clarke	Keep our water safe Please study the public health effects of copper sulfide ore mining	WAT	NS	X	1	
Tom Evans	Don't ring ??? Bell!	O	NS	X	1	
Tom Kriegl	We need to do more recycling & reuse of materials	O	NS	X	1	
William Chase	It is not strictly a jobs proposal. Jobs will be lost when the pollution sets in. It is also a health and beauty and respect for the land counter proposal.	GEN	NS	X	1	
Zoe Thouin-Rochester	Habitat matters! It needs to be protected.	GEN	NS	X	1	
Vincent Graziano	Please, it's just too risky to put a sulfide mine next to the BWCA	GEN	NS	X	1	
Vincent Graziano	Please, We have a canoe wonderland in northern Minnesota. We don't want to risk a mining catastrophe right now when the State economy is very strong.	GEN	NS	X	1	
Vincent Graziano	Please don't let mining spills spoil our beautiful canoeing wonder land.	GEN	NS	X	1	
Mary & Michael Barrett	We prefer pure water rather than copper ?????	GEN	NS	X	1	

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Dennis Good	Nice touch, releasing the FEIS late on a Friday afternoon to take advantage of what's commonly known as " The Friday Night News Dump" wherein controversial news is released late on a Friday in the hope that it will be downplayed, missed or overtaken by other events. An even nicer touch is releasing it on the Friday before deer season when people will be occupied for the next 2 weeks and 3 weekends. After that is the run-up to Thanksgiving, Black Friday, Cyber Monday etc. etc. An added bonus is that this comment period runs concurrently with the comment period on the 10mg/l sulfate standard, another momentous issue. Coincidence? One would have to be virginally naïve to believe that. This was done deliberately to eat up time before the comment period ends, reduce the amount of time a person has available to go through this lengthy document and generally, to attempt to stifle debate. Most people won't get through the Executive Summary anyway (which is basically a written pep rally for the project), but even if you're curious you'll most likely never make it to the Financial Assurance and the Land Exchange sections.	GEN	NS	X	1	
Dennis Good	Tactics like this are not new for this project. Anyone who has been involved with it or kept tabs on it knows this. Ignoring the 10mg/l sulfate standard; trying to keep the Land Exchange out of the EIS as a connected action; St. Louis County attempting to secure wetland mitigation acreage for Polymet without environmental review or public notice; the petty revenge taken against the State Auditor for daring to question the lack of Financial Assurance details; the endless propaganda from Polymet and its supporters designed to trumpet the economic benefits (which are cruel illusions) while downplaying and minimizing the environmental impacts which are real and dangerous; the hijacking of a special election endorsement process in Northern Minnesota to ensure the election of a Polymet supporter and the recent revelations that not only did Barr Engineering botch the water modeling between the East Pit and the Peter Mitchell Pit, the Co-Lead Agencies (our "Regulatory Agencies") never bothered to run any of the water models themselves as they are required to do by law. And the fact that this water will flow north, eventually into the BWCA, is not mentioned in the FEIS. Not only does this call into question all the water modeling but it also begs the question of where the Co-Lead Agencies loyalties lie.	FIN	NS	X	1	
Dennis Good	These are only a few examples of why the preparation of this EIS should have been sent out of state. There is a precedent for this. I was involved in the "MINNTAC Water Diversion Project" DEIS (ca.2006). This project was considered so controversial, certain officials in the MPCA decided to send the DEIS preparation out of state and to hold open and fair public meetings. This helps to minimize bias, preordained outcomes, political meddling and conflicts of interest. The contrasts between that MINNTAC EIS process and this NorthMet EIS process couldn't be more stark. The NorthMet EIS has been prepared by and overseen by two entities that stand to make a lot of money if this project is permitted. This would be Barr Engineering and the MNDNR. The conflicts of interest are obvious. And with the Co-Lead Agencies preparing position papers for Polymet, in essence working for Polymet and abandoning all the due diligence they're required to exercise by law, one can easily see how dirty and corrupt this process has become.	GEN	NS	X	1	
Dennis Good	If you do make it to the Financial Assurance section, it's easy to get through because there's virtually nothing there. It's the same nonsense from the SDEIS; "surety bonds, irrevocable letters of credit, cash and cash equivalents, trust funds, insurance policies". There's not a tangible asset in sight. This is nothing but worthless paper and the passage of time (200+years) won't improve its worth. These are the same toxic waste products that Wall Street has been peddling since day one. The SDEIS says "the amount of Financial Assurance associated with reclamation actions cannot be estimated until these actions are understood at a more detailed level of design." The FEIS says "The level of engineering design and planning required to	FIN	NS	X	1	

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	calculate detailed Financial Assurance amounts is not currently available but it would be evaluated in detail during the permitting process". If the SDEIS and FEIS statements are true, then Polymet and the Co-Lead Agencies are trying to bypass the NEPA process. They are also trying to conceal from the public the true costs of this project. If a "detailed level of design" is not available for Financial Assurance purposes, then how is it available for determining the impacts of the mine during operations? If detailed Financial Assurance amounts are not "currently available", then this project is fundamentally and irretrievably flawed.					
Dennis Good	Under MN Rule 6132.3200, "To receive a permit to mine, the permittee must be able to close the mine in such a way that it is stable, free of hazards, minimizes hydrological impact and the release of substances and is maintenance free". I can't see any of these conditions being met and judging by the comment letters I've read, neither can anyone else. Has this rule changed?	PER	NS	X	1	
Dennis Good	It is known that Polymet has private lease agreements with mineral rights owners S.W. of the West Pit. It seems that the West Pit will become at some point, a new opening for new mining activities. I didn't see this mentioned in the FEIS. It sounds like a reasonably foreseeable future action to me.	PD	NS	X	1	
Dennis Good	As far as the Land Exchange is concerned, I see that the USFS has already run up the white flag of surrender and adopted Polymet's Need and Purpose in toto. In effect, the USFS is letting a private corporation dictate what is done with public land and public resources when it has no right to do so. The excuse the USFS is using is a fear of litigation with "no certain outcome" and having judicial precedents set concerning Weeks Act Lands. Someone wasn't thinking this issue through. The USFS has now set a precedent. All a company has to do from now on is bluster about "fundamental conflicts" and threaten litigation and Voila! Mission accomplished. As far as litigation is concerned, all the summaries of court decisions I've seen say that a right to surface mine must be expressly reserved in the deed. If a right to surface mine is not reserved in the deed then surface mining is not allowed. Polymet's deed has no such provision for strip mining. The original parties to the deed knew that the United States under the Weeks Act was acquiring this land for forestry and watershed protection and surface mining is inimical to forestry practices and watershed protection.	LAN	NS	X	1	
Dennis Good	In essence, the USFS has and the other Co-Lead Agencies are going to put a bar code on the Superior National Forest. But there's a way out of this. This isn't my idea; it was in a letter to the editor of one of the state newspapers. I'll call it Amendment A to the No-Build Alternative. Staffing levels at this mine are projected to be around 360 employees. Set up some criteria (disabled veterans and/or unemployed veterans should go to the head of the line) and pay these 360 people \$ 50,000.00 dollars a year for 20 years. Since this will be a scab operation and the median income for St. Louis County is around \$ 45,000.00 a year, \$ 50,000.00 will work out nicely and is a nice round number. Since the "Financial Assurance" will consist of worthless paper, no matter what the amount is, the state and its taxpayers will come out of this smelling like a rose. This is a No-Lose Alternative; simple yet brilliant and I commend the person whose idea it was. And it has the added effect of allowing the Co-Lead Agencies to step back from the brink before it's too late.	ALT	NS	X	1	

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Multiple	I oppose the proposed PolyMet NorthMet copper-nickel sulfide mine.	GEN	NS	X	1	
Multiple	The PolyMet Final Environmental Impact Statement (FEIS) is inadequate under both federal and state standards; I object to the U.S. Forest Service proposal to exchange Superior National Forest land for the PolyMet proposal; and I oppose issuing any federal permit allowing PolyMet to destroy wetlands and impair water quality.	MEPA	NS	X	1	
Multiple	I oppose issuing any federal permit allowing PolyMet to destroy wetlands and impair water quality.	ROD	NS	X	1	
Multiple	The PolyMet FEIS is inadequate under federal and state laws and regulations because: - It fails to evaluate pollution risks to drinking water, fish, wild rice and human health using realistic assumptions about how much polluted seepage will be captured and treated during operations, reclamation, and closure.	PER	NS	X	1	
Multiple	The PolyMet FEIS is inadequate under federal and state laws and regulations because:- It fails to evaluate pollution risks to drinking water, fish, wild rice and human health using realistic assumptions about how much polluted seepage will be captured and treated during operations, reclamation, and closure.	WAT	S	O	8	FEIS Chapter 5
Multiple	It fails to analyze health risks and impacts on children, workers and communities who rely on fish and wild rice for subsistence, including risks from asbestos-like particles and methylmercury.	HU	S	O	8	FEIS Chapter 5
Multiple	It does not evaluate the impacts of polluted seepage north of the mine site on the 100 Mile Swamp and the Rainy River (Boundary Waters area) Basin.	WAT	S	O	8	FEIS Section 6.2.2.3.1
Multiple	It fails to adequately consider alternatives to minimize environmental harm, reduce polluted seepage from unlined permanent waste facilities, mitigate wetlands destruction, and reduce the threat of catastrophic dam failure.	ALT	S	O	8	FEIS Section 3.2.3.3

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Multiple	I strongly object to the proposed NorthMet Mining Project Land Exchange in the Superior National Forest because: - It conflicts with federal policy to protect wetlands, resulting in direct destruction of 913 acres of wetlands and destruction or impairment of up to 8,264 acres of wetlands. - It would degrade surface and groundwater, violating the Superior National Forest plan and state, federal and tribal water quality standards. - It would harm endangered, threatened and species of concern, including the northern goshawk, great gray owl, lynx and moose. - It is not in the public interest, would impair tribal resources, and would result in an uncalculated loss of ecological services.	LAN	S	O	8	SDEIS Theme LAN 01
Multiple	I oppose any federal Clean Water Act permit for PolyMet discharge and wetlands destruction because: - PolyMet discharge of pollutants and wetlands destruction and impairment would degrade surface and groundwater and violate federal, state and tribal water quality standards.	GEN	NS	X	1	
Multiple	PolyMet discharge of pollutants and wetlands destruction and impairment would have adverse impacts on municipal water supplies, aquatic life, wildlife, human health and welfare, environmental justice and special aquatic sites.	GEN	NS	X	1	
Multiple	The PolyMet proposal does not adequately consider alternatives to reduce harm to wetlands and water quality and is not the Least Environmentally Damaging Practicable Alternative.	ROD	S	O	8	SDEIS COOP Comment #3021
Multiple	The PolyMet proposal fails to quantify or provide mitigation for indirect loss of up to 8,264 acres of wetlands, and provides wholly inadequate mitigation for direct destruction of 913 acres of wetlands within the Lake Superior Basin.	WET	S	O	8	FESIS Section 5.2.3
Multiple	I request that the Minnesota Department of Natural Resources reject the PolyMet FEIS as inadequate	MEPA	NS	X	1	
Multiple	the U.S. Forest Service reject the proposed exchange of Superior National Forest lands for the PolyMet project; and the U.S. Environmental Protection Agency veto and the U.S. Army Corps of Engineers deny any Section 404 permit that would allow PolyMet polluted discharge and wetlands destruction.	ROD	NS	X	1	

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Multiple	In order to ensure that my comments on the PolyMet land exchange are considered, I object to the land exchange under 6 CFR 218 Rules; the responsible official for that decision is Superior National Forest Supervisor Brenda Halter; and I submitted comments on the PolyMet SDEIS and/or I reject any claim that the objection process can be limited to people who commented prior to the draft land exchange Record of Decision.	ROD	NS	X	1	
Multiple	I request a specific response to my comments.	O	NS	X	1	
Multiple	I also request that the Army Corps of Engineers hold a public hearing in January 2016 following a 30-day notice as required by 33 C.F.R. § 327.11(a), and that the Corps' extend the time period within which comments on the PolyMet final environmental impact statement and the Section 404 public notice will be accepted for consideration in the Corps' Record of Decision until at least ten days beyond the hearing date, pursuant to 33 C.F.R. § 327.8(g).	MEPA	S	N	5	
Multiple	The Final EIS for the NorthMet Mine is far beyond "adequate." It takes a careful and comprehensive look at the project from every angle.	MEPA	NS	X	1	
Multiple	The project's water modeling—which was fully updated for the Final EIS—shows that PolyMet's treatment and mitigation plans will prevent acid mine drainage and meet all water quality standards. - After careful review, the Final EIS concludes that groundwater flows from the NorthMet project will not directly, indirectly, or cumulatively affect the Boundary Waters Canoe Area Wilderness or Voyageurs National Park, and that any possible groundwater flow would be prevented.	WAT	NS	X	1	
Multiple	In short, the Final EIS meets all of the requirements of the Minnesota Environmental Policy Act and the National Environmental Policy Act.	HU	NS	X	1	
Multiple	The Final EIS also specifically considered the project's potential effects on air quality and water quality with respect to human health, and identified no adverse health risks.	MEPA	NS	X	1	
Multiple	I am writing to oppose PolyMet's proposed NorthMet sulfide copper mine on the Superior National Forest. The recently released Final Environmental Impact Statement (FEIS) is inadequate, and the proposed open-pit mine would result in unacceptable, irreversible environmental harms.	MEPA	NS	X	1	
Multiple	The proposed mine would destroy nearly 1,000 acres of high-quality wetlands in a region that has already lost many thousands of acres of wetlands to past and ongoing iron ore and taconite mining.	WET	NS	X	1	
Multiple	The mine would also destroy two square miles of designated critical habitat for Canada lynx and wolves, which also provides important habitat for Minnesota's declining moose population.	WI	NS	X	1	

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Multiple	The FEIS is plainly inadequate, as it has still not answered fundamental questions such as which direction the pollution will flow	WAT	NS	X	1	
Multiple	how PolyMet can provide financial assurance for the hundreds of years of mechanical water treatment that would be required to comply with water quality standards. The FEIS also fails to evaluate pollution risks and impacts using realistic and scientifically supported assumptions concerning how much polluted seepage is likely to be captured and treated both during and after the proposed mining operations	FIN	NS	X	1	
Multiple	no Clean Water Act Section 404 permit should be issued for the proposed mine because the mine would degrade groundwater and surface water, there is no plan to adequately compensate for the thousands of acres of direct and indirect impacts to high quality wetlands, and there has been no meaningful consideration of alternatives that would reduce harm to wetlands and water quality.	PER	NS	X	1	
Multiple	Moreover, the proposed mine site and surrounding lands on the Superior National Forest should not be traded away to PolyMet for other lands. The proposed land exchange is not in the public interest, and would violate the forest plan for the Superior National Forest, harm endangered species, impair downstream tribal resources and conflict with laws and policies to protect wetlands and other resources.	ROD	NS	X	1	
Multiple	The FEIS is inadequate and fails to demonstrate that the proposed PolyMet mine will comply with all environmental laws and that it will not result in unacceptable environmental impacts. The agencies should reject PolyMet's proposal, and keep the proposed mine site under the current ownership and protections provided by the Weeks Act, Endangered Species Act, the Superior National Forest Plan and other laws.	MEPA	NS	X	1	
Multiple	I'm commenting on the most recent FEIS for the Polymet mine to state my complete opposition to the Polymet mine on the grounds that this type of mining cannot be done safely near some of the most important water systems in North America. I take issue specifically with the planned storage of mining tailings and the subsequent wastewater retention ponds that are guaranteed to house a highly reactive stockpile of acidic sludge. These same type of retention ponds burst at the Mount Polley Mine in British Columbia in August of 2014, and I won't stand idly by as an international mining corporation is allowed to endanger the water and land I depend on.	GT	NS	X	1	
Multiple	also see the current groundwater modeling around the mines as inconclusive, as they are unable to determine exactly which watershed pollution from these mines will drain into.	WAT	S	O	8	MDNR et al. 2015c
Multiple	I'm writing not only as a concerned citizen, but as a member of a thriving, sustainable, tourism-based, North Shore economy made up of over 18,000 workers that generates over \$800 million dollars of revenue for the state annually, and that depend on the Boundary Waters and Lake Superior remaining the way they are today. I work for YMCA Camp Menogyn, a camp on the Gunflint Trail that takes kids on canoeing, backpacking, rock climbing, and dog sledding trips around the very landscape that these mines threaten to harm irreparably. Our country made a promise to me, the kids I take on my trips, and all future generations when we signed the Wilderness Act of 1964 and the BWCA Wilderness Act of 1978. We declared that this place would remain untrammled by industry forever. I urge you not to go back on that promise, no matter the political pressures.	GEN	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
	If not for my sake, don't allow this to mine to be built for the sake of anybody who has never heard a loon call as the sun sets over a pristine Boundary Waters lake, anybody who's never swatted mosquitoes through a muddy, wet, 250 rod portage, or anybody who hasn't yet received what this amazing, uniquely Minnesotan slice of wilderness-perfection has to offer. Thank you for ensuring that children will be able to explore and adventure here forever,					
Multiple	The PolyMet Final EIS (FEIS) should be rejected as incomplete because it fails to accurately model water seepage from the tailings basin, some of which will flow north towards the Boundary Waters Wilderness, due to alteration of the Laurentian Divide from nearby taconite mining. The mine proposal does not detail plans to protect the Boundary Waters from centuries of toxic drainage. Instead, it assumes the planned clay-lined trench will collect 100% of groundwater seepage (Figure 3.2-28) which is patently impossible, and it requires only monitoring of groundwater flows leading north to the Boundary Waters (p 3-150, Section 3.2.3.3.4). This analysis is insufficient and incomplete.	WAT	S	O	8	MDNR et.a;. 2015c
Multiple	The Final EIS should also be rejected as incomplete because it fails to examine an important alternative: dry stack storage of tailings, which could greatly reduce the hazard of future tailings dam failure and environmental damage. Instead, the FEIS rejects examining this alternative in depth, because seepage would be reduced, concentrating pollutants into the remaining waters, making it difficult to meet water quality standards. This implies that PolyMet's solution to pollution is dilution - clearly an unacceptable approach (pp 3-156-158).	ALT	S	O	4	SDEIS Theme ALT 11
Multiple	The PolyMet Final EIS should be rejected as incomplete because it fails to detail future risks and costs of polluted water treatment and possible leaks and dam breaches. This detail is essential to determine financial assurances necessary to conserve natural resources in the future and to protect our children from paying for the clean up of this proposed mine.	GT	S	O	6	SDEIS Theme GT 15
Multiple	I oppose the current PolyMet NorthMet copper-nickel sulfide mine proposal. The PolyMet Final Environmental Impact Statement (FEIS) is inadequate under both federal and Minnesota state standards; I object to the U.S. Forest Service proposal to exchange Superior National Forest land for the PolyMet proposal; and I oppose issuing any federal permit allowing PolyMet to destroy wetlands and impair water quality.	MEPA	NS	X	1	
Multiple	I request the Minnesota Department of Natural Resources reject the PolyMet FEIS as inadequate; the U.S. Forest Service reject the proposed exchange of Superior National Forest lands for the PolyMet project; and the U.S. Environmental Protection Agency veto and the U.S. Army Corps of Engineers deny any Section 404 permit that would allow PolyMet polluted discharge and wetlands destruction.	ROD	NS	X	1	
Multiple	Please stand with me in keeping Minnesota's lands pristine, and in stopping foreign mining companies from destroying our precious resources.	O	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Multiple	The Final Environmental Impact Statement on PolyMet's copper/nickel sulfide mine proposal is inadequate; it will not protect the lakes, rivers and streams in the Lake Superior watershed and it threatens the BWCA. Please Reject the PolyMet mine proposal. The following highlight some of my concerns: 1. The mine would destroy or damage 7,680 acres of prime wetlands at the headwaters of streams leading to Lake Superior. These are irreplaceable. 2. It would result in centuries of toxic drainage from more than 500 acres of 20-story waste rock piles and the mine pit. This drainage would require treatment "indefinitely." That means "forever." 3. Sulfates and mercury released from the mine would increase mercury contamination of fish, already a problem in the area. One in ten infants in NE Minnesota is born w/ excessive mercury levels. 4. The financial risk to future generations would be enormous. Who would pay for centuries of active water treatment? What about spills and accidents? Mine sites are the #1 liability of the taxpayer supported Superfund cleanups, with a bill exceeding \$50 billion to date.	GEN	NS	X	1	
Multiple	The PolyMet proposal does not adequately consider alternatives to reduce harm to wetlands and water quality, and to human health. Please say "No" to PolyMet.	ALT	NS	X	1	
Multiple	I oppose the PolyMet NorthMet copper-nickel sulfide mine. The Final Environmental Impact Statement (FEIS) is inadequate under federal and state standards. I object to the U.S. Forest Service (USFS) proposal to exchange Superior National Forest (SNF) land for the proposal, and oppose issuing any federal permit allowing PolyMet to destroy wetlands and impair waters.	GEN	NS	X	1	
Multiple	The FEIS fails to adequately evaluate pollution risks, health impacts, and impacts on the Rainy River Basin. It does not adequately consider alternatives to minimize environmental harm.	WAT	S	O	8	FEIS Section 6.2.2.3.1
Multiple	I strongly object to the proposed SNF Land Exchange because it would result in direct destruction of 913 acres and destruction / impairment of up to 8,264 acres of wetlands, degraded surface and groundwater -- violating the SNF plan and water quality standards, and harm endangered, threatened and species of concern. The exchange is not in the public interest, would impair tribal resources, and result in loss of ecological services.	LAN	S	O	8	SDEIS Theme LAN 01
Multiple	I oppose any federal Clean Water Act permit for discharge and wetlands destruction / impairment because it would degrade surface and groundwater, impact water quality standards, and adversely impact municipal water supplies, aquatic life, wildlife, human health and welfare, environmental justice and special aquatic sites. T	GEN	NS	X	1	
Multiple	The proposal does not adequately consider alternatives and is not the Least Environmentally Damaging Practicable Alternative.	ALT	S	O	8	SDEIS COOP Comment #3021
Multiple	The proposal fails to quantify or mitigate indirect loss of up to 8,264 acres and provides wholly inadequate mitigation for direct destruction of 913 acres of wetlands within the Lake Superior Basin.	WET	S	O	8	FEIS Section 5.2.3
Multiple	I request the Minnesota Department of Natural Resources reject the FEIS as inadequate	MEPA	NS	X	1	
Multiple	he USFS reject the proposed exchange of SNF lands	ROD	NS	X	1	

Name of Sender	Comment	Issue	Substantive / Non-Substantive	Old / New	Response ID	RGU Consideration
Multiple	the U.S. Environmental Protection Agency veto and the U.S. Army Corps of Engineers deny any permit that would allow PolyMet polluted discharge and wetlands destruction.	PD	NS	X	1	
Multiple	I object to the land exchange under USFS Rules found at 36 CFR 218; the responsible official is SNF Supervisor Brenda Halter. I submitted comments on the PolyMet SDEIS and/or reject claims that the objection process can be limited to people who commented prior to the draft land exchange Record of Decision. I will provide a signature to verify my identity upon request.	ROD	NS	X	1	
Multiple	I request an extension of the PolyMet comment and objection periods. The 30 day period is insufficient to review over 3,500 pages of documents, which limits public input.	NEPA	NS	X	1	
Multiple	The Final Environmental Impact Statement (FEIS) for PolyMet's proposed mine represents a thorough and independent review of the project's potential environmental effects. After 10 years of study, the Minnesota Department of Natural Resources, U.S. Army Corps of Engineers, and U.S. Forest Service have looked at the evidence and correctly found that the NorthMet Mine can comply with strict state and federal environmental standards.	O	NS	X	1	
Multiple	The Co-Lead Agencies have adequately considered the potential project effects and alternatives.	ALT	NS	X	1	
Multiple	The Final EIS addresses the thousands of public comments and questions submitted during the review periods for the Draft EIS and the Supplemental Draft EIS.	NEPA	NS	X	1	
Multiple	The project's water modeling-which was fully updated for the Final EIS-shows that PolyMet's treatment and mitigation plans will prevent acid mine drainage and meet all water quality standards.	WAT	NS	X	1	
Multiple	After careful review, the Final EIS concludes that groundwater flows from the NorthMet project will not directly, indirectly, or cumulatively affect the Boundary Waters Canoe Area Wilderness or Voyageurs National Park.	WILD	NS	X	1	
Multiple	The Final EIS also specifically considered the project's potential effects on air quality and water quality with respect to human health, and identified no adverse health risks. In short,	HU	NS	X	1	
Multiple	In short, the Final EIS meets all of the requirements of the Minnesota Environmental Policy Act and the National Environmental Policy Act. I strongly encourage the DNR to determine the FEIS is fully adequate and begin the permitting process for this important project.	MEPA	NS	X	1	