NPDES/SDS Response to Comments - "Multiple" Spreadsheet

Sort ID	Commenter Name	Commenter Org	Comment Text	Combined Theme and Individual Responses
1	Susan Flygare	Citizen	I really appreciate the fact that the DNR is here to answer our questions. I'm very concerned that the process of mining the copper is so extreme, blasting the rock, releasing heavy metals, and when asking the DNR about that and if their job is to protect our natural resources, the answer that I'm getting consistently is, no, their job isn't to make a judgment about whether this is good or not for Minnesota. Their job is only to review the permit. And I find that distressing, because my sense was that they were also there to help provide some context in judgment around the types of permits that are submitted. And so the fact that this has gotten this far for something that is so egregious in its process and use of water and potential for contaminating our water in Minnesota, I'm very concerned that the DNR is somehow saying that they have to do it because of legislation and statute and whatever and that they don't have a way or a process to bring concerns if they have a moral compass and they have concerns about our natural resources to the forefront. So if nothing else, hopefully this project will at least bring that to light, that there is no vehicle for the DNR to protect our natural resources if they only have to react to statute and the permits that are submitted to them.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
2	Elanne Palcich	Citizen	I'm Elanne Palcich, P-a-l-c-i-c-h. The potential for pollution of the headwaters on Lake Superior is not in the best interest of the citizens of the state. And the PolyMet permit to mine must be denied. I believe that everyone in this room deep inside knows that the permitting of PolyMet will result in a pollution of our watershed, the sole source of drinking water aquifer of the region. This claim to mining cannot be done in a water rich environment without leaving behind a toxic legacy. The permitting of PolyMet would also open the door for tax encampments. (Inaudible) creating an industrial mine zone with additional scattered deposits throughout the Arrowhead. The permitting of PolyMet will not save us. And instead, it will destroy all intrinsic value, including the clean water upon which our life depends. The PolyMet science process is derived from the depth of management solutions. Adaptive management is not science. The permit to mine process has weakened environmental protections in order to facilitate PolyMet, a foreign mining company seeking to mine on our federally protected lands. It is too expensive and it's technologically not feasible to control pollution on a scale of such mining operations, including the 99 percent waste rot that will remain. The mining of copper, nickel, and sulfide ores results in matters such as arsenic, mercury, copper, nickel, and manganese into our water and our environment. Those most impacted would be women in child-bearing age, infants, children, and our children's children for the next 20 generations. The permit to mine is a corporate politically controlled process, placing the health risks and burden of cleanup upon our children and our children's children. This is not the way of the future. We must find jobs for our young people that will not destroy the environment for all future generations. And I believe that there are people within our agencies who will have the courage to step up and deny the permit to mine. Thank you.	Comment noted. This comment poses questions or contains statements about issues previously considered during the environmental review process. It also generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). The draft permits were developed according to current state and federal law. No changes were made to the draft permit in response to this comment.
3	Gary Anderson	City Counselor, City of Duluth	Thank you. Commissioner Landwehr, Assistant Commissioner Naramore, and other folks here tonight and people in the audience, it's a pleasure to be here and an honor to be able to speak with you tonight. As you know, we've been working on building a relationship with you, as a city counselor for the city of Duluth, and I'm grateful for the opportunity to see you here in Duluth tonight and see the support and the trust that the people of this area have in the DNR. I'm not an expert in anything and I'm sorry I can't speak to the technical aspects, but I'll gratefully use my two minutes remaining to say that the draft PolyMet permit to mine does not protect the public interests. The comment goes on to explain the purpose of DNR and how the project could impact resources.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
4	Gary Anderson	City Counselor, City of Duluth	DNR Commissioner Landwehr, use your discretion to call for a contested case hearing on the permit to mine prior to approval. Thank you	Comment noted. Requests for a contested case hearing were evaluated according to current state law.
5	Dave Lislegard	Mayor of Aurora	My name is Dave Lislegard, L-i-s-l-e-g-a-r-d, and I am the mayor of Aurora, Minnesota. Let me begin by urging the MPCA and the DNR to grant these permits in a timely manner.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
6	Dave Lislegard	Mayor of Aurora	As the new mayor of Aurora, I know firsthand that the last 15 years our city has been through much and lost much. But through it all we haven't lost hope. We continue to persevere and support a process that would bring about new job opportunities for our community.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

7	Dave Lislegard	Mayor of Aurora	Today's hearing is a part of that process. Tonight and tomorrow you'll hear stories about why the PolyMet project shouldn't move forward. Opponents of this project in a mining community are eager to kill our opportunity at any cost, even when the company proves it meets or exceeds all state and federal regulations as required by law. Let me repeat that. Even when the company proves it can meet or exceed all state and federal regulations required by law. We see the delay tactics as a part of their strategy, trying to step outside the established process to destroy the future of the people I represent. Yet the people I represent continue to be polite, kind and courteous throughout this whole process. Let me state for the record, I would not support any project that failed to meet the environmental standards. But PolyMet hasn't failed, they've excelled. And yet, we continue to hear the opposition state that it can't be done safely. The notion that we can't have both jobs and protecting the environment is simply wrong. In the history of mankind we went from no cars to cars to mars. Technology has advanced. I believe the State has been thorough in its permitting process. I trust the science and the findings of State experts, which now show NorthMet project will protect human health and the environment. In closing, let me say, the company has done its job, you have done your job. Please move the process forward so we can do our job. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
8	Dan Snidarich	Business agent of Operating Engineers Local 49	Good evening commissioners, thank you for giving us this time to speak. I'm Dan Snidarich, I'd like to introduce myself. I'm a business agent for Operating Engineers Local 49 out of Virginia. I represent as of a couple days ago 524 unemployed operating engineers that are out there looking for something to build, construct and things like that. We do it best and we do it good. And I struggled -- I've been to many of these programs and I struggle each time I decide to come up and talk and what I should talk about and what's best. "..." For all the contractors, the members, the vendors that Local 49 represents and we have people in the public sector in these communities that are directly around here that I personally represent, I'd like to see that happen for those individuals, for these towns, for these places to keep this thing going. But the one thing I struggle with that I really wanted to talk about tonight if I got an opportunity is that word that I just said, is opportunity. I have a 14 and a 16-year-old boys myself at home. And if you go back in time when these meetings started, they were little. And now I'm looking at my kids going, geez, I'm wondering what they're going to do and what opportunities are they going to have to sit there in these crowds and have good jobs like the ones that we have to offer. And I just hope that some day that we can get together and make this thing happen and we can actually have opportunities for these young individuals that are behind us. None of them are my kids, but I would like to say that that opportunity would be there for them.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
9	Dan Snidarich	Business agent of Operating Engineers Local 49	And I guess we've proven that we can do things right. PolyMet has done the science. Every time somebody comes up and they contest something, they stand tall, they do what they have to do. I just hope that after these meetings that a good decision can be made and maybe this thing can actually go forward so my kids aren't standing here ten years later having these same discussions with a lot of the same people in the same building. I appreciate your time. I'd like to say I -- I think it's the right thing. I think it's time, it's overdue. Give them the opportunity to do what they need to do and let our people have the opportunity so maybe in a short period of time I'm not talking about 529 people that I represent that don't have jobs. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
10	Robert Bassing	Citizen	Hello, my name is Robert Bassing, B-a-s-s-i-n-g. And I'm a senile old retiree from U.S. Steel and I live in Buhl. And I'm here because I do support the idea of mining. I think those that say it has been shown to never have been done safely before could also say, well, man can't fly or man can't go to the moon. We can't be naysayers, we have to be positive and say we can do that which they say cannot be done.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
11	Robert Bassing	Citizen	But in the environmental issues we have to ask ourselves, are our studies impartial? Are they being paid for by corporations, corporations that have proven in the past that the standards, as in the lifeboats on the Titanic, the standard of nondouble hull on an oil tanker, the standard of not having a blowup preventer on a rig out in the Gulf of Mexico? These were all standards that were met. And for us to ask the question, why do we have to accept on the dike, which has been a problem in Chile and a problem in Canada of collapsing, why do we have to accept either concrete columns or a buttress? Why not go the extra length and say we're going to put in those concrete columns and we're going to put the buttress in? And we're going to make damn sure that that dike does not let loose out into the environment.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
12	Robert Bassing	Citizen	And I think it's up to you people in the positions to demand them to go that extra distance to ask why if there's a liner under Stockpile 2 and there's a liner under Stockpile 3, why is there no liner under Stockpile 1? And if it's not as reactive, why does it have to be capped with an impermeable barrier if it's not as reactive? And are we handling that Number 1 the way we should, that stockpile? We can be partners with corporations, we can be partners in progress or we can be partners in crime. And so far there's plenty of examples that we have been partners in crime with the corporations. We can change that. We can hold their feet to the fire and say we are going to make you do the right thing. Thank you.	Comment noted. This comment poses questions or contains statements about issues previously considered during the environmental review process and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.

13	Jack Eloranta	Citizen	Thank you. My name is Jack Eloranta, E-l-o-r-a-n-t-a. And I just have a very short message, two points that I want to make. And one is that we're talking about Minnesota mining. Minnesota is where surface mining was invented. And the mining is done better in Minnesota than anywhere in the world. And the people who are doing it, I've worked with most of the people involved. And they're the most honest, reputable and trustworthy people. And their reputation around the mining world is unmatched. And I'd like to just say, having said what my two points are is that this isn't the first mining operation that I've seen. I've got a degree in geology and I've got a degree in mining engineering and my master's in mining engineering. I spent 22 years in the taconite operations here. I spent 18 years as the international consultant, done work in Senegal, South Africa, Panama, Chile, Peru, Canada, New Zealand, Australia. The notion that it's being done poorly in Minnesota is laughable. This is where mining was invented and this is where it's done properly. I also ran a coal mine in Pennsylvania where we treated acid mine drainage. And people have a tendency to place these all together. This is hard rock mining. This is where -- to get that -- for sulfates to be leached out of rock is very difficult. The softer coal mining formations are completely different. And we treated that water out of mines that had been worked since the Revolutionary War, very old archaic mining practices. But you know what? From me to that screen away from our treatment pond, that's where the trout fishermen were catching trout out of that stream. So, this notion that this is somehow the end of the world coming because of acid mine drainage is just foolish. So, just to reiterate my two points is, one is that people here know what they're doing. And maybe I'll add one other, and that's, if we're not going to get our minerals from here, then you're signing up for getting them from Senegal, from around the world. And I can tell you the standards there are not anywhere near ours. Thank you very much.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
14	Matt Olsen	Citizen	My name is Matt Olsen from Nashwauk and I'm going to let Brandi speak on my behalf.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
15	Brandi Salmela	Citizen	Hi, I'm Brandi Salmela, B-r-a-n-d-i, S-a-l-m-e-l-a. I'm a student here at Mesabi East High School. Growing up on the Iron Range is different than anywhere else in Minnesota and maybe even the world. We have a different perspective on what makes this state great. We have an appreciation for the great outdoors and small town life. And we respect the industries that make our way of life possible. I'm from a mining family. My grandpa worked in the mines and my dad works for (inaudible). Mining jobs and the wages they pay support our way of life. I'm proud to be a Ranger. I'm proud of what comes from our mines. We have been mining for over a hundred years here. I and many others are looking forward to continuing the tradition of mining on the Iron Range for many years to come. We have a chance to ensure that we produce safe mining industry to supply the metals we use almost every day. PolyMet's copper nickel mine makes the future possible for not only my generation, but the next generation, too. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
16	Louflinn Johnson	Citizen	My name is Louflinn Johnson and I live in Hoyt Lakes, Minnesota. And I support PolyMet and I defer my time to Dave Thompson.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
17	David Thompson	State Senator (Chisholm)	Thank you very much. I'm David Thompson, a state senator from Chisholm. And I proudly represent the Iron Range in the Minnesota State Senate. I have six taconite plants in my Senate district. PolyMet processing plant will be in my Senate district and will be refurbishing the former taconite plant on the current brown field. We mine for a living. I'm the son of a miner. We've been mining for 135 years. The environmental quality report card clearly indicates we know how to mine. He have the best water anywhere in the state. Mining has been our livelihood from generation to generation. We want to keep mining for generations to come. So, just like our iron mines were responsible for winning two world wars and building this country, we now want to be part of building our new age economy. PolyMet could, in fact, contribute to the four and a half tons of copper and nickel used in solar panels. Other precious metals would be part of things like batteries for electric cars or cell phones and computers, critical medical devices. And it's becoming more and more evident that our defense systems need a reliable source of minerals mined right here in our country, not in an unreliable third world country with no American laws, no safety standards for the workers. And not to mention all of the children doing the mining at 50 cents a day. We want to be and should be a part of the next generation of mining. Good paying jobs done right with safety standards and environmental safeguards in place. And make no mistake about it, we must mine in order to produce things. Those 30-some minerals and microbes don't just magically show up in factories. They are mined. Let's mine them here. Today is a big day. The Iron Range has been waiting for over a decade to get to this point.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
18	David Thompson	State Senator (Chisholm)	The draft permit to mine that is in front of all of you today is one of the most comprehensive and scientifically sound documents this state has ever seen. Industry experts and scientists have spent thousands of hours studying and restudying the data. Every box has been checked and rechecked, every T crossed and every I dotted. And the reason the draft permit has been issued and the reason we are here today is because PolyMet has met the letter of the law. What we have here is a gold standard of mining operation in this country. Its significance cannot be understated.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.

19	David Thompson	State Senator (Chisholm)	Minnesota is setting the bar for environmental standards and we should be proud of that. Financial assurance will be assured. We should also be proud that PolyMet put our people to work. Construction hours alone are like building a Twins stadium on the Range. The next generation of miners will have the opportunity to work in one of the most state-of-the-art mines in the country. Let me thank our state and federal agencies for the very hard work they put in for more than ten years in this process. It's another indication of how comprehensive our environmental laws are Once the public comment period closes the fate of this project is out of our hands. After this it's time for state agencies and Governor Dayton to make a final decision. As an selected official and as a Ranger, I cannot be more proud to support this project and encourage the agencies to issue the final permits quickly. Its time to mine, let's get started	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
20	Stephanie Dickinson	Citizen	My name is Stephanie Dickinson, D-i-c-k-i-n-s-o-n. My family and I live in Aurora. It was important for me to come here today because I believe that PolyMet is crucial to the well-being of our community. Our community, like most on the Iron Range, have supported and is supported by the mining industry for all of my life. I believe that PolyMet is fortunate to have us, a community of people knowledgeable about mining and its way of life. I believe that there are communities fortunate to have PolyMet here to invest in (inaudible). There is no question that PolyMet itself would have a huge impact on our area and would assist in furnishing (inaudible) something that has been hard to sustain since the closing of the LTV plant, PolyMet now calls home. My husband and I chose to raise our family here because when we married we were familiar with the area and enjoyed it. We have friends and family to spend time with and we also work nearby. Northern Minnesota is a beautiful area and provides recreational opportunities, beautiful schools with small class sizes and low crime rates. More families are not planting their roots in our local communities because it's hard to make a decent wage here due to lack of jobs that are needed and have enough spare money to enjoy. A family has a better chance of re-investing in our area, so we need jobs to support. I care about our neighbors having good jobs to report to so that we will no longer be a dying town. Everyone wants to see our communities not only maintain the population and operational existence, but also to see them grow. The impact of PolyMet operations on our local economy will allow us to achieve those things and so much more.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
21	Stephanie Dickinson	Citizen	This is why I encourage the MPCA and the DNR to in the most timely manner grant these permits to PolyMet because they have met the criteria set by the State. And as soon as you can give the instructions so they can move into our communities. Lastly, I want to say that my husband and I work for Minnesota Power and ask many of the local residents if they know what standards goes into the permitting processes in our state. We know that Minnesota has some of the strictest review processes to help the people that live here and also the land, which is so important for the recreation that's one of the biggest area attractions. PolyMet spent more than ten years working for an accepted Environmental Impact Statement, in which many significant environmental issues were analyzed and reviewed. This proves that PolyMet has not only adjusted and tolerated, but they also take pride in hoping we celebrate the Iron Range's first copper-nickel mine. (Inaudible) of responsible mining and continue to grow our communities by maintaining an attractable living.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
22	Paul Rennesisen	Citizen	Paul Renneisen, R-e-n-n-e-i-s-e-n. And I live in Schroeder, Minnesota. I am a pro ferrous U.S. owned and regulated mining supporter. I'm opposed to foreign owned and internationally unregulated mining. I'm here to state the falsified and job creation and consequences of environmental damage by unmanned mining operations. I'm opposed to the DNR plan, particularly the lack of environmental and liability insurance necessary to pay for damage outside the mining perimeters as shown in the exhibit hall.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
23	Paul Rennesisen	Citizen	Mining operations, domestic and international worldwide, are being built from the start as unmanned operations. Robots, unmanned machines, used to mine do not breathe, need clean water, pay income taxes, pay Medicare taxes or Social Security taxes. Robots don't pay unemployment taxes, they don't pay workers' comp premiums, they don't buy groceries, and by far they don't pay union dues. And robots don't vote. Robots include driverless trucks, unmanned security, et cetera, all which will be at PolyMet. At the mining control centers, these robot control centers are remote, not 600 yards away on the property, but a control center outside the U.S.A. Could be in China, owned and controlled by foreign owners who are outside the jurisdiction of Minnesota and U.S. supports. Will Minnesota be the first state to have a robot that gets sentenced to prison for violating state or environmental laws? I don't think so. Where in this proposal is the contract for human being manned jobs? None.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
24	Paul Rennesisen	Citizen	I've yet to see a newspaper article of a promise for jobs that comes with an enforceable contract. Robotics will be, unlike human operations, unable to detect dust being released. The following future is as likely as the so-called promise for protections of PolyMet, which (inaudible). A future report, Cook County citizens take to mandatory evacuation. The governor has ordered the Minnesota National Guard to help protect Cook County, Minnesota citizens following the release of toxic sulfates. This year is the driest year ever, which resulted in water shortages impacting PolyMet mining operations. U.S. Forest Service is using military helicopters to remove (inaudible) as the governor reaches out to PolyMet control center in Asia and is unable to make contact. No human observers are on the project site. The mining site is run by robots and they're unable to detect that. In short, there's a clear threat in the future to the environment of Northeastern Minnesota. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
25	Jerry Tyler	Executive Director, Up North Jobs	Commissioner, my name is Jerry Tyler, I'm the executive director of Up North Jobs in Ely, Minnesota. My last name is spelled T-y-l-e-R. I'm here to yield my time. I support PolyMet and yield my time to speaker Kurt Daudt	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
26	Kurt Daudt	MN Speaker of the House	I'm Kurt Daudt, D-a-u-d-t, from Zimmerman, Minnesota and I am the Speaker Of The House in the Minnesota House of Representatives. It's been a long road for PolyMet and the various regulatory agencies and all of those interested in this project to get to this point. First and foremost I want to thank you for you all and everyone for their time and energy in working on this project.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

27	Kurt Daudt	MN Speaker of the House	Minnesotans love the outdoors. I think our state's public embrace of the Bold North theme during the Super Bowl this last week showed that to the world. As someone who greatly values our beautiful, abundant natural resources, I can tell you that I'm confident that we can take advantage of our natural resources and protect the environment. And I know my fellow members in the House Republican Caucus feel the same way. The NorthMet project has and continues to undergo very rigorous, independent scientific scrutiny from many different entities. The bar has been set high and that's okay. I don't think we'd be here tonight commenting on these draft permits if PolyMet and the regulatory agencies didn't believe the standards within them could be met by a company in both the permit limits and the financial assurance.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
28	Kurt Daudt	MN Speaker of the House	The economic activity that this modern state-of-the-art mine will bring to Minnesota will be significant. The NorthMet project will create an estimated 1,000 jobs and will generate $515 million in economic benefits annually for St. Louis County alone. Northern Minnesota needs more good paying jobs and can be a leader in the world in developing products that are in high demand around the globe. The governmental agencies and the company have done their due diligence. Let's take advantage of this exciting opportunity. Rangers and Minnesota have waited long enough. It's pretty exciting to see these kids sitting here tonight in support of this project. They're the future of the Iron Range and the future of the state of Minnesota. It's time to mine. I urge our state and federal regulators to finalize and issue these permits as soon as possible so this project can move forward. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
29	Paul Undeland	Citizen	Hi, my name is Paul Undeland, U-n-d-e-l-a-n-d, and I'm a resident of Grand Rapids, formerly a resident of Aurora where I was born and raised and where I still own property close to the prior bridge and watershed. It's important for me to come here tonight to support the advancement of the required permits to continue moving this project forward. Because I believe the State has been thorough in its permitting processes. And as an engineer and as a downstream landowner to the PolyMet project, I trust the science and the finance of the state expert, which show the project will protect human health and also protect the environment. PolyMet has also followed the State's strict regulatory review and permitting process and has met all the conditions the State has imposed on the project. These conditions the State has imposed on PolyMet in its draft permit to mine and the air and water permits are prudent and reasonable.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
30	Paul Undeland	Citizen	They will ensure the mining project will protect human health and the environment and the taxpayers will be protected under the financial assurance provisions in the permit to mine. The permit to mine also goes above and beyond the requirements of Minnesota law by establishing bankruptcy proof financial assurance loans for two years when the law only calls for one year. This is just one example where PolyMet and the State have gone to extra lengths to ensure taxpayers are protected in the case of bankruptcy and that the mine and processing facilities are properly closed and reclaimed with no risk of impact to the environment, including my downstream property, where I spend time hunting and fishing and being outdoors while growing up in Aurora. And I want my kids to experience the same outdoor activities that I have passion about.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
31	Paul Undeland	Citizen	Minnesota has some of the strictest environmental standards of any state. The company has demonstrated through the environmental review and permitting process that it can meet those standards. The permitting conditions, which were informed by the comprehensive environmental review process, would spell out the monitoring, operating, and reporting and inspection requirements for the mine during construction, operation, and closure. Together they provide the framework for mining and environmental protection to co-exist. The resources that this mine produced are in demand and they will be mined by someone somewhere. On the Range we have a rich history of mining with one of the most stringent environmental regulated states in the nation. We can do it better, safer and more environmentally responsible than anyone else, while putting our residents of Northeastern Minnesota to work. Thank you.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
32	Doug Christy	Citizen	I'm Doug Christy from Grand Rapids and I'm giving my time to Mike Syversrud.	This comment simply defers speaking time to another individual. No response needed.
33	Mike Syversrud	President, Iron Range Building Trades and Construction Trades	Good evening. I'm Mike Syversrud, S-y-v-e-r-s-r-u-d, I'm from Gilbert, Minnesota. And I thank you for the opportunity to speak here. As Dan, one of my coworkers here, I'm actually president of the Building Trades. I represent thousands of building tradesmen and women up here in Northeast Minnesota. Dan mentioned something about his son growing up, he was ten years old. I was 150 pounds when this thing started ten years ago. PolyMet has been a steward already of the communities up here. They've been involved, they've been active in everything, whether it be sports, community events, from one end of the Range to the other. I've worked hand in hand with these guys to get an agreement in place with PolyMet to put our tradespeople to work. And like I say, these are hard working families. You look around here, there's a lot of retirees that busted bones in these mines, they worked hard. My grandpa, my great-grandpa, these are where I started.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

34	Mike Syversrud	President, Iron Range Building Trades and Construction Trades	I'm a cement finisher by trade, not a very good one, but I am. We used to work on all these plants, buildings, putting them together to make sure they're done right, correctly, environmentally safe, done on time and ahead of schedule under budget. That's what we pride ourselves on in the building trades. We also pride ourselves in being community active in the building trades as well. We get out, we go forward, we try to bring work to our areas. So these communities, like Aurora, can still bring people here to work. You have to have a job before you can have a school. If you have a school, you've got to have people to pay for it. The Aurora community just passed a referendum over here to do the addition on the school. This will be done by you, local union craftsmen, will build this school and they'll do it right and they'll do it on time and ahead of budget. But it wouldn't have been done if it wasn't for PolyMet. PolyMet has given this community in Northeast Minnesota a light at the end of the tunnel so we can bring communities back to where they should be, We must find jobs for our young people that will not destroy the environment for all future generations. And I believe that there are people within our agencies who will have the courage to step up and deny the permit to mine. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
35	Jerry Baland	Citizen	Distinguished guests, thank you for this opportunity. My name is Jerry Baland. I spell my name B-a-l-a-n-d. I live here in Aurora, all three children of ours went to the local schools. I am a very proud Iron Ranger. My background is about 45 years in mining, 30 years with Erie Mining Company and 15 years with the State of Minnesota with the Soudan Underground Mine. And those of you who may not know, this is one of our outstanding state parks. I would like to have the opportunity passed on to my children, my grandchildren and great-grandchildren that I had and my family had growing up here. We see all of these nice young people here. They're going to be going on from Aurora -- Mesabi East, excuse me, they'll be going on to school, both from the crafts and also going on to college. I think it's wonderful if we give them the opportunity to have part-time jobs while they're working their way through school. And one of the ways we can is with PolyMet being operational. And the sooner the better. I would like to think that we as adults -- and Michigan at Eagle Mining Company is successfully meeting the environmental challenges. Can't we do the same? They have received national environmental awards. I think we owe that to these young people and the local people to get this show on the road and get the approval process that has taken over ten years. I think the time to analyze and rescrutinize is over. Let's get the show on the road and get this behind us. I think we have the intelligence, the educated people that can do this and do it environmentally sound. Thank you very much.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
36	Greg Mosher	Citizen	My name is Greg Mosher, M-o-s-h-e-r, I'm from Ely. I support PolyMet. And I defer my time to Julie Sandstede.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
37	Julie Sandstede	MN State Representative, 6A	Hi, I'm Julie Sandstede, I'm a wife, a mother, an educator, and also a state representative. To follow up on some statements that were made previously, mining is a great Minnesota tradition. The safety of mining has been a first priority for generations because we live in the various communities where we work. This project has been in the works for over ten years. We've been thoughtful, responsible, and intentional about the thorough review of every aspect of its completion and the impact it will have on Northeast Minnesota. We care deeply about the environment. And this project is setting the bar for environmental standards and we can be proud of that.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
38	Julie Sandstede	MN State Representative, 6A	We have not ignored the crucial safety standards that are necessary when implementing a project of this scope. We're thankful for the opportunities that PolyMet has brought and will continue to bring to our communities for many generations to come. Vibrant communities need new opportunities to build upon the successes of the past. PolyMet is just that, a chance to expand our economy and offer the next generation a future of hope. This project will not only better the economy in Northeast Minnesota, but for the state as a whole. The modern mining technology used for this project would become a positive impact on the global market. There's no need for outsourcing when we have the innovative tools right here at home. Families in my district choose to raise their children on the Iron Range because Rangers come together and fight for the successes of our region. We stand together and support the science and the strong environmental regulation and we also are united in our support of this project. The production tax this project could bring in could be an outstanding source of revenue to improve our schools, which are the bedrock to any thriving community. As a state legislator, it is my job to shed light on the needs of Northeast Minnesota, which is why I'm called to proceed in convincing our governor to approve this project and help create the next generation of world class miners in Minnesota. I encourage you to approve these permits. And I thank you for the opportunity to share my thoughts.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
39	Gregg Allen	Superintendent, Mesabi East School	Good evening. My name is Gregg Allen, A-l-l-e-n, and I'm from Gilbert. And I'm also the superintendent of Mesabi East School District. I have a resolution of support for PolyMet from District 27 and 28 school superintendents. The letter of support states, and I will summarize, that the Minnesota Association of School Administrators of Region 7, Districts 27 and 28, declare its support of the issuance of state permits and is confident that the exhaustive review by state and federal regulatory agencies have concluded the project can operate in an environmental safe and secure manner.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
40	Gregg Allen	Superintendent, Mesabi East School	We support the success of this project 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 metals we need every day without harming our region's air and water quality.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

41	Gregg Allen	Superintendent, Mesabi East School	This project is extremely important to the school districts on the Iron Range. Funding for most schools in Minnesota comes in three major ways: local, state, and federal. However, for schools in the taconite assistance area, which includes most schools in Northeast Minnesota, there's a fourth funding source and it's from production tax from the mines. Production tax is used in lieu of property tax. Nonferrous mines like PolyMet uses different formulas, but the concept in the same. If the mine is producing, schools receive funding. If the mines are not producing, schools receive less or no funding. The funding from mining is important to schools from this area. Mesabi East receives about $10,400 for students from all sources of funding. The state average per pupil funding is about 12,000. That leaves Mesabi East about $1,600 per student short of the average, leaving Mesabi School District about 1.5 million dollars short per year. The PolyMet project will increase funding to Mesabi East and help close this gap and, therefore, allowing more learning opportunities for students. Our students are our future. The students attending the school and the students here tonight need the best education possible. These students are PolyMet's next generation of workers. They're also our future doctors, engineers, teachers, and employees of the DNR and MPCA.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
42	Gregg Allen	Superintendent, Mesabi East School	I thank all of you for your hard work in the permitting process. On behalf of Mesabi School District, I look forward to MPCA and DNR granting these permits as soon as possible. Thank you for your time.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
43	Erik Erie	Principal, Mesabi East High School	Good evening. My name is Erik Erie, I'm the principal of Mesabi East High School. I'm a resident of Biwabik Township. I support the PolyMet project and defer my time to Jason Metsa.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
44	Jason Metsa	MN Representative, 6B	My name is Jason Metsa, I'm a state representative for District 6B here, the most mining center district in the United States of America. And proud to be here today. Commissioners, thank you for being here as well. It's been a long time coming, hasn't it, Rangers? I want to speak to a few things that I heard earlier I thought were pretty misleading. And this has been a long, tedious process where I know that there's been a very thorough review from our federal, state, and local folks who have really put in the time and due diligence and patience to hear every side out on this issue. But I am sure glad that my constituents can see dust and that they're not robots. They're people who will ensure, just like our steel workers have for many generations up here, that we are meeting the upmost quality in standards. And Minnesota will be a shining star of the north for many years to come for having the most safe, responsible mining in the world. And everyone in this room can be proud of that. My wife and I just had a baby last year and I can assure you that there were no issues with the water in Virginia, which comes from a reclaimed mine pit. And our baby is doing just fine. In fact, today as soon as I left the house my wife ecstatically was texting me that he got behind his little walker for the first time and started pushing it around. So, I can't wait to go home tonight to go and enjoy that time with him before session starts.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
45	Jason Metsa	MN Representative, 6B	But overall, again, we've been here time after time again and essentially laid out the ground work for what's a phenomenal project in Minnesota's largest recycling of a plant at the former LTV site. That alone reduces the carbon footprint, puts good people back to work. PolyMet takes on the responsibility of some of the troubles that we had with the closure of LTV, like Senator Thompson mentioned. Those are all wonderful things for the environment. I couldn't be prouder today that we're in the final stages of what's been a very long process. Overall, the people in this room, the kids behind me here, they're our future. They're going to come up behind us, fill these jobs, become steel workers, tradesmen, doctors, lawyers, and the next state senator, the next state representative and they're going to lead us into an even better place. And tonight is the start of that. I look forward to continuing work with you all. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
46	Jeff LeDoux	Citizen	Hello, my name is Jeff LeDoux, I'm a resident of Pengilly, Minnesota. And I would like to defer my time to Pete Stauber.	This comment simply defers speaking time to another individual. No response needed.
47	Pete Stauber	District County Commissioner, St. Louis County	Thank you very much. My name is Pete Stauber, S-t-a-u-b-e-r, and I live in the city of Hermantown, Minnesota. I serve as a district county commissioner here in St. Louis County and I'm a candidate for Minnesota's 8th Congressional District seat. Mining, as we all know, is the economic engine that powers St. Louis County. The mining industry already provides thousands of some of the best paying jobs for families here in Minnesota.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
48	Pete Stauber	District County Commissioner, St. Louis County	The State has thoroughly reviewed the NorthMet project and PolyMet has proven the project will protect Minnesota's pristine environment and ensure clean water and clean air.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
49	Pete Stauber	District County Commissioner, St. Louis County	All of us here tonight want the same things for our kids and grandkids. We want good paying jobs and clean water. Our commonalities far outweigh our differences. The time has now come in these final stages of the environmental review for us to move past one or the other discussions.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
50	Pete Stauber	District County Commissioner, St. Louis County	I look forward to PolyMet paving the way forward and proving once and for all that we can have both clean water and air and mine these minerals. If there's anybody in the world who knows how to mine safely for the minerals we all use it's the folks here in Northeastern Minnesota who spend their weekends fishing and summers camping right here. We all care deeply about the environment in our back yard. Mining and all of our watersheds have co-existed for decades and will continue to co-exist going forward. The science is in, the review process is nearly complete and the time is now. The LTV mining site has sat quiet long enough. It's time for us to recycle that plant, revive the economy of the East Range and realize the promising new era of mining and economic growth for St. Louis County in Minnesota. I urge the agencies to approve these permits. And I appreciate your time. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

51	Cyndee Forsman	Citizen	Hi, my name is Cyndee Forsman, I live in Aurora and I support PolyMet. And I defer my time to Chris Vreeland.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
52	Chris Vreeland	Councilman, City of Hoyt Lakes	Hi, my name is Chris Vreeland, V-r-e-e-l-a-n-d. Good evening and thank you for taking my comments. My name is Chris Vreeland, I am a councilman of the City of Hoyt Lakes and I'm a licensed Minnesota water and waste water operator for 35 years. When I started as an operator, the standard treatment limits and laboratory analysis for waste water in the state of Minnesota were parts per million. With technology advancements over the last 40 years, we now test out chemicals at parts per billion, like mercury. My point is, technology analysis and treatment methods have gotten a lot better. It is unfair to compare copper-nickel operations from 40 years ago. I have no doubt that PolyMet can meet all state and federal requirements in protecting the environment.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
53	Chris Vreeland	Councilman, City of Hoyt Lakes	In 2001 the LTV taconite plant closed, permanently eliminating 1,400 good paying jobs. It was devastating to our area and we still have not recovered. So, the PolyMet project will reuse the old site and many of its buildings. This project will bring good paying jobs, benefiting the city of Hoyt Lakes and surrounding areas. This project will give a major boost to our schools in the communities. The metals that PolyMet will mine are essential in our lives for clean energy. Copper is critical to components in wind mills, solar energy and the like. Nickel is used in batteries and stainless steel. I believe if we are going to use these metals, it is our responsibility to ensure that we get them from an environmentally compliant mine. PolyMet is that mine. Let's get this done. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
54	Allen Brown	Citizen	My name is Allen Brown, I'm from Aurora. When I first moved to Aurora (inaudible) he lived in North Dakota and paid $200 a month. The first weekend, he worked on Labor Weekend, he made more money than he made in a month in North Dakota. He said, "I'm never going back." Now, I worked 41 years in the paper industry in International Falls and moved back. And I'm hoping these meetings that -- and I see the same people that's against everything were against people in the paper industry.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
55	Allen Brown	Citizen	We moved back after 41 years because my grandchildren ended up living down here. That was 13 years ago. And PolyMet was in the works then. And we sat there and waited and waited. And during that time we've watched a grocery store, a dentist office, a drug store, this town is going. I mean, it's been hurting. And I think we really need to do something to help the people out. And like you say, Minnesota has the strictest rules for mining anyplace. Thank you.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
56	Mike Perala	Citizen	Good evening everyone. My name is Mike Perala, P-e-r-a-l-a. I'm a resident of Virginia. I'm a logical supporter of the PolyMet project and passionate supporter of the PolyMet project. I'd like to concede my time to my good friend Mary Hess.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
57	Mary Hess	Citizen	Thank you. And thank you panel commissioners for taking my comments today. My name is Mary Hess, I'm the former mayor of Aurora. And I've spoke many times on behalf of PolyMet, supporting PolyMet's operation.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
58	Mary Hess	Citizen	And today I've decided to take a different avenue, kind of telling my personal background in regard to mining. I was born and raised in Sunburg, Minnesota and grew up on a farm, my mom and dad were farmers and had a tough time. I was young, I didn't realize the tough times, but I learned later that they struggled. In 1959 my dad was hired at Erie Mining Company and we moved to Aurora, Minnesota. My mom and dad were in heaven, actually. They were drawing a paycheck every two weeks, they were getting benefits, they were getting insurance, their kids had a good school to go to, we had a clinic, we had a hospital, we had a dentist office right at our fingertips. So, I've seen the good side. But then again, I've also seen the bad side because I was an employee of the IRRRB for 30-some years when LTV closed, it was very devastating. Fortunately my husband had retired, but I had a brother that worked for LTV and many, many friends that worked for LTV. So, I saw what happened there. And, actually, my husband and I helped a lot of people during that time. So, now today I am talking -- it's been years. As I said, I worked at the IRRRB, I heard about the PolyMet project when I was there and retired in 2003.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
59	Mary Hess	Citizen	In the last ten years, like I said, I have supported the PolyMet project, spoke many times on behalf of PolyMet. And I just look back at all of the time and all of the money, of course, that's been spent on this whole process and money that probably could have been in families' pockets.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
60	Mary Hess	Citizen	But I appreciate all of the studies that have been done. I have children, grandchildren here that attend Mesabi East Schools. I have brothers that live in town, siblings that live here, nieces, nephews have all gone to school here. So, I appreciate all that have been done. And, of course, I want it environmentally safe as well. But I think it's time now to move forward. I think we've waited long enough. I thank you for all of your work, but I think it's time to put a shovel in the ground. Thank you.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
61	Arik Forsman	Citizen	Good evening. Thank you to the agencies for the opportunity to speak tonight. My name is Arik Forsman, F-o-r-s-m-a-n. And I live in Duluth, but I'm from Aurora. And I could not be more excited to stand tonight in support of PolyMet. Tonight's setting, as we discuss our future, is in a place where Mesabi East holds commencement ceremonies.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
62	Arik Forsman	Citizen	For over a decade our little communities have fought pushback from environmental elitists who demand wind turbines and electric vehicles, but don't want the minerals that go into them to come from our back yard. They claim to want to help the Iron Range economy and in their next breath attack the iron mining industry and union jobs with nonsense regulations. We've been at this for a very long time.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.

63	Arik Forsman	Citizen	It would be easy for us to get frustrated and give up. Just last night I had a woman at my precinct caucus in Duluth who introduced a resolution claiming that PolyMet will destroy baby brains from mercury. Never mind that the EIS states that there will be an overall, and this is a quote, "decrease in mercury concentrations in the receiving waters due to water treatment activities that would occur as part of the proposed NorthMet project." So, in other words, it won't. But these uninformed activists have accomplished something else that is truly remarkable. They've inspired us, generally soft-spoken Iron Rangers, to get in the game and fight for our future.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
64	Arik Forsman	Citizen	And take a look tonight at who's in here in support with us. We've got our local elected officials from the Range, House Speaker Daudt, and candidates for federal office, organizations like Jobs for Minnesotans, which have done more for our region than most will ever know. And maybe most impressively, moms with young families who tonight are setting aside the anxiety of public speaking and the inconvenience of finding child care on a week night because they know how much this matters to their own families. By a show of hands tonight, I want to see who here is a graduate or student of Mesabi East, Aurora, Hoyt Lakes, Biwabik, and Palo. Tonight I'm proud to call myself one of you. Thank you for coming and fighting for our future and way of life. In 2006 I graduated in this gym and gave a speech as the class salutatorian, because I wasn't as smart as John Stark, about the importance of valuing time and each and every day we're blessed with I was a kid and didn't know anything about life, but somehow that message holds up tonight because we've wasted enough time waiting for this project and it's time to move forward.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
65	Arik Forsman	Citizen	The rebirth of our economy on the East Range is close at hand. And when those who would rather see us go away speak loudest, remember that we are the giants, that we couldn't be prouder. And even when they refuse to hear us, we will yell a little louder. I urge the agencies to approve these permits and allow the East Range the fighting chance we deserve of a brighter future because we should think globally and mine locally. Thank you.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
66	Cathy Bissonette	Citizen	Hi, my name is Cathy Bissonette, I'm from Babbitt. And I defer my time to Dan Fabian.	This comment simply defers speaking time to another individual. No response needed.
67	Dan Fabian	MN Representative, 1A, Chairman of the Environment anbd Natural Resources Policy and Finance Committee	Thank you, Cathy, and thank you everyone for being here. Commissioner Landwehr and Linc Stine, thank you for being here. I'm Dan Fabian, F-a-b-i-a-n. I'm the chairman of the Environment and Natural Resources Policy and Finance Committee in the Minnesota State House of Representatives. Most of you know I'm a proud supporter of this project and I look forward to the day when we actually start sticking a shovel in the ground.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
68	Dan Fabian	MN Representative, 1A, Chairman of the Environment anbd Natural Resources Policy and Finance Committee	Minnesota has a very strong, rigorous and independent environmental review permitting process. Sometimes, as you guys know, I'm very frustrated by some of the processes. But we are what we are and we're getting to the end.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
69	Dan Fabian	MN Representative, 1A, Chairman of the Environment anbd Natural Resources Policy and Finance Committee	I believe that PolyMet can and will meet the environmental and financial assurance standards required for the NorthMet project.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
70	Dan Fabian	MN Representative, 1A, Chairman of the Environment anbd Natural Resources Policy and Finance Committee	I spent 35 years in a high school gym like this one as a physical education teacher and a track and cross-country coach. I'm so proud to see you guys here today, this is awesome. This is about your future. And it's also fun to see some of my legislative friends here. I'm proud to stand next to you on this project. We've been through some ups and downs with our economy. (Inaudible) in 1980, Arctic Cat plant in Thief River Falls closed in 1981. We're back up and we're producing the best ATVs in the world right now and we're very proud of that. So, let me just say that I'm fighting for you folks here on the Range. I want to see this project. I urge our state agencies to issue the permits for the NorthMet project as soon as possible. This project's time has come. Thank you.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
71	Seth Thun	Citizen	My name is Seth Thun, T-h-u-n, and I'm not from Aurora necessarily, but I'm from Silver Bay. And T-h-u-n is my name. And I have the Norshor Agency on Main Street in Aurora. My brothers and I and my dad decided ten years ago when this process was two years in, so I'm going to bring a different perspective. Our perspective was this is a place to expand our insurance agency, too, at a time when things weren't that great. And they still may not be great, but it's time, it's high time for this project.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
72	Seth Thun	Citizen	Part of what we did coming to Aurora was about purchasing a building, expanding our business. The other part was PolyMet and what was happening with it, as the project itself looked to be very promising for our area. My dad, my grandpa, my uncles all worked for Reserve Mining Company. I knew the impact it was. Before that they were rock farmers in Central Minnesota.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
73	Seth Thun	Citizen	So, we got together with the Honorable Mayor Hess there and the economics and we bought the old Moose Club. We put a lot of elbow grease into it and $200,000. We invested in this community for the future. And it's time, it's high time to have this project go. We know there's been progress in this project. We've invested here. We want it to go, we know it can go. I'm a political guy, too, I'm kind of a junkie.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
74	Seth Thun	Citizen	This process is so burdensome. And you guys have done a great job, I can't take anything, technology has pushed us to that level.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.

75	Seth Thun	Citizen	When we started this project of having meetings and converting to lease space, we hoped that we could rent these spaces and make some money. That hasn't turned out real good. However, we've had tenants who have now done the same thing we did. They moved out of our building after three years and purchased two other vacant buildings in our town, in this town. So, it works. Our $200,000 investment has now led to them paying taxes to this town and this county. And the taxes aren't cheap here, right? Not that I can tell. So, we want to get this thing going and we have to assume we can. The detractors out there are doing their thing and we understand that. But technology has brought us to the point where we can't do more than what? What the state of the art is. And I appreciate your time.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
76	Ross Petersen	Citizen	My name is Ross Petersen, P-e-t-e-r-s-e-n, I'm from Ely. I'm the former mayor of Ely and I still own some rental houses in our Hoyt Lakes area. I think I have a little bit of a unique perspective in some ways. I especially have a unique perspective on some of the opposition to this project. I've seen a lot of the opposition from this project come out, very few people from Ely. Overwhelmingly folks in Ely are for this project. The leaders of kind of the opposition tend to come from Ely. And to be honest with you, I've been monitoring that very closely and I've been very disappointed in some of the reasons I feel they're really using to oppose this project.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
77	Ross Petersen	Citizen	And I think if you're familiar with Becky Rom and Reid Carron in the article in the New York Times, I think it displays something that a lot of us have known for a long time. A lot of the opposition to this project comes from people who don't want to see a similar project in Ely. And I think in many ways it's not because they're worried about pollution, I think they have some other reasons that have been exposed.And I think it's kind of sad what some of those reasons are. They feel that miners and blue-collar people are kind of in that basket of deplorables that Hilary Clinton talked about and they don't want to see a number of those additional folks in Ely.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
78	Ross Petersen	Citizen	And some of them have businesses. They have businesses that have excellent people that they're paying virtually nothing to. And they feel that that would change if the mining comes in. So, they've done an excellent job of throwing up road blocks to these projects. And you can't say that these are some of the reasons why you're really opposed to these projects.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
79	Ross Petersen	Citizen	So, it's been kind of a hard thing to see, but one thing I'm sure of is they're not worried. The people who are really spearheading some of these projects aren't worried that this project PolyMet is going to pollute. They're worried that PolyMet is not going to pollute and that will further additional projects in Ely. So, that's a part of this. I don't think it gets displayed enough. And they've used every trick, political and whatever, to kind of throw up some road blocks. So, I want to throw that out there. I think there's some kind of nefarious reasons for the things that have been done. And I hope that doesn't affect this panel in moving forward. Thank you.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
80	Daniel Manick	Citizen	My name is Daniel Manick, M-a-n-i-c-k, I'm from Cook. I fully intended on deferring my time, but when the superintendent from Mesabi East School spoke I felt I had to speak. I do represent, I guess by default, ISD 2142, the St. Louis County schools, kind of neighbors to Mesabi East and everybody. We have a school over in Babbitt, we have five schools in our district. Our school in Babbitt was built to hold enrollment of 2,000 students. We currently have 200 in that building. I would hope that now would be the time to grant these permits before another graduating class from Mesabi East, another graduating class from any of the schools in our systems. When these kids leave, they're gone. Can we please keep some more of our students in this area?	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
81	Daniel Manick	Citizen	We do love the tourism dollars that Boundary Waters brings and everything, snowmobiling. We love the people that come here to play, but we need people to stay. Thank you for your time. And this shirt today, I'm also a 31-year member of the United Equipment Operators. Jason Metsa, you have earned this. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
82	Chris Knopf	Executive Director, Friends of the Boundary Waters Wilderness	Good evening, I'm Chris Knopf, that's K-n-o-p-f. And I'm the executive director of Friends Of The Boundary Waters Wilderness. And I want to thank Commissioner Landwehr and Commissioner Stine for being here and giving this opportunity to all of us to speak on this important issue here. I believe strongly in community. I strongly believe in union jobs and family. And I also believe in clean water. When I think of PolyMet, I think of that slick road on a winter day that's covered in ice. And you look down that road and you see the cars and trucks stranded on either side of the ditch. And you see that F150 on the right and you see the Chevy Silverado on the left and the Toyota Corolla further down the road and an 18-wheeler further down, jackknifed.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
83	Chris Knopf	Executive Director, Friends of the Boundary Waters Wilderness	And you wonder if you're going to go down that icy road, what's going to happen. With PolyMet and sulfide mining, we're not talking about ferrous mining, we're talking about a different type of mining.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
84	Chris Knopf	Executive Director, Friends of the Boundary Waters Wilderness	The track record is very, very clear. What you have, that F150 down the road, that's the Berkeley Pit in Montana where you have 900 feet of acid water where in December, 2016, a thousand snow geese went in for a drink of water in a snowstorm and all died. You have Mount Polley mine disaster in Canada where on August 4, 2014 the dam burst, destroyed the lake and river downstream from that.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
85	Chris Knopf	Executive Director, Friends of the Boundary Waters Wilderness	You have another mine down in Montana where the water coming off of it is orange, just like orange juice. And that's the track record that we have here. So, when you ask yourself what we're going to get, that's what we're going to get with PolyMet here.	Comment noted. This comment poses questions or contains statements about issues previously considered during the environmental review process and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
86	Chris Knopf	Executive Director, Friends of the Boundary Waters Wilderness	We have water coming into contact with the sulfide and you get an acid runoff here. We don't have a state-of-the-art mine that's going to keep that water from coming into contact with that road here.	Comment noted. This comment poses questions or contains statements about issues previously considered during the environmental review process and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.

87	Chris Knopf	Executive Director, Friends of the Boundary Waters Wilderness	When you're driving the car, you get insurance to -- in case you have some damage to pay for that. Here we really do not have insurance for PolyMet mine. After ten years you don't have a half billion dollars, you don't have a billion dollars that DNR's own experts say. You only have 26 million dollars. So, what you have with PolyMet is an uninsured driver going down the road there. And that other 974 million dollars will be paid by all of us, all the taxpayers. It's not being paid by the Canadian company that's going to be long gone by that time here. So, again, I'm grateful for the opportunity to speak here and I welcome the opportunity to continue a dialogue on this to protect clean water. Thank you so very much.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
88	Hailey Lislegard	Citizen	Hello, my name is Hailey Lislegard, L-i-s-l-e-g-a-r-d, and I'm from Aurora, Minnesota. Thank you for the opportunity to comment. As I stated before, my name Hailey Lislegard and I'm proud to say that I was born and raised on the Iron Range. I come from a long line of miners. It started with my great-grandfather who mined where my grandfather worked. And he was followed by my father, who worked there until the plant closed in 2001. Mining is in my blood. So, when it came time to think about a career, I chose to follow my family's footsteps. I wanted to support the mining industry.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
89	Hailey Lislegard	Citizen	Now, I stand before you as an apprentice with the Operating Engineers Local 49. And I've been blessed to find a job that I love that allows me to live in my hometown of Aurora, Minnesota. I find it insulting when I hear people from outside this region say that my job is not worth this, we do not care about the environment. No one here would support a project moving forward if they did not prove that they can meet or exceed our strict environmental standards. I hunt and I fish. I take pride in where I live because it's where my family and I spend our free time. This is land we depend on. I also take great pride in working in an industry that provides me with the quality of life on the Iron Range.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
90	Hailey Lislegard	Citizen	I support the science and the work by the DNR and MPCA and independent experts who found both in the environmental review and in drafting these permits that the PolyMet project can meet all the state and federal standards. I believe the conditions spelled out in these permits will ensure that the project can be built and operated in a way that protects our health and the environment.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
91	Hailey Lislegard	Citizen	By doing this right I know that we can produce the jobs we need to support our families now and for future generations while being protective of our waters and other natural resources. I urge the agencies to finalize these permits as quickly as possible. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
92	Andrea Zupancich	Mayor, City of Babbitt	Hi, thank you. My name is Andrea Zupancich, Z-u-p-a-n-c-i-c-h. I'm the mayor of the city of Babbitt. And thank you for coming here. Our population is about 1,500. We used to be almost 4,000, but that was before the mine closed in 1987 and the town pretty much emptied out. Prior to that we were a thriving community. We had two growing elementary schools, a booming state-of-the-art high school with a shop class that no one could rival, with the help of the mine, of course. They provided us (inaudible) and they were very intent on training those people, those future miners.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
93	Andrea Zupancich	Mayor, City of Babbitt	Our schools even had their own swimming pool and an indoor arena, hockey arena. Class sizes were over 400. Now fast forward to today, as the gentleman from Cook spoke before. We have in our third grade about ten kids, tenth grade has 13. We are cutting down, our kids are consolidating classes. And as parents you want to offer the best we can to our kids.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
94	Andrea Zupancich	Mayor, City of Babbitt	Those that are against mining say bring in other business into town. You need to do something better. I don't see them offering solutions, just criticism. But we are trying to get other businesses. We are working on every option that is remotely being dangled in front of our communities.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
95	Andrea Zupancich	Mayor, City of Babbitt	We have some of the best resources here and such a fantastic opportunity to show the world how to do it and how to do it right. I don't see what's wrong with that or that person or that area that does it the right way.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
96	Andrea Zupancich	Mayor, City of Babbitt	At one time we had a thriving pool table company in our town. They employed about 50 people. To some that's a small number. To us, that's a big number. China was able to duplicate or design and with the cheap labor and work environments they were able to manufacture those tables at a fraction of the cost. You can imagine what happened next. We had five very large working buildings (inaudible) any tax revenue either as they went bankrupt.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
97	Andrea Zupancich	Mayor, City of Babbitt	Now, I also know a very talented person who moved to our area in Babbitt. They had a plan and they had a savings. They sold everything to come up here, they wanted to live up in this area. Now they purchased a home back down in the Twin Cities and they got jobs back down there. They were unable to find work here. And by work, I mean, sustainable work. But they were a family that wanted to rely on benefits and a retirement plan for their future. They wanted to live up here and gave themselves time to do something and they were unable to do that. So, unfortunately, they had to move back.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
98	Andrea Zupancich	Mayor, City of Babbitt	Let us not forget the statement in the thoroughly permitting process. We have reviewed and justified the mining and the statement is true, PolyMet NorthMet project will protect human health and the environment.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

99	Andrea Zupancich	Mayor, City of Babbitt	The NorthMet project will require an estimated two million construction hours for us to build. This is a lot of jobs for everyone. All right. That's all I have to say. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
100	Mike Larson	Citizen	Hello, my name is Mike Larson, L-a-r-s-o-n, and I'm from Aurora. I'm a strong supporter of the PolyMet and I'm deferring my time to Charlie Baribeau.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
101	Charles Baribeau	Councilman, City of Virginia	Thank you. My official name is Charles Baribeau, but everyone calls me Charlie. That's spelled B-a-r-i-b-e-a-u. I'm here to speak about the water quality that everybody is so concerned and afraid of that PolyMet is going to destroy the environment or water.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
102	Charles Baribeau	Councilman, City of Virginia	I'm also professionally a pharmacist, so I know the chemistry and I know what goes into this. PolyMet is going to use reverse osmosis. And I don't know how many of you know what reverse osmosis is, it's a system -- a lot of you do, the students especially know what it is. It's a system that's used in the pharmaceutical industry and being used (inaudible) it purifies the water that goes into these products, pharmaceuticals that you take into your body, other things.	Comment noted. General comments related to water quality and flow were considered during the environmental review process. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
103	Charles Baribeau	Councilman, City of Virginia	PolyMet is going to use reverse osmosis when they discharge their water into the -- discharged in the facilities that they're going to be using this. This is going to be millions and millions of dollars of high-tech technology with membranes.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
104	Charles Baribeau	Councilman, City of Virginia	I'm also a city councilman at the City of Virginia where our water, as said before by Jason Metsa, comes out of a mining pit. We test that every year. That water is as pure as any water in the Boundary Waters or anyplace else. Once you get rid of water through reverse osmosis you actually have to add chemical entities to it to make it drinkable so your body can handle it. It's almost like drinking distilled water, if everybody knows what that is.	Comment noted. General comments related to water quality and flow were considered during the environmental review process. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
105	Charles Baribeau	Councilman, City of Virginia	There's nothing left for chemicals that go into the environment. And people are so concerned about the water. I am not concerned as a professional person using our technology that is being put forth by this project.	Comment noted. Comments related to this theme generally state an opinion and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
106	Charles Baribeau	Councilman, City of Virginia	I would say that that is better than the water that comes out of any of your sewage treatment plants. We just had a video on sulfate and that's what they're talking about, saying it goes through sulfuric acid. A judge just ruled on sulfate standards for wild rice and threw everything in the science out because they aren't using the right science.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
107	Charles Baribeau	Councilman, City of Virginia	Right now the science that PolyMet and their advisors they've gotten is the best science in the world. So, I'd appreciate if anyone has questions afterwards about it, I will answer questions about reverse osmosis. Thank you.	Comment noted. Comments related to this theme generally state an opinion and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
108	Bob Berrini	Supervisor, Town of Morse	Hello. Thank you, I'm Bob Berrini, B-e-r-r-i-n-i. I'm a supervisor in the Town of Morse that surrounds Ely. And I want to yield my time to my commissioner, everybody here knows him, Tom Rukavina.	This comment simply defers speaking time to another individual. No response needed.
109	Tom Rukavina	Citizen	Thank you, Bob. And just for Mike Syversrud, when this project started 14 years ago and I was in the legislature, I was six feet tall. So, I'm -- I was in the legislature for 26 years, I represented the good people from Ely all the way through Babbitt and down here to Aurora, Hoyt Lakes. Representing the people on the Iron Range for 30 years, I can assure the gentlemen from Schroeder that I don't represent robots, I represent super men and women who have contributed to this country and this state like no other people in this world. And I have to say this, for anybody to think that I would want anything to harm my daughter and my two grandchildren that live five miles south of here, that's absurd.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
110	Tom Rukavina	Citizen	Whether you're against mining or for mining, you're a consumer that consumes all these minerals. And they can only be mined where they lay in the ground.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
111	Tom Rukavina	Citizen	We have a proven track record for 135 years. We are looking at one of the largest recycling projects in the history of the state of Minnesota. For people that don't know it, everything is there basically in order to run this mine. The only thing that has to be done is to dig a new hole amongst all the other holes that have been dug by both North Shore Mining and the old LTV site. It's time for this project to move on.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
112	Tom Rukavina	Citizen	Again, we are all consumers, we all use this. I want to thank my constituents and the people of the Iron Range for their perseverance on this project.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
113	Tom Rukavina	Citizen	And I want to thank you folks because you have done what you are supposed to do and you have made sure that all the statutes and all the rules that have been on the books since the agreement between the environmental community and the mining community in the 1990s, I believe, that those rules and statutes have been met. And that's why we're here tonight because PolyMet has met them. I say it's time to move on. I want to thank you for what you've done and I want to thank the people of the Iron Range for putting up with this for 14 long years.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
114	Bill Erzar	Citizen	Good evening, I'm Bill Erzar from Ely. I'm a proud supporter of PolyMet and I defer my time to Mr. Mike Jugovich.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
115	Mike Jugovich	7th County Comissioner, St. Louis County	Thank you. My name is Mike Jugovich, J-u-g-o-v-i-c-h, I live in Chisholm. I am the 7th District County Commissioner right here in St. Louis County, proud to be, and represent a lot of the people here. It's an amazing thing this process has taken so long. And I understand it's a process, but at some point we've got to get to work. We talked about our future, these kids are our future. I have one of my kids here tonight.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
116	Mike Jugovich	7th County Comissioner, St. Louis County	Because this is what it's about, generations being able to stay here, generations having their own kids. This is why we all moved here because we love the area. No one wants to pollute where we live, work and raise families. And I believe the science is clear. And I think deep down we all know the '70s is long gone. And what we have now is the technology and the ability to mine and mine right. So, people like these young people right across from me will have the opportunity to stay here, raise their own families and have their kids go to Mesabi East. It's a great, great feeling to be an Iron Ranger and understand what it takes to be an Iron Ranger.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.

117	Mike Jugovich	7th County Comissioner, St. Louis County	You've got to be tough. You've got to be Tom Rukavina, you've got to be tough, because he's been through it all. He gets it. And I see a lot of blue and white hats, tradespeople, all kinds of people here. You've been through the ups and downs. They understand how important it is to have these jobs.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
118	Mike Jugovich	7th County Comissioner, St. Louis County	We need them, our families need them. We can do this right, we can do this safely. We've been doing it for 135 years, nobody does it better, nobody does it safer, right here in the Iron Range. And we can make this go and be a success environmentally and economy-wise. Thank you.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
119	Jean Akkanen	Citizen	Hello, I'm Jean Akkanen, A-k-k-a-n-e-n, from Embarrass. And I'm a supporter of PolyMet and defer my time to Lance Johnson.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
120	Lance Johnson	Aurora Chamber of Commerce	My name is Lance Johnson, L-a-n-c-e, J-o-h-n-s-o-n. I'm from Biwabik Township. I'm a business owner here in Aurora, but I'm also speaking on behalf of the Aurora Chamber of Commerce. My wife and son and my mother are in the crowd tonight. My wife and I have attended many meetings about this project dating back quite a bit. We attended PolyMet public comment meetings in Blaine and Aurora in 2010, I believe. Next were meetings in Duluth and Aurora and in St. Paul in 2014. And that was followed by another round of meetings in Duluth and Aurora in 2016. And here now we are in 2018, another round tonight and then tomorrow in Duluth. After following this process for nearly a decade the agencies have overseen a thorough scientific review process. There's been ample opportunities all over the state for both local residents here where the project will take place and also those 100 miles away to provide input on the PolyMet permitting process. With PolyMet following our state's rigorous review and permitting process and years of scientific study by state experts, I see no reason why this important project for our area needs to wait any longer.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
121	Lance Johnson	Aurora Chamber of Commerce	I'm not sure when you folks got here today, if you're going to be in the area tomorrow when we go back down to Duluth, but if you get an opportunity and you want to take a drive into Hoyt Lakes, you'll find multiple manufacturing facilities that have closed down over the last few years. You can drive through Aurora's Main Street, and you've heard that referenced here tonight multiple times, and you can see buildings that were once homes to productive businesses and they're now falling apart and in disrepair and empty. In just the last few years we also lost a grocery store and the pharmacy, too. The scientific review process has been followed and this project should not be delayed any longer. The positive economic benefits that PolyMet will bring to our community is desperately needed. This project will inject new life to our local businesses, along with hired additional employees and expand instead of laying off and closing doors. Thank you.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
122	Tonia Kittelson	Friends of the Boundary Waters Wilderness	Hi, I'm Tonia Kittelson, K-i-t-t-e-l-s-o-n, I'm from Duluth. And I'm with Friends of the Boundary Waters Wilderness. Thank you for the public comment. We strongly urge you to deny the PolyMet mine application and we ask for our comments tonight to be about specific things that are in the permit request. My comments are about that. So, there's an example of the mine in British Columbia, the Mount Polley mine, the toxic waste from that mine followed 400 miles down the tributary and down the river.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
123	Tonia Kittelson	Friends of the Boundary Waters Wilderness	And if PolyMet mine pollution, the acid mine drainage, was to go 400 miles, it would go all the way from here down through the Partridge River, down through St. Louis River, 197 miles down to the Duluth and Superior, Wisconsin area and estuary, if you go another 203 miles down from Lake Superior, 203 miles from the lift bridge. My request is that you determine how far PolyMet pollution would travel and let people know how far that would go out into Lake Superior. People living downstream of the mine deserve to know just how far that contamination is going to reach, especially since it contains six of the top ten worst chemicals that the World Health Organization has identified in acid mine drainage.	This comment pertains to issues considered in the development of the DNR Dam Safety permit. Regarding potential contamination from the discharge from the WWTS, the discharge is required to meet Operating Limits for sulfate, copper, arsenic, cobalt, lead, nickel and mercury at the point of discharge at the project site. The permit also states that the discharge must not violate water quality standards; again, this would be at the point of discharge. In addition, the project will include other engineering controls such as stockpile liner systems and seepage capture systems that are designed to control wastewater and runoff from the facility to prevent the pollution of downgradient water. Consequently, impacts to the St. Louis River and Lake Superior will not be discernable.
124	Tonia Kittelson	Friends of the Boundary Waters Wilderness	A couple other things to consider are that the St. Louis River estuary had decades of cleanup going on for the area of concerns in the estuary. And that's cleaning up legacy pollution from the past industries. And PolyMet would be a new industry putting new legacy contamination into that area that's had hundreds of thousands of dollars spent in cleanup and decades to clean it up.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
125	Tonia Kittelson	Friends of the Boundary Waters Wilderness	I know the health impact assessment was thrown out, but I think that was legislation that determined that. And that's actually, I think, something that's worthy of consideration for you in your role as impact on humans, even lastly for their sulfide mine proposals.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
126	Tonia Kittelson	Friends of the Boundary Waters Wilderness	Regarding reverse osmosis, I know the pharmacist made some excellent points, but the reverse osmosis in the proposed permit to mine application was done on taconite rock, not in the sulfate ore that's going to be used in the PolyMet mine proposal. So, I would request that you use the rock that's going to be used in the PolyMet mine for your testing for the reverse osmosis. Thank you very much.	Reverse osmosis as a treatment technology is designed to treat water with certain chemistries, so it is not important to the viability of the treatment where that chemistry came from. However, to demonstrate that membrane treatment technologies were capable of meeting treatment targets for the PolyMet project, the company conducted a 6-month pilot testing program using seepage water from the existing tailings basin. For a portion of the test, additional metals were added to the test influent to more closely simulate projected effluent quality (i.e., wastewater that would be expected from the mining of sulfide-bearing ore). Results of the pilot testing were used in MPCA's engineering review of the treatment system design, and MPCA determined the proposed design is capable of providing the necessary level of treatment.
127	Patricia Renneisen	Citizen	I'm Patricia Renneisen from Schroeder. And I give my time to John Gappa.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
128	John Gappa	Board Member, Friends of the Boundary Waters Wilderness	Good evening. My name is John Gappa, G-a-p-p-a, I live in St. Paul. I served as a corporate chief financial officer for a number of Minnesota companies and I've been actively following the financial assurance aspects of this proposed project. I also serve on the Board of the Friends of the Boundary Waters Wilderness. Governor Dayton has stated that permitting for the proposed PolyMet mine will occur only if taxpayers from Minnesota enact financial assurance.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.

129	John Gappa	Board Member, Friends of the Boundary Waters Wilderness	While the DNR's latest financial assurance departments are much improved, they still do not provide the financial protection Minnesota taxpayers deserve. The DNR analysis shows that the first year of mining creates a cleanup bill of 588 million dollars. After 11 years of mining the cleanup exposure is over a billion dollars. At the conclusion of mining the remediation cost and the cost of treating polluted water for a hundred years is 782 million. And these estimates assume that everything goes according to plan.	Comment noted. This comment pertains to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to this comment.
130	John Gappa	Board Member, Friends of the Boundary Waters Wilderness	To protect the taxpayers in Minnesota I recommend the following: First, significantly increase the up-front cash contribution required. As it stands, total cash requirements by the ninth year of mining operations total 26 million dollars, a mere 3 percent drop in a billion dollar bucket. DNR's own consultants state that it would be very difficult for PolyMet or even a major mining company to obtain the financial instruments required in the permit. Second, require PolyMet to complete an updated tentative feasibility study, examine the project's ability to meet the cash contribution requirements. This study should be subject to public review and comment. And the information learned from the study should be incorporated into the final permit to mine. Outside expert analysis of the project shows that this project produces marginal financial income at best, even with copper prices at ten-year peak levels. Third, the DNR should provide public transparency into the annual review process for financial assurance and continue to use its third-party consultants for these annual reviews.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
131	John Gappa	Board Member, Friends of the Boundary Waters Wilderness	Finally, if PolyMet fails to meet any of its financial assurance requirements, the DNR needs to have the options to, first, prohibit payment of dividends to mine shareholders, prohibit payment of bonuses, stock options or other incentives to the mine and require full cash funding of all financial assurance obligations in the event the mine is sold.	Comment noted. This comments pertains to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to this comment.
132	John Gappa	Board Member, Friends of the Boundary Waters Wilderness	In conclusion, a significantly more financial assurance package needs to be funded with cash rather than difficult to obtain financial instruments. To adapt an old saying, "In God we trust." PolyMet, please bring cash. Thank you.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
133	Bob Tammen	Citizen	I'm Bob Tammen, T-a-m-m-e-n, from Soudan, Minnesota, home of Minnesota's first iron mine. And I've also worked on the mine site of the PolyMet proposed processing plant. That was back in the days when Lindsey (sp.) had an (inaudible) plant there. So I'm an old-timer.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
134	Bob Tammen	Citizen	I guess, I don't know, I didn't prepare a presentation. I just want to respond to a couple of things I heard here tonight. We have been assured several times that when it comes to mining, Minnesota knows how to do it right. It was just two weeks ago I was at a hearing in Mountain Iron with my wife Pat for US Steel that was asking for a variance. They want another 20 years for their groundwater to be attenuated. I think that means diluted to meet Minnesota standards. So I started working on that property 50 years ago. Fifty years ago those lakes were leaking. Today those lakes are leaking. We are told it's going to take another 20 years to attenuate the groundwater coming off that site.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
135	Bob Tammen	Citizen	So when you hear somebody say when it comes to mining, we know how to do it right, it's not very accurate. We have a sad record. I know our regulatory agencies have good leadership and good rank and file people. What they don't have is the political clout to clean up Minnesota water that's been degraded by our existing mining industry.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
136	Bob Tammen	Citizen	We've been told we need these metals to make cars and batteries and windmills and all these wonderful things. Which is an element of truth, but we should acknowledge that we pay a price for using our metals.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
137	Russell Hess	Citizen	My name is Russell Hess. I'm a resident of Plainview, Minnesota. I support PolyMet. And I defer my time to Julian Collins.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
138	Julian Collins	President, IDEA Drilling	Hello. Thanks for having me today. My name is Julian Collins, C-o-l-l-i-n-s. I am the president and CEO of IDEA Drilling, a local drilling company based in Virginia, Minnesota. IDEA Drilling offers lots and lots of high-paying jobs for local citizens specifically by aligning ourselves with (inaudible) such as PolyMet. In fact, we relocated our headquarters to the Iron Range specifically to support the local economy. I'm here today, quite simply, to ask you to please approve the permitting process to allow me to continue to offer local employment to the citizens of this area. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
139	Randy Lasky	Presizent, Northspan Group	My name is Randy Lasky, L-a-s-k-y. I'm a resident of Duluth. I'm also president of the Northspan Group. We are a private nonprofit business and community development organization. And my board and myself we strongly support the PolyMet project. I defer my time to Melissa Cox, president of the Laurentian Chamber.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
140	Melissa Cox	President, Laurentian Chamber of Commerce	Hi. My name is Melissa Cox, C-o-x. I'm a resident of Hibbing and I am president and CEO of the Laurentian Chamber of Commerce and we represent nearly 300 businesses in the Quad Cities and surrounding communities. And on behalf of the Laurentian Chamber of Commerce and our board of directors and our member businesses, we stand today in strong support of our next generation of mining and the draft permit to mine, air and quality permits, and 401 wetland certification for the PolyMet NorthMet project. I also want to note that my nephew goes to school here, my family lives in this area and I'm an Iron Ranger at heart and proud to live and work here, which makes this even more important and close to my heart.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
141	Melissa Cox	President, Laurentian Chamber of Commerce	So utilizing natural resources is a core aspect of our economy on the Iron Range. Beyond our region of strong, sustainable, domestic supply of minerals that will be mined by PolyMet, it's essential to a vibrant American manufacturing sector. This, in turn, positively affects all of our other member industries, including financial, legal, defense and communications, which are all integral in supporting our high standard of living.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
142	Melissa Cox	President, Laurentian Chamber of Commerce	The Laurentian Chamber of Commerce supports responsible mining in all forms in northeast Minnesota. We believe in the systematic application of science upon which decisions must be made to guide mining and create economic viability. PolyMet has undergone an exhaustive environmental permitting process and has been fair to all stakeholders. We believe the State has been thorough in their permitting processes and we trust the science and findings of the State's experts which show that the PolyMet NorthMet project will protect human health and the environment.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

143	Melissa Cox	President, Laurentian Chamber of Commerce	PolyMet will not only provide up to 1000 direct and indirect jobs, but it will also have a massive impact on our infrastructure, our schools and other areas. The profound effect of this project will be seen in our communities, in our schools, and the people in this room without projects like this won't be able to sustain our communities and our viabilities. We won't be able to stand here much longer to even be here to support. So we need to have the mining continue and support. So we urge today that the MPCA and the DNR grant these permits in a timely manner. Thank you for the opportunity to speak. We appreciate it.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
144	Kara Josephson	Citizen	Hi. My name is Kara Josephson. And I would like to cede my time to Kristina Noghre (sp.).	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
145	Kristina Nighre	Citizen	Hi. My name is Kristina Noghre (sp.). I'm from Knife River, Minnesota. My last name is N-o-g-h-r-e (sp.). I just came up here to voice a couple of concerns that I have. What concerns me is the permit waste storage element of this project. The waste storage basin will be unlined and will leak (inaudible) rock. And according to the PolyMet plan, untreated water will seep directly into the groundwater. According to their numbers, that's 5,000,000 gallons from the site itself and 10,000,000 gallons from the storage basin. And it struck me that when everything is operating perfectly, millions of gallons of contaminated water are going directly into our groundwater.	See response to Comment Water-510.
146	Kristina Nighre	Citizen	And then the second piece that I wanted to mention was the real value of our water in Minnesota. If you think about the nation as a whole, how many states are undergoing serious crisis in terms of drought and we are so rich in water. The amount of water that the PolyMet plan says they are going to use is 6.1 billion gallons of water each year. Each year. And they aren't paying for that water. They are paying $8 per million gallons.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
147	Kristina Nighre	Citizen	I live downstream, and my thought, my concern is for everyone around the mine, wherever along, whether the top or the bottom of the stream or anywhere, my concern is about our kids, about contamination, contaminating water. And, you know, what's the value of our land if we can't drink the water. So I ask the DNR and MPCA to deny the permits and certifications for the PolyMet sulfide mine. Thank you.	Treatment of the discharge through the WWTS using membrane treatment technology (e.g., reverse osmosis) and where enforceable operating limits for sulfate and various metals apply, will minimize effects on downstream water quality. In addition, the project will include other engineering controls such as stockpile liner systems and seepage capture systems that are designed to control wastewater and runoff from the facility. The effectiveness of these controls was evaluated in the EIS and the water quality permit requires their installation and operation.
148	Mark Giese	Citizen	My name is Mark Giese, G-i-e-s-e. I'm from Gilbert, Minnesota. I defer my time to Chara Jarvela.	This comment simply defers speaking time to another individual. No response needed.
149	Chara Jarvela	Citizen	Hi. I'm Chara Jarvela, J-a-r-v-e-l-a. Originally Chara Chuck. I live in Hoyt Lakes, Minnesota, but I grew up in Aurora and went K through 12th grade here at Mesabi East School District. "..." Sadly, many of these schools had to close their doors due to LTV shutting down in 2001. After that date, we lost almost one-third of my graduating class. Friends left, families moved away and businesses shut down. After growing up in these small towns, I realized how important it is to trust people, to be a part of a community and to be close to family. After moving away to college and getting my degree in elementary education, I immediately moved back to try to start my new career in the Iron Range. I'm currently a teacher in Virginia. "..." The upcoming possibility of PolyMet opening in our area is amazing for our young family. It has been very depressing driving down the streets that used to be filled with people mingling and businesses thriving that have now become vacant and closed. The possibility of the class sizes going up, people moving into the hundreds of houses that are currently sitting for sale, and the use of a current infrastructure and reuse of our resources is more than anyone could ask for around here. I have dreams of my daughter -- sorry, growing up in the school just like both of my parents did and how her father and myself did. Molly will some day get to use the new athletic complex, play volleyball and basketball on this court like I did, meet new friends and find success here at Mesabi East. I implore you all to think of these dreams as well: Hundreds of jobs and families moving to our area to work at PolyMet, schools and other businesses, more money in our communities and a more secure life on the east end of the Iron Range. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
150	Nancy Norr	Director of Regional Development for Minnesota Power	Nancy Norr, N-a-n-c-y N-o-r-r. It is my privilege to be in front of you again this evening as the director of regional development for Minnesota Power as well as the chair of Jobs for Minnesotans. I'm here on behalf of those 55,000 labor union members, 2500 businesses across the state and thousands of citizens in the Arrowhead region and across the state as well who commend the regulatory agencies for the work you have been doing and how closely you have been working together to reach this important and historic milestone. The core belief in our organization is we do not have to choose between jobs and the environment. We can do both. A key economic driver clearly here in the region is mining. And the growth in terms of (inaudible) of this industry is critical to the long-term success of our way of life here in northern Minnesota.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
151	Nancy Norr	Director of Regional Development for Minnesota Power	As the nation with the highest consumption of strategic metals in the word, it is imperative that we maintain the regulatory framework that allows responsible mining to move forward. You will hear from a very vocal minority of people that these permits should not be issued and that the financial assurance is insufficient. And they will criticize agencies, the governor and anyone else that supports PolyMet. In fact, I don't think they would ever think the project is good enough or safe enough. And yet those same individuals consume, like we all do, an average of 1400 tons of metal to minerals to fuels in their lifetime. Critics of the financial assurance package are loose with the facts, and it seems as though they are as loose as those who keep claiming there will be acid rock drainage when the DNR has clearly stated that there will not. PolyMet will have to meet the bankruptcy approved petition for the financial assurance before they will be issued their permit. And that is the same as mines across this country who post bonds and letters of credit as the primarily means of meeting their financial obligations. That's the same high standard the State of Minnesota will require.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
152	Nancy Norr	Director of Regional Development for Minnesota Power	Our members, along with the vast majority of the people, understand our society, that we fundamentally rely on our natural resources and fully support your rigorous review to be conducted over these dozen years. We support a process based on sound science that strives to minimize and mitigate risks and at some point comes to a close. We fully recognize that if you say no to mining here, we are saying yes to mining somewhere else in the world where it's unlikely their environmental protection or labor safety laws are as rigorous as ours here in Minnesota. So the agencies have done their jobs, the process works. Now it's time to let Minnesotans get to work. And we respectfully request permits to be issued in a timely manner and that the agencies now can turn your attention to long-term compliance activity that will on daily basis protect human health and the environment. Thank you.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.

153	Tony Jeffries	DIrector, Engineers Club of Northern Minnesota, Director of Iron Range Tourism Bureau	Good evening. Tony Jeffries, J-e-f-f-r-i-e-s. And I apologize to all for having no prepared remarks. I'm here not only as the director of the board of the Engineers Club of Northern Minnesota and as the director of the Iron Range Tourism Bureau, I'm here as myself. And only for myself. And I would like to speak mostly in support of the agencies and your great work and the long time it has taken to get where you're at. The brunt of my professional life has been spent in environmental science and environmental engineering and I've been blessed with the opportunity to work not only in Minnesota, but across this country in many pretty controversial and contentious projects, from the mining where extraction of landfill of gas to be converted into usable energy to the combustion of solid waste, and a project in downtown Minneapolis which now is being celebrated in about its 28 years of operation, the Hennepin Energy Resource Center, which took almost 10 years to permit for Hennepin County to combust their solid waste and convert that into steam and usable electricity. So as a guy who woke up every morning and put his shirt and tie on and ran into that brick wall waiting for the permits to come through, lots of things happened, including the world's first commercial mercury permit limit. It was kind of like Field Dreams, build it and they will come. There was not even any technology available at that date that the PCA put that permit limit on there. Guess what? We got the technology. We made it. We made it happen. And we made it happen successfully.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
154	Tony Jeffries	DIrector, Engineers Club of Northern Minnesota, Director of Iron Range Tourism Bureau	I am not convinced that there has been any argument to date that suggests that this project will be environmentally degrading to human health or the environment. I am fully convinced back from my days of doing graduate research for the DNR and looking at chelating leachable and toxic heavy metals out of the Goat Ridge Lee (sp.) case to my work with the PCA on several rulemaking task forces, this project has not to me demonstrably ever been proven to come anywhere close to degrading human health and the environment. I believe the agencies have done their jobs and done it well, have done it multiple times over. I'm not going to speak to the -- I grew up in Ely, I grew up in Eveleth, I live in Eveleth now again. I'm not going to speak to the socioeconomic aspects as so many of these other folks have so successfully spoke to. I'm going to speak completely technologically and scientifically. There is nothing that I see that suggests that this project is going to be degrading to human health or the environment and I urge that consideration to pass on this permits by the agencies. And I thank you all for your work.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
155	James Watson	Citizen	I'm not much of a public speaker. My name is James Watson, W-a-t-s-o-n. No relation to Sherlock and his buddies. I have lived up here on the Iron Range now for about just under 50 years. Two of my kids would have been in that blue shirt group 10 years ago. Now my grandkids are going to be in that. That's where they're at. They are in school right now. Well, I have a little bit of a unique situation here. I had an opportunity to work at PolyMet for three summers in a row cleaning up and reorganizing things that the mine had left. Rewarehousing, picking up parts, new parts, used parts, and what I picked up along the way just from the conversation among the workforce that was out there at the time, that these PolyMet people they really have got their stuff together. It was clean, do it right, do it the way it really needs to be done, prepare for when PolyMet finally gets over there and gets the ball rolling, they can jump right in and just go for it. Well, I think PolyMet has really got the environment at heart. Well, making money, too.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
156	James Watson	Citizen	Now, in the 50 years that I have been here, I also played in a country band and it used to be in the heyday when the LTV and the Erie Mining Company were running you couldn't find a parking place on Main Street or the side street on a Friday or a Saturday night. Now, you shoot a bazooka down the street and not hit a person or a car or nothing. It's becoming just almost abandoned. You take a look at the streets now compared to what they were 15 years ago, it's becoming a ghost town. We lost our grocery store, the drugstore, about six or seven or eight bars, hardware stores, zilch. Now, I would like to see some opportunities for the younger people. Most of our young families have left the area. Why? Their means of support is gone. PolyMet I think is their salvation.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
157	James Watson	Citizen	Now, I appreciate the fact that you folks have done such an extensive, tight-knit job of this. But I do have one complaint. You are taking way, way too long. I mean, I've been waiting 13 years for this opportunity. And I'm 76 years old now. It's too late for me. But what about my kids and my grandkids? Two of my grandkids, three of my grandkids are going to graduate from this school. Sitting up there with them blue shirts on. Which is kind of nice I think. And as far as the opposition to this PolyMet project, I think these folks just don't have their stuff together. I'm doing pretty good I thought. I was afraid to get up here and talk and I was going to give my time to somebody because I couldn't keep my language clean. But I think I'm doing pretty good. When my name came up, I changed my mind and to just go for it. But PolyMet in my opinion is good to go. It's time. Let's go for it. Go PolyMet. Thank you.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
158	Joni Stutzman	Citizen	Hi. My name is Joni Stutzman. My name is spelled J-o-n-i, last name Stutzman, S-t-u-t-z-m-a-n. I live in Gilbert. I would like to defer my time tonight to Lance Kupka.	This comment simply defers speaking time to another individual. No response needed.
159	Lance Kupka	Citizen	My name is Lance Kupka, L-a-n-c-e, K-u-p-k-a. I'm from Hibbing, Minnesota. I am the son of a steelworker, a grandson of a steelworker and a brother-in-law of a steelworker. I'm also a proud member of the Mesabi East Teachers Union. I am here to speak strongly in support of the PolyMet project. I adamantly believe that mining and caring for the environment are not two mutually exclusive ideas. We can have well-paying mining jobs and make sure that our air is clean and our water is safe to drink. Diversifying our economy is incredibly important, but will only work if we take advantage of the foundational resources such as mining that we already have in abundance. I am a third generation Iron Ranger who wants his son and daughter to live on the land where they were born. I do not want them to make the tough choice to have to leave this area in search of employment.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
160	Lance Kupka	Citizen	PolyMet has gone above and beyond the requirements to make sure that this project is safe. The science is sound and proven. Much like our existing mayor Dave Lislegard, I would not support this project if it was not done in an environmentally responsible manner. We have the technology to build this operation right. Let's move this project ahead and do this the right way.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

161	Lance Kupka	Citizen	I have been a teacher at Mesabi East for 17 years. I watched as our population has slowly faded away. Stores have closed. People have moved away in search of greener pastures. When LTV shuttered it doors in 2001, Mesabi East lost over $400,000 of funding that was provided by taxes. I have watched as our graduating classes have went from well over 100 students to approximately 50 to 60 students. We need this project for the well-being of our communities and the future of the Iron Range. I was born on the Iron Range and will probably die on the Iron Range. I will give my very last breath to make sure that this area sustains and thrives in the future. I look forward to the day when we can proudly look back at this project and say that we did things the right way, we provided good jobs for people in the area, and we ensured the sustainability of the Iron Range. Please move forward with this permitting process. We have have waited far, far too long for this to happen. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
162	Tom Wright	Citizen	I'm Tom Wright. I would like to defer my time to Mike Geisdorf.	This comment simply defers speaking time to another individual. No response needed.
163	Mike Geisdorf	Citizen	My name is Mike Geisdorf. Last name is G-e-i-s-d-o-r-f. Commissioners, I want to thank you for coming to our community. I know it's been a long road for all of you. And your staff has probably been enduring this as well as all the rest of us. So I want to thank you for coming in. The one thing, it's a very long process, the permitting that has been very obviously I think making problems to both pro and anti mining has been the delivery of process, that as you guys at the MPCA and DNR and other permitting agencies have shown getting to this point. I want to encourage you to continue to effect and then issue these permits in a timely manner so the residents of northeast Minnesota and PolyMet (inaudible) and our young people can get the jobs it produces.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
164	Mike Geisdorf	Citizen	If there is any kind of takeaway from all of this, it's been that whether the anti mining crowd likes it, if a company like PolyMet has the wherewithal to do it by following the existing law and statutes, that copper-nickel mining can be permitted regardless of the voracious opposition. At what point will the opposition see the futility in furthering this fight? At what point will the opposition recognize the opportunity to create something positive not just for northeast Minnesota but for the world? And I think Ross Peterson was right, they are afraid that PolyMet is actually going to do this correctly. And we all know they are.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
165	Mike Geisdorf	Citizen	The world is changing how it looks at this kind of mining. They are looking at the United States and us in particular to lead that change. And that is exactly what PolyMet is doing right here in northern Minnesota. And for those that say this has never been done right before in the United States, that's just simply not true. We have a living example of it with the Eagle Mine in northern Michigan and the Flambeau Mine in Wisconsin has done very well. And to this day that mine site is a park that is used by the community there in Ladysmith. I wanted to point that out. So we can create a world-class mine with top of the line controls and unequal environmental safety right here in the middle of the forests and lakes of northeastern Minnesota.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
166	Mike Geisdorf	Citizen	I'm going to ask the anti mining crowd, once again, where will you get your copper-nickel from? What third world nation would you prefer to see that mining being placed in? If you've seen some of the mining sites in some of these third world nations, would you prefer that? Our sustainability friends want these modern communities to (inaudible) at someone else's expenses. I encourage the MPCA and the DNR permit the following into statute and law. Thank you.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
167	Diane Kromer	Citizen	My name is Diane Kromer, K-r-o-m-e-r. I am a resident of Ely, Minnesota and I thought it very important for me to spend my birthday today here in support of PolyMet. I just want you to listen to the engineers and the chemists who have spent 14 years working on this project and listen to the experts in the field. And I would like to defer the rest of my time to Nancy McReady.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
168	Nancy McReady	Citizen	Hi. Nancy McReady, N-a-n-c-y M-c-R-e-a-d-y. I'm president of Conservationists With Commonsense. I've followed and reported on PolyMet and the NorthMet project with the CWSC and the Ely Echo since 2004. I haveattended community readiness meetings, open houses, presentations and hearings and have learned about PolyMet's process, their environmental safeguards and their financial reassurance that would be updated annually. In those early days of information on PolyMet, few, if any, anti copper-nickel mining activists attended the meetings. Only in the last two years have they been speaking against all aspects of the permitting process and copper-nickel mining. The main arguments against copper-nickel mining or sulfide mining, as they call it, are that it might, may or could pollute area lakes, rivers and streams. They say they want it proven that it can be done safely. But when we cite Flambeau in Wisconsin, Stillwater in Montana or Eagle Mine in Michigan, they aren't satisfied. PolyMet's ore body has a low sulfur content of less than 3 percent compared to the Flambeau which was at 30 percent. They do not acknowledge the new mining technology that's been used in other parts of the United States and in Canada. The opposition will bring up Mount Polley in British Columbia and the horrible breach of its tailing ponds in 2014. They don't say how many times the mining company applied for water discharge permits beginning 10 years earlier that the ministry didn't address. This is what lead to the breach of the tailing pond's wall. The walls that were far steeper than what PolyMet proposes for their double-wall tailing pond. They also bring up Gold King in Colorado in 2015. The EPA deliberately released toxic water into the Animas River from a mine that's been idle since 1920. It was cheaper to release the water than to build a wastewater treatment facility, and there were no reports of any fish loss. And within weeks the Animas River was open to tourists, rafters on the rivers, fishermen on the lakes, on the rivers and on the streams that were affected. An independent study of water quality in the Animas River after the spillage shows major human health concerns were short-lived. The lawsuit against Reserve Mining Company over taconite tailings dumped into Lake Superior were deemed asbestos-like fibers. Today we have Black Beach near Silver Bay where millions of tons of tailings washed ashore. This beach is now hailed as the most beautiful beach on Lake Superior. Accidents happen, there are no guaranties against that, but they are addressed and and mitigated.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
169	Nancy McReady	Citizen	CWCS believes the State has been very thorough in its permitting process. We trust the science and the findings of the State agencies' experts which show the PolyMet NorthMet project will protect human health and the environment.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

170	Aaron Stolp	Citizen	My name is Aaron Stolp, S-t-o-l-p, from Duluth. I am born and raised on the Iron Range. And I believe in hearing both sides to any story, but after 13 years of hearing opposition to this, while PolyMet has followed the letter of the law in their permitting process, I encourage the State agencies to take a closer look at some of the arguments against this project to help realize it's time to continue forward with this permitting process.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
171	Aaron Stolp	Citizen	Opposition point number one: We often hear that there is too much copper already available in the world and we have more than enough copper for all of our needs. To that argument, I say false. I'd like to know the source that can show us that we have enough copper for the development that we need for the next 20 years, 30 years and beyond. And even if this were the case, to that I would say, so what. I could make the same argument that there is already too much craft beer available for us in Duluth. But if a new brewery wants to open up and if they go through the proper permitting process, they have the right to do that. Opposition point number two is the misleading verbiage that we often hear about this process. Precious metal mining is often referred to as sulfide mining by opponents. I would like to ask if they are aware that all metal and ore mining involves exposing sulfide rock. And this deposit we are focusing on here has no higher sulfide content than any other successful, non-polluting mine site in the country.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
172	Aaron Stolp	Citizen	Or how about the gentleman who came to the gym here tonight from North Oaks who gave us a complete apples versus oranges scenario of mines that did not go through the rigorous permitting process that the State of Minnesota is requiring PolyMet to do. It's nothing more than another scare tactic to hinder economic progress here and what too many people from out of town like to consider their own personal playground. None of us here in support of PolyMet want polluted water. That's ludicrous. And after 13 years of following the rules and setting a high standard, I encourage the approval of these permits as a way to promote responsible industrial development in our region. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
173	Jack Mattila	Citizen	My name is Jack Mattila. It's M-a-t-t-i-l-a. No "r." And I would like to defer my time to Tony.	This comment simply defers speaking time to another individual. No response needed.
174	Tony Hansen	Citizen	Good evening. My name is Tony Hansen, H-a-n-s-e-n. I'm a resident of Duluth, Minnesota. A lifelong, born-and-raised resident. It's important for me to come here today because the proposed PolyMet project has a potential to create job opportunities that will benefit my friends, my family for years to come. I urge the Minnesota Pollution Control Agency and the DNR to grant these permits in a timely manner because our communities need job growth. The NorthMet project will create an estimated 1000 good paying jobs that would greatly benefit everyone here. This will be done by the creation of 360 full-time mining jobs in operations and the creation of an additional 600 plus related spinoff jobs. In bringing forth these jobs, you would also bring an estimated $720,000,000 of wages and benefits to our families, friends and community members. This project also carries with it the potential for 2 million hours in construction. So the benefits of just growing the business. This project will support our current local industries and bring new potential industries to our communities. These industries include manufacturing, technology, green energy, green technology, retail, automotive, restaurants, construction. Just to name a few. Having a good job is one of the most powerful determinants of a quality life. And I want to make sure that my community, my friends and my family have both.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
175	Tony Hansen	Citizen	The science behind this engineering marvel shows that the PolyMet project can meet or exceed all environmental regulations and standards at the same time of creating these jobs. The Rotary guiding principles are: Is it the truth? Yes. By fact, what you guys have proposed and done with the evidence and fact checking, we can do this in an environmentally conscious manner. Is it fair to all concerned? Absolutely it is. It brings forth opportunities that are abundant to us now and into the future. Will it build goodwill and better friendships? Absolutely. This brings our community together today here to have a meaningful conversation that we can get positive feedback from. Will it be beneficial to all concerned? Yes, it will. That means it's a no-brainer to move forward with this economic improvement to our area. Thank you for your time.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
176	Dave Kromer	Citizen	My name is Dave Kromer, D-a-v-e K-r-o-m-e-r. I didn't really have much prepared until I listened to some of this stuff tonight. And I really appreciate the work that you guys did. I'm looking at all those papers and I'm saying that's a lot of stuff to go through. I still oppose it. I would never vote for it. That's what we're up against. We need to talk to these kids that are here. That's our future. We lost a generation already to the years that we have wasted. Let's not waste another generation.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
177	Justin Dallas	Citizen	Hello. My name is Justin Dallas. I'm from Knife River. I just want to say a few words here after hearing everyone tonight. I think this is a question of conscience. The word is conscience. You know, you think to yourself what is your source and what do they gain to stand -- or what do they stand to gain from what they are telling you? Well, we hear about science on this side and we hear about science on that side. And I do believe that we need jobs. We need to mine. We need to do this. But, at the same time, we need to do it right. It's easy when there has been a dry spell to take anything that comes to you, but it's not always the first thing that comes along that you want to go for. We shouldn't settle for less and we shouldn't settle for long-term damage to get something now. We must be more critical of how applicable the opposed science is. In light of the formidable amount of recent failures, we must take all the time necessary to make sure that we are doing it right. We need the resources, we need the jobs, we need to show the rest of the world how it's done, so we need to do it right. We need to take the time to do it right. We should not gamble with our children's future. We should make sure that we are going to get these things pushed through. We are going to help these fine people that live in this area. But we need to do it right. It's a matter of conscience and we need to make sure that the science is right and the people that stand to gain aren't just pushing something through that's going to hurt us in the long run. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
178	Todd Lyden	Citizen	Hi. I'm Todd Lyden and I support PolyMet. And I will concede my time to Jerry Fryberger.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.

179	Jerry Fryberger	Citizen	My name is Jerry Fryberger and I'm from Duluth. And I was born and raised in Duluth. I went to school in Duluth. And unlike Tom Rukavina, my friend, I'm not an Iron Ranger, but I'm a (inaudible) and I'm passionate about the Iron Range people. I'm passionate about the communities across the Range. PolyMet, a project that Minnesotans should be very, very proud of, particularly the co-lead agencies that have painstakingly studied this thing, and they have done a superlative job. The Corps of Engineers, the Department of Natural Resources, the State of Minnesota, the U.S. Forest Service and MPCA and the EPA, you have done a wonderful job. I know they are all not represented here, but I'm very, very proud of -- I was paddling in the Boundary Waters Canoe Area in 1946 long before many of you were born. So I understand the environment. Over the past 11 years of responsibly addressing the environment and the processing challenges and the expenditure of in excess of $300,000,000, we have watched this project's gradual development. And continuing in the rich heritage of Minnesota's mining industry, a major contributor of America's industrial growth and national security, Minnesota should be extremely proud of this project. "..." A milestone has been reached here in the tremendous efforts of PolyMet and the co-lead agencies in this project. The progress PolyMet has made in the last 11 years is a wonderful, wonderful milestone as they develop Minnesota's first copper-nickel non-ferrous mining project. A milestone, an important milestone, which is our mining industry is no longer being judged how mining was done more than a century ago back in the 1870s or even decades ago. But rather by state- of-the-art present mining technology and enlightened environmental standards based upon the science of our 21st century. You have done a superlative job, folks. We are very proud of you. I'm proud to be a Minnesotan and I really support it. Thank you much.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
180	Chad Sarh	Citizen	My name is Chad Sarh. This here is my son Cody. We are here to support PolyMet. We are going to defer our time to Jodi Pierkarski because it's getting late and I've got to get him home to bed.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
181	Jodi Pierkarski	Citizen	Hello. My name is Jodi Piekarski, J-o-d-i P-i-e-k-a-r-s-k-i. I'm from Grand Rapids, Minnesota. It was important for me to come here today. I have spent ever since high school graduation working in either the paper or polymer industry. During those over 20 years I have observed with the proper permitting and environmental oversight that industry and environmental regulations can coexist together to create positive impact for a community. Minnesota has some of the strictest environmental standards of any state. If mining is going to occur, we want it to be done in a state and country that cares about the environmental impact. I urge the MPCA and the DNR to grant these permits in a timely manner because the permitting conditions, which were created through a comprehensive environmental review process, follow the monitoring, operating, reporting and inspection requirements for the mine during all phases of construction, operation and closure. Together the permits provide the framework for mining and environmental protection to coexist together. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
182	John Rebrovich	Citizen	My name is John Rebrovich, R-e-b-r-o-v-i-c-h. I am a third generation miner on the Range and our family has been mining for over 80 years up here. I'm also assistant to the director of United Steelworkers District 11. Our district covers nine states in which we represent miners in just about every one of them. One of the states that were mentioned was Montana. And, actually, I heard the Stillwater Mining Company mentioned. And I use that as an example because they, too, when they opened up, they had the East Boulder Mine on one side of the mountain and the Nye on the other. Very sensitive rivers run right next to it. The Yellowstone River. You can throw a rock from the parking lot right into the river. So you can imagine when that mine opened up we heard a lot about the same things that are going on here. They went through a stringent, rigorous environmental impact statement that's done here and they met the standards. But the fight was still going on. They started to mine. They showed that there was no pollution that was coming. And the regulators were right. They did it right. Now, what the mine did was talk to the environmentalists and said, look, come on in here and look what we are doing. Don't just raise heck or make false statements and file lawsuits and on and on and on. We meet the vigorous environmental standards that are here. Come and look at what we are doing. And they formed what they called after many, a couple of years of talks the Good Neighbor Agreement. This Good Neighbor Agreement is transparent with everybody. And the environmentalists, the union and the company worked together to show that this can be done safely. Thank you. I hope you support PolyMet.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
183	Steve Giogi	Executive Director, Range Association of Municipalities and Schools	Good evening. Steve Giorgi, G-i-o-r-g-i. I'm from Mountain Iron. I'm the executive director for the Range Association of Municipalities and Schools. This is not my first rodeo at one of these hearings conducted by Commissioner Stine or Commissioner Landwehr. And, unfortunately, in the past, we have not always been in agreement. But tonight RAMS and the 72,000 residents who are members of our association stand here in support of all of the work that you have done on this project. The reason we are here tonight is because those two commissioners and their departments have done the environmental research and checked all of the standards. They have worked with PolyMet rigorously, we believe a little bit too long, but we have come to the right conclusion. That it's time to issue these permits. They have met the standards. They have met the tests. And these are the right things to do at this time. And I'm going to have some more remarks tomorrow down in Duluth. Hopefully, I will get a chance. We have got resolutions coming in from a lot of Range communities, from some groups, from our board. We have already passed a resolution of support for these permits and we will submit them for the record. But tonight I'm going to ask this crowd, mostly supporters here, to give these people a hand. Because they have done the work. We thank you for your dedication and hard work and making us get to this point and we hope this is the last delay and the permits do get issued. And it almost worked out perfectly, because you started the hearing with the mayor of Aurora, a good friend of mine, Dave Lislegard, and I was hoping we could wrap it up with a round of applause. But you are probably going to draw a couple of more names. But thank you. Thank you for your hard work on this.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
184	Robert Peterson	Citizen	Hi. My name is Robert Peterson. The last name is spelled P-e-t-e-r-s-o-n. I'm a senior here at Mesabi East High School. I sometimes question why my dad has only moved a mile in his whole life. I mean, it's kind of weird, he's 46 and he's only moved a mile his whole life. But then I think about today and the opportunities he has here on the Iron Range. I mean, growing up and graduating from Mesabi East High School is what I'm going to be doing here in June. Which my dad also did. He works at a mine now and we have a great life here on the Iron Range. When I think about my future, unfortunately, I don't see it on the Iron Range. As I've grown up up in my life, I've seen businesses close and doors close. It's not something I want to put a family towards when I know that the economics are unstable. My dad works in the mines. Which is a great job when they are open and running. But you never know when a layoff is going to happen. For example, the Mesabi Nugget is now not running when it was up and running not less than two years ago. What I would really like to see is to see PolyMet go through so I can come back here after college and the Air Force and raise my family and live here happily. So I urge you guys to pass these permits. Thank you for your time.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

185	William Whiteside	Citizen	My name is William Whiteside, W-h-i-t-e-s-i-d-e. Thank you all for being here. I'm really impressed to see this crowd still hanging out here after all this time with dedication. I think that you have all had a chance to appreciate the high caliber of people that we have here in northern Minnesota. "..." So I would like to just say there has been mining in North America in copper for thousands of years. Thousands. We went through a period of time where we industrialized and we had a learning curve, which we got through. And these minerals that are in this area, the copper and precious metals, they were known before I was born. One of the first things I remember was exploration. ".. We could get it done and we could keep our environment. We could make a good living. We can produce important products for the world, for our country. And this whole area here has been extremely important to this country. We have provided the backbone to preserve liberty in the world from our iron mines that built the ships that saved the world from becoming a totalitarian swamp. You know, just the disaster of World War II, for example. And we can still provide these rich resources for all the technology that we need to go forward and to live in a society that is going to be free and be able to use our intelligence to have good health, to have good transportation, to have good education, we need these resources. And so we need to go forward with this. We have the technology. We can provide for our ownselves a more diverse economy in this area and hopefully we will be able to capitalize on that with further industries to utilize these materials that we will be producing. Thank you very much. Let's go forward.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
186	Nick Rowse	Citizen	My name is Nick Rowse and I live at 10704 Prescott Court, Burnsville, Minnesota. I am here to advocate and bear witness for the continued, strict protection of the Boundary Waters Canoe Area Wilderness, specifically from the NorthMet Mining project as proposed by PolyMet Mining and in their nationally owned mining company.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
187	Nick Rowse	Citizen	For 33 years, I have lived and worked in Minnesota and specifically have experienced the joy and recreation provided by the Boundary Waters Canoe Area Wilderness. Whereas, copper and nickel mining will expose subsurface rock to air and water erosion resulting in acid mine runoff...	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
188	Nick Rowse	Citizen	..... whereas, air pollution will degrade air quality for recreation within the Boundary Waters Canoe Area Wilderness; whereas, significant noise will result from blasting and degrading quiet recreation within the Boundary Waters Canoe Area Wilderness; whereas, air quality is a high priority on federal land, specifically on nationally recognized wilderness areas such the Boundary Waters Canoe Area Wilderness; whereas, the State of Minnesota must protect wilderness values provided by the Boundary Waters Canoe Area Wilderness for current and future generations of Minnesotans; whereas, large-scale mining on more than 4000 acres of currently forested land will result in releasing air pollution over the Boundary Waters Canoe Area Wilderness,.....	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
189	Nick Rowse	Citizen	....and; whereas, the Fond Du Lac Tribe of Lake Superior Chippewa, the Grand Portage Band of Lake Superior Chippewa and the Bois Forte Band of Chippewa will suffer the loss of wild ricing leading to the degradation of their livelihoods in waters downstream at the proposed project due to changes in water quality.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Because the authorized discharge from the WWTS is limited to 10 mg/L and the required engineering controls will prevent unauthorized discharges, the project as designed will not harm wild rice.
190	Nick Rowse	Citizen	One more whereas. These tribes were treated unfairly by the Corps of Engineers and the Minnesota Department of Natural Resources during the environmental review process.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
191	Nick Rowse	Citizen	Because the long-term integrity of tailing ponds in copper-nickel mines worldwide has proven to be inadequate, resulting in irreparable water pollution, the Minnesota Pollution Control Agency must deny the NPDES/SDS water quality permit. There is no failsafe technology to contain mine waste material in perpetuity, which will result in degradation of water quality in the Boundary Waters Canoe Area Wilderness.	Comment noted. General comments related to water quality and flow were considered during the environmental review process. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
192	Nick Rowse	Citizen	Finally, the wilderness values given to people across this nation must be the highest priority. Wilderness can never be replaced. That's it.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
193	Tom Peterson	Citizen	My name is Tom Peterson. I'm disappointed the way the governor has been handling this process on money to northern Minnesota. We gave $500 million to the Vikings stadium, and I think he should be giving $500 million to the Iron Range. They think there is 350 jobs are going to be over the long run here. And if you figure 350 jobs dividing that into the $500 million for the stadium is $17,000,500 a year, and that's enough for 28 years of well-paying jobs for the Iron Range. So they can start an Olympic training facility, they can build factories for the solar panels, they could do a number of environmental projects.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
194	Tom Peterson	Citizen	We don't need to bring these toxic metals to the surface. They are buried underground for a reason. For human species to survive on this earth, we couldn't be walking on coal and mercury and oil and lead. That's why they are all buried underground, and that's how the human species has survived. To bring this stuff to the surface is just another ecological nightmare. We have ruined our planet. There is no going back. And now to have this project, just one more foot in the grave, for the world is appalling.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
195	Todd Dobesh	Citizen	Good evening. My name is Todd Dobesh from Minneapolis, Minnesota. The City of Lakes. It has come to my attention after numerous years that the DNR is finally ready to reach its resolution on the PolyMet mining issue and the permits regarding that. I've been following it. I've been following it in depth and I have heard both reasons for and against it, and I feel that the principalities for the permit have been both false and self-effacing and that there are so many ways that they misrepresent the facts and play on people's emotions.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
196	Todd Dobesh	Citizen	I understand why in this tight-knit community of the North Shore a good paying job is important and both the State and the organizations at the behest or behooth, I don't know what it is, of the taconite mining industry have been self-serving and misrepresented the fine people and culture that's engrained so deeply in this community. The very organizations that they bring forth out of obligation to their covenant with the people for economic development and opportunity in lieu of tax write-offs in reality are politically strong armed to rebate those charges back to the mining principalities. I could go on	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

197	Todd Dobesh	Citizen	But I believe PolyMet, which is a shell organization, is a crock of shit because they refuse to list the Swiss venture capitalists who would benefit in this top-heavy, winner-take-all profiteering scandal. And I would cite that they should man up and identify themselves to the American public and the other principalities of this argument so that we can see them for what they are, which is self-serving oligarchs. Yours truly, Todd Dobesh.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
198	Michael Link	Citizen	I live in Willow River, Minnesota. I live in a state forest. I'm surrounded by areas in which we manage and use our resources, and I support that. I'm also a professor of environmental studies for Hamline University in St. Paul. I was formerly the director of the Audubon Center in Sandstone, Minnesota. I have guided in the Boundary Waters. I have explored this entire land. And in 2010 with my wife walked around Lake Superior. When we walked around Lake Superior it was a culmination of a career of over 40 years in environmental studies and environmental concerns. We did it because we cared about freshwater, we cared about this vulnerable landscape that we are in with a geology that is not very forgiving when we put pollution in our waters or do things to alter the landscape. We did it to raise consciousness amongst people in three states, two countries about Lake Superior and about that great land we call the border lakes. We have now reached a point where it's essential for us to speak up and say no to PolyMet, no to this mining that will create a sulfate disaster in our great state and the watershed of lake Superior.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
199	Michael Link	Citizen	We have had the opportunity to wander in this land with a lot of different people, including a number of graduate students and teachers who we have helped to explore and see the sensibility and the fragility of the landscape. When they talk about PolyMet and the potential for being safe, we know it's a lie. It's a lie because we have something going on in numerous states around this great America and in numerous provinces in Canada and in places in South America and other countries where they face the same issue and no one has ever resolved the problem with the sulfide. Even now, we are told to feel good because there will be a bond put up to protect and maintain the waters that we'll potentially pollute for over 500 years.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
200	Michael Link	Citizen	It's easy for the PolyMet and even the DNR scientists to lie because none of them will be alive during the status of this threat to our conditions, to our water and to our future life. This isn't just an issue of jobs in the old Iron Range. It is a world issue. And, yes, we use copper and we use other minerals in the things that we are sold and have become part of or daily lives. But that's not a justification for destroying the future for stealing from our grandchildren, for making other generations have to face the problems that are created by our generation.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
201	Michael Link	Citizen	We need to have the courage to speak up, we need the courage to say if I have to be without a smart phone, I will live without a smart phone. We have to know that decisions we make today aren't about us. I'm 72. My grandchildren are the ones who are going to face this and their children. And I care more about them than I do about a 20-year job that PolyMet might offer as a bribe to be able to get to come in and rip up our landscape. Tohave a corporation that isn't even from the United States controlling the assets of the United States is wrong. In 1986, I was with Sigurd Olson at a hearing in Ely in which we spoke up for the wilderness and the beauty of that landscape. During that same year, I was with Bud Hinselman in Washington, D.C. as we worked to protect that land through the wilderness bill. Sigurd Olson said to me that we cannot afford to loose any of these battles. Because the Boundary Waters is always going to be a target for somebody to develop. But once we lose, there is no going back. We can't put back what is destroyed. And so my stand today and for the rest of my life will be do not destroy our land, take care of our resources, do not sell out the beauty and the importance of our natural landscape for quick profits and promises that can't be fulfilled. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
202	Maureen Skelly	Citizen	Hello. I'm Maureen Skelly. I'm a native Minnesotan. I'm a grandmother and an educator. I worked on Isle Royal, which is an international biosphere preserve and lived in Grand Marais. I presented at the International Water Conference at Eisenhower Hopkins High School and organized for the Women and Water Rights conference at the University of Minnesota. Five hundred years, 500 years is 2050. No, 2520 is 500 years from now. That is if we would say that a generation is 100 years, that would mean that the people that are going to inherit the water monitoring from this project is our grandchildren, our great grandchildren, our great, great grandchildren, our great, great, great grandchildren and our great, great, great, great grandchildren. We are leaving a potentially horrible toxic mess for all these people yet to come in the future for a 20-year mine for 360 jobs. Perhaps 900 jobs. History will probably look back on us as short-sighted, greedy, incapable of self- sacrifice and disrespectful of future generations.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
203	Maureen Skelly	Citizen	I am requesting that PolyMet receive no permits until they explore as a compromise the dry stacking process. I teach my grandchildren in workshops in their elementary schools that as native Minnesotans in the land of 11,000 lakes and source of the largest river in North America bordering the largest freshwater lake in the world that it is their duty and responsibility to protect the water in this area. We all want the miners to have good jobs. With all the money that has come into the state with the Super Bowl, can't we put our heads together and provide some jobs training programs or come up with some new projects so the people that live up there will have good jobs. It's not impossible.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

204	Maureen Skelly	Citizen	All this infrastructure for mining was mentioned. Well, how about using some of the infrastructure that the roads and the buildings for the mining, how about enticing a solar company to come up here. How about wind. How about maybe building a new hospital. There are options. We don't have to have this be the only source of income for desperate people. The grandmothers say no, you do not propose a proposal -- it is unacceptable to have a proposal that will pollute potentially where the water has to be monitored for 500 years. We can't even see what's going to be happening 50 years from now. We are in a time of population growth, we are in a time of climate change. It is the wrong time and it is the wrong proposal for this area of the country. This is also larger than jobs in northern Minnesota. And we love the miners and appreciate all the people that really believe in this project that really have tried hard. But it could very well happen that people from all over the world will be coming here for water. So we don't know what the future will bring. Anyway, I guess that's all I have to say right now. But I really, really encourage the compromise of dry stacking and say no to a project where the water has to be monitored for 500 years.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
205	Kathleen Crowley	Citizen	Speaking as a lifelong Minnesotan, as a mother and grandmother and someone who spent 4 1/2 months walking the entire shoreline of Lake Superior, the greatest reservoir of freshwater in the world, my problem with this mine proposal is that I consider it morally wrong to propose implementing a type of mine that has historically been proven to cause or create toxic wastewater that lasts for hundreds of years. There has not yet been an example of a copper-sulfide mine that has not leaked or leached its toxins into surrounding watersheds or streams.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
206	Kathleen Crowley	Citizen	Minnesota's greatest resource after its people is our freshwater. There is nothing in the natural world that is more precious.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
207	Kathleen Crowley	Citizen	We are told to believe a foreign mining company that says, quote, "trust us," end quote. We know what we are doing when they cannot point to one example that has been without failure. If the mines don't leak, they leave behind poisonous holding ponds that must be, quote, "managed," unquote, for 500 years or more. And this is confirmed by the mining companies themselves. This is insane. Our country has only been in existence for two and a half centuries and we are supposed to believe that this company will fund and provide supervision of said poisonous waters for hundreds of years.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
208	Kathleen Crowley	Citizen	In Butte, Montana there is one such pond and every year countless waterfowl die when they land in it. What do the people promoting this mine think about the future when our state bird, our beloved loons, mistake the PolyMet holding ponds for lakes? These are birds that already face environmental challenges. The last thing they need is this kind of threat.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
209	Kathleen Crowley	Citizen	We have been told this mine will have a lifespan of 20 years. And then what? What do the people in the Iron Range do next? This is classic bust and boom mentality. With all the intelligent, hardworking people in Minnesota, I just can't believe we can't find a better, longer-lasting solution to their difficult economic problems.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
210	Kathleen Crowley	Citizen	As a mother and grandmother, I care desperately about the future health of our water resources. I have three grandchildren living in Duluth and we love Lake Superior. And the PolyMet mine is in the Lake Superior watershed as well as the watershed of the incomparable Boundary Waters. I beg the DNR to consider its responsibility for protecting our precious waters far into the future and deny this mining permit.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
211	Maureen Allen	Citizen	This is Maureen Allen. I am from Minneapolis. I live in Stillwater. I am an enrolled tribal member of the Ho-Chunk Nation and I came here with my mother who this is an important subject for her, so I tagged along. She's a second-time cancer survivor and the environment is very important for her, so it's important to me. The only thing I really wanted to say was I think if the company does any mining in Minnesota, they should be under their legal name not under a subsidiary or umbrella company. I think it's PolyMet Minnesota and I think they should have the name of the company for everything. All legal documents should have the main company name on it. All legal documents. And I believe that company is out of Switzerland. I'm not sure. That's all I really wanted to say.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
212	Anja Curiskis	Citizen	My name is Anja Curiskis and I am here to urge the DNR to deny the permit to mine for PolyMet and urge the MPCA to deny all PolyMet pollution permits and certifications. Water is life. We do not want to risk our precious resource. I believe there is room in Minnesota for better industries. Industries that do not threaten our safety or well-being. I would ask only why risk our most precious resource for the profit of the few. Thank you.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
213	Stephanie Pearson	Citizen	So my name is Stephanie Pearson. I grew up in Duluth. My paternal great grandfather immigrated from Sweden to mine and log in Tower, Minnesota. My family had to move away because mining is not a sustainable activity. And I since went on to become an editor at Outside Magazine, a nationally renowned publication.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
214	Stephanie Pearson	Citizen	Two years ago, Outside assigned me a story about Lake Superior because they realized that it's one of the most pristine bodies of water left on the planet and that the potential for recreating and the wilderness potential is unparalleled. And as one of the people I interviewed for the story told me, that this is some of the best and most strategic water on the planet. John Downing, the director of the Minnesota Sea Grant, told me that wars have been fought for thousands of years over water like this. So I would ask why are we voluntarily putting this resource at risk? And that's all.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

215	Tom Thompson	Executive Board, Northstar Chapter of Sierra Club	Hello. My name is Tom Thompson, and I'm on the executive board for the Northstar chapter of the Sierra Club. I live halfway between where we are today and where PolyMet is proposing to be built. Some argue that we need more copper for our gizmos: Our cell phones, our wind generators, our electric lines, our TVs, our Game Boys, our hybrid cars that need copper. So is there a shortage of copper? I looked at the copper markets yesterday, and they didn't look like there was a shortage. If anything, the copper market was down, not up. Furthermore, copper dispersed -- production is dispersed throughout the world, not just here. I don't think there's a need to fear that there won't be enough copper for our gizmos. Why not increase recycling efforts? And it should be noted that there is progress towards wireless electric transmission. Apple has pledged not to use mined materials in their products, and Subaru brags about all their parts being recycled. And it should be noted that there is progress towards wireless electric transmission. Apple has pledged not to use mined materials in their products, and Subaru brags about all their parts being recycled. Another argument says that this country has more strict protections than most other countries, so do it here. To me, this is a comment on the sad state of affairs for the world, since I believe that ours are far from what they should be. However, if this is true, I would like to see the list of foreign mines operating with inferior protections that will be closed should PolyMet be built. What? There isn't one? No other mines will close?	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
216	Tom Thompson	Executive Board, Northstar Chapter of Sierra Club	That means that however good PolyMet might be or not be, it will add to the total amount of pollution from copper-nickel mining in the world, not lower it. Regardless, PolyMet will add to the pollution going into the waters of northeast Minnesota, Lake Superior, and the Boundary Waters. In the scheme of things, PolyMet is not needed. There is no apparent shortage of copper in the world. So if a copper-nickel mine really isn't needed that much, what do Minnesotans and Americans get out of it? A permission slip will be given to a foreign corporation to dig gigantic holes, pile rocks into huge mountains, destroy thousands of acres of habitat, forests, wetlands, and recreational areas, creating giant lakes full of toxins and heavy metals, and to allow sulfides into our rivers and streams, threatening wild rice and increasing the methylation of mercury, infecting fish eaten by many, including children. Thus, much of the water we consider the -- much of the area that we consider the bedrock of Minnesota where people live and thrive will, in effect, become a mining -- a sulfide-mining industrial zone. No permits. Thank you.	The status of the global copper market is, legally, not a consideration of the NPDES/SDS permitting process; any permit issued must comply with state and federal pollution control and permitting regulations. Treatment of PolyMet's discharge through the WWTS using membrane treatment technology (e.g., reverse osmosis) and where enforceable operating limits for sulfate and various metals apply, will minimize effects on downstream water quality. In addition, the project will include other engineering controls such as stockpile liner systems and seepage capture systems that are designed to control wastewater and runoff from the facility. The effectiveness of these controls were evaluated in the EIS and the water quality permit requires their installation/operation. It should be noted that the project is located in the St. Louis watershed and will not affect BWCA's watershed.
217	Brad Boos	Citizen	My name is Brad Boos, from Moose Lake, Minnesota, and I support PolyMet. And I want to defer my time to Commissioner Keith Nelson.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
218	Keith Nelson	Commissioner, St. Louis County Board	Good afternoon. I am Commissioner Keith Nelson, currently serve as the chair of the St. Louis County Board. Commissioner Landwehr, imagine the day that I would come in front of you and thank you. I don't think you imagined that, some years back. With that said, I truly do want to thank you for the science, for the work that you've done on this project. It is -- the people of St. Louis County, that I have been so proud to serve for these last 14 years, truly appreciate the efforts that have been made.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
219	Keith Nelson	Commissioner, St. Louis County Board	For my the friends out there in labor, for my friends out there with blue hats on, I cannot thank you enough for the patience that you have had. I hope that this is the last time we have to meet on a project which has significant merit and which has proven itself both in science and in process. To my dear friends out there with the orange bandannas, I have to tell you: I like a good cowboy, I like a good cowgirl, and you are my friends. I hope that as this process moves forward and this project moves forward, you will join me in the prosperity that this county is certainly going to see as a result. With that, and since this organization -- this -- or the rules of this event are that we can't clap after people are done, I'm going to cede the last minute of my time to my friends out there in labor who want to use their two hands to clap now and work later at PolyMet.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
220	Mike Casey	Citizen	I'm Mike Casey. I'm going to cede my time to Ricky DeFoe.	This comment simply defers speaking time to another individual. No response needed.
221	Ricky DeFoe	Citizen	Thank you, Mike. My name is Ricky DeFoe, R-I-C-K-Y, D-E-F-O-E, from the city of Cloquet. If we take a look out at this lake out here, the Ojibwe call it "gichi Ojibwe gami," "the great sea of the Ojibwe." Now, we talk about fealty. Who do you owe your allegiance to? Do you owe it to death, which is when we pollute, we continue to do these things as proposed? Or do you owe your fealty to life? Now, we talk about who is in the -- the Commissioner's -- who are the plutocrats? Who are the kleptocrats? Who are the bureaucrats? Who do they owe their fealty to? We often wonder. And then we say -- I was raised here in Duluth in the hillside. 35 years of my life. I know a little bit about a book, and in that book, it says the iniquities of the father will be met on by -- in the third and fourth generation, the kids. So I wonder about those things. Do we need to shine a light on those whose fealty it is about death? So we realize we are here about life, water. Mother Earth is crying about all the damage from pillaging in the rape of our Mother Earth. Life. We talk about a world view. Mainstream America's world view is dominion over all things, hierarchy of life, and an almighty, transcendent God, and we know that the ambiguity, the conflict, the tension that is coming now is a reflection of those things that are unresolved because of the dysfunctional cosmology, a dysfunctional world view.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
222	Ricky DeFoe	Citizen	These folks, the State of Minnesota, owe their fealty to death. When we take a look at when we're destroying waters such as pristine Lake Superior -- who's known throughout the world -- our planet, our Mother Earth, we have to begin to think in terms of life, not destruction. So we sound out to yous: Who do you owe your fealty to again? Anishinaabe have a world view where all things are interdependent on one another. Our world view is one that has the "Great Mystery," and then we come down to the star world, and then the moon, the sun, and finally to our Mother Earth. And on our Mother Earth, we have orders of things -- we have orders of things: The rock nation, the plant nation, the animal nation, and last, man. We can't live without them; they can live without us.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

223	Jim Sanfferer	Citizen	My name is Jim Sanfferer. I was born and raised in Minnesota. I'm a veteran. I spend many days hunting and fishing in northern Minnesota. My family - - my son has a home on Lake Vermillion. I don't think anybody appreciates the land, the water, the trees, and nature anymore than I do. I spend a lot of time hunting and fishing, and I love it up here. However, we do have a need -- it was several years ago when we were at war with -- in Europe and in the Pacific, and it was the ore that came out of our hills here that really, probably, saved this country, in making the planes and the tanks and the ships and everything that was needed for our military to be successful. Today, we're still at war. We have people in this world that would like to put away with our entire way of life. And with the rocket boy, now, and his little rocket with the atomic bomb on it, he can hit our nuclear -- oh, shake your head -- he can hit our nuclear -- our electrical grid, and he can put us all out in no time. We can't let that happen. War today -- or -- our military today uses a lot of new technology. We have unmanned aircraft, we have satellites, we have all kinds of computers. Just about every part of the military industry uses technology and computers to -- for their -- for their efforts. So it is our obligation to provide them with the materials that they need to be successful, and that's all these special, precious metals that we have here under our feet today. We do not want to buy from oversees because that's exactly what will happen. We have it here; let's use it. God bless the military men and women today, God bless the mining industry in northern Minnesota, and God bless the U.S.A. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
224	Tonia Kittelson	Friends of the Boundary Waters Wilderness	Hi, there. I'm Tonia Kittelson. I'm with the Friends of the Boundary Waters Wilderness. Thanks for letting us speak tonight. We strongly urge you to reject the Poly Met-NorthMet sulfide-ore mine proposal permits that are in front of you right now. You're considering some pretty serious stuff, so I appreciate your critical review of it. You asked us to content -- asked us to comment on content that is new or unresolved at this state, and there are a few that I'm going to list right now.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
225	Tonia Kittelson	Friends of the Boundary Waters Wilderness	One is that I ask you to require PolyMet to use the best available technology for storing mine waste, and that would be dry stacking. That's currently the industry's best standard for storing mine waste versus storing it in a liquid form, kind of a waste, the slurry that's stored behind an earthen-built dam. The earthen dams are actually old technology and are the main reason why so many sulfide-ore mines seriously polluted in the past. PolyMet has promised to use best industry standards, and dry stacking is recommended, so the permits you are currently considering allow PolyMet to use the old technology.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
226	Tonia Kittelson	Friends of the Boundary Waters Wilderness	Another is: Given that acid mine drainage from PolyMet mine dam that cracked -- collapsed in 2014, that pollution traveled 400 miles And I mentioned this last night in Aurora, but it's worthy of repeating here: I'm asking that you determine how far that that acid mine drainage pollution will travel into Lake Superior. From where the PolyMet mine sits, if you go 200 miles downstream, you get to our lift bridge, which is just outside of the DECC here, and another 200 miles past that goes out into Lake Superior, and that's 400 miles. So maybe PolyMet mine pollution goes not quite that far, but maybe it goes further. But as citizens of this state, I think we deserve to know how far that reach of contamination extends before you make a decision.	This comment pertains to issues considered in the development of the DNR Dam Safety permit. Regarding potential contamination from the discharge from the WWTS, the discharge is required to meet Operating Limits for sulfate, copper, arsenic, cobalt, lead, nickel and mercury at the point of discharge at the project site. The permit also states that the discharge must not violate water quality standards; again, this would be at the point of discharge. In addition, the project will include other engineering controls such as stockpile liner systems and seepage capture systems that are designed to control wastewater and runoff from the facility to prevent the pollution of downgradient water. Consequently, impacts to the St. Louis River and Lake Superior will not be discernable.
227	Tonia Kittelson	Friends of the Boundary Waters Wilderness	I request that you require an updated financial analysis. The last one was done in 2008. It's been 10 years, and no one -- not -- and no one should -- and no one, including the State of Minnesota, should make a decision based on 10-year-old financial information.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
228	Tonia Kittelson	Friends of the Boundary Waters Wilderness	Lastly, I request that you require PolyMet to prove it can capture and collect 90 percent of its wastewater before you make a decision. No other metal mine has ever captured 90 percent, let alone suggested that they could. Mines usually promise high and perform low, meaning they usually promise 60 to 80 percent capture rate, but fall short of their promises by about 25 to 30 percent. PolyMet plans to use the same technology that other mines have used -- nothing new, nothing better -- yet claims it will achieve what has never been achieved before, so please reject the permit application and require that proven technology be used to capture 90 percent of wastewater. 10 percent of billions of gallons of wastewater is bad enough. It's too much pollution to allow in our public waterways. Please do not allow more than that. Thank you.	The containment systems function on the principle of maintaining an inward hydraulic gradient across the barrier wall that is part of the system design. If the hydraulic gradient is inward, hydraulic head is greater outside the basin and water cannot escape -- instead, water will tend to flow into the capture system. The Modflow modeling conducted for the EIS indicated that the capture efficiency for both systems would be in excess of 90% and the subsequent GoldSim modeling indicated that degree of capture would be sufficient to protect downgradient surface and ground water quality. See FEIS at 5-7. The comment questions the efficacy of controls of the seepage capture systems required in the NPDES permit at the Mine Site and Plant Site. The same issues were raised in the EIS and DNR, in consultation with MPCA, considered those issues. The comment does not raise any new facts for MPCA to consider at the permitting stage, it merely disagrees with MPCA's conclusion.
229	Paula McCabee	Advocacy Director, Water Legacy	Thank you. Good evening. I'm Paula Maccabee, the advocacy director for Water Legacy. I live in St. Paul, but Water Legacy is based in northeastern Minnesota. All of our board members either were born in or live in northeastern Minnesota.	Background statement for comments to follow. No response needed.
230	Paula McCabee	Advocacy Director, Water Legacy	I'm a bit of a technical person, so I'm going to focus on some specific technical issues in the permit to mine and the Minnesota Pollution Control Agency water pollution permit. And based on the technical information that I've read, I believe the PolyMet copper-nickel mine threatens Minnesota waters, downstream property owners and communities, the St. Louis River, Lake Superior, and Minnesota taxpayers. Now, you need to know that even if everything goes as planned, the PolyMet mine project would result in over 15 million gallons per year of untreated, contaminated pollution seeping into Minnesota groundwater, and from groundwater into wetlands and streams. PolyMet's mine pits, its tailings waste, and its waste rock piles, that's permanent. All have no liners underneath, and it would seep contaminated water for centuries, if not forever.	See response to Comment Water-740.

231	Paula McCabee	Advocacy Director, Water Legacy	When the Minnesota DNR said, back in March of the 2016, that PolyMet's environmental impact statement was, quote/unquote, adequate, it relied on claims made by PolyMet that it would capture more than 90 percent -- no -- more than 99 percent of the polluted seepage at its tailings waste site. Now, PolyMet's claims were based on phony modeling. The only examples they gave of an unlined tailings dam was the Tar Sands tailings dam, which, since then, has resulted in billions of dollars of cleanup in Canada. Now -- so PolyMet used phony modeling, and we were hoping we'd see the DNR put in their conditions that no permit to mine unless you keep the promise and prove that you've captured over 99 percent of the pollution. But the DNR does not have any conditions for seepage captured, and PolyMet can break its promises without any consequences.	The effectiveness of the FTB seepage containment system was evaluated in the EIS. The permit has been revised to include the barrier design specifications (i.e., thickness, permeability) that were evaluated in the EIS and that it be constructed and operated so as to maintain an inward hydraulic gradient across the barrier. The containment systems function on the principle of maintaining an inward hydraulic gradient across the barrier wall that is part of the system design. If the hydraulic gradient is inward, hydraulic head is greater outside the basin and water cannot escape -- instead, water will tend to flow into the capture system. The Modflow modeling conducted for the EIS indicated that the capture efficiency for both systems would be in excess of 90% and the subsequent GoldSim modeling indicated that degree of capture would be sufficient to protect downgradient surface and ground water quality. See FEIS at 5-7. The MPCA has revised the language of the permit to state that if an inward gradient is not reestablished within 14 days of detection of an outward gradient, it is a violation of the permit. The permit also requires that the effectiveness of the seepage capture system be evaluated on an on-going basis.
232	Paula McCabee	Advocacy Director, Water Legacy	The Minnesota Pollution Control Agency draft water pollution permit is just as weak. The MPCA wouldn't limit pollution through groundwater that seeps up into wetlands and streams and harms water quality, fish, or wild rice. In fact, the Minnesota Pollution Control Agency doesn't even propose to monitor at those really close-by wetlands and streams, so PolyMet could pollute Minnesota surface water for decades with acid mine drainage, sulfate, and toxic metals and no one would be the wiser.	See response to Comment Water-723.
233	Paula McCabee	Advocacy Director, Water Legacy	That is not what we want from either the DNR or the PCA. We are counting on you to protect us.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
234	Paula McCabee	Advocacy Director, Water Legacy	Now, here's something even more dangerous for any of you who live downstream. The DNR permit turns a blind eye to another huge risk: The threat that PolyMet's dirt dams, that are supposed to hold back tailings waste, would collapse. PolyMet is only being required to put up $10 million for what could be hundreds of millions of dollars in liability. Thank you.	Comment noted. This comment pertains to issues considered in the development of the DNR Dam Safety permit. No changes were made to the draft permit in response to this comment.
235	Kristin Larsen	Friends of the Cloquet Valley State Forest	Hi. I'm Kristin Larsen, with Friends of the Cloquet Valley State Forest, and speaking for me today is Jan Kehoe (phonetic), and Jan is the supervisor of North Star Township.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
236	Jan Kehoe	Supervisor, North Star Township	Hi, yes, my name is Jan Kehoe. I'm a wetlands scientist and a past president of the Society of Wetland Scientists. I'm going to speak today in -- with concern about the permit to mine -- okay? I'm short. A couple of things. First of all, the wetland loss around the mine has been grossly underestimated in the narrative document because the analog model that was used has scientific flaws through analysis of a bedrock type that's not present there, and so I think that the damage to wetlands around the mine will be much greater in scope and geographic area, and that's a concern.	This comment addresses the 401 certification. No changes were made to the draft NPDES permit in response to this comment.
237	Jan Kehoe	Supervisor, North Star Township	The second concern I have is that the construction of the mine and operation will result in 1,000 acres of wetland loss that will not be replaced because the mitigation bank that's planned to be used -- that is, the Superior Mitigation Bank -- is comprised largely of healthy wetlands. And so the peatland types that the mine will destroy will not be restored in the mitigation area. They'll be -- credits for mitigation are going to be comprised entirely of preserving natural wetlands, so this results in the total loss of 1,000, or even more acres, of wetlands overall during the project. So I'll be very brief. I'd like to ask the DNR and the MPCA to deny the permit until they can show that there will be no net loss of wetlands. Thanks.	This comment addresses the 401 certification. No changes were made to the draft NPDES permit in response to this comment.
238	Catherine Kohlmeier	Citizen	I'm Catherine Kohlmeier, and I cede my time to Rich.	This comment simply defers speaking time to another individual. No response needed.
239	Rich Staffon	Duluth Chapter of the Izaak Walton League	My name is Rich Staffon, R-I-C-H, S-T-A-F-F-O-N. I'm speaking for the Duluth chapter of the Izaak Walton League. I can remember when the lower St. Louis River in Duluth was an industrial wasteland. It was not fishable, swimmable, or drinkable. Thanks to the Clean Water Act and after spending nearly half a billion dollars, the river has been restored to the point that it is now an economic asset, rather than a liability for Duluth. It does not seem consistent policy to us to spend so much money to clean up the lower river and then issue permits to create an industrial wasteland in the headwaters.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
240	Rich Staffon	Duluth Chapter of the Izaak Walton League	Copper and other minerals are valuable for our economy and society, but they're not more valuable than water. Water is essential to everything we do. Protecting watersheds is how we safeguard our water. The land where PolyMet wants to build their mine was purchased with the Weeks Act for the very purpose of protecting the headwaters of the St. Louis River. It defies common sense that we can sustain this watershed while building a toxic mine in the midst of the headwaters. This is a forested, swampy, stream-laden landscape, an ill-suited place for Minnesota to experiment with the risky business of copper mining.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
241	Rich Staffon	Duluth Chapter of the Izaak Walton League	If it is so important that we mine these minerals, the permit should at least require PolyMet use the best available technology, such as dry stacking of tailings, rather than storing them in a flooded tailings basin that we know will leak into surface and groundwater, and if the dikes fail, send a slurry of contaminated water right into the river.	Comment noted. This comment poses questions or contains statements about issues previously considered during the environmental review process and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
242	Rich Staffon	Duluth Chapter of the Izaak Walton League	One of the duties of DNR is to promote the mining of our state's minerals. Because of this bias to support mining, we ask that a contested case hearing be held as a check to make sure that the facts around copper and nickel mining are complete and accurate.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Requests for a contested case hearing were evaluated according to current state law.

243	Rich Staffon	Duluth Chapter of the Izaak Walton League	And as a check on the safety of the mining itself, we ask that the permit require that all employees who mine, transport, and process the ore be regularly monitored for the uptake of pollutants. They are the canaries in this mine, and monitoring their health would be the best way to determine if the standards are being enforced and are actually protecting the workers and our environment.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
244	Rich Staffon	Duluth Chapter of the Izaak Walton League	Finally, we're especially concerned about the way industry and our state legislature has been able to thwart the enforcement of existing water quality regulations. What good are these permits if they will not be enforced? We recommend that before mining, Minnesota should consider recycling copper as a better way to meet our needs for this metal. If there's no shortage today, we believe it would be prudent to not issue a mining permit at this time, leave these minerals in the ground, and wait until mining technology is advanced so we can mine them safely. It is time for somebody to stand up and just say no. Thank you.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
245	Janet Draper	Citizen	I'm Janet Draper, and I cede my time to my wonderful city counselor, Gary Anderson.	This comment simply defers speaking time to another individual. No response needed.
246	Craig Olson	President, Duluth Buildinng and Construction Trades Council	Good evening. Thank you for the opportunity to speak here tonight. My name is Craig Olson. I am president of the Duluth Building and Construction Trades Council. I represent approximately 16 -- 6,000 men and women that work in the construction industry in this region. Many of them are here tonight, and I want to thank our brothers and sisters from the Building and Trades Movement to be here -- be here with PolyMet and to stay strong with us through this process. The State has thoroughly reviewed the NorthMet project, and PolyMet has proved the project permit conditions protect Minnesota's environment by creating hundreds of living-wage jobs in the area in a state that really needs them right now.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
247	Craig Olson	President, Duluth Buildinng and Construction Trades Council	Northeastern Minnesota has the potential to be a global powerhouse of responsible, strategic metals mining. The NorthMet Project will bring new life to an idle taconite plant and mine. With this new life, the region will rebound, communities will grow, jobs will be created. It's estimated that 650 construction workers will be employed on this project alone and an additional 350 jobs in operations once the mine is open. Estimates are that there are 200 -- or -- 2 million hours of construction. 2 million hours. This is equivalent to the Minnesota Twins stadium in Minneapolis. Think about the good jobs that were created when the new stadium was built. We have the trained workforce, the existing roads, the rail, the piping, the power, the tailings dams, and other infrastructure already in place.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
248	Craig Olson	President, Duluth Buildinng and Construction Trades Council	There is no better time or place to build the mine. The NorthMet ore body is part of a world-class resource. It's located in the middle of a mining zone where mining has occurred for more than 135 years.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
249	Craig Olson	President, Duluth Buildinng and Construction Trades Council	I, along with my union brothers and sisters, have been waiting a long time, and, quite frankly, have been waiting long enough. It's time for the State to finalize and issue the permit so that we can get these projects underway to get our people back to work. Thank you.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
250	Lynne Pickart	Citizen	Good evening. My name is Lynne Pickart, L-Y-N-N-E, P-I-C-K-A-R-T. Tuesday night, a lot of us went to the caucuses, right? A lot of us went to the caucuses? Yes, we did. We did our civic duty, we participated, we brought up sulfide mining, and we presented resolutions against sulfide mining. Of course, a few folks at our caucus didn't like that, and one lady pointed out that it isn't called "sulfide mining." It's called "copper-nickel mining." I beg to differ. What Minnesota gets out of sulfide mining is sulfide slush, acid mine drainage that is full of mercury, arsenic, lead, asbestos-like fibers, toxic stuff. We get air pollution, gigantic waste piles, tailing pipelines, and the 24-hour around-the-clock light and noise pollution. Most of the copper, nickel, platinum, gold will go someplace else. Most of it will go to China. One of the folks at the caucus -- this is a good place to go for information -- said that we don't even need the copper here. Most of it could be recycled copper. How about that? Minnesota gets big holes in the ground as big as cities, as deep as forever. When they're all done in 20 years, what goes into the holes, I wonder? Water? Dirty water? Minnesota gets higher taxes to pay for the cleanup that they left behind, long-term costs, contamination of fish and wildlife. Minnesota gets America's biggest polluting industry. I live in Duluth; I love Duluth. I actually moved here, but my spirit lives in the Boundary Waters, waiting for me.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
251	Jody Starch	Citizen	Hello. My name is Jody Starch. I'm a Local 49er from Mantorville, Minnesota, and I support PolyMet, and I defer my time to Senator Tom Bakk.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
252	Tom Bakk	Senator, MN District 03	Good evening. I'm Senator Tom Bakk. The PolyMet mine will be in my senate district. Thank you to all of the Department people, all of the PolyMet people that were not only employees, but contractors that have persevered over a decade of going through this process.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
253	Tom Bakk	Senator, MN District 03	And I think what we all need to understand is everything in life has some risk, so all of you that are -- all of you that are concerned -- all of you that are concerned, let me share a couple observations with you. I would bet you that in 1961, when NASA launched Alan Shepard into space, there was a whole lot of engineers that were very worried if he was going to come back. Other examples of 1962 John Glenn, Neil Armstrong, firefighters, policemen, immigrants. Immigrants are examples of risk and using the Iron Range to raise their family.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
254	Tom Bakk	Senator, MN District 03	And now let me just conclude by saying: All of you in blue hats -- and especially those of you who I saw pictures in the Mesabi Daily News today, young people wearing blue shirts -- dream big, just like they dreamed big when iron ore mining started in Minnesota and we ended up winning two world wars. Dream big, that some day we build the factories that make the pipe and make the wire and the Range is reborn. Because it can be done, but it will not be done without some level of risk, because everything in life carries some risk. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

255	Alyssa Hoppe	Citizen	My name is Alyssa Hoppe, and I cede my time to Henry Mott.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
256	Henry Mott	Professor, St. Cloud State University	Good evening. I'm Henry Mott. I'm professor of environmental engineering at St. Cloud State University, formerly of the South Dakota School of Mines and Technology, 35 years where I've been following environmental systems, and I think I've figured out how things move in the environmental systems.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
257	Henry Mott	Professor, St. Cloud State University	This closure plan that PolyMet has proposed is fatally flawed. We look at history, and there's 57 metal mines in 15 states right now that are producing acid rock drainage, and they will produce that acid rock drainage in perpetuity. They've used 1950s technology, and it just don't work. They've left rock piles on the surface, they've left processing pits open on the surface, they've left high walls, and they've left pits open to fill with acid rock drainage. PolyMet's plan is not that much different. They want to dump waste rock in the pit with no isolation measures. That will be a problem in perpetuity. They want to leave processing waste and open pits on the surface. Murphy will have his way with that eventually. They want to cover waste rock piles with thin plastic membranes. Microbial activity, root penetrations, freeze-thaw cycles will have those membranes looking like American flags that have been on flagpoles continuously for two years. So -- and then they want to leave the pit open. They want Minnesota's own version of Montana's Berkeley Pit: PH 2.5, toxic groundwater, unsolvable in perpetuity.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
258	Henry Mott	Professor, St. Cloud State University	All right? So what do we do? There's all these blue hats over here; all these orange flags over here. How can DNR bring those two groups together? They can say, "Now, in the future, if we're going to mine sulfide-bearing ore in Minnesota, we'll put the waste back into the repository." They can build that repository with an earthen barrier around the periphery. It will take 5,000 years for water to get through that earthen barrier. They can put a lake on top of that repository. They can have that lake have organic sediments. Oxygen will never get in. No oxygen gets in; no acid rock drainage will ever be produced. Now, DNR, there's lots of good rock. Let's drag some of that rock. Let's put some walleye-spawning areas in that lake. Let's use the rest of the rock. Let's use the rest of the overburden. Let's create some topography on the rock -- around the lake. Let's plant some trees.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. This comment generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to this comment.
259	Anna Urbas	Citizen	Hi. I'm Anna Urbas, and I'm a resident of Ely, Minnesota, and I support PolyMet, and I defer my time to Representative Rob Ecklund.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
260	Rob Ecklund	Representative, MN House 03	Good evening. I'm State Representative Rob Ecklund, International Falls, Minnesota. Let me start with a few facts about copper and the everyday use we've all become accustomed to. Automobiles have an average of 44 pounds of copper in normal mid-sized cars, the average luxury and hybrid cars have 99 pounds of copper, the electric cars average 150 pounds, and Tesla tops them all with 186 pounds. The average wind turbine contains 6- to 7,000 pounds per turbine. We've all been accustomed to the joys of doing our work through the new technologies in the modern world. I would venture to guess that the vast majority or people present tonight have a smartphone in their pocket. Every smartphone contains more than 25 different precious minerals. Friends, it's really hard to be pro-green energy but still be anti-mining. I'm a guy that likes to enjoy some of the great microbrews that our state has become so famous for. I also enjoy touring these places. If you ever take a tour of a microbrew operation, just take a quick look at all the stainless steel and copper that it takes to put together even a small microbrew operation. These materials have to be mined somewhere. I would personally rather have them -- have the mining take place where we can be assured of the environmental standards that are the most stringent in the world, and that the workers' safety will be taken care of by the best labor standards anywhere.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
261	Rob Ecklund	Representative, MN House 03	Thank you to the DNR and MPCA for holding this public hearing. I am in favor of this project moving forward. We have the strictest and most stringent environmental regulations of any state or country in the world. My view of this project is that it can be done through science and research, and that we can safely mine copper and nickel and all the other precious metals available in the Duluth complex. It should move forward. To deny this project will just make us more reliable on imports from third-world countries that have little regard for environmental regulations or the working conditions of their employees.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
262	Rob Ecklund	Representative, MN House 03	Again, thank you for this public hearing, and I would like to close with a couple of thoughts: We won two world wars by mining on the Iron Range. Let's take this mining one step further. After the permit to mine is issued, let's make this area the destination for industry that could further develop the copper and nickel resource. There is no reason that we cannot build the electric cars, wind turbines, microbrew vats, that our new green economy is going to demand, right here in northern Minnesota where the resource, pride, and our great work ethic already exists. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
263	Adam Lantz	Citizen	Good evening. My name is Adam Lantz. I work with Minnesota Industries. We support responsible mining, and we support PolyMet. I would like to defer my time to Harry Melander.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
264	Harry Melander	President, MN Building and Construction Trade Council	Commissioners, good evening. My name is Harry Melander, 353 West 7th Street, St. Paul, Minnesota. I'm here as the president of the Minnesota Building and Construction Trade Council's chair and founding board member of Jobs for Minnesota. And I'm also here today, like the orange and the blue, because we all care about Minnesota. Our state has gone through a permitting process -- a thorough permitting process -- for the Poly Met-NorthMet Project. We, as Minnesotans, trust the science and the findings of our state experts, which shows that this project will protect Minnesotans and also our environment.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

265	Harry Melander	President, MN Building and Construction Trade Council	About the builders: The skilled laborers, the men and women of the building trades who will build this project and meet and exceed all the state and federal environmental requirements. To our Rangers, the miners: A well-trained professional and knowledgeable workforce that has more than 130 years of experience mining responsibly and taking care of our backyard. On the jobs: This project will create hundreds of job opportunities for workers to provide for their families and to bolster the economy of the Iron Range community and beyond. These job opportunities will bring well-paid, long-term, dependable jobs that are fit for highly skilled workers that are needed within this community.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
266	Harry Melander	President, MN Building and Construction Trade Council	Additionally, PolyMet trusted the process that they were asked. It has invested millions of dollars because they agreed with the process and have followed through with it. PolyMet has followed the State's strict regulatory reviews and permitting process. It has done everything that you and we have asked. I urge the MPCA, the DNR to grant these permits in a timely manner. It's time for the State to finalize these permits and allow Minnesotans to get to work. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
267	Bill Erzar	Citizen	My name is Bill Erzar, B-I-L-L, E-R-Z-A-R. I'm a lifelong resident of Ely and the Boundary Waters Canoe Area around which Ely has always been a part. And I'm a former school board member in Ely who has seen our school population dwindle. I'm a proud Air Force veteran and a retired, proud, union steel worker. I support PolyMet, and I defer my time a Lori Fedo.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
268	Lori Fedo	President, Hibbing Area Chamber of Commerce	Thank you. Good evening. My name is Lori Fedo, L-O-R-I, F-E-D-O, and I have been president of the Hibbing Area Chamber of Commerce for over 25 years. I've lived in or around mining communities my entire life, and I now live in French Township, just 30 miles north, as the crow flies, from the proposed PolyMet Project. PolyMet has been under -- or -- has been in this process for half of my career, and I'm kind of old. I strongly support the PolyMet Project because I believe PolyMet will mine safely in our region. I believe in the strength of the environmental scientific community of our region and our industries, and more importantly, I believe in the people who are behind both.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
269	Lori Fedo	President, Hibbing Area Chamber of Commerce	We have a track record of mining safely for more than a century, and I believe we will continue to do so. Industry is continually innovating and must, to stay operational and relevant. Our community can be a part of this innovation. As we move towards using more sustainable energy sources, we will depend heavily on the mining industry to supply the materials we need. As consumers, we can provide these materials from overseas, or we can produce them here. We have the metals, we have with resources, we have the workforce, we have the infrastructure. PolyMet will be part of keeping this wealth in our communities and our nation and in our state.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
270	Lori Fedo	President, Hibbing Area Chamber of Commerce	I also trust our state's regulatory agencies have done their job to analyze the project accurately and fairly, and PolyMet is working through the process outlined by the agencies. It is time to move this project forward. Our chamber and all the northern chambers of commerce and business community stand at the ready to help be a part of this exciting project that will strengthen our region and provide jobs for our people. Thank you.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
271	Laura Kircher	Member, Bettere in our Backyard	My name is Laura Kircher. I'm a lifelong Minnesota resident and a member of the grassroots group called Better In Our Backyard which supports responsible, economic, industrial development that drives our economy in northeastern Minnesota. The state we're in tonight has some of the strictest environmental standards of any state. The regulatory process for the NorthMet Project, which has been very thorough, shows that the company can meet and operate within these standards. Our area has been mining for over 135 years, and safety and the environment are at the forefront of our work.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
272	Laura Kircher	Member, Bettere in our Backyard	Better in Our Backyard rejects the notion that the copper, nickel, cobalt, and precious metals we all consume should only be sourced from countries that lack the laws, means, or will to protect their environment, As a Minnesotan and a resident of St. Louis County, the economic benefits cannot be repeated too much. The NorthMet Project will create 360 full-time jobs. These are good, high-paying jobs that support families. This project will create secondary job needs, creating 600 additional opportunities for residents. Iron Range needs these jobs. They have the expertise and the available talent to fill these roles and inject energy into their communities. The county needs this project. St. Louis County will see $515 million in benefit. That has an incredible impact to schools, roads, and county services. I urge the MPCA and the DNR to grant these permits.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
273	Harvy Van Horn	Citizen	My name is Harvey Van Horn, and I'm actually going to cede my time to Michael Pfau.	This comment simply defers speaking time to another individual. No response needed.
274	Mary Thompson	Citizen	Mary Thompson from Duluth. I cede my time to Virgil.	This comment simply defers speaking time to another individual. No response needed.
275	Chris Urbas	Citizen	I'm Chris Urbas, a resident of Ely, Minnesota, born and raised. I support PolyMet, and I defer my time to Tony Kwilas.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
276	Tony Kwilas	Director of Environmental Policy, Minnesota Chamber of Commerce	Good evening. My name it Tony Kwilas, K-W-I-L-A-S, and I am the director of environmental policy at the Minnesota Chamber of Commerce. First of all, I'd like to thank the Department of Natural Resources and the Pollution Control Agency for having this consolidated draft public hearing on the draft permit to mine, the draft air permit, the draft water -- or NPDES permit -- and the 401 certification. Because this is the perfect example of one of the efficiencies that the chamber has been asking for: Instead of having four separate public hearings, to have one consolidated hearing, and we thank you for listening to us and having -- this is one, just, perfect example of when we think of efficiency in the system. Second of all, I'd like to thank you for having multiple public hearings, which you didn't have to do, and went above and beyond what was required in state law. But we thank you for doing that, and especially having it in the region where the proposed project is located. Hearing from stakeholders that have daily interactions with this proposed project is invaluable.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
277	Tony Kwilas	Director of Environmental Policy, Minnesota Chamber of Commerce	The environmental review and environmental permitting process has been adhered to by state statute and rule. Some say, along with the chamber, that it's taken too long and cost too much, but no one can argue that this process has not been followed and closely adhered to.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

278	Tony Kwilas	Director of Environmental Policy, Minnesota Chamber of Commerce	We have a tremendous opportunity before us to develop a world-class resource, the NorthMet ore body, and in turn, capitalize on one of the largest economic development project proposals in this state in recent years, all the while protecting the great natural resources that we all enjoy. The economic impact to this project is invaluable and could create over 600 construction jobs and 360 permanent jobs at the facility. There will be numerous auxilliary benefits also to local cities, counties, school district.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
279	Tony Kwilas	Director of Environmental Policy, Minnesota Chamber of Commerce	In regards to the four permits -- on the permit to mine, I'd like to thank the Department of Natural Resources, Commissioner Landwehr and Assistant Commissioner Naramore, for your staff for putting together this document. I know it was no easy task.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
280	Tony Kwilas	Director of Environmental Policy, Minnesota Chamber of Commerce	But the most important part of that permit to mine is the financial assurance provision. The financial assurance provisions ensure that the state of Minnesota will be protected from the process when the facilities and the mine are properly closed and maintained. It is important to note that this provision could be revisited yearly and adjusted by the State.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
281	Tony Kwilas	Director of Environmental Policy, Minnesota Chamber of Commerce	In regards to the draft air permit, the company has set -- has met all the details required by the draft air permit. The potential emissions are identified and have set limits on those and they are legally enforceable.	This comment addresses the air quality permit. No changes were made to the draft NPDES/SDS permit in response to this comment
282	Tony Kwilas	Director of Environmental Policy, Minnesota Chamber of Commerce	On the draft water quality permit, or the NPDES permit, we thank you for establishing the specific limits and protection of surface and groundwater. But in the end, it is clear that the process established by the State --	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
283	Emily Norton	Citizen	My name is Emily Norton. I'm a citizen of Duluth, and I'm out here asking the DNR to oppose the permits to mine, all the things the scientists have said. What's at stake here, from a DNR standpoint, is the pristine wilderness that we want to preserve, and I don't think we will regret preserving the wilderness, but we're probably going to regret the mine. I would like to defer the rest of my time to Bridget Holcomb, who will speak for Duluth for Clean Water.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
284	Bridget Holcomb	Citizen	My name is Bridget Holcomb, B-R-I-D-G-E-T, H-O-L-C-O-M-B. I'm from Duluth. This is my first sonnet, and I think it's appropriate that I wrote my first sonnet for public servants, and I recognize that these public servants have enough flex in the law. You can make this decision either way. How much was hushed to get us to this day? How far would be the breaking point for you? Contort the draft and with it science lay. Whatever reason facts tell us to do. You do your job but still reach to sleep fair, so keep the struggles with all laws concealed. Deep dives minutia of design and their false sense of calm kill qualms about the real. But what alone soft voice resolved could say? No model holds the world and all its flaws. The thought of ground you stood and lives you changed be foremost on your mind retirement day. Before you lies a whistle and our home. Our eyes ask: Who has the courage to say no? Thank you.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
285	Kevin Lee	Citizen	Thank you. My name is Kevin Lee. The last name is L-E-E. I've heard a lot today about this project complying with the highest standards in the world, so I'd like to talk about that for just a moment. In 2015, there was a panel of expert mine engineers that issued a report that outlined how we can learn from the mistakes of the past. Most of the mining industry listened. PolyMet and Glencore have not.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
286	Kevin Lee	Citizen	The first item on this expert's list: Don't store mine waste with water, but PolyMet won't listen. They want a permit to create a mine waste lake 900 acres large, 250 feet in the air, and keep it there forever. The Mining Association of Canada, an industry trade group, now requires its members to have their mining practices audited by outside experts. PolyMet won't do this. The government of British Columbia requires outside review of mine waste dam designs. Poly met does not.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
287	Kevin Lee	Citizen	The Canada Mining Innovation Council says you need to make sure that surrounding communities have realtime access to water quality data. PolyMet won't do this. Here in the States, the governments of Maine, Michigan, and New Mexico will not permit mining operation that has to be maintained in perpetuity.	Comment noted. Monitoring data considered in the development of the draft permit and required by the draft permit documents are publically available. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
288	Kevin Lee	Citizen	PolyMet's water permit application says that maintenance and water treatment will be required forever. Montana not only requires that permits are reviewed by outside experts, they require that mine waste dams have what's called a "factor of safety" of at least 1.2. PolyMet allows 1.1, and when you get to 1, the dam collapses. We deserve better than this.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
289	Sally Munger	Citizen	I'm Sally Munger, and I'm ceding my time to Gay Trachsel.	This comment simply defers speaking time to another individual. No response needed.
290	Gay Trachsel	Member, League of Women Voters of Duluth, Natural Resources Committee	My name is Gay Trachsel, G-A-Y, T-R-A-C-H-S-E-L. I'm from Duluth. I am a member of the League of Women Voters Duluth Natural Resource Committee. We have a public policy position that states that we promote an environment beneficial to life through the protection and wise management of natural resources in the public interest. Also, to preserve the physical, chemical, and biological integrity of the ecosystem and to support measures to reduce pollution to protect surface water, groundwater, and drinking water.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.

291	Gay Trachsel	Member, League of Women Voters of Duluth, Natural Resources Committee	According to your own statements, the purpose of a permit to mine is to control the possible adverse environmental effects of mining by ensuring orderly construction and development of a mine, sound operational practices, and reclamation of mined areas. These are some of the things that I think have not been fully addressed with PolyMet.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
292	Gay Trachsel	Member, League of Women Voters of Duluth, Natural Resources Committee	The design of the tailings basin is the cheapest, and it has a history of failing. Pollution, due to seepage, can still contaminate the surrounding water and last for years, maybe forever. We don't know. How will PolyMet satisfy the 10-milligrams-per-liter sulfate standard when existing mines are not even being held accountable today?	Comment noted. This comment poses questions or contains statements about issues previously considered during the environmental review process and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
293	Gay Trachsel	Member, League of Women Voters of Duluth, Natural Resources Committee	Reclamation is the act of returning something to a former, better state. I see no path to this happening unless you believe what is in Butte, Montana, the nation's biggest body of toxic water from a flooded copper mine, the Berkeley Pit, is reclamation. It is a Superfund and is under the EPA's remediation, not the company that's produced the toxic water. In the latest decision by EPA Director Pruitt on Bristol Bay to protect salmon from copper mining, he states, "It is my judgment at this time that any mining projects in the region likely pose a risk to the abundant natural resources that exist there." I would think that 10 percent of the fresh water in the world, Lake Superior, might deserve at least the same protection salmon fish are getting in Alaska. The world's water supply is dwindling due to climate change, pollution, and overpopulation. The only conclusion at this time is that sulfur-copper mining poses too many risks today.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
294	Dennis Goode	Citizen	Hi. My name is Dennis Goode, and I would like to cede my time to Paula Maccabee.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
295	Bob Tammen	Citizen	I'm Bob Tammen. I see time's a flying, for which some will be grateful. But I'm from Soudan, Minnesota. Bob Tammen, T-A-M-M-E-N, and I worked in the mines in Minnesota and, as well, upper Michigan, Montana, and North Dakota. I've seen a lot of mining communities, and I don't see many healthy economies. I don't see many healthy mining communities. We don't know if we have any real benefit from mining in Minnesota at the state level. I know you asked for technical reasons to analyze this permit, so I would suggest that we need to do an adjusted net savings accounting. Now, this is a widely used process when countries that depend on natural resources -- a lot of them are very poor, so you do an adjusted net savings accounting to see if the costs balance with the benefits. Now, we know the costs of mining in Minnesota, about a quarter of a billion dollars to build a bridge over there at Highway 53. We know that we rebate up to -- it's been a quarter of a billion dollars since '93, we rebate right back to the mining industry, so I think we should do that accounting. I don't believe the State of Minnesota should make the decision on mining without knowing if we're actually going to get a benefit for the great state of Minnesota. And the other thing I would mention, that in the accounting, they account for mineral depletion, wetland destruction, carbon sequestration. There are a lot of costs to mining, so we're destroying wetlands for little benefit. And I hate to think that I live in a state that would dynamite a cathedral to create a job salvaging bricks. Thank you.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
296	Rose Hoene	Citizen	My name is Rose Hoene, spelled R-O-S-E, H-O-E-N-E, and I'm here to stand with the water and ask you to not permit this to happen.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
297	Rose Hoene	Citizen	And I want to talk about seven generations of sustainability and where that concept comes from. This is not a new concept; this is a very old concept. It originated with the Iroquois, the Great Law of peace from the Iroquois nation, the Haudenosaunee, who, by the way, our Constitution is based on theirs. They talk about looking forward, for our children, seven generations. I wonder what it looked like here 500 years ago. Sometimes I like to daydream about that, and I wonder what it will look like 500 years from now. What PolyMet is proposing, 500 generations from now would be 25 -- 500 years from now would be 25 generations. The Haudenosaunee people, in their wisdom, were looking at 7. We need to look even beyond that at this point.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
298	Rose Hoene	Citizen	We need to be thinking about not just us, immediate gain, jobs. I'm not against jobs. We all need jobs, we need to live, but not through the loss of water, because water really is life, and every single one of us needs to be thinking forward.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
299	Rose Hoene	Citizen	One of the great leaders of the Haudenosaunee -- who, by the way, I lived with for many years -- is a chief named Oren Lyons who's often quoted. He says, "We're looking ahead, as is one of the first mandates given us as chiefs, and as people, to make sure that every decision that we make relates to the welfare and well-being of seven generations to come." What about the 7th generation? What about the 25th generation 500 years from now? Where are you taking them, and where are you taking us?	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
300	Lauren Sandbulte	Citizen	I'm Lauren Sandbulte from Duluth, Minnesota. I defer my time to Mark Giese.	This comment simply defers speaking time to another individual. No response needed.

301	Mark Giese	Citizen	My name is Mark Giese. I'm not a person who -- G-I-E-S-E -- I'm not a person who would normally speak in public, but I will because we need to encourage everyone to support PolyMet in the final stages of the permit process. I was born and raised in northern Minnesota. My wife and I decided to raise our family here too. I attended school in Aurora, so did our children. I've worked in the mines, as did my father, uncle, and great-uncles. My family have all been avid outdoor enthusiasts. The last 30 years, I've resided on a small lake on the Embarrass River chain. It's located downstream from the old Erie and LTV mine site, which is the proposed site of the PolyMet Project. We use the lake to hunt, fish, kayak, boat, and swim. We also take trips to the Boundary Waters and enjoy the outdoors, pristine waters, and fishing. Contrary to what opponents of this project portray, residents in this area, including my family, friends, neighbors, coworkers, and customers are all concerned about our environment.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
302	Mark Giese	Citizen	We've been mining Minnesota for close to a century and a half. Our watershed is one of the cleanest in the nation. We've also utilized some of the old mining pits in our region for water sources and recreational purposes. It is clean water because we live in a state that monitors mining activities. Companies are held responsible and not given the opportunity to jeopardize the environment without severe ramifications. PolyMet has been thorough in following the governmental regulatory review through this long permitting process.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
303	Mark Giese	Citizen	The PolyMet Project will mine ore from the Duluth complex. It is a world-class resource of precious metals located in the midst of existing mining operations. It will produce metals that are essential to our lives: Appliances, electrical components, power plant equipment, dental instruments, and numerous necessary items that are built with copper, nickel, platinum, and other precious metals, metals that can be resourced locally by environmentally responsible mining. This is not the old sulfide-extraction method often referenced by opponents, but a new technology which will make it possible to tap this valuable resource safely. Modern copper and nickel mines have shown they can operate without polluting and comply with state and federal standards, protecting our air and water. There's no better place to construct this mine.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
304	Mark Giese	Citizen	There's no better place to construct this mine. Our region has a trained workforce, existing roads, rail, power, tailings basin, and infrastructure to minimize the environmental impact as compared to starting a new greenfield operation.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
305	Mark Giese	Citizen	I believe organizations like the Clean Water Action group are needed, but our region has the cleanest water in the state, and I believe it's because we're heavily regulated. The Clean Water Action group focuses on protecting our lakes, streams, and rivers in other regions of the state that currently have contamination issues, and continue to protect our watersheds from exotic species.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
306	Mark Giese	Citizen	PolyMet Project will be monitored throughout the whole process, including construction, operation, and closure of the mine. In the permit to mine, there are financial assurance provisions to assure taxpayers are protected. I encourage everyone, including the opponents to this project, to examine the comprehensive permit conditions which have been structured to meet strict environmental guidelines.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
307	Mark Giese	Citizen	Thank you for considering my comments. I urge the MPCA and the DNR to conduct a timely review of the comments and issue the permits PolyMet needs to produce metals we use every day. Thank you.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
308	Anja Curiskis	Citizen	My name is Anja Curiskis, A-N-J-A, C-U-R-I-S-K-I-S, and I've got someone who's actually prepared tonight, John Gappa.	This comment simply defers speaking time to another individual. No response needed.
309	John Gappa	Board Member, Friends of the Boundary Waters Wilderness	Good evening. My name is John Gappa, G-A-P-P-A. I live in St. Paul. I served as a corporate chief financial officer, and I've been actively following the financial assurance aspects of this proposed project. I also serve on the board of the Friends of the Boundary Waters Wilderness. Governor Dayton has stated that permitting the proposed PolyMet Project will occur only if it protects the taxpayers of Minnesota with adequate financial assurance. While the DNR's latest financial assurance requirements are much improved, they still do not provide the financial projections -- the protections that Minnesota taxpayers deserve. The DNR's analysis shows that the first year of mining creates a cleanup bill of $588,000,000. After 11 years of mining, the cleanup exposure is over a billion dollars. At the conclusion of mining, the remediation costs and the costs of treating polluted water for 100 years is $782 million, and these estimates assume that everything goes according to plan. To protect the taxpayers of Minnesota, I recommend that the DNR, first, significantly increase the up-front cash contributions required in the financial assurance package. As it stands, the total cash requirements by the ninth year of operation total $26 million, a mere 3 percent drop in a billion-dollar cleanup bucket. DNR's own consultants state that it would be very difficult for PolyMet, or even a major mining company, to obtain the financial and -- financial instruments required. Second, require PolyMet to complete an updated definitive feasibility study examining the project's ability to meet the cash-contribution requirements. This study should be subject to public review and comment, and information learned from the study should be incorporated in the final permit to mine.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.

310	John Gappa	Board Member, Friends of the Boundary Waters Wilderness	PolyMet has proposed paying itself first by contributing only $2 million a year during most profitable years of mine operation while deferring its cleanup payments until after most of the productive ore is mined. By delaying the cash cleanup payments, the State runs the risk of PolyMet privatizing the profits and socializing the cost of this project. Finally, if PolyMet fails to meet any of its financial assurance requirements, the DNR needs the options that have -- needs options similar to all corporate credit agreements, which carry the following conditions: First, prohibit the payment of dividends to mine shareholders if the agreement -- if the financial assurance agreements are not being met. They should also prohibit the payment of bonuses, stock options, or other incentives to executives of the mine if the financial assurance is in default. And finally, require full cash funding of all financial assurance obligations in the event the mine is sold. In conclusion, significantly more of the financial assurance package needs to be funded with cash, rather than difficult-to-obtain financial instruments. To adapt an old saying: In God we trust, PolyMet, please bring cash.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
311	Blanche Wilcox	Citizen	Hi, my name is Blanche Wilcox, and I defer my time to J.T. Haines.	This comment simply defers speaking time to another individual. No response needed.
312	J.T. Haines	Citizen	Hi, my name is J.T. Haines. I live in Duluth, and I'm a volunteer with Duluth for Clean Water. I spent some of my early years growing up on the Iron Range in Mountain Iron. I have very fond memories of growing up in Mountain Iron. The basic comment that I want to make today is that those of us in this area, we live downstream of this proposal, and as such, I think that the very serious concerns you're hearing from downstream communities need -- deserve special respect. I have three brief comments about the permits.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
313	J.T. Haines	Citizen	First, as you know, medical professionals around the state have called for a health impact assessment on this project to measure cumulative impacts to humans. That study has not happened. I view this as a failure in the process and something the draft permits do not adequately address.	Comment noted. The issue related to a health study was addressed as part of the EIS process.
314	J.T. Haines	Citizen	Second, the U.S. Forest Service recently found that 28 percent of dams for this type of mining failed in the U.S. That rate is unacceptable in a water-rich environment. Since this process began, agencies have updated climate data which confirms increasing frequency of heavy precipitation events in our area. My understanding is that these draft permits do not address the increased risk of dam failure to downstream communities. That is clearly a failure in this process.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
315	J.T. Haines	Citizen	Third, and finally, there has been no emergency response-planning education with downstream communities like Fond du Lac, like Cloquet, Esko, Duluth, and others. The threat of dam failure is high, and the threat of spills and leaks is, essentially, 100 percent. It is unconscionable that downstream communities have not been educated and informed about dam failure rates, inundation analysis, and emergency response planning. How has that not happened? This is a fundamental failure in the process, and the permits should be denied on that basis alone. This has been a long process, but I think it's important that we remember -- are we okay here?	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
316	J.T. Haines	Citizen	Thank you. I just want to acknowledge this has been a long process, but I think it's really important, Commissioners, that we recall that this is the moment of decision, and it's required of all of us, elected officials and commissioners, that we give it a fresh look with the final details now, and I expect you to do that.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
317	J.T. Haines	Citizen	And I want to say that I regret that my advocacy for the children of this area feels like advocacy against the children from my old home town. That is not my intent. I like to think that as Minnesotans we could agree that if our jobs harm or threaten our neighbor's children, as painful as it might be, maybe those aren't the right jobs.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
318	J.T. Haines	Citizen	Glencore is not a good company. They have a horrible record of mistreating labor and the environment. I think it's obvious they would say anything for profit. I do not trust them. I don't think anyone in here should trust them, either blue hat or orange scarf.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
319	J.T. Haines	Citizen	Commissioners, we believe this process has failed in fundamental ways, especially with regard to downstream communities. I urge you to reject the permits. If this goes forward, I believe we will have sold Minnesota to the lowest bidder and nothing would ever be the same again. We need a better option. Thank you.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
320	Korii Northrup	Member, Fond du Lac Band of Lake Superior Chippewa	Okay. My name is Korii Northrup, K-O-R-I-I, Northrup. I come from the Fond du Lac band of Lake Superior Chippewa. I live over there on the reservation. I've been there about four years, but I was born and raised in Duluth, so, you know, obviously, Duluth has a big part of my heart. I've heard a lot of people talk today about 500 years from now, and I stand here in front of you as, sort of, a relative 500 years from the past. 500 years ago, we didn't worry about poisoned water. We didn't worry that we would not have enough wild rice to feed our families. We didn't worry about game. We came here to our promised land, the Anishinaabe people. You know? Not just my reservation, but across all of mining country. Not just in this state, but in other states as well. You know? 500 years ago, we all lived together, community. We looked out for each other, and there was no such thing as profit. And, you know, to me, I'd like to get back to that, you know, where we all are living in the promised land again and we're all snowshoeing and hanging out and going fishing and, you know, telling each other stories and stuff. Because, like, to me, you know, that's a better use of our time than having to come to meetings and hearing and judges and, you know, things of that nature. You know, I'd rather share my last dollar with a stranger than say, "I need a profit." I don't need a profit. I need to help my fellow man. I need to be here to share this beautiful place, this beautiful life, with everyone around me. And, you know, 500 years in the future, I would like it to go back to the way it was 500 years in the past, so thank you for listening.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.

321	James Kramar	Citizen	Hello. My name is James Kramar, K-R-A-M-A-R. I'm a resident of Hoyt Lakes, Minnesota, and I support PolyMet. And I defer my time to Peter Haines.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
322	Peter Haines	CEO, GPM	Hello. My name is Peter Hains. I'm the CEO of GPM, a 40-year-old pump company located in Duluth. We manufacture the world's toughest submersible slurry pumps. They're cased in cast iron, they're loaded with copper-wound motors and alloy steels that contain copper and nickel. We support over 50 families regionally and over 1,000 families if you factor in our 48 North American distributors and our local marketing partners. We all support mining.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
323	Peter Haines	CEO, GPM	Description of daily life with aspects of daily life that require natural resources (electricity, oil heating, water, wastewater. And how much of detail life uses copper. Like it or not, if you live in a house, an apartment, a mobile home, or any type of man-made dwelling, then, by default, you support copper and nickel mining. Everything you use every day is manufactured and produced by equipment that's made from steel alloys that contain varying fractions of copper and nickel. That means if you consume electricity, use natural gas or propane, turn on a faucet for water, eat food or beverage products that you've purchased, if you flush a toilet, ride a bike, drive a car or a truck, by default, you support copper and nickel mining.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
324	Peter Haines	CEO, GPM	Minnesota surpasses all states in protecting and leveraging our natural resources. From a first-person standpoint, the Boundary Waters are as pristine and fresh today as they were the first time I went there with my dad 50 years ago. If you live in Minnesota, you need to support PolyMet. You need to support mining. You can't live as you do today without copper and nickel metals that PolyMet	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
325	Alex Haveron	Citizen	Hello, my name is Alex Haveron, I'm a resident of Duluth, Sheet Metal Local 10. I support PolyMet and I defer my time to Mike French.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
326	Mike French	Citizen	Good evening. My name is Mike French and I'm a civil engineer with LHB here in Duluth. I'm here to speak as a member of the consulting engineering and environmental services community and for the industrial clients that I have the privilege of serving. There are many passionate voices speaking tonight and those that have spoken for many nights over many years now on this topic. To that lengthy conversation I'd simply like to add my three points.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
327	Mike French	Citizen	One, as an engineer, I'm a big fan of process. That is, following rules, procedures and the implementation and guidelines of best practices. Guidelines and rules are important in that they take the guesswork out of problems, not controversy, but they take away the randomness. It is in this mind-set that I wish to voice strong support for the approval and completion of PolyMet's permit to mine on the basis of following the procedures.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
328	Mike French	Citizen	Mining is a significant part of our shared heritage in Minnesota. And I have to say that I've only been a Minnesotan since 2004. So, in my 14 years of being a Minnesotan, I've never known a period when PolyMet wasn't working on getting their permits. It's quite a time. As time has progressed the rules and standards that administer mining continue to evolve, whether on the matter of worker safety or environmental impact mitigation. We have state agencies and federal agencies that establish and enforce standards and lay out a clear path for reviewing and issuing permits. If an enterprise like PolyMet is committed to following the rules, to funding its environmental committments, to ensuring worker safety, then it needs to be allowed to engage in that business. In the absence of following our own established rules, how is any enterprise to have confidence that they would want to locate in Minnesota? I believe our permitting and review process is robust and it works. It's time to end the debate and move forward with the permit to mine.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
329	Mike French	Citizen	Two, I support allowing PolyMet to advance their project as it relates to the benefits of improvements to regional infrastructure. We've heard many calls for approving this project on the basis of jobs. And I absolutely agree. But heavy industry like PolyMet supports us in many ways. Industry supports the expansion and protection of our harbor with products coming in and out. Heavy industry like PolyMet supports the construction and safety of rail. Heavy industry like PolyMet supports education and research, like that at NRRI. And heavy industry like PolyMet supports the robust electric infrastructure providing significant reliability for which all Minnesotans benefit. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
330	John Rosene	Citizen	Thank you so much. My name is John Rosene, I will proudly defer my time to Libby Bent.	This comment simply defers speaking time to another individual. No response needed.
331	Libby Bent	Citizen	Hi, I'm Libby Bent, downstream resident of Duluth. And I oppose the issuance of any permit. As my father observed, the sheer complexity of the chemistry, hydrology, and geology involved in sulfide mining without irreversible pollution in our water rich environment boggles the mind. It's never been done because the cost would be huge, far in excess of the value of extracted metals. A more far-fetched industrial initiative is difficult to imagine.	Comment noted. This comment poses questions or contains statements about issues previously considered during the environmental review process and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
332	Libby Bent	Citizen	So, what is going on? How did this plan make it past a federal law designed to protect watersheds, headwaters on forest service land? A state law requiring sulfide mines to be maintenance free on closure and treaty rights to hunt, fish and gather on a sea of territories requiring high biodiversity lands.	Comment noted. The draft permits were developed according to current state and federal law. The comments does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
333	Libby Bent	Citizen	Why was the call for a health impact assessment ignored, even as 30,000 health professionals requested one? Why are warnings from mining engineers that the tailings basin design is risky and unsafe going unheeded?	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
334	Libby Bent	Citizen	The proposed upstream design to store a slurry of toxic mine waste on top of unstable wetland soils is a Mount Polley recipe for disaster. The Mount Polley review panel warns it is not enough to tweak around the edges of what we've been doing. We cannot continue to use technology that is fundamentally -- Hello? Yes? Okay. All right. These are not problems of the past. Dam failures are increasing and PolyMet has not analyzed the increased risk of dam failure from higher precipitation events due to global warming.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
335	Libby Bent	Citizen	Perhaps most troubling, where is the analysis of the value of one of the world's largest fresh water deposits? Water is becoming desperately scarce worldwide. 40 states could face clean water shortages in the next ten years.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

336	Libby Bent	Citizen	This decision will broadcast Minnesota's priorities. Do we embrace a blue economy and lead the way in mining landfills for strategic metals and investing in copper and precious metal recycling? Or do we trade multi-billion gallons of our fresh water every year for deposits containing less than 1 percent minerals, transforming our lake country into a sea of toxic waste?	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
337	Libby Bent	Citizen	The rest of the world is choosing. El Salvador prizes water over gold saying, "We are the first country to evaluate the cost and benefits of metallic mining and say no." Buffalo, New York is transforming their city from rust to blue, embracing an economy based on the Niagara River and Lake Erie. And Minnesota, 50 years of cleaning up the St. Louis River, only to become the land of sky tainted waters? As my dad would say, it boggles the mind. This decision is irreversible. For our future and for the greatest lake in the world, we cannot get it wrong. Please do not check one more box. Please reject these permits.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
338	David Ivonen	Citizen	Like many of the other people here, I'm not really accustomed to public speaking, but this is an issue that's really tough for me. I grew up on the Iron Range, Chisholm. My grandfather drove or engineered trains from The Range to the Superior area. Another grandfather worked in the underground mines, a pioneer in Ely, spent a lot of time in and around the Boundary Waters. I've seen it transform people's lives. I've seen it bring people from different social and economic backgrounds together. But dollars to doughnuts, bottom line, water is more precious than copper. We need it, we do need copper, we have other ways to get it currently.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
339	David Ivonen	Citizen	We have companies' bad track records, Glencore. Should the Twin Metal mines follow, we've got Antofagasta, even worse. If you let this abomination in our door, please make sure they put down at least a half a billion deposit with most of their profits paying for the rest of it year after year.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
340	Kate Harrison, for Rebecca Otto	State Auditor	Kate Harrison, H-a-r-r-i-s-o-n. I'd like to read a statement from Rebecca Otto, state auditor and candidate for governor, on PolyMet draft permit to mine. "The draft PolyMet permit to mine allows PolyMet to store mine waste in a dangerous, outdated way that puts people and water downstream at risk.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
341	Kate Harrison, for Rebecca Otto	State Auditor	"I oppose the draft permit for PolyMet's sulfide mine proposal because PolyMet has not listened to the public and experts who oppose the dangerous way it stores mine waste and the hundreds of years of pollution and the over one billion that is at stake.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
342	Kate Harrison, for Rebecca Otto	State Auditor	"The draft permit sets a one billion figure needed to reclaim the site and pay for long-term water treatment during the middle of the proposed mining. "However, reliance on bonds PolyMet has not proven they can acquire, failure to require PolyMet to update their financial feasibility study, and the low two million per year required contributions to the long-term water trust fund in the first half of the proposed mine mean taxpayers are not protected.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
343	Kate Harrison, for Rebecca Otto	State Auditor	"The draft permit assumes PolyMet will achieve an impossible level of capturing polluted water and use reverse osmosis water treatment for at least 55 years after the mine would close. Environmental review showed that water could be polluted for over 500 years. "The NorthMet Environmental Impact Statement asserted PolyMet would capture and treat over 90 percent of the contaminated groundwater, but the draft permit does not require it. "If PolyMet does not capture and treat polluted water, people downstream will suffer from water polluted with arsenic, mercury, copper, nickel, and other heavy metals. "The draft PolyMet permit to mine does not protect the public interest, puts people downstream at risk, and leaves taxpayers unprotected. As drafted, the PolyMet permit to mine doesn't protect Minnesotans and should be rejected by the Minnesota DNR."	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
344	Laurel Melby	Citizen	I'm Laurel Melby, spelled L-a-u-r-e-l, M-e-l-b-Y. I'm from Duluth, Minnesota, but I raised my family in Finland, Minnesota and I love a place called Lake Vermillion. I have harvested wild rice for 37 years with my husband. And I believe it is the canary in the mine and we need to listen now, not when it's too late.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
345	Laurel Melby	Citizen	I request that the DNR does its job by requiring this permit process to be done completely, followed completely.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
346	Laurel Melby	Citizen	And I believe what they can see is that no sulfide mining has been done anywhere near reasonable cleanliness without extreme pollution. And I concede the rest of my time to Greg Benson.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
347	Greg Benson	Citizen	Hi, I'm Greg Benson, I'm a resident of Duluth and a business owner. I'm going to read really fast. I'm here representing 100 small businesses in the north, we're the Downstream Business Coalition. We employ nearly 1,211 people. We're continuing to grow and reinvest in both our companies and our community. This equates to adding jobs and real dollars to the local economy. To continue this our businesses depend on the health of the Lake Superior watershed. We are pro iron ore mining and pro jobs. We support and benefit from ferrous mining, which originally built this economy in the north. We rely on mined products in our businesses.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
348	Greg Benson	Citizen	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 our facilities. But because we are so dependent on the health of our water, we are concerned about copper-nickel mining.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
349	Greg Benson	Citizen	The proposed PolyMet NorthMet copper-nickel mine and others like it are vastly different from ferrous mining, as we've been hearing all night. I'm going to just jump ahead here.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.

350	Greg Benson	Citizen	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 ten years and been closed for ten years. Even the state-of-the-art now closed Flambeau mine touted by PolyMet supporters as a mine that operated without polluting local waters has now been shown to have caused significant groundwater and surface water pollution.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
351	Greg Benson	Citizen	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 will continue to reinvest the wealth we create in new jobs over the next 20 years and beyond. We call on our state and local politicians to do this. And Senator Bakk, how many of those spaceships actually blew up?	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
352	Beth Bartlett	Citizen	Hi, my name is Beth Bartlett, B-e-t-h, B-a-r-t-l-e-t-t, I live in Duluth. I'd like to address two specific issues. The first is that the 1854 treaty ceded territory goes right through the Duluth rock complex in question. And there has been no consultation with the tribes about the rights to hunt and fish and gather in this territory.	Comment noted. The draft permits were developed according to current state and federal law. The comment does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
353	Beth Bartlett	Citizen	The indigenous people of this region will be disproportionately affected by any toxic contamination of water, fish and wild rice, resulting in harm to their health, livelihoods, culture, and well-being.	Because the authorized discharge from the WWTS is limited to 10 mg/L and the required engineering controls will prevent unauthorized discharges, the project as designed will not harm wild rice.
354	Beth Bartlett	Citizen	Apparently PolyMet is a Canadian corporation who feels no need to uphold U.S. law and is quite willing to violate these treaties. The U.S. public citizens, as citizens of Minnesota, it is all of our duties to ensure that those treaty rights are upheld.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
355	Beth Bartlett	Citizen	It is also the ethical responsibility of all of us who are settlers to do everything in our power to do no further harm to the Anishinaabe land, people and religious and spiritual practices, to take every opportunity to do what we can to support the restoration of these.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
356	Beth Bartlett	Citizen	Second, one of the bodies of water into which toxic contamination would flow is the St. Louis River, as we've heard all night. This puts all of us living in Duluth and the Duluth region, especially those in Fond Du Lac, at risk.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
357	Beth Bartlett	Citizen	We've heard a lot about heavy metals, I imagine you've heard about it over and over again. But do we really know what any of these do? So, just to focus on one, mercury and methylmercury. We need to learn from the Minamata disaster in Japan in the late 1950s where mercury levels in the flesh of fish in contaminated water were more than a million times higher than that of the water they swam in. In Minamata, the first signs were cats going crazy and dying. In humans, methylmercury poisoning first causes hands and feet to tingle, then it becomes increasingly difficult to hold objects, becomes difficult to speak and hearing becomes muffled, general paralysis sets in, hands become gnarled, swallowing becomes difficult and death soon follows. In the womb the placenta can magnify levels of toxic chemicals even more. Developing organs are extremely sensitive to damage. Methylmercury interferes with the critical period of brain cell migration, resulting in high rates of miscarriage, severe physical maldevelopment and mental impairment to those babies who do survive.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
358	Beth Bartlett	Citizen	And I don't think any of you would wish this on anyone, let alone all of the many generations of children yet to be born, not only of humans, but of deer, moose, walleye, all beings that depend on clean, fresh water for life. In this water rich environment, all beings are at risk for generations to come.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
359	Beth Bartlett	Citizen	And as for the lessons from Minamata, the Japanese government stated that having learned vital lessons from the misery caused by Minamata disease and other painful manifestations of pollution as a consequence of this misconceived priority, that's their term, it's Japan's sincere wish to see other countries becoming fully aware of the importance of environmental consideration based on Japan's experiences and lessons learned and establishing a sustainable society without experiencing the misery of pollution like Minamata disease. I urge you not to let this project become yet another misconceived priority and not issue permits for the PolyMet mine project. Thank you.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
360	Kathy Heltzer	Citizen	My name is Kathy Heltzer, H-e-l-t-z-e-r. I yield my time to Bill Hansen from Grand Marais, Minnesota.	This comment simply defers speaking time to another individual. No response needed.
361	Bill Hansen	Citizen	Commissioners, deputy commissioners, thank you for letting me testify today and your time. I'd also like to especially thank the community mediators for their time and service and the ASL interpreters, who have been doing a great job up here. So, thank you very much. My name is Bill Hansen, H-a-n-s-e-n. My parents founded Sawbill Canoe Outfitters at the end of the Sawbill Trail in Tofte in 1957. My wife Cindy and I bought the business from them 35 years ago. We made a dignified living over those years, raised four children, and sold the business to our daughter and son-in-law two years ago. In addition to my small business career I've involved myself as deeply as I can in regional economic development over the last three decades. I've been fortunate and honored to serve as a Trustee and Board Chair of the Northland Foundation and the Entrepreneur Fund. These organizations have been long-time partners with private companies, lending institutions, government agencies in creating jobs in Northeastern Minnesota. These partnerships have spanned every sector of the economy, including mining services, tourism, health care, manufacturing, service industries, and so on. I'm honored to have played a modest role in supporting diverse local economic development. My very first vote at my very first board meeting at the Northland Foundation was in favor of providing an emergency loan to a struggling small company called Cirrus Designs. Initially I welcomed the prospect of precious mineral mining in our region, but as the PolyMet project has moved through the study and approval process, I've become convinced that it's simply bad economic development.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
362	Bill Hansen	Citizen	Northeastern Minnesota has a long history of backing economic development projects that end badly. The chopsticks factory is the poster child, but unfortunately there's been many other examples, large and small, of which you are aware. I believe PolyMet is another economic developmental mistake promising prosperity and wealth, but very unlikely to deliver on those promises.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

363	Bill Hansen	Citizen	In my opinion it boils down to what kind of community do we want to leave to our grandchildren and great-grandchildren. Do we put our trust in huge foreign-owned corporations with long histories of labor and environmental violations, leaving a trail of depressed communities and perpetual pollution? Or do we roll up our sleeves, invest in ourselves and build a regional economic system that's diversed, resilient, sustainable, respectful to our people, our environment, our health, our communities, and our long-term future? We can do better. And as a good friend of mine said in this very room in 2002 at the AFL-CIO convention, "We all do better when we all do better." Thank you.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
364	Sam Hodel	Citizen	My name is Sam Hodel and I'd like to concede my time to Josh Skelton.	This comment simply defers speaking time to another individual. No response needed.
365	Josh Skelton	Citizen	Good evening. My name is Josh Skelton, S-k-e-l-t-o-n, and I reside in Coleraine, Minnesota, but I grew up in Hoyt Lakes. My wife and I are both chemical engineers licensed professionally here in the state of Minnesota. And we've made a very conscious decision to locate our family here where we don't believe there's any better quality of life. I'm here tonight to urge the Minnesota Pollution Control Agency and the Department of Natural Resources to grant these permits in a timely manner. Because the proposed PolyMet NorthMet project would provide consequential impacts to our region and our way of life.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
366	Josh Skelton	Citizen	In a time where our region has been decimated from a lack of professional opportunity, this NorthMet project brings hope in the form of an estimated a thousand jobs. These types of jobs and wages that come from building and operating and maintaining a project of this scale will have long-term benefits on a region where the very social and moral fabric that makes it so unique has become storied in history books instead of the reality in our own front yards. The ability to work and live in this area has been hanging in the balance as the science and technology proposed with this mining operation has been vetted deeply and with the review of your agencies deemed adequate to provide a framework to protect all that we cherish.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
367	Josh Skelton	Citizen	Your work has been important to help us assure that those same things we hope draw and retain our families will be with us for a long time and not just a season and we can co-exist with this mining operation. It's time to put these great mines to work. And as a result, bring in and retain employees of the future to become the great pillars of our communities to help lead our schools, businesses, churches, and community organizations. It's time to write a new chapter in our history that shows the region can persevere, they can reinvent. And building from a long tradition like iron mining propagate state-of-the-art technologies, once again serving our nation and leading the world in safe, efficient and responsible practices.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
368	Josh Skelton	Citizen	Worldwide demand for copperas material will continue to build with our appetite and strategic goals to reduce our own carbon footprint and modernize our way of life. If we are serious about transforming our energy landscape to meet these goals, like integrating more renewables and advanced technologies for our energy production and delivery, responsibly mining these materials will be critical to address any global threats. Copper is an essential material to build these energy systems in the future and being able to rely on a domestic source with high accountability for impacts on the environment will allow us to meet those needs with the highest integrity.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
369	Josh Skelton	Citizen	Being from Hoyt Lakes and living in the region, I'm eager to see the former LTV facilities refurbished and modernized and returned to operation, bringing back hundreds of good paying jobs and helping to lead the charge on making our world a better and safer place. I urge you to get these permits issued in a timely manner, we have no more time to waste.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
370	Ryan Sistad	Citizen	I'm Ryan Sistad, I fully support the PolyMet project, but I'll be deferring here to Craig Fellman.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
371	Craig Fellman	Citizen	My name is Craig Fellman, C-r-a-i-g, F-e-l-l-m-a-n, I'm from Duluth. I appreciate the opportunity to speak on the draft permits here today for the PolyMet NorthMet project. And I appreciate that PolyMet is going to provide over 70 million in federal, state and local taxes, 15 million, which is going to go locally and fund every different school district. And I appreciate the 500 million dollar economic impact we'll feel throughout Northern Minnesota, which is very vital for us. And so are the jobs that it's going to create, 600 indirect jobs and 360 direct jobs. NorthMet project is needed in Northern Minnesota.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
372	Jerry Fryberger	Chairman, Hallett Dock Company	Thank you. I appreciate the representatives from the MPCA and the Department of Natural Resources State of Minnesota. My name is Jerry Fryberger, F-r-y-b-e-r-g-e-r. I'm Chairman of the Board of Hallett Dock Company, a local company. And I'm a lifelong resident of Duluth. And I am one of these people who thinks that our co-lead agencies and along with PolyMet and all kinds of other consultants have done a superlative job.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
373	Jerry Fryberger	Chairman, Hallett Dock Company	I am very proud to be a Minnesotan. I'm very proud of the PolyMet project and the thoroughness and the level of excellence that happened. Over the past 11 years of responsibly addressing the environmental and processing challenges, we have watched this project gradually develop from its infancy when we did the initial drilling to define the extent of the oil reserve to the design of mine, power, rail and other structure -- project infrastructure, decades of unprecedented in-depth respectable research of the mining process to ensure protection of our air and water from possible toxic waste.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
374	Jerry Fryberger	Chairman, Hallett Dock Company	The enlightened visionary and responsible corroboration of regulatory agencies, namely the EPA, the Corps of Engineers, the U.S. Forest Service, the Minnesota Department of Natural Resources, and the Minnesota Pollution Control Agency have done a superlative job of working together and working through the difficult challenges of this new operation, continuing the rich heritage of Minnesota's mining industry and major contributor of America's industrial growth and national security, Minnesotans should be proud of this project.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
375	Jerry Fryberger	Chairman, Hallett Dock Company	After more than a decade of persevering effort and expenditures in excess of 300 million dollars to develop environmentally responsible mining and processing practices, PolyMet will arguably be the benchmark of copper-nickel mining, not only in Minnesota, but in North America as well. They will provide the minerals necessary to produce the technological advances in support of our nation's ever increasing standard of living while providing the jobs and taxes to support our local Iron Range communities. An important milestone in which our mining industry will now no longer be judged upon mining -- how mining was done more than a century ago, 1870s, or even decades ago, but rather by the state-of-the-art of present mining technology and enlightened environmental standards based upon the science of this 21st century. Thank you very much.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
376	Todd Lyden	Citizen	My name is Todd Lyden, I'm a strong supporter of PolyMet NorthMet project. And I defer my time to Pat Mullen.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.

377	Pat Mullen	Senior VP, Allete	Good evening. My name is Pat Mullen, I'm senior vice president of external affairs for ALLETE, which is the parent company of Minnesota Power. What a special high-quality environment and beautiful outdoors we have here in Northeastern Minnesota. The Boundary Waters and the Superior National Forest are gems that attract millions of visitors to our region and form a playground for people lucky enough to live and visit here.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
378	Pat Mullen	Senior VP, Allete	Some people frame the decision on PolyMet's permits as pitting the economy against the environment. And for a number of reasons I believe those can co-exist. PolyMet's mining proposal is an opportunity that shouldn't be squandered. The economic benefits of this project are significant and will help support hundreds of families in Northeastern Minnesota for decades to come. Hundreds of new good paying jobs and millions of dollars in spending right here in Northern Minnesota, as well as new tax revenue for state and local governments.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
379	Pat Mullen	Senior VP, Allete	Minnesota has some of the toughest environmental standards in the nation. PolyMet's permit conditions determined after more than a dozen years of environmental review set the requirements for monitoring, operating, reporting, inspections for the mine during construction, operation, and closure. These permit conditions and requirements are fair and reasonable and include protections for our environment and our health. Through the environmental review and permitting process PolyMet has demonstrated that it can meet those tough Minnesota standards.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
380	Pat Mullen	Senior VP, Allete	Closing a mine safely will cost a lot of money. And the permit to mine protects Minnesota taxpayers financially, too. It doubles the bankruptcy proof, financial assurance amounts from one year to two, showing how the state and PolyMet have gone to extra lengths to ensure taxpayers are protected in case of a bankruptcy.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
381	Pat Mullen	Senior VP, Allete	And at the mine the processing facilities are properly closed and reclaimed. Taken together, the permit conditions and financial assurances provide a path for mining and environmental protection to co-exist while making sure the mine will be safe and responsibly closed when that time comes.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
382	Pat Mullen	Senior VP, Allete	From a utility perspective, the metals PolyMet will produce are essential to our quality of life and especially to the production of clean energy. Copper is a critical component of the transformation of the nation's energy landscape. It's used in large quantities with wind turbines and solar rays and used in the wires needed to get that carbon-free energy to customers. Electric cars require copper, too, along with nickel, a key ingredient in the batteries that fuel them. As our nation moves ever forward in clean energy, we're going to need more and more of these metals. Mining these metals in the United States and right here in Northeastern Minnesota under our tough standards, rather than a far-away country that might not offer the same environmental protections, makes good sense for our nation.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
383	Pat Mullen	Senior VP, Allete	Let's open a new chapter for mining on the Iron Range with PolyMet and not squander the opportunities so we can prove that copper-nickel mining and clean environment can co-exist while also boosting the fortunes of a part of Minnesota that could use some good financial news right now. Thank you for your time and the opportunity to address this important issue.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
384	Anna Yliniemi	Citizen	Hello, my name is Anna Yliniemi and I have been participating in this process for close to a decade. And when I first got involved we were lowering the sulfate standards. And then we were studying the impact on wild rice, millions of dollars on the impacts. And then we are changing land exchange legislation. And it's one thing after another. And we've supposedly got these strong mining laws that we don't necessarily follow. And they get changed behind closed doors. And the process hasn't been transparent.	Comment noted. The draft permits were developed according to current state and federal law. The comment does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
385	Anna Yliniemi	Citizen	And there's a lot of misconceptions. These precious metals, this copper, it's not coming to us, it's going to the open market. And it's only 10 percent of the open market, so it's unlikely to ever come back to us and impact us. There's a lot of really slippery language. I personally have been studying extreme weather events around the world and they are on increase. Just this weekend in Australia, 152 milliliters of water -- sorry, 152 centimeters of water in a 24-hour period has parts of the region completely shut down. Flooding in South America, extreme weather in Russia. The jet stream is changing. We don't understand all these things. Yet, when I went downstairs and spoke to the water people, they said that they do look at 30 years of highs and lows. But we know right now that in the next 15 years everywhere in the world is expected to be getting an increase in these hundred-year events. So, that means we don't know what to expect out of these changes.	Permit review did consider extreme storm events. Mine water sumps and ponds typically have normal operating capacity for the 100-year, 24 hour precipitation event (approximately 5.2 inches), and have additional capacity within the freeboard as a safety factor. In the case of a larger 500-year or 1000-year storm event, water can be transferred to the Equalization Basins if needed, where sufficient freeboard capacity is available to contain the aggregate volume of a 1000-year storm event (estimated at 7.0 inches of precipitation in 24 hours) without an overflow.
386	Anna Yliniemi	Citizen	Climate change is real. We know it's here. It's one extreme to another. It's a thaw and it's a freeze and it's a thaw and a freeze. In New Brunswick, Canada just this weekend a small creek froze up and then they had a warm spot. And it caused everything to thaw and more rain to fall. Well, the creek was ice jammed, so it flooded a parking lot. And then, the temperature dropped to 20 below zero, plus a windchill. The cars were frozen in place. What if that happens with this PolyMet mine? What kind of accommodations are being made for these extreme conditions that our urban engineers don't even understand? Thank you so much for the opportunity. I hope that we continue to have this public comment process long into the future.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
387	Catherine Pruszynski	Citizen	I'm Pruszynski, Minneapolis. And I'm ceding my time to Allen Richardson.	This comment simply defers speaking time to another individual. No response needed.
388	Allen Richardson	Citizen	My name's Allen Richardson, A-l-l-e-n, R-i-c-h-a-r-d-s-o-n, from Duluth. I want to say, it's one of my least favorite things to be in a state of political opposition with members of the labor movement. I really and truly dislike it. I feel like it's a -- it's a false dichotomy and that we're being maneuvered against each other. And I sincerely hope that we can come together to build an economy that does not require an open-ended amount of water treatment. Hopefully working together we can build a more resilient future than that. And I'm here to -- my opinion as a citizen is to give a vote of no confidence in the PolyMet project.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.

389	Allen Richardson	Citizen	I will say that I'm glad that what we share with our labor brothers and sisters is we come from a culture of science. And I wanted to invoke the CO2 question on this project. So, over 20 years of mining PolyMet would release 15.8 million tons of CO2 equivalent pollution, which is more than ten million tons from burning fossil fuels. And on an annual basis, PolyMet's CO2 equivalent pollution would be 700,007, 342 tons per year, which is more than a quarter of the carbon footprint of all of Duluth, including commercial, industrial, residential, transport, and waste sectors.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
390	Allen Richardson	Citizen	I -- I remember well in August of 2014 when the Mount Polley copper-nickel tailings dam in Canada blew out, releasing 6.3 billion gallons of polluted water. And I'm certain that they had a long Environmental Impact Statement, that the Mount Polley mine was heralded as a state-of-the-art facility at the time. And I'm sure that those folks love their families and there probably were a lot of outdoorsmen that worked on that project, but that's one hell of a mess.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
391	Allen Richardson	Citizen	I just want to say that based on environmental review documents, the hydrometallurgical waste facility that's attached to this project would have sulfate concentrations above 7,300 milligrams per liter, which is 700 times Minnesota's wild rice sulfate standard. And over 20 years of operations that would hold 3,280 pounds of highly toxic mercury. Again, speaking directly to my brothers and sisters in labor, I would hope that you would expand your concept of solidarity to include the wild rice protection that is enshrined in treaty law, which is the true law of this land. Thank you for your time.	The permit specifies that the HRF be operated as a closed-loop system and prohibits a discharge from the HRF system to surface waters or to the FTB pond. The HRF will be constructed with a double liner system with a leachate collection between the two liners. This means that there will be essentially no leakage to groundwater from the facility. The permit includes detailed requirements on the investigation of the subsurface at the proposed site and the preparation of the foundation for the HRF. In addition, the permit requires MPCA review and approval of the final plans and specifications for the liner system before it can be constructed.
392	Larry Bogolub	Citizen	Good evening. My name is Larry Bogolub from St. Paul, Minnesota. I am a full union teacher in Minneapolis teaching at the Northrop Environmental School. I do not want to see the PolyMet proposal go forward. And I'm going to cede my time over now to Nancy Schuldt. Thank you.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
393	Nancy Schuldt	Water Quality Specialist, Fond du Lac Band	: Thank you. Can I speak from the yellow mic? MODERATOR GOURLAY: As long as it's on. NANCY SCHULDT: Is it on? MODERATOR GOURLAY: Yes. NANCY SCHULDT: Thank you. I'm Nancy Schuldt, N-a-n-c-y, S-c-h-u-l-d-t. I live in Duluth, but for the last 20 years I've worked for the Fond Du Lac Band as their water quality specialist. And it's been a long 12 years of trying to understand what this project is going to do and how it can potentially be done in accordance with state and federal rules. Along with my other tribal counterparts we spent a lot of time preparing and submitting very detailed, very extensive, very substantive comments for the last 12 years.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
394	Nancy Schuldt	Water Quality Specialist, Fond du Lac Band	And yet, it's been really frustrating to see so little of that expertise that has come from the tribes reflected in the environmental review, the results of that environmental review. And now as I'm reading through these massive documents, I wouldn't call it efficiency personally to have to review four major permits at one time, but there's very little of that reflected in what I'm seeing coming out in permits right now. So many of those major differences of opinions were kicked down the road until permitting. And I don't see them resolved or addressed in the permits so far.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
395	Nancy Schuldt	Water Quality Specialist, Fond du Lac Band	There's a big question that the tribes raised back in August and we can't get a simple answer to a question about how many acres of wetlands will actually directly be impacted by this project. It seems like it's awfullyl late in the game to have questions hanging over something that is so fundamental to all four of the permits that we're talking about tonight.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Detailed responses to specific written comments are addressed in the "Water" and "401" sections of the Response to Comments.
396	Nancy Schuldt	Water Quality Specialist, Fond du Lac Band	And as a downstream water quality regulator, the Band can say that we fundamentally disagree with the 401 certification. We know that the existing mines and the way they are regulated in this state with all of its stringent environmental regulations are polluting waters already. And there's nothing in the proposal for this project and the permits for this project that give me any kind of confidence or provide any evidence that this project will control its water pollution either.So, I'll be submitting another round of substantial and extensive comments on all four of these permits. Thank you.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Detailed responses to specific written comments are addressed in the "Water" and "401" sections of the Response to Comments.
397	Nancy Deever	Citizen	Nancy, N-a-n-c-y, Deever, D-e-e-v-e-r, Duluth. (Other language spoken). Water is life. In the '90s I chose to leave this land of water, don't ask me why, and move to the arid Southwest. I lived for several years in Silver City, New Mexico, next to one of the largest open pit copper mines in the country. It didn't disgust me, it didn't bother me because it was what it was. It had been there a long time, as many copper mines are.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
398	Nancy Deever	Citizen	The western United States is very arid, it's a different geology, different everything compared to our land of waters and watersheds and water everything. So, I was -- I had to learn something very important out there, whiskey is for drinking, water is for fighting. That is one of their mantras. Also, water flows uphill to money in New Mexico because of water rights. We don't have that problem here, but water is really, I think, at the bottom of the contention here. I have -- I'm an environmental researcher in -- mostly in native plants and botany, but I have a real strong background in teaching water quality and hydrology, it's my love because I'm an aquarium, what can I say. And I have been on the fence since I moved back here about seven years ago and heard about this project.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.

399	Nancy Deever	Citizen	Mining companies everywhere do not have a good reputation. And people who make their living from them know that. They understand that. It's not a happy situation. In Cobre, New Mexico where I knew people, they -- you know, the mine gave them work. I actually worked in the mine doing some botanical research for the company. My husband was a forest service employee. So, I know my way around some of those places.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
400	Nancy Deever	Citizen	And coming back here and listening to the testimony, this is brand new for me, I've never spoken to a public audience like this, but I'm going to remind you of something that's the focus of all this.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
401	Nancy Deever	Citizen	The results of all this are because the -- I guess the argument on both sides is really because of our most precious resource. We cannot replace it, we cannot remake it. When certain things happen to water it -- we can't fix it. Water is life. So, I would just like to point out that no matter which side of the debate you're on, water always wins. Nature is smarter, stronger and more resilient than we give her credit for.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
402	Nancy Deever	Citizen	So, I just want to remind -- when I taught science I told my kids -- how many of you played rock, scissors, paper? Okay. What beats all three of those elements when you play that game? Water. It melts the paper, erodes the rock and rusts the scissor. Folks, no matter what side you're on, water is going to win.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
403	Doug Christy	Citizen	I'm Doug Christy, you spelt the name wrong, but that's all right, it's -t-y. And I'm from Grand Rapids. I'm a proud union member and a representative for Sheet Metal Workers Local 10 for Northern Minnesota. I'm going to give my time up to Dave Lislegard.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
404	Dave Lislegard	Mayor of Aurora	Hi, my name is Dave Lislegard, L-i-s-l-e-g-a-r-d. And I am the mayor of Aurora, Minnesota. And I think it's very well known the struggles that our community has had, but I want people to know that we truly do care to do the right thing the right way. My grandfather -- my grandfather built the Erie Mining Company. My dad worked there, I worked there. And we're hoping that many of our family members can continue to work there. My message is to all of you, I respect you guys for your caring. We may not agree, but I think that as long as we can have this open dialogue and communicate in a professional and polite manner that we can come to some sort of resolve.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
405	Dave Lislegard	Mayor of Aurora	And I don't believe that it's all or nothing. And I want to leave saying thank you for all of your hard work as the agencies. I want to thank the company for doing their due diligence and for the state of Minnesota.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
406	Dave Lislegard	Mayor of Aurora	This isn't just for our region. And I want Duluth and Lake Superior to know that our goal, the agency's goal and the company's goal is not to pollute the water that goes to Lake Superior. That is not our goal, in all due respect. Our goal is to do the right thing the right way and provide jobs. So, I thank you for your due diligence, our communities thank you for your due diligence. I appreciate it. Thank you.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
407	Scot Bol	Citizen	Hi, I'm Scot Bol. I believe the research shows that sulfide mining has not been done safely ever. And to watch it for 500 years? I don't know. No one here is going to be that person that's going to do that.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
408	Scot Bol	Citizen	Brothers and sisters, I want us to figure out how we can help the common good. Now, I hope a lot of you would want that also. Let's have jobs for everyone. There's better ways. Following the dark money, following the 1 percent's analysis is shortsighted. We have to create jobs in another way. It turns out, you know, the science is helping us in many ways. It's pointed out that climate change is real. We need to create other alternative energy. There can be so many millions of jobs with this. They retooled after World War II -- during World War II after the bombing of Pearl Harbor. So, let's retool and move away from all these fossil fuels. We can do it. We can create jobs in other ways.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
409	Scot Bol	Citizen	But following the corporate analysis, the dark money, the 1 percent's ideas of where we should get our jobs, this kind of mining is not safe, it's not been done. So, we have to look at other ways. There's so many other options. We have to look for the common good. Right now we allow three people in this country to have more wealth than half of our nation. That's in Forbes magazine, I'm not making this stuff up. That hurts my mind to conceptualize that. Three people have more wealth than half of our nation? We need to distribute our wealth better than that. I think that along with having a minimum wage we have to have a maximum wage. I don't see how we can allow three people to have as much money as half of our nation. So, we have to do better at looking out for the common good	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
410	Scot Bol	Citizen	We need to retool, create alternative energy jobs. We have to say no to sulfide mining, it's just too great a risk. We can't risk our water. I know those that are desperate for a paycheck have a hard time grasping this because they're blinded by the possibility of a job. We made people too desperate. I know that I've worked with some folks on the food shelf and there's a lot of folks that are desperate for a meal. And I'm sorry folks on the Iron Range are looking so hard for jobs. They're losing their kids moving away because there's not jobs. There's other ways. We can do a new deal. We can do like we did -- a green new deal would be a beautiful thing for creating the jobs, a lot of possibilities. There's so many other options. We have to think beyond what the corporation's analysis has given us. I think that's about it. Let's take care of each other.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
411	Jessica Bleichner	Citizen	Hello, my name is Jessica Bleichner, J-e-s-s-i-c-a, B-l-e-i-c-h-n-e-r. I'm from Brainerd, Minnesota. This is hard for me to do, so excuse my warbly voice. I am a Minnesota master naturalist volunteer specializing in youth education about watersheds and water quality. I do water quality monitoring volunteering. So, this is a topic that's very near and dear to me. My issue with this mine and this location is because of the watershed. Every watershed has a pour point and an entry point.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.

412	Jessica Bleichner	Citizen	They're trying to put this mine in at the very top of the watershed. So, it can pollute anything downstream. What's downstream? Some of our only clean water that is not at all contaminated in the entire state. I encourage you to look at the RAPs reports for local watersheds. A RAPs report is from the Pollution Control Agency, it's a watershed restoration and protection strategy. Please take these into consideration as you're making your decision because there's not a single RAPs report in the state that encourages further pollution and contamination of our waterways. We have very little fresh water in the entire world. Minnesota is already looking to export some of our water resources. This is an incredibly valuable resource, far more valuable than anything that's below our ground, any mineral, anything. Like everybody says, water is life, we need it to live.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
413	Jessica Bleichner	Citizen	I have my children here with me tonight that I educate, along with many others in the community. And what we teach them is that it's very important to take very, very, very high considerations as to what kind of developments that we are going to be making to affect these future resources. The risk is just far too great with this mining proposal. Water is a closed dynamic system, so nothing ever leaves it. What we put into it we generally cannot take out.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
414	Jessica Bleichner	Citizen	So, risking what very, very, very little clean water we have left on this planet as a resource just does not make sense for our future generations.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
415	Jessica Bleichner	Citizen	With that also in mind, this is a boom and bust system, this is not going to be a long-term benefit to our state, in my opinion. So, when it busts, who's left with the cost? It's not going to be us, it's going to be our kids.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
416	Jessica Bleichner	Citizen	I care so very much about our future generations. What are they going to have to drink? What are they going to have for life if we contaminate everything? We can't do this, please. Also, this is public land. How is leasing this to a private company going to benefit me wanting to access these public lands? How can I benefit from that forest? How can I benefit from these lakes that are public lands that are supposed to be accessible by everybody if it is under the control of a private corporation? I just want to say thank you to all of the water protectors that have been working just as diligently for the decade that this has been going on. I've been here with you for five years of it, let's keep on going. Please take this into consideration.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
417	Kim Davis	Citizen	Hi, I'm Kim Davis, K-i-m, D-a-v-i-s, I'm from Shakopee, Minnesota and I support the water. I'm going to turn this over to Paul Christianson.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
418	Paul Christianson	Citizen	Hi, good evening, I'm Paul Christianson, Kim's husband. Thank you very much for the opportunity to speak. I will keep it very short since we're at the end of the session. I'm a U.S. Navy veteran for clean water. My wife and I own property in Lake County and we will be building a house and moving to this region in about five years. And this type of mining does not belong in Minnesota. The toxic pollution from the mines will last hundreds of years, as we've heard. There's no guarantee that it will be cleaned up, even though they say it will. PolyMet and Glencore are only in this for short-term profit. Please do not issue the permits. Thank you.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
419	Julius Salinas	Citizen	My name is Julius Salinas, J-u-l-i-u-s, S-a-l-i-n-a-s. And my father was a World War II combat vet, my uncles were combat vets. And there's Purple Hearts involved there. In 1971 and '72, those summers I worked at U.S. Steel. I made eight bucks an hour and I sure appreciate that. I support miners, but I do not support this mine.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
420	Julius Salinas	Citizen	Insurance companies are in business to make money and they've proved to be very successful. They do well because they do their homework, reviewing the science and mathematical probability associated with risk before they're willing to accept them.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
421	Julius Salinas	Citizen	According to PolyMet's own research the proposed copper-nickel mine would be in production for 20 years, but the waste water and tailings from the operation would need to be treated for as much as 500 years and contained for as long as the water -- or the waste materials remain toxic. As of this day every sulfide mine in a water rich environment has contaminated surface and/or ground water as a result. This proposed mine would also violate treaty rights granted to indigenous peoples by the U.S. government.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
422	Julius Salinas	Citizen	Due to its incredibly high probability of contaminating the land and resources in ceded territories, this is not a sound decision, the largest sources of Super Fund liability to U.S. taxpayers or mines exactly like the one PolyMet is proposing. With the EPA concluding that the probability of potential failure of water collection and treatment of the proposed PolyMet mine is 93 percent, is there really any question of its practicality? From a business perspective this is an intolerable risk. There's not an insurance company on the planet that would accept this risk. If an insurance policy covering the cost of hazardous cleanup was negotiated, the premiums would be so high that no private company would be willing to -- willing or able to pay it.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
423	Julius Salinas	Citizen	The risk is clear, but is being clouded by the promise of money. How much is a clean environment worth to our descendents? How much money will it cost to have clean water and healthy habitat for plants and animals?	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
424	Julius Salinas	Citizen	The toxic liquid waste will need to be treated for 500 years. What are the odds of just one leak in 500 years? The proposed mine project is a con.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
425	Julius Salinas	Citizen	The business plan is to go through the motions of appearing to care for the health of people, communities and the environment in order to receive required approvals that both unnecessarily expose every living thing in the Lake Superior watershed. Irreparable damage when the toxic waste is -- 99 percent is waste. This is not a sound decision and --	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.

426	Alex Spitzer	Citizen	Hello, my name is Alex Spitzer, I'm a senior at the University of Minnesota. I'm studying environmental law. I'm originally from Chicago. One of the main reasons I wanted to come to the university of Minnesota is because Minnesota has been known for its progressiveness when it comes to environmental issues. And I refuse to stand by and let Minnesota be bullied into disregarding its environmental principals by corporations like PolyMet and Glencore.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
427	Alex Spitzer	Citizen	These corporations don't care about what happens to Minnesota citizens, which is why it is your responsibility to intervene and protect them. Anyone who truly looks at and understands the science behind this project would undoubtedly see that it would be devastating for our state.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
428	Alex Spitzer	Citizen	Copper-nickel mining is not like other mining. It is much more environmentally risky and dangerous than other kinds of mining. There has never been a copper-nickel mine built on a water rich environment that has not resulted in toxic water pollution. The U.S. Environmental Protection Agency has concluded that during the time the sulfide mine is operating, the rate of failure of pollution in collection systems is 93 percent. After the mine closes, there's been a 100 percent rate of failure of pollution collection. Seepage from PolyMet's copper-nickel sulfide mine, pits, tailings and other waste containing sulfate and toxic heavy metals would last for over 500 years.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
429	Alex Spitzer	Citizen	That is long -- PolyMet would have to be treating the seepage for over twice the age of this country. Claiming that PolyMet would responsibly take care of the pollution for that long is foolish. Additionally, PolyMet has admitted that millions of gallons of contaminated waste water from the mine site and tailings site would be released untreated into ground water. The seepage would pollute drinking water, wetlands, rivers and would increase downstream mercury contamination of fish. We need to stand our ground and protect Minnesota natural resources, taxpayers, and downstream properties. I love Minnesota and I would like to live here the rest of my life. I am not asking you, I am begging you, not just for me, but for my future family as well, please do not allow these foreign corporations to come here, destroy our environment and poison our communities.	The project includes engineering controls such as stockpile liner systems, seepage capture systems and wastewater storage and conveyance systems that are designed to limit and manage impacted water from the facility so that it does not impact groundwater or surface water. The effectiveness of these controls was evaluated in the EIS and the water quality permit requires their installation/operation. The Annual Comprehensive Performance Evaluation Report required by the permit will provide an assessment of the performance of the engineering controls, including liner systems, using permit-required monitoring results and internal operational data to ensure that pollution of groundwater and surface water does not occur.
430	Brian Hanson	CEO, APEX	Well, it's not very often I get the last word, so that's great. My name is Brian Hanson, B-r-i-a-n, H-a-n-s-o-n. I'm a resident of Duluth and I grew up in Grand Rapids. I'm also the CEO of APEX, private sector led business development engine for Northeast Minnesota and Northwest Wisconsin. APEX investor members represent over 80 of the most influential companies in the region with a collaborative approach to promoting sustainable economic growth. Today I'm here to urge the DNR and MPCA to respect the long, fair, and informative process that's been completed by issuing the permit to mine, along with related permits for the PolyMet NorthMet project. And please do so in a timely manner.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
431	Brian Hanson	CEO, APEX	Back in 2013 APEX invited PolyMet's CEO, Jon Cherry, to speak with our group about the NorthMet project. Mr. Cherry informed our group about the quality of the copper, nickel, and precious minerals deposit. He talked about the massive recycling effort required to reuse the existing mining facilities of former LTV plant. He informed us that construction alone would require two million hours of work with thousands of tradespeople on site. He also spoke with pride about the 360 family sustaining jobs and 600 additional indirect jobs estimated to be created by the project.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
432	Brian Hanson	CEO, APEX	All of that was great, but you know what was particularly interesting to the people in that room, people like me learning about the project, the permitting process and the protection of our environment. Mr. Cherry shared the details of four state and federal agencies working together on an array of permits designed to protect our environment. He talked about how PolyMet's staff and consultants, many of whom live and work right here in Duluth, working together to create a plan that would address potential issues and provide a basis for solid permits. Based on the information provided and with the input of APEX members, including chemists, engineers, and scientists, APEX members concluded that a resolution of support for the PolyMet NorthMet project was in order. And that resolution was passed in January of 2014.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
433	Brian Hanson	CEO, APEX	Since then APEX has closely and carefully monitored the project, including the draft environmental EIS, the final EIS, and now these draft permits. In my assessment, the correct steps have been taken to move forward with the NorthMet mine permits. The DNR and PCA are issuing draft permits because PolyMet's mine can comply with strict state and federal environmental standards while protecting our land and water. Their detailed work includes more than ten years of diligent study and review. Let's get on with it folks. Thank you.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
434	Doretta Reisenweber	Citizen	Water is life for you, me - all life. You of all must enforce proper stewardship of water for the future. Thank you Dorie R	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
435	Doretta Reisenweber	Citizen	Whether I read the PolyMet Fact Sheets or the thousands of pages of draft permit, I find serious shortcomings... shortcomings indicating minimal control, if that, by the agencies charged with regulating the PolyMet draft permits. Who is in charge? Polymet or the DNR/MPCA? It appears the former, which is untenable.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.

436	Doretta Reisenweber	Citizen	Concerns about the PolyMet Fact Sheets follow. In the Project Overview, page 1 regarding the 3 phases---particularly 2/ Mining operations: Apparently monitoring of water is to occur only during the mining phase. During construction Duluth Complex ores which are high in sulfide would be disturbed, thus increasing the chances of polluting groundwaters, surface waters and wetlands especially in the event of extreme precipitation. Those waters should continuously be monitored within, along the perimeters and beyond the perimeters of the company's property both prior to and during the many aspects of construction, not just during the mining operations and closure phases. It would be environmentally responsible, if the company would be required 1. to monitor and 2. to report on water quality (in real time) to the enforcing agencies throughout all phases: construction, operation and closure. Insist on that or deny the permits.	The monitoring requirements of the NPDES/SDS permit are effective upon issuance of the permit; this would include the construction period. Comment noted. General comments related to water quality and flow were considered during the environmental review process. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
437	Doretta Reisenweber	Citizen	Another concern is found on page 2 : " PolyMet's goal is to transition to non-mechanical treatment, if the company is able to demonstrate to the satisfaction of the DNR and MPCA that a non-mechanical system could comply with all water quality standards." However, the DNR and MPCA are charged both with promoting and with protecting natural resources, thus setting up internal conflicts which might prevent the duty to protect the environment. I have often heard that the state legislature may establish a separate agency to be charged with the environmental protection aspect of such industries, leaving the DNR and MPCA to work separately on the promotion of natural resources for industries. Is the permit/contract written in such a manner as to transfer the job of environmental protection to a separate or different agency? If not, please correct the appropriate, binding legal documents to that effect to protect the public's interest.	The permit does not authorize a discharge from an unproven or innovative treatment system. MPCA has reviewed the proposed WWTS technology and determined that it is capable of achieving the required effluent quality. The MPCA has added language to the permit to require construction of the WWTS components as proposed in the application. Construction of anything other than what is described in the permit will require a modification of the permit, with public notice and comment. The permit complies with state and federal permitting rules and is independent of speculation on the future of state regulatory agencies.
438	Doretta Reisenweber	Citizen	Next please consider RECLAMATION. The DNR/MPCA should not accept an indefinite time line such as suggested here: " ..... mining so areas can be reclaimed as soon after initiation of operation as practical." The company should reclaim immediately, or provide the agencies an acceptable explanation forthwith of the specific extenuating circumstances delaying the reclamation.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. This comment pertains to issues considered in the development of the DNR Dam Safety and DNR Water Appropriation permits. No changes were made to the draft permit in response to this comment.
439	Doretta Reisenweber	Citizen	Along with that the DNR should require that the company's specific plan and timeline remediate all reclamation problems in a prompt manner, of course, pending agency approval.	Comment noted. This comment pertains to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to this comment.
440	Doretta Reisenweber	Citizen	Another situation not referred to in the PolyMet plans or draft permits, prompts this concern. "What if other mining companies (for example Twin Metals/Antofagasta, Teck or Encampment) use the processing plant and operate beyond PolyMet's suggested twenty years? What would be the controls on PolyMet's responsibility for mine closure? Would it be, is it, mandated to devolve to other companies? What legally binding assurances are there of reclamation, if and when PolyMet is no longer involved? Please make sure reclamation is fully covered regardless of ownership.	A proposal by another entity to utilize PolyMet infrastructure would be subject to separate environment review and permitting for that proposal. The extent to which such a proposal could affect the terms and conditions of the PolyMet permit would also be subject to review, and may result in supplemental environment review of the PolyMet project and/or modification of the PolyMet permit, with public notice and comment.
441	Doretta Reisenweber	Citizen	Further, I note that wetlands mitigation would use wetland bank credits "as appropriate." The state agencies charged with oversight should delineate what "as appropriate" means and not leave the determination in the hands of the permitee. The agencies need to demand specifics and accountability. It seems there is a long history within the agencies of passing the buck and not demanding accountability. This is not acceptable on the agencies' part. In the case of PolyMet, the DNR and MPCA are dealing with Minnesotans' water quality. Deny these permits.	Comment noted. This comment primarily relates to the 401 certification. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
442	Doretta Reisenweber	Citizen	I would be remiss not to mention the reclamation "happy talk" --- to wit: 'provide for subsequent land uses such as wildlife habitat, timber production and recreation.' From my reading about sulfide mining over the past years, AMD seepage and, worse yet, major breaches leading to environmental devastation have occurred in New Guinea, South America, Mt. Polley, BC, Canada, and elsewhere throughout the world. What "subsequent land uses" is PolyMet planning? Even Minnesota, is not exempt from the laws of nature, no matter what one believes to be the strength of our ever-degraded environmental protection laws, much of which came from our own state's lawmakers. Take special note of Reps. Nolan, Emmer and Walz legislation and our illustrious president for the recent legislative and executive travesties inflicted upon Minnesota---HR 3115 and HR 3905 and the evisceration of the EPA.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
443	Doretta Reisenweber	Citizen	The reclamation section further goes on to claim there would be "monitoring and maintaining of bodies of water....and other features of the environment....." ....."Reclamation activities would be reported and reviewed on a yearly basis..." YEARLY? The reporting should be monthly or, better yet, weekly even during the non-growing season. Dirt might be moved, water channels and roads disturbed, etc. Require that the accounting be accurate and up-to-date. Keep the mining company accountable to the agencies. I suggest weekly reports, even if they simply report "no change at such and such area from date of last report."(Specifics provided, of course.) Our water is at serious risk from PolyMet's proposed mining project. Weekly reports to agency staff tasked with evaluating the reports at the onset and throughout reclamation on positively or negatively affected aspects and areas should be required to be sent to and evaluated by agency staff tasked specifically with evaluating the reports and enforcing violations or "slip-ups." Looking the other way or letting problems slip through the cracks and fissures is not acceptable on either's part. Our water quality is at grave risk.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. This comment pertains to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to this comment.

444	Doretta Reisenweber	Citizen	Another aspect of concern is DAM SAFETY. I've commented on it in previous letters, except for the portion on Minnesota Rules 6115.0410, subp. 8 ...."potential hazard to health, safety and welfare of the public and the environment....." (That certainly pertains to the PolyMet mine proposal)....."availability of alternative sites..." (From what I have learned, the low-grade ores which PolyMet proposes to mine are found pretty much throughout the WORLD, so why site it here in water-rich Minnesota/ Why sell that precious water at less than pennies per gallon all the while risking the pollution of the quality water we currently enjoy? Why? Because vast, VAST amounts of water are required for hardrock sulfide mining. VAST AMOUNTS OF WATER! Now consider the cumulative appropriations of water should Twin Metals/Antofagasta, Teck and Encampment begin mining the Duluth Complex. Such a drawdown would surely conflict with Minnesota statutes or regulations.	Comment noted. This comment pertains to issues considered in the development of the DNR Dam Safety and DNR Water Appropriation permits. No changes were made to the draft permit in response to this comment.
445	Doretta Reisenweber	Citizen	White Bear Lake, MN, has already experienced an OVER APPROPRIATION of water (Aug. 2017 news coverage of lawsuit). Who in the DNR oversaw this? Who might OVERLOOK this PolyMet situation? Maybe too many divisions over too many years were working on the problem and miscommunicated, but, in the White Bear Lake over appropriation, there were citizens who tried to get someone to pay attention and fix the problem, before it became any worse. That is what the public comments on the PolyMet draft permits are for, too. I shall be more than charitable and circumspect now remembering it is human to make mistakes. It is not difficult to wonder, if someone in one or both agencies were to become unable to perform the difficult tasks assigned thus unfortunately resulting in the selling short of our precious water quality and our natural resources with the resultant perpetual (admittedly 500 years) water pollution. This is unacceptable. Deny the permits.	Comment noted. This comment pertains to issues considered in the development of the DNR Water Appropriation permits. No changes were made to the draft permit in response to this comment. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
446	Doretta Reisenweber	Citizen	Deny PolyMet draft dam permits. Looking at the revised permit to mine, p. 354, Flotations Tailings Basin, lines 10-12 discuss a PMP rainfall event (35" in 72 hours) as rare and "estimated to range from 100,000 to 1 billion years.(Reference (46)). Climate change is real---aninconvenient truth the drafts should not overlook. "Facts do not cease to exist, because they are ignored." (Aldous Huxley) Recent extreme rain events in the US and throughout the world demand review and recalculation. The 100,000 to 1 billion year time frame is ridiculously far off the mark. It does not appear to be a typo. Deny the permits.	Permit review did consider extreme storm events. Mine water sumps and ponds typically have normal operating capacity for the 100-year, 24 hour precipitation event (approximately 5.2 inches), and have additional capacity within the freeboard as a safety factor. In the case of a larger 500-year or 1000-year storm event, water can be transferred to the Equalization Basins if needed, where sufficient freeboard capacity is available to contain the aggregate volume of a 1000-year storm event (estimated at 7.0 inches of precipitation in 24 hours) without an overflow.
447	Doretta Reisenweber	Citizen	Turning to p. 355, paragraph 3, lines 5-8 the dubious assurance is given that "As noted previously there will be an emergency overflow system based on industry standard practices...." How is one to believe best practices or even standard industry practices would be followed, when the proposed plans are for an upstream type tailings basin dam and for wet tailings both of which are NOT RECOMMENDED industry practices? In fact since the Mt. Polley, BC breach in 2014, those practices are repeatedly cited as specifically NOT recommended, most recently in November of last year by the UNEP (UN Environmental Programme).	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. This comment pertains to issues considered in the development of the DNR Dam Safety permit. No changes were made to the draft permit in response to this comment.
448	Doretta Reisenweber	Citizen	What other suspect or substandard practices are the permits masquerading as standard practice? On p. 357, 11.4.7.1 Existing Conditions describes construction atop the decades- old LTV tailings site. How does that make for a solid foundation? On page 359 the last two lines read "is designed to keep the hydraulic head on the lower liner system very low." "Very low??" The document should specify" below what scientific metric of low whether in inches or centimeters." Accurate measurements matter when attempting to construct systems to prevent toxic overflows.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. This comment pertains to issues considered in the development of the DNR Dam Safety permit and Permit to Mine. No changes were made to the draft permit in response to this comment.
449	Doretta Reisenweber	Citizen	Page 361 notes that "prior to the start of operations, as required.... PolyMet will develop.....in accordance with..." a stormwater permit. Why is the plan not already required? Why is it not already developed so it can be examined now during consideration of the permit? Why try to squeeze the toothpaste back into the tube---only in this case it is toxins back into the basin. Who is writing these draft permits? Does the industry not yet have a plan, because it has never having mined before, or because the permittee thinks he can get by with it? Is it standard practice to wait and see just how far the industry can push the permitting process and common sense?	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. This comment pertains to issues considered in the development of the DNR Dam Safety permit and Permit to Mine. No changes were made to the draft permit in response to this comment.
450	Doretta Reisenweber	Citizen	These draft permits keep putting the cart in front of the horse...waiting until they are forced to act, when, lo and behold, it might be too late to act effectively to prevent long-lasting, negative impacts. Someone keeps putting the fox in charge of the chicken coop....the permittee in charge of writing the permits. How irresponsible! Minnesota's water is at risk and yet the citizens are expected to trust that PolyMet will be able to do it right, and that the agencies will enforce protections. Look at Table 11-1on page 364---8 boxes contain "N/A." If that means not available, as it commonly does in other material, how can the DNR or the MPCA or any other expert reviewing the chart find that to be sufficient information on which to grant any permit? In what business model would "N/A" be deemed acceptable for an industry, posing such grave environmental risks? Deny these draft permits.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. This comment pertains to issues considered in the development of the DNR Dam Safety permit and Permit to Mine. No changes were made to the draft permit in response to this comment.
451	Doretta Reisenweber	Citizen	I have been direct about my concerns. The DNR and the MPCA are responsible to the people of Minnesota, both to current and future citizen/stakeholders, for maintaining our clean water legacy. Copper-nickel sulfide mining companies are beholden to their shareholders to maintain a profit margin. But at whose expense and to what lengths are the copper-nickel sulfide mining companies willing to go to make money? Less than 1% of the ore mined contains the minerals the mining companies are seeking. Metal markets fluctuate. Mining booms and busts leaving communities broken and resources depleted, destroyed, even devastated in the case of copper-nickel sulfide mining. Deny the permits.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.

452	Doretta Reisenweber	Citizen	Would PolyMet or any of the other mining companies want to operate in Minnesota, if we truly had stringent environmental protection laws? Environmental laws have been all but eviscerated since the Clean Water Act. Each state legislative session for some years has attempted to whittle away at Minnesota's environmental protection statutes and regulations. Another question to consider is would PolyMet or the other mining companies want to mine these low grade ores here, if Minnesota had very little water? I think not. Water is required in abundance to mine. Water which Minnesota apparently is willing to sell for cheap---$8 for how many thousands or is it millions of gallons??? Water is life. Do not give away future generations' clean water legacy. Deny all of PolyMet's draft permits. Please, protect the waters. A sustainable future for Minnesota depends upon this. Deny PolyMet's draft permits. Thank you for deliberating over these questions and concerns. Yours for maintaining our water legacy.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
453	Doretta Reisenweber	Citizen	To the MN DNR and the MN PCA: Once PolyMet operations contaminate the water, no amount of financial assurance will return the treated water to the original purity of the waters in their pre-mining state, but then, who would know? Were water quality baselines established as part of the permitting process? Of course, water quality is not the issue in these comments. The issue of concern in these comments is the lack of financial protection in the permitting process. Hence I ask the agencies to deny the PolyMet permits.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments. Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
454	Doretta Reisenweber	Citizen	Something to consider is that PolyMet, which has no mining experience whatsoever itself, has not pointed to any copper-nickel sulfide mine, which has operated for even ten years without polluting the water. No amount of money, if financial assurances and bonds, etc. were more than empty promises, has been shown to return to the original purity the water in the closed sulfide mine sites, which top the EPA's SuperFund list, the clean-up costs for which are estimated to be up to $54 Billion. Deny the permits. Minnesota's taxpayers including those downstream would be put at financial risk from the DNR's lax permitting. A 27% upstream dam failure risk, such as PolyMet's upstream-type dam plans call for, is too big a risk for centuries of water pollution. Deny the permits.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
455	Doretta Reisenweber	Citizen	DNR's permit indicates that PolyMet could receive a permit by putting up a mere $75 million, when the cost of PolyMet's closure and treatment for the first operating year is estimated to be $544 million. Where did the $544 million come from? [DNR, Draft Conditions, PTM] How many years would it take to earn that amount? That is scarcely 14 cents on the dollar.[ibid.] Who is the DNR working for-- PolyMet or the people? The Minnesota DNR should not be enabling this risky business knowing full well the very real potential for failure. Let PolyMet itself or Glencore ante up the money, but do not grant PolyMet a penny. Deny the permits. The Minnesota rule 6132.100 on copper-nickel mines demands up front "financial assurance" to cover closure and long-term treatment in case the project folds the first year of operations prior to a mining permit being issued. Yet, reports I have read indicate Trump issued an executive order to the EPA early in December of 2017 requiring no financial assurance from hardrock and coal mines. If the president were to have rescinded the financial assurance requirement, might that put Minnesota requirements in a predicament? [Earthjustice, Dec. 04,2017, "Trump EPA Abandons Safeguards Protecting Taxpayers from Mine Cleanup Cost: Agency decision leaves communities at risk and taxpayers facing multi-billion dollar bill for toxic releases."] How would such an executive order affect Minnesota law? We need a solid answer in the tumultuous times of the Trump administration. PolyMet has estimated it would require $72.6 million merely to clean up existing pollution at the old LTV taconite tailings site, before even taking into account the clean-up costs of PolyMet's newly-generated pollution. [PolyMet Form 20-F Annual Financial Report to U.S. SEC, for year endng Jan. 31, 2016] That looks like the DNR is telling PolyMet it is OK to put up less than $3 million to cover costs for PolyMet's own copper-nickel mine, before it receives a mining permit. Who benefits from that sort of financial deal-making? Not the taxpayers. Not the agencies, which are not liable for any problems. Who benefits? It appears to be the mining company. Is that a surprise, when the mining company also appears to be writing the permits? I object to state agencies granting an under-resourced, under-financed company like PolyMet with zero mining history carte blanche. Deny the permits.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments. Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

456	Doretta Reisenweber	Citizen	Before even considering a permit to mine application, Minnesota law 6132.1100 requires that a copper-nickel mining company verify that it has liability insurance "in an amount adequate to compensate persons who might be damaged as a result of the mining operation or any reclamation or restoration connected with the operation." It's supposed to protect both folks who own land downstream and the employees. However, neither agencies nor the people seem to have any idea what the actual costs of PolyMet's potential environmental liability insurance would be. Nonetheless, the DNR would grant PolyMet a permit to mine with a mere $10 million in liability policy to cover leaks, spills and dam failure. [DNR, Draft Conditions, PTM] What?! In the thousands of pages nowhere are mentioned the costs and dangers to downstream property owners, the drinking water, the whole of the Fond du Lac reservation, or the cities from Hoyt Lakes downstream to Duluth and Lake Superior were the dam to fail. No health impact study, no economic impact study....Irresponsible! No, not until a year after deposit of tailings do the DNR draft permits require PolyMet to compute liability costs. Wouldn't those costs be borne by Minnesota taxpayers, if PolyMet fails to have enough insurance until a year after tailings are deposited? If this were a boat, it would have so many leaks, it could not float. Deny the permits. Why should the above lack of sufficient liability insurance be a red flag for the Minnesota DNR? The Imperial Metals company had put up $73 million in bonds for the failed Mt. Polley mine in British Columbia, Canada. That is $63 million more than the DNR is requiring for PolyMet's proposed NorthMet, a very similar mine. Indeed that was not enough. So far, reclamation costs for the 2014 Mt. Polley dam collapse has run over $100 million. After four years it is still not "cleaned up." In November of 2017, Moody's rated Imperial Metals as "a very high default risk." So how would PolyMet rate with Moody's? Look at the similar and sharp downward trajectory PolyMet's plan and the DNR's draft permit for PolyMet to mine place Minnesota on. Both indicate catastrophic dam failure risk and underfunded financial liability. There are dangerous similarities between Mt. Polley and PolyMet. Deny the permits.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
457	Doretta Reisenweber	Citizen	I enclose the comments of four Minnesotans who KNOW finance. First is an article featuring the findings of the DNR's three independent financial experts. It is entitled "Listen to state's hired sharks on PolyMet draft permit."[Duluth News Tribune. p. 5, 2/7/18] The article concludes: "Unfortunately, the draft PolyMet permit ignores some of the sharks' key recommendations, and the resulting risk to Minnesota taxpayers is unacceptable." I repeat, deny these permits. Also I enclose a copy of Rebecca Otto's statement to the DNR on PolyMet's draft permits. It was read at the February 8, 2018, hearing in Duluth. Otto makes it abundantly clear that these permits should be denied. Minnesota's current State Auditor concludes: The draft PolyMet permit to mine does not protect the public interest, puts people downstream at risk, and leaves taxpayers unprotected. As drafted, the Polymet permit to mine doesn't protect Minnesotans and should be rejected by the DNR. Both of the attached provide thoughtful, expert commentary urging the DNR to deny these permits. For myself as well as current and future Minnesotans, I urge you to deny PolyMet's draft permits. Thanking you for your attention, I am yours for a better Minnesota, <Refer to original comment file to review the referenced attachments.>	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
458	Doretta Reisenweber	Citizen	Again I write to urge the agencies to deny PolyMet's draft permits to mine. Over 40% of our state's waters are considered impaired or polluted. Governor Dayton's bill would invest $167 million to update aging water treatment systems and protect bodies of water around the state. This much-needed action will help provide clean drinking water and protect the land of ten thousand lakes for generation to come."Ken Martin in the dfl Dispatch, 2/23/2018 The above statement about "protecting bodies of water" is not true for northeastern Minnesota. While the rest of the state's waters were given at least hope for help, Governor Dayton ignored the plight of the St. Louis watershed withhis support of PolyMet. Furthermore, Dayton's expressed desire to protect the Boundary Waters Canoe Area Wilderness from copper-nickel sulfide mining confused many who thought that there was only one copper-nickel mine proposed and that it would harm the BWCAW. Few paid attention to the fact that PolyMet was the first such mine proposed and would, if permitted, negatively impact the entire St. Louis watershed all the way to and into Lake Superior.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
459	Doretta Reisenweber	Citizen	I am not alone in my contention that if PolyMet is granted permission to mine, a legal precedent for such mining will have been set and other copper-nickel sulfide mining companies within the Duluth Complex (Twin Metals/Antofagasta, Teck, Encampment) will demand the right to mine as well. Both agencies appear to willfully neglect looking at the big picture. The cumulative effect of copper- sulfide mining operations on the waters of the Duluth Complex would harm the watersheds of the St. Louis River, the Mississippi, and the Rainy River. It would devastate the waters of the whole area including Lake Superior containing 10% of the world's fresh water as well as the BWCAW.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
460	Doretta Reisenweber	Citizen	Governor Dayton's proposed $167 million toward the replacement of aging water treatment systems may seem like a lot of money toward a worthy cause. It is, but it IGNORES THE COST OF NOT PROTECTING OUR CLEAN WATERS IN MINNESOTA'S NORTHEAST. An ounce of prevention is worth a pound---make that tons---of cure. Have the agencies considered the cost of allowing the waters of northeastern Minnesota to become polluted by toxins from copper- nickel sulfide mining? Have the agencies factored in costs for "trying" to treat the water basically forever, human health impacts (due to rising mercury levels and heavy metals), devastation of plant and animal life, the elimination of the way of life for those peoples whose lives depend to large degree on "living off the land?"	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
461	Doretta Reisenweber	Citizen	It appears that the DNR and MPCA have allowed PolyMet/Barr Engineering to dictate what will and will not be considered in the permits. If that is the case, it is irresponsible. How often have both agencies looked the other way only to have the people face huge environmental and health costs? Cases in point include US Steel's SuperFund site in the St. Louis River and the millions being spent trying to clean it up in recent years, the state's court battle with 3M over PFC's and the greatly reduced fine brought to light just this past week, the exceedance of water withdrawal from Forest Lake-August 2017, and numerous variances and violations overlooked for decades. It is time the people demand strict protection of our waters. From all of the facts environmental organizations and citizens are putting forth and from what I have learned, I insist that the agencies deny PolyMet's draft permits and protect future generations' water.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

462	Croitiene n. ganMoryn	Citizen	Dear Mr. Stine, Arguably, the Minnesota DNR had an excuse for its weak PolyMet draft Permit to Mine. There are state laws saying that part of the DNR's mission is to encourage minerals development. The mission of the Minnesota Pollution Control Agency (MPCA) is to protect the environment and Minnesota citizens from pollution.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
463	Croitiene n. ganMoryn	Citizen	The MPCA draft water pollution permit for the PolyMet sulfide mine doesn't set limits on polluted seepage through groundwater to drinking water or surface water.	See response to Comment Water-510.
464	Croitiene n. ganMoryn	Citizen	The MPCA draft water pollution permit for the PolyMet doesn't even provide appropriate monitoring; PolyMet discharge in violation of the Clean Water Act could go completely undetected.	See response to Comment Water-711-A.
465	Croitiene n. ganMoryn	Citizen	The MPCA draft section 401 certification ignores the deficiencies in the water pollution permit and erroneously claims that the PolyMet sulfide mine project would not violate water quality standards or degrade Minnesota water quality.	This comment addresses the 401 certification. No changes were made to the draft NPDES permit in response to this comment.
466	Croitiene n. ganMoryn	Citizen	State agencies refused to evaluate impacts on human health from the PolyMet mine project using an open and public health impact assessment (HIA) process, even though 30,000 Minnesota medical and health professionals asked for an HIA to assess pollution threats including brain damage to fetuses, infants and children from mercury contamination of fish.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). The issue related to a health study was addressed as part of the EIS process. No changes were made to the draft permit in response to these comments. Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
467	Croitiene n. ganMoryn	Citizen	Now, the MPCA draft section 401 certification accepts PolyMet's "exclusions" and junk science to erroneously claim that the PolyMet sulfide mine project would not endanger the environment and human health.	This comment addresses the 401 certification. No changes were made to the draft NPDES permit in response to this comment.
468	Croitiene n. ganMoryn	Citizen	I oppose this permit! Please DENY the PolyMet permit!	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
469	Amelia Kroeger	Citizen	Dear Commissioner Stine, MPCA's draft water pollution permit misses on setting contamination limits on PolyMet waste facilities seepage to wetlands and streams and doesn't even require monitoring for the quality of surface water, thus violating the Clean Water Act.	Comment noted. Monitoring data considered in the development of the draft permit and required by the draft permit documents are publically available. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
470	Amelia Kroeger	Citizen	MPCA is allowing PolyMet to skew forms allowing them to deny any threats to water quality including wetlands, wild rice, mercury in fish, and threats to the health of people. There is something dreadfully wrong when a company can be allowed, gratis, to contaminate our water. The MPCA needs to protect our waters from sulfide mine pollution!	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
471	Amelia Kroeger	Citizen	I strongly urge the MPCA to deny water pollution (NPDES/SDS) permit and deny the Section 401 certification for the PolyMet copper-nickel mine project.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
472	Amelia Kroeger	Citizen	The proposed NPDES/SDS permit is weak and fails to control the biggest threat from sulfide mining – the seepage of contaminated wastes to groundwater and then to drinking water and surface water from mine pits, waste rock stockpiles, tailings basins and other sulfide mine waste storage facilities.	The project includes engineering controls such as stockpile liner systems, seepage capture systems and wastewater storage and conveyance systems that are designed to limit and manage impacted water from the facility so that it does not impact groundwater or surface water. The effectiveness of these controls were evaluated in the EIS and the water quality permit requires their installation/operation. The Annual Comprehensive Performance Evaluation Report required by the permit will provide an assessment of the performance of the engineering controls, including liner systems, using permit-required monitoring results and internal operational data to ensure that pollution of groundwater and surface water does not occur.
473	Amelia Kroeger	Citizen	The Section 401 certification relies on PolyMet's assumptions, exclusions and misleading information to claim that the PolyMet sulfide mine would not violate water quality standards, degrade water quality, and endanger the environment and human health.	This comment addresses the 401 certification. No changes were made to the draft NPDES permit in response to this comment.
474	Amelia Kroeger	Citizen	The PolyMet draft NPDES/SDs permit and draft 401 certification would conflict with federal and state laws and would jeopardize Minnesota water quality, natural resources, health and finances.	The permit complies with Clean Water Act requirements identified by EPA, including permit coverage for all pollutant discharges expected from the facility. The permit contains limits consistent with 40 CFR part 440.
475	Amelia Kroeger	Citizen	*The MPCA draft water pollution permit for the PolyMet sulfide mine wouldn't set limits on polluted seepage through groundwater to drinking water or surface water.	See response to Comment Water-510.
475-A	Amelia Kroeger	Citizen	*The MPCA draft water pollution permit for the PolyMet wouldn't even provide appropriate monitoring; PolyMet's pollution seeping from groundwater and welling up in wetlands and streams in violation of the Clean Water Act could go completely undetected.	See response to Comment Water-711-A.
476	Amelia Kroeger	Citizen	*The MPCA draft section 401certification would ignore the deficiencies in the water pollution permit and erroneously claims that the PolyMet sulfide mine project would not violate water quality standards or degrade Minnesota water quality.	This comment addresses the 401 certification. No changes were made to the draft NPDES permit in response to this comment.

477	Amelia Kroeger	Citizen	*The MPCA, along with other State agencies refused to evaluate impacts on human health from the PolyMet mine project through an open and public health impact assessment (HIA) process, even though groups representing 30,000 Minnesota medical and health professionals asked for an HIA to assess threats including brain damage to fetuses, infants and children from mercury contamination of fish.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
478	Amelia Kroeger	Citizen	*Now, the MPCA draft section 401certification would accept PolyMet's exclusions, assumptions and junk science to erroneously claim that the PolyMet sulfide mine project would not endanger the environment and human health.	This comment addresses the 401 certification. No changes were made to the draft NPDES permit in response to this comment.
479	Amelia Kroeger	Citizen	Please accept your Agency's mission as a protector of Minnesota waters, fish, wild rice, wildlife, wetlands and human health not the protector of foreign mining companies seeking profit at our expense. On behalf of the people of Minnesota and clean water, I ask you to reject and deny the draft water pollution (NPDES/SDS) permit and the draft 401 certification for the PolyMet copper-nickel sulfide mine project.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
480	Gary G. Kohls	Citizen	Here are my reasons that the PCA should reject PolyMet's permit applications for their earthen tailings dam, their liquid slurry pipeline pumping operation and their open pit sulfide mine near the headwaters of the St Louis River:	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
481	Gary G. Kohls	Citizen	For starters, it is critically important to understand that the foreign Penny Stock company called PolyMet has a current share price of $0.63 per share, down from $1.50 per share in 2014. PolyMet, a total amateur in the business, has never operated a single mine in its short corporate life nor has it earned a single penny from mining. Their only income comes from selling shares to speculators and borrowing money from investors to pay their executives and employees. In addition, PolyMet, being an inanimate money-making corporation (that by definition has no conscience), cannot be trusted to tell the public about all the risks to the environment (including wildlife, fish, water, soil and air) that their exploitation of the earth could generate.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
482	Gary G. Kohls	Citizen	Therefore PolyMet can be expected to hide the fact that their operations could easily cause a massive environmental catastrophe similar to what happened at Mount Polley, British Columbia in 2014 (carefully study the article further below for the frightening details). Mount Polley was a state of the art copper mining operation and had a state of the art tailings pond with state of the art earthen dams holding back the millions of cubic meters of highly toxic heavy metals in the slurry that burst through and devastated, permanently, the downstream creeks, previously pristine lakes and rivers and destroyed billions of dollars of property and economic values.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
483	Gary G. Kohls	Citizen	Every citizen stakeholder that is potentially adversely affected by PolyMet's operation deserves to be fully informed by (theoretically) unbiased regulators such as the MN PCA about the potentially catastrophic pollution risk to the water users who happen to live downstream from the massive tailings lagoon, whose (eventual) 250 foot high earthen dam is at a high risk of failing in some way or other sometime in the near future, especially in the event of a large deluge of rain, an earthquake or a design flaw that could cause the earthen dam to dissolve, leak, over-top or structurally fail in some other way, including the probably high likelihood of being damaged by sabotage. The risks will exist for 500 years (or eternity, whichever comes first for human life on earth), since the toxic metals (see list below) in the lagoon will never degrade into non-toxic forms.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
484	Gary G. Kohls	Citizen	In addition, the vulnerable pipeline that will carry the toxic sludge from the processing plant to the slurry pond is at high risk of sabotage, with serious environmental contamination that could possibly be even worse than the bursting of a dirty frack oil pipeline such as could happen from the foreign pipeline company Enbridge as it transports dirty oil from the tar sands in Canada or from the Bakken oil fields in North Dakota. I don't believe that PolyMet has dealt with the possibility of sabotage.	The project, including the pipeline referenced in the comment, is on private property upon which public access is not authorized. The pipeline in question is within the main processing area where project activities are concentrated and unauthorized access would be easily detected. Further, if the pipeline was damaged, any spills would flow to the disposal facility and would not leave the site.
485	Gary G. Kohls	Citizen	Up to this point, both PolyMet and Twin Metals (and all of the governmental agencies that have been involved in the approval process) have been seriously neglectful in educating the public about all the potential lethal dangers of either the pipeline or the massive amount of toxic liquids that will forever cause the deaths of any water bird that lands on the lake-like lagoon (a la Butte, Montana's ever-lastingly poisonous mining tailings "pond" and the nearby defunct Berkeley open pit mine [now a toxic "lake"] that has had its water pumps shut down and is now nearly filled to the brim with poisonous water that has high levels of dissolved toxic metals and a pH approximating that of stomach acid!).	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
486	Gary G. Kohls	Citizen	It seems to me that the MN PCA (and the DNR and Forest Service) would be exceedingly naive if it trusts PolyMet's promises to treat the water from the tailings pond by some unaffordable, piein- the-sky reverse osmosis or other de-watering plan that has not yet been tried on a commercial level. Those promises are theoretical and should not be trusted.	Reverse osmosis is a long-established water treatment technology that is used in a wide variety of applications, including mining, world-wide. To demonstrate that membrane treatment technologies were capable of meeting treatment targets for the PolyMet project, the company conducted a 6-month pilot testing program using seepage water from the existing tailings basin. For a portion of the test, additional metals were added to the test influent to more closely simulate projected effluent quality (i.e., wastewater that would be expected from the mining of sulfide-bearing ore). Results of the pilot testing were used in MPCA's engineering review of the treatment system design, and MPCA determined the proposed design is capable of providing the necessary level of treatment.
487	Gary G. Kohls	Citizen	To more fully understand the importance of the ongoing Butte, Montana disaster, I attach below an aerial view photo of Butte's serious SuperFund site that will be impossible for the EPA to remediate. Every attempt to de-acidify or alkalinize the tailings lagoon has failed miserably. And now, the future of the city of Butte, which was once happily promised jobs, jobs, jobs by the copper bosses, is extremely bleak. Butte, whose rivers and streams experience regular fish kills due to the copper mine-caused water contamination, is becoming de-populated. Could the same thing happen to downstream communities in northern Minnesota? (See my article about the Butte environmental catastrophe that was published at http://www.scoop.co.nz/stories/HL1612/S00062/poisoned-snow-geese-in-butte-toxic-nature-of-coppermining. htm.)	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

488	Gary G. Kohls	Citizen	The DNR, the PCA and the Forest Service are surely ethically - and also legally, I hope - obligated to adequately educate and fully inform every citizen that relies on the drinking water that is in the nearby aquifers about all of the dangers of extracting (and grinding up into a fine powder) low-grade copper sulfide or nickel sulfide ore (99+% of which is hazardous waste material), whether the risks are catastrophic or minor.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
489	Gary G. Kohls	Citizen	One cannot expect the full disclosure of all risks by any corporation, whether it is a major trans-national mining corporation like Glencore or Antofagasta or a rookie Penny Stock company like PolyMet or Twin Metals (neither one of which have ever earned a penny at mining anything). Of course, their share-holders and corporate executives would not stand for totally full disclosure, because such information could adversely affect their investments or the company's prestige.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
490	Gary G. Kohls	Citizen	Regulatory agencies like the PCA and DNR are ethically obligated to inform those of us whose precious and increasingly threatened water is at high risk of being contaminated, especially if the culprits are foreign corporations that have investors who don't live here. The St Louis River – and thus Lake Superior – is definitely at risk of contamination if the dam fails or the pipeline breaks or the pipelines are sabotaged. Any such failure – whether gradual or sudden - will impact millions of people, animals and plants downstream.	The DNR's Dam Safety permit addresses dam safety issues. Pipeline sabotage is unlikely since the project, including pipelines, is on private property upon which public access is not authorized and where security is provided. Pipelines in the main processing area are in a heavily trafficked area and unauthorized access would be easily detected. The pipeline from the mine site to the plant is buried making any attempt at sabotage difficult. Regarding potential pipeline breaks, the main pipeline from the mine site to the plant side has been upgraded from its original design to increase its factor of safety. Spills from pipeline breaks in the plant area would generally flow to a disposal facility (e.g., the FTB) and not leave the site.
491	Gary G. Kohls	Citizen	In the worst case scenario (the Mount Polley scenario), the St Louis River watershed (and therefore Lake Superior) will be poisoned to such a degree that it will never be remediable or usable for fishing, hunting, farming, wild rice harvesting, canoeing, swimming and drinking by those overwhelmingly large numbers of area residents that will never benefit from a copper mine. Even a trillion dollar escrow account posted by PolyMet would be woefully inadequate to meet the costs of futilely trying to clean up an environmental catastrophe such as happened at Mount Polley. The chances of the failure of an earthen tailings dam with walls that are planned to rise to 250 feet high which would result in an massive environmental disaster in northern Minnesota will significantly increase every time the dam needs to be raised. The gradual raising of an earthen dam to the towering heights of 250 feet (just try to imagine that!) by large bulldozers that will probably use the easily available sand and soil from the area (probably including the finely-ground-up powdery tailings material that would otherwise be part of the liquid sludge that winds up inside the lagoon). Please study the state-or-the-art tailings lagoon at Mount Polley, which had soluble walls that only rose to 130 feet. Any earthen dam wall is at risk of dissolving in a torrential rain, and the raising of each bulldozed level will necessarily have to be narrower and narrower and therefore increasingly more likely to leak, liquify, over-top and/or burst.	The conditions of permits required by both DNR and MPCA are designed to minimize impacts from day-to-day activities as well as minimize the risk of catastrophic failures occurring. For example, the design of wastewater sumps and storage basins authorized bythe NPDES/SDS permit takes into account the accumulation of water from large storm events. Dam safety issues are directly addressed in the DNR's Dam Safety permit and financial assurance conditions are included in the DNR's Permit to Mine.
492	Gary G. Kohls	Citizen	The public needs to understand that the liquid slurry that is piped into the lagoon by a pipeline system of undesignated length or safety will contain toxic levels of some of the following common sulfide-mining, highly toxic heavy metal by-products (that are only safe if they remain buried in the ground as un-processed sulfide ore). The poisonous waste metals that commonly occur – mixed in where copper sulfide and nickel sulfide ores are mined include Lead, Arsenic, Zinc, Cadmium, Vanadium, Antimony, Manganese and Mercury, most of which often exist as sulfide ore, as opposed to the mostly oxide-containing ore bodies where iron mining is done. The above list of hazardous waste minerals were the ones that were present in large quantities in the contaminated sludge in the sludge lagoon that first totally destroyed Mount Polley's Hazeltine Creek and then heavily and permanently contaminated Polley Lake, Quesnel Lake and then the Quesnel and Fraser Rivers. en route to the Pacific Ocean	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
493	Gary G. Kohls	Citizen	Duluth residents, representing the largest concentrated population that could be adversely affected by a copper/nickel tailing's lagoon disaster upstream, need to be fully informed that, in the event of a leak or full-fledged collapse of the dam, the fishable, swimmable St Louis River and eventually Duluth's drinking water from Lake Superior will be contaminated, perhaps mortally and irretrievably. The over 100,000 people who would have their lives disrupted heavily out-number the small number of miners who would be "lucky enough" to land on of the scarce, temporary jobs that might destroy their lives and livelihood. Earthen dams are notorious (albeit well hidden from public view) for dissolving and collapsing, especially in the presence of certain weather circumstances that are out of the control of any mine operator. One only has to consider the frequent flash floods that result from a sudden deluge of rain similar to the one Duluth experienced a few years ago - and which are increasingly common all over our warming, climate-unstable planet. To back up this testimony, I offer the following videos - plus an eye-opening article about the Mount Polley environmental disaster of 2014, which should make the DNR decision-makers reject PolyMet's permits. Mount Polley is considered the worst environmental catastrophe in the history of Canada. And it was man-made (actually corporate-made). Thank you for your attention. Gary G. Kohls, MD, Duluth, MN	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
494	Gary G. Kohls	Citizen	This comment is supplemented by supporting articles and video links.	Conclusion statement. No response needed.
495	Lori Andresen	Save Our Sky Blue Waters	These comments and requests are being submitted on behalf of the following conservation organizations: Save Our Sky Blue Waters, Save Lake Superior Association, Wetlands Action Group. On 3/16/2018 , I emailed copies of these documents to the MPCA' s Anne Moore and the info.pca(a),state.mn.us email address listed on the MPCA website. I talked with numerous individuals at the MPCA offices, including Anne, about when the public comment period ended for the PolyMet project. Staff I spoke with at the MPCA assumed it must be midnight, since the website said the MPCA's public comment period for the PolyMet NorthMet draft permits was open until March 16, 2018. The website does not give a definitive time for when the comment period closes, just the March 16 date. The MPCA's website does not say the comment period closes at 4:30pm, which is totally misleading to the general public. How many people weren't able to send/upload their comments because the MPCA did not specifically say what time on 3/16/2018 the comment period closed and found out too late to submit a comment because the MPCA shut down the website portals early? Thank you,	The public notice for the draft permit clearly states on page 1 that the public comment period ends at 4:30 p.m. on March 16, 2018.

496	Elanne Palcich, LeRoger Lind, Bob Tammen	Wetlands Action Group, Save Our Sky Blue Waters	These comments are being submitted on behalf of the following conservation organizations: Save Our Sky Blue Waters, Save Lake Superior Association, and Wetlands Action Group (hereinafter, "Organizations"). The Organizations submit these comments and Petition and Request for a Contested Case Hearing on the Minnesota Pollution Control Agency (MPCA) proposed Clean Water Act Section 401 Water Quality Certification for the Section 404 (Wetlands) Permit for PolyMet Mining, Inc.'s proposed NorthMet Project. The Conservation Organizations believe that the NorthMet Project may result in water quality standard violations on several bases. Some of these are covered by the Petition for Contested Case Hearing on the NPDES/SDS Permit that will be submitted by Minnesota Center for Environmental Advocacy, et al. We are also requesting a contested case hearing on the Water Quality Permit for the proposed PolyMet - NorthMet Mine.	Background statement for comments and petition for contested case hearings to follow. No response needed. Specific comments are addressed individually.
497	Elanne Palcich, LeRoger Lind, Bob Tammen	Wetlands Action Group, Save Our Sky Blue Waters	Save Our Sky Blue Waters (SOSBW) is a Duluth based grassroots non-profit organization dedicated to protecting the waters, forests, wildlife and local communities of Minnesota's Arrowhead Region. The Arrowhead Region has been known as one of the most magnificent areas of the state, for its majestic forests, wetlands, and waters and because it contains the headwaters of three great watersheds: north to Rainy River, east to Lake Superior, and south to the Mississippi. The protection of these valuable resources is SOSBW's core mission. SOSBW developed in response to proposed copper-nickel sulfide mining and exploration in northeastern Minnesota and has consistently participated at all levels in the ongoing environmental review and approval process involving the proposed PolyMet NorthMet Mine proposal. Protecting the health of the St. Louis River watershed and Lake Superior is a key component of the mission of SOSBW. Save Our Sky Blue Waters' members live, depend upon, enjoy, recreate, fish, eat and gather locally from the lands and waters, and own prope1iy in the area that would be adversely impacted by PolyMet's proposed mine.	Background statement for comments to follow. No response needed. Specific comments are addressed individually.
498	Elanne Palcich, LeRoger Lind, Bob Tammen	Wetlands Action Group, Save Our Sky Blue Waters	Save Lake Superior Association (SLSA) is headquartered in Two Harbors, MN with members residing in the three states and a province on Lake Superior's shoreline and watershed. SLSA has about 250 members , many of whom fish and recreate along the North Shore of Lake Superior, in its watershed, and in the St. Louis River estuary. The mission of SLSA is to prevent further degradation of Lake Superior and to promote its rehabilitation. SLSA was formed in 1969 to stop the discharge of taconite tailings into Lake Superior by Reserve Mining Company. This waste material contains many of the same toxins such as mercury and asbestos fibers that would be generated by the mining and processing of sulfide ore by PolyMet. As stakeholders SLSA is concerned about the potential destruction of natural habitat and the pollution of both air and water in the watershed of Lake Superior, and ultimately the Lake itself, should PolyMet be permitted. Lake Superior and its watershed are downwind and downstream from current taconite and proposed sulfide mining, both of which emit these toxic substances. Even now SLSA's members, friends, and families, especially children, must limit their fish consumption due to the continuing pollution. Many are unaware of the danger and continue to consume fish as part of their daily diet. SLSA's members, and others ho visit the local parks, streams, trails, shoreline, and the lake itself , are unknowingly exposed to these toxins. The release of more toxins by new mining operations would exponentially increase the pollution of the air we breathe and the water we drink.	Background statement for comments to follow. No response needed. Specific comments are addressed individually.
499	Elanne Palcich, LeRoger Lind, Bob Tammen	Wetlands Action Group, Save Our Sky Blue Waters	Wetlands Action Group (WAG) represents citizens of Northeast Minnesota seeking to protect the region's waters, wetlands and watersheds. WAG became active following an improper decision by St. Louis County commissioners in 2006 to enter into an agreement for a wetlands mitigation plan for the PolyMet mine. Legal action by WAG and local citizens nullified this agreement. WAG has continued to follow, make comments, and attend meetings and hearings on the PolyMet proposal along with simultaneous wetland actions set in place to facilitate mining. Its members and supporters depend upon the water, wetlands, forests, and ecological resources of our area, and its mission is to preserve these resources for present and future generations. WAG's members who recreate , fish, eat wild rice, live in this area, or otherwise enjoy the Arrowhead region would be harmed by PolyMet's mine if it were approved. Our groups believe the permits for PolyMet's proposed sulfide mine must be denied. The proposed permits cannot and do not protect future generations from the long-term impacts of sulfide mining.	Background statement for comments to follow. No response needed. Specific comments are addressed individually.
500	Elanne Palcich, LeRoger Lind, Bob Tammen	Wetlands Action Group, Save Our Sky Blue Waters	PolyMet's permits are written to allow contamination up to the site's boundary line, which encompasses many square miles. In Minnesota, groundwater belongs to the public even when it is located within private property, just as surface water does. The permits need to address how polluted water from the PolyMet site will impact ground water.	The permit includes provisions intended to prevent the groundwater from being polluted. See response to Comments Water-510 and Water-248. The permit ensures that groundwater outside the seepage capture system will not become polluted.
501	Elanne Palcich, LeRoger Lind, Bob Tammen	Wetlands Action Group, Save Our Sky Blue Waters	The Environmental Impact Statement (EIS) promised that an underground wall built to contain and collect groundwater in the most polluted areas will be at least 90 percent effective. The permits deem the system acceptable if it works under "average annual conditions," effectively disregarding the potential for snowmelt and heavy rainfall to flush pollution through cracks in the wall. The permits provide no standards and no fines if the system fails -- even if surface streams become polluted as a result.	The MPCA has removed the "temporary conditions" language and has revised the language of the permit in light of the comment to state that if an inward gradient is not reestablished within 14 days of detection, it is a violation of the permit. The permit also requires monitoring of the Category 1 stockpile paired wells/piezometers weekly following a 100-year storm event to ensure that monitoring and any necessary preventative maintenance occur promptly. In the event of noncompliance with the permit, the assessment of penalties is determined through the MPCA's enforcement process. As with any NPDES/SDS permit in Minnesota, penalties are not "pre-established" as a term of the permit. MPCA enforcement actions include corrective actions to be taken by the regulated party.

502	Elanne Palcich, LeRoger Lind, Bob Tammen	Wetlands Action Group, Save Our Sky Blue Waters	The most disturbing aspect of this plan is that there is no end point. Modeling suggests that the underground barriers will need to stay intact -- along with a continuously operating pump-and- treat system -- for centuries. Also continuing for a thousand years or more are the dangers presented by the tailings basin dam. It is unconscionable to allow more liquid tailings to be stored on an outdated and contaminated existing tailings basin. We object to the State of Minnesota sanctioning this threat to future generations living downstream.	The NPDES/SDS permit requires the submittal ofan Annual Comprehensive Performance Evaluation Report which specifically requires the annual assessment of the perfiormance of individual engineering controls and the implementation of adaptive management, mitigation or corrective actions before potential impacts actually occur. This annual assessment is required each of the five years of this permit issuance and some updated adaptation of this is likely in future reissuances of the permit. (These future reissuances of the permit will be subject to public review and comment prior to reissuance.) The DNR administers Minnesota Rule 6132 and their Permit to Mine for the facility includes financial assurance conditions that, in part, address the long-term maintenance of necessary controls. Dam safety issues are addressed in the DNR's Dam Safety permit.
503	Elanne Palcich, LeRoger Lind, Bob Tammen	Wetlands Action Group, Save Our Sky Blue Waters	•Air emissions have not been adequately addressed. These include arsenic, mercury, sulfur, blasting compounds, and metals and dust from the blasting, hauling, crushing, and hydrometallurgical process.	This issue has been fully addressed in the environmental review process, the air quality permit and, as it may relate to water quality, in the Cross-Media analysis. This comment does not raise issues that fall within the scope of the NPDES/SDS permit. The NPDES/SDS permit regulates point source discharges to water.
504	Elanne Palcich, LeRoger Lind, Bob Tammen	Wetlands Action Group, Save Our Sky Blue Waters	•Synergistic effects upon human and environmental health have not been addressed. •Cumulative impacts are missing, resulting in weak and/ or faulty environmental conclusions (errors).	Health impacts were considered during the environmental review process. See FEIS section 7.3.4. The NPDES permit and 401 certification do not provide for conducting the health impact assessment requested. The cumulative impacts issue has been fully addressed in the environmental review process and the Cross-Media analysis. This comment does not present any specific facts to support the position that cumulative impacts are missing or that environmental conclusions are faulty. This comment does not fall within the scope of the NPDES permit or 401 certification.
505	Elanne Palcich, LeRoger Lind, Bob Tammen	Wetlands Action Group, Save Our Sky Blue Waters	•Air emissions will exacerbate water quality violations, but have not been figured in.	This issue has been fully addressed in the Cross-Media analysis, which led to conditions in the 401 certification. This comment does not present any specific facts to support the commenter's position or to provide a reasonable basis to dispute the MPCA's conclusion on the permit. The NPDES/SDS permit regulates point source discharges to water.Therefore, the comment is outside the commissioner's jurisdiction for this NPDES/SDS action.
506	Elanne Palcich, LeRoger Lind, Bob Tammen	Wetlands Action Group, Save Our Sky Blue Waters	•Rail spillage is not adequately considered, although this would have broad ramifications for toxicity to the environment and water resources.	This issue has been addressed in the 401 certification and is not an NPDES/SDS permit issue. See the 401 response to comment document.
507	Elanne Palcich, LeRoger Lind, Bob Tammen	Wetlands Action Group, Save Our Sky Blue Waters	•It is contradictory to consider wetlands as mitigation for toxic metals without considering the over-all impacts to the ecological health of the wetlands themselves, and the biosystems that are dependent upon them.	This issue has been addressed in the 401 certification and is not an NPDES/SDS permit issue. See the 401 response to comment document.
508	Elanne Palcich, LeRoger Lind, Bob Tammen	Wetlands Action Group, Save Our Sky Blue Waters	•Baseline monitoring/modeling must be done on wetlands that would be impacted by PolyMet's mining.	This issue has been addressed in the Cross-Media analysis and 401 certification and is not an NPDES/SDS permit issue. See the 401 response to comment document.
509	Elanne Palcich, LeRoger Lind, Bob Tammen	Wetlands Action Group, Save Our Sky Blue Waters	•Mercury is a concern for the entire Great Lakes basin. No new or increased loads or discharges of mercury should be allowed. The conclusion that this project will not contribute additional mercury to the Lake Superior basin is in error.	See response to Comment Water-198.
510	Elanne Palcich, LeRoger Lind, Bob Tammen	Wetlands Action Group, Save Our Sky Blue Waters	•Nickel modeling must be redone, especially due to the fact that nickel will be the hardest to extract from the ores, so there will likely be high amounts left in plant residues.	This issue has been fully addressed in the Cross-Media analysis. See the 401 response to comment document. The nickel that is not extracted from the ore is primarily the nickel that is associated with the silicate mineral olivine. Nickel in olivine is specifically addressed in the cross-media analysis.
511	Elanne Palcich, LeRoger Lind, Bob Tammen	Wetlands Action Group, Save Our Sky Blue Waters	•Seasonal and other fluctuations in water cycles must be considered in wetlands' ability to sequester toxic metals.	This issue has been addressed in the Cross-Media analysis and is not an NPDES/SDS permit issue. See the 401 response to comment document.
512	Elanne Palcich, LeRoger Lind, Bob Tammen	Wetlands Action Group, Save Our Sky Blue Waters	•Aluminum must be accurately addressed in spillage models.	This issue has been addressed in the Cross-Media analysis and is not an NPDES/SDS permit issue. See the 401 response to comment document.
513	Elanne Palcich, LeRoger Lind, Bob Tammen	Wetlands Action Group, Save Our Sky Blue Waters	•It is not sufficient to address water quality problems after they develop.	The MPCA relies on its technical review of the permit application and plans submitted to determine if proposed wastewater treatment systems will adequately treat waste from the proposed industry. The MPCA has reviewed the available information, including an engineering review, and concluded the permit conditions can be met and the WWTS will function as designed. The incorporation of adaptive management as a failsafe does not invalidate the requirements for compliance. Adaptive management is regularly used in complex environmental scenarios to ensure standards are met while allowing flexibility. In this case, the underlying requirement must be met; the adaptive management is intended to develop strategies to maintain compliance.

514	Elanne Palcich, LeRoger Lind, Bob Tammen	Wetlands Action Group, Save Our Sky Blue Waters	We also ask that MPCA and MDNR consolidate all of the permits and issues into one hearing. There is a great deal of overlap between the permits, including the 401 Certification.	Comment noted.
515	Elanne Palcich, LeRoger Lind, Bob Tammen	Wetlands Action Group, Save Our Sky Blue Waters	Conclusion: The PolyMet EIS, and subsequent draft permits and proposed 401 Certification, evade the seriousness of pollution impacts to the air, surface, and waters of the NorthMet site and surrounding wetlands, forests, and waters--and the co-existant aquatic, plant, and wildlife species--as well as impacts to human health. This environmental process, as it now stands, will only lead to the continued degradation of the envifonment and water of northeast Minnesota--for all future generations. Please protect the future of the people, wildlife and waters of northeastern Minnesota by saying "no" to this mine plan.	Conclusion statement to the above individual comments. No further response needed.
516	Elanne Palcich, LeRoger Lind, Bob Tammen	Wetlands Action Group, Save Our Sky Blue Waters	Incorporate by Reference The Conservation Organizations incorporate by reference our comments on the PolyMet NorthMet Mine and Land Exchange EIS; the Comments ofMCEA et al. on the NorthMet Dam Safety Permits submitted to the DNR on October 16, 2017; the Joint Petition of MCEA et al. for a Contested Case Hearing on the NorthMet Permit to Mine Application submitted to DNR on February 28, 2018; the Comments and Objections ofMCEA et al. to the DNR on the NorthMet Mine Project Permit to Mine Application submitted to the DNR on March 6, 2018; Friends of the Boundary Waters et al. Petition for Contested Case Hearing on Section 401 Certification for the NorthMet Mine. The Conservation Organizations request that these documents be considered as part of our comments. We are submitting the Friends of BWCAW_CED Petition for CCH (2).pdf as part of our comments and petition. Thank you for the opportunity to comment on this proposed project, which has enormous implications for the Superior National Forest, the Arrowhead region, the state of Minnesota, and the Lake Superior watershed. We believe that a contested case hearing(s) is necessary to correct errors for the draft Water Quality Permit and 401 Certification.	Comment noted.
517	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	WaterLegacy is a Minnesota 501(c)(3) non-profit organization founded to protect Minnesota's water resources, wetlands, wildlife, habitats and the communities that rely on them, particularly from the threat of copper-nickel mining in sulfide-bearing ore in Northeastern Minnesota. Many of plaintiff's board members, advisory committee members and supporters live in Northeastern Minnesota and use the Superior National Forest and the waters and habitats of the Embarrass River, Partridge River and St. Louis River watersheds for a variety of recreational and aesthetic purposes including hiking, canoeing, kayaking, cross-country skiing, horseshoeing, dog- sledding, wildlife viewing, solitude and photography.	Background statement for comments to follow. See detailed responses to comments below.
518	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Several of WaterLegacy's members have canoed up the South Branch Partridge River and the Partridge River from forest roads and have otherwise walked and canoed onto the site of the proposed PolyMet NorthMet Copper-Nickel Mine Project ("PolyMet Project"). They have enjoyed the proposed PolyMet mine site and the sinuous reaches of the Upper Partridge River in proximity to the site for their beauty, for recreation, for hunting, and to gather wild plants.	Background statement for comments to follow. See detailed responses to comments below.
519	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Many members of WaterLegacy have gathered wild rice or have fished downstream of the proposed PolyMet Project in the Embarrass River and Embarrass River chain of lakes, the Partridge River, Colby Lake and the St. Louis River. Some of these members belong to environmental justice communities and rely on the wild rice they gather and on wild-caught fresh fish from these watersheds for sustenance. Some of our members have conducted scientific investigations of waters and habitats in the Partridge River and St. Louis River downstream of the proposed PolyMet Project. At least one of our members works as a wilderness guide, specializing in immersive wilderness experiences that include teaching plant and animal ecology, tracking, hunting, and traditional gear and transportation. He has taken at least two groups canoeing and portaging up the Partridge River toward the proposed PolyMet mine site.	Background statement for comments to follow. See detailed responses to comments below.
520	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Some of our members live in Hoyt Lakes, and drink municipal water drawn from Colby Lake. Other members of WaterLegacy own lakeshore property within the Embarrass River chain of lakes or riparian property on the Embarrass River or St. Louis River downstream of the proposed PolyMet Project, where they recreate, swim, canoe, kayak, cross-country ski, fish, support sustainable ecological practices, and obtain moral and spiritual as well as economic value from preserving the property they own. Other members of WaterLegacy are doctors and other health professionals concerned about the impacts of PolyMet pollution on the health of their patients and the Northeastern Minnesota communities in which they live and serve.	Background statement for comments to follow. See detailed responses to comments below.
521	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	WaterLegacy's mission, goals and objectives would be adversely impacted by the MPCA's approval and issuance of the Draft NPDES/SDS Permit MN0071013 ("Draft NPDES/SDS Permit"). Our mission, goals and objectives would also be adversely impacted by the MPCA's approval and issuance of the Draft Clean Water Act Section 401 Certification ("Draft 401 Certification"). As explained in our Comments below, issuance to PolyMet of a permit for its water pollution and MPCA certification to the federal government that the State of Minnesota supports a federal Clean Water Act permit for PolyMet wetlands destruction would severely impact Minnesota water resources in the Partridge River, Embarrass River and St. Louis River watersheds, the quality of water in Minnesota's Lake Superior basin and the health and well- being of plant, animal and human communities who rely on these fresh water resources.	Background statement for comments to follow. See detailed responses to comments below.
522	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The interests of WaterLegacy's individual members in a wide range of recreational, aesthetic, cultural, life-sustaining, economic and spiritual activities would be adversely affected by MPCA action to approve and issue the Draft NPDES/SDS Permit and/or to approve and issue the Draft 401 Certification for the PolyMet Project. Not only our members who own or rent property immediately downstream of the property, but many other members of WaterLegacy have continuing and important connections with the waters and natural resources on the site of and downstream of the proposed PolyMet copper-nickel mine project. WaterLegacy's members intend to continue their recreational, aesthetic, cultural, life-sustaining, economic and spiritual activities connected to the waters and other natural resources that would be adversely affected by issuance of a water pollution permit and Clean Water Act certification to PolyMet for its proposed open-pit copper-nickel sulfide ore mining and processing project.	Background statement for comments to follow. See detailed responses to comments below.
523	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Specific Actions Requested from MPCA by WaterLegacy I .WaterLegacy requests that the Minnesota Pollution Control Agency ("MPCA") reject and deny the Draft NPDES/SDS Permit MN0071013 ("Draft NPDES/SDS Permit") for the PolyMet1 NorthMet Copper-Nickel Mine Project ("PolyMet Project")	The MPCA will consider the request before making its final decision.
524	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	2.WaterLegacy requests that the MPCA reject and deny the Draft Clean Water Act Section 401 Certification ("Draft 401 Certification") for the PolyMet Project.	The MPCA will consider the request before making its final decision.
525	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	3WaterLegacy requests that the MPCA grant our Petition for Contested Case Hearing submitted in furtherance of WaterLegacy' s mission and the representation of our members whose individual interests would be impaired by the approval and issuance of the Draft NPDES/SDS Permit and/or the Draft 401 Certification for the PolyMet Project.	The MPCA will consider the request before making its final decision.

526	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Summary of WaterLegacy Comments Opposing Draft Permit and 401 Certification The PolyMet project is Minnesota's first copper-nickel sulfide ore mine project to reach the permitting stage. Many other copper-nickel mine projects are in various stages of exploration and feasibility analysis in Minnesota. It is understood both that the PolyMet project would serve as the "snowplow" behind which other copper-nickel mine projects would advance and that the standards set for the PolyMet NPDES/SDS permit and Section 401 Certification would become precedent for future copper-nickel projects. For this reason, it is particularly important that the MPCA "get it right" and establish standards that will protect natural resources across a broad swath of northeastern Minnesota, from southwest of Duluth to the Boundary Waters watersheds.	Background statement for comments to follow. See detailed responses to comments below.
527	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Getting it right will be no easy task. Sulfide mining for copper, nickel, gold and other metals, also known as "hardrock mining," has a very poor track record. There is no sulfide mine in a water-rich environment, like that in northeastern Minnesota, which has operated and closed without polluting surface water and/or groundwater with acid mine drainage and/or toxic metals. In 2009, the U.S. Environmental Protection Agency ("EPA") in identifying the hardrock mining industry as the first priority for financial responsibility rules under Superfund statutes, estimated that this sulfide mining industry is responsible for polluting 3 400 miles of streams and 440 000 acres of land.2 PA also estimated that the metal mining industry (copper, nickel. gold, lead and zinc) was responsible for nearly 1.15 billion pounds or approx imately 28% of the total 2007 Toxic Release Inventory that U.S. industry was required to report.3	Background statement for comments to follow. See detailed responses to comments below.
528	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	It cannot be assumed that the sulfide mining Superfund sites highlighted by EPA to have a potential remediation cost as high as $54 billion4 were attributable to "direct discharge" of pollutants to surface waters. Many of the most extreme cases where sulfide mine projects have had toxic results requiring hundreds of millions of dollars to remediate remained as a legacy of seepage from mine pits, waste rock stockpiles and tailings facilities long after the company had filed for bankruptcy, leaving its liabilities for the taxpayers.5In the course of analyzing the potential for a copper mine in Bristol Bay, Alaska, the EPA cautioned that 13 out of the 14 copper mines operating in the United States had experienced "failures to collect and treat seepage that resulted in water quality degradation." Such degradation had resulted from various factors, including "including inadequate pre-mining data, poor prediction of mitigatjon needs, inadequate design , improper operation, and equipment failure." 6 The EPA emphasized that prediction failures resulted in water collection and treatment failure, despite permits including "mitigation measures intended to prevent such occurrences."7	Background statement for comments to follow. See detailed responses to comments below.
529	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Many of the factors singled out by EPA as leading to prediction failures and thus to water quality degradation would sound eerily familiar to anyone who has followed the PolyMet environmental review process: waste rock leachate concentrations derived from humidity tests, use of simplifications to model surface-water and groundwater hydrology, water quality models that assume that mining would not affect background water quality, use of average receiving water flow without considering low dilution during low-flow periods, water quality criteria that fail to address chemical interactions or are out of date, non-representative tested rock and tailings samples, and the absence of tests for sensitive aquatic insect species.8	See detailed responses to comments below.
530	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Overall, the EPA concluded that the probability of potential failure of water collection and treatment during operations for a copper mine is 93%. Post-closure collection and treatment failures are yet higher and, if the mine site were to be abandoned, EPA concluded that sulfide mining's track record suggested that failure of water collection and treatment becomes "certain." 9	Background statement for comments to follow. No response needed.
531	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	In addition to the precedent-setting nature of the PolyMet Project and the history of water degradation experienced at similar mines, a special challenge is facing the MPCA and the State of Minnesota due to the State's poor history in regulating mining pollution. For decades, despite a formal agreement with the EPA to prioritize mining permits, the MPCA has failed to update expired mining permits and variances and to enforce violations of water quality standards resulting from mining seepage from tailings and waste rock storage and from mine pits. In response to these failures ofregulation, in July 2015, WaterLegacy filed a formal Petition for Withdrawal of Program Delegation from the State of Minnesota for NPDES Permits Related to Mining Facilities. '0 The EPA prepared a comprehensive protocol to investigate this petition in March 2016,11 and its investigation is still pending. Since July 2015, the MPCA has neither reissued any of the State's expired mining permits nor enforced violations of surface water quality standards at existing mines resulting from seepage from mine pits or waste facilities. The Minnesota Legislature has enacted special interest legislation preventing the MPCA from listing impaired waters or requiring permittees to spend money in order to comply with Minnesota's sulfate water quality standard that protects wild rice.12 The MPCA has also issued 401 certifications even in the most egregious case where mining company seepage from mine pits and tailings waste had resulted in violation of Minnesota water quality standards, the company had violated its permit for a quarter of a century, and the permit had been expired and out of date for over a decade.13	Background statement for comments to follow. No response needed.
532	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	In the context of mining industry failure to protect water quality, the MPCA's deficits in controlling water pollution, and the unrelenting pressure upon Minnesota regulators to approve permits and certifications irrespective of their likely and foreseeable impacts on water quality, the PolyMet Project Draft NPDES/SDS Permit and DRAFT 401 Certification stand out in stark relief. Neither the draft Permit nor the draft 401Certification comply with applicable state or federal law. Neither the draft Permit nor the draft 401 Certification would protect Minnesota water quality, environmental resources or human health. And neither the draft Permit nor the draft 401 Certification should be approved or issued by the MPCA.	See detailed responses to comments below.
533	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The NPDES permit process reflects the state's delegated authority under the Clean Water Act, Section 402.14 While states are given leeway to enact more stringent standards or procedures than required by the Act to protect and clean up their waters, state statutes and rules must, at a minimum, satisfy and conform to the Act and EPA regulations.15	Background statement for comments to follow. No response needed.
534	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Requirements for issuance of a National Pollutant Discharge Elimination System (NPDES) permit are spelled out in the Clean Water Act and its implementing regulations. These federal laws define the waters of the United States to which the Clean Water Act permitting requirements apply and the nature of point sources and their discharge.16 Federal regulations also require that a state NPDES permit prevent discharge that causes or contributes to an exceedance of state numeric or narrative standards, including antidegradation, and define the process by which a state determines whether a discharge has the reasonable potential to cause or contribute to such exceedances.17 These legal standards, along with corresponding state laws, will be discussed in more detail in the various discussion sections of these comments pertaining to the Draft NPDES/SDS Permit for the PolyMet Project.	Background statement for comments to follow. No response needed.

535	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Although states are entitled to waive 401certification, once a state determines not to waive 401certification, findings to issue or deny 401certification must comply with state law and with federal Clean Water Act. Federal regulations as well as Minnesota rules require that a Section 401 certification only be issued if "there is a reasonable assurance that the activity will be conducted in a manner which will not violate applicable water quality standards." 18 Minnesota rules also require that the MPCA deny section 40 l certification upon making the factual findings that also justify revocation of a permit or refusal to issue or reissue a permit.19 These include findings, with respect to the facility or activity to be permitted or certified that "the proposed permittee or permittees will not comply with all applicable state and federal pollution control statutes and rules administered by the agency, or conditions of the permit,"20 or that "the permitted facility or activity endangers human health or the environment and that the danger cannot be removed by a modification of the conditions of the permit." 21 These grounds for refusal to issue a permit and for the denial of a 401certification apply to the PolyMet copper-nickel mine project and the decisions currently pending before the MPCA.	See detailed responses to comments below.
536	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The bases for WaterLegacy's position that the MPCA is obligated under law to reject both the Draft NPDES/SDS Permit and the Draft 401 Certification are summarized below. 1.The Clean Water Act requires the MPCA to set enforceable NPDES permit limits to prevent discharge through groundwater to hydrologically connected surface waters from causing or contributing to a violation of State surface water quality standards, including degradation, applicable to waters of the United States.	See detailed responses to comments below.
537	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	2.The Draft NPDES/SDS permit for the PolyMet Project violates the Clean Water Act and its implementing regulations by failing to perform appropriate analysis or establish permit conditions to prevent discharge to surface water through hydrologically connected groundwater from causing or contributing to an exceedance of Minnesota water quality standards.	See detailed responses to comments below.
538	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	3.The Draft NPDES/SDS permit for the PolyMet Project violates the Clean Water Act and Minnesota law by providing inadequate monitoring to detect if PolyMet discharge through groundwater causes or contributes to violations of Minnesota water quality standards or results in unpermitted discharge.	See detailed responses to comments below.
539	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	4.The Draft NPDES/SDS permit for the PolyMet Project violates the Clean Water Act, its implementing regulations and Minnesota law by failing to set limits for direct discharge to surface water with the reasonable potential to cause or contribute to violation of Minnesota water quality standards.	See detailed responses to comments below.
540	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	5.The PolyMet Project is likely to cause or contribute to violations of Minnesota water quality standards for mercury, increase mercury impairments, and degrade water quality by increasing mercury levels, precluding NPDES permit issuance or assurances for 401 certification under federal and state law.	See detailed responses to comments below.
541	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	6.The antidegradation analysis performed for the PolyMet Project with respect to pollutants other than mercury and methylmercury is inadequate for NPDES/SDS permitting or for Section 401 certification.	See detailed responses to comments below.
542	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	7.The Draft 401 Certification for the PolyMet Project is premature given the substantive deficiencies of the Draft NPDES/SDS Permit; the absence of an up-to- date Section 404 application; and the lack of a current evaluation of the effects of Project water appropriations on the Upper Partridge River headwaters.	See detailed responses to comments below.
543	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	This comment is supplemented with a lengthy discussion section and a Petition for Contested Case Hearing.	Comment noted. Requests for a contested case hearing were evaluated according to current state law.
543-AA	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	This comment is supplemented with a lengthy discussion section and a Petition for Contested Case Hearing.	Comment noted. Requests for a contested case hearing were evaluated according to current state law.
543-AB	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The Clean Water Act requires the MPCA to set enforceable NPDES permit limits to prevent discharge through groundwater to hydrologically connected surface waters from causing or contributing to a violation of State surface water quality standards, including degradation, applicable to waters of the United States. ... The surface waters potentially impacted by sources of contamination from the Poly Met mine site and tailings site are waters of the United States, under traditional Clean Water Act definitions, Supreme Court decisions and federal regulations.33 The Partridge River, Embarrass River and Second Creek and connected lakes are traditional navigable waters that are currently used, or were used in the past or may be susceptible to use in interstate and foreign commerce, and tributaries to such waters in the headwaters of the St. Louis River, the largest United States tributary to Lake Superior, which is an international as well as interstate water body. The creeks at the PolyMet mine site and plant site, to the extent they are not traditional navigable waters, are tributaries to such waters; the wetlands at the Poly Met mine site and plant site are wetlands adjacent to traditional navigable waters and to tributaries to such waters; and the creeks and wetlands at both locations are waters the use, degradation or destruction of which could affect ·waters. The Whitewater Reservoir is an impoundment of waters of the United States.34 As with the tailings pond in the Hecla Mining Co. case, the coal ash ponds and lagoons in the Duke Energy Carolinas and Tennessee Clean Water Network cases and the sedimentation pond requiring an NPDES permit in the Pocahontas Land Corp. case, there are many potential pollution sources at the Poly Met mine site and plant site where process waters and wastes will be confined and conveyed by pipes, ditches, channels, conduits, or other discernable, confined and discrete conveyances. These proposed point sources include the tailings storage facility and the hydrometallurgical residue facility at the plant site; and sumps, ponds, equalization basins, waste rock stockpile drainage liners and collection systems and, eventually, the mine pits themselves at the mine site. ... The Poly Met mine pits will also become unlined point sources for discharge to surface water through groundwater. During the operations phase of the project (or if early closure is required), the East Pit and Central Pit would be backfilled with Category 4, Category 2/3 and Category 1 waste rock and saturated overburden and flooded through pipes conveying water from the plant site in order to permit subaqueous storage of reactive mine waste.41 During closure whenever that begins the West Pit would also be flooded with water conveyed through pipes from the Poly Met plant ite.42	See response to Comment Water-723. This comment raises a legal issue, not a factual issue. The comment interprets federal law as applied to the facility.
543-AC	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The EPA has repeatedly instructed MPCA that NPDES permits must identify, describe and regulate contaminated water from both mine site and plant site point sources discharged to surface waters of the United States through hydrologically connected ground water. The EPA's comments on the PolyMet preliminary supplementary draft environmental impact statement (PSDEIS) explained, "Section 301 of the CWA prohibits point source discharge to surface waters, either directly or via directly connected ground water, unless the discharge complies with a NPDES permit."43 EPA further advised that the Clean Water Act defines "discharge of a pollutant" as any addition of any pollutant to navigable waters from any point source;" as a result, "an NPDES permit is required at both the Mine and Plant Sites, with limits and monitoring requirements applied at the points of discharge."44	See response to Comment 543-AB.

543-AD	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	EPA identified mine site sources of contaminated wastewater seeping from the mine property through groundwater that required regulation under an NPDES permit including mine pits, waste rock stockpiles, the ore surge pile, the Overburden Storage and Laydown Area, and wastewater equalization basins.45 The EPA explained that for "pollutants that leave the mine property via groundwater" a "level of detail" will be required for NPDES permitting "in order to determine water quality-based effluent limits and establish control and mitigation measures that ensure attainment of Minnesota's water quality standards in the Partridge River and other downstream surface. "46 The EPA emphasized that surface water criteria as well as groundwater criteria must be applied to mine site pollutants "when the contaminated groundwater enters the Partridge River."47 As the Poly Met environmental review process continued, the EPA underscored that surface water criteria become applicable at the first location where discharges reach surface waters, including jurisdictional wetlands: However, as EPA has stated previously, the pollutants originating from mine site features may discharge to jurisdictional wetlands and tributaries prior to reaching the Partridge River. CW A Section 301 prohibits any point source discharge of pollutants to waters of the United States, either directly or via directly connected ground water, unless the discharge complies with a NPDES permit. Waters of the United States include jurisdictional wetlands and tributaries. See 40 CFR 122.2. Recommendation: The FEIS should reflect the fact that a NPDES permit is required before the pollutants from the mine site reach waters of the U.S. (including jurisdictional wetlands and tributaries).48 In a spring 2015 memorandum to MPCA, the EPA was yet more pointed in its insistence that the MPCA's NPDES permit for the Poly Met Project specifically cover discharges to surface waters that will occur through subsurface flow or hydrologically connected groundwater. EPA began by stating, "EPA has consistently interpreted the Clean Water Act (CWA) to apply to discharges of pollutants from a point source to surface water, including those that occur via hydrologically connected ground water. 49 EPA stated that the memo's " clarification on discharges that occur via subsurface flow or hydrologically connected groundwater that EPA provided in the aforementioned federal register notice" was occasioned by MPCA's statement that the need for NPDES permit coverage at the mine site would depend on when "a point source discharge" adds pollutants to waters of the U.S.50 The EPA reiterated that "the Partridge River is not the first receiving water of mine discharges"51 and noted that, in conversations with the Agency, "MPCA confirmed their understanding that the wetlands associated with the Partridge River and the tributaries to the Partridge River are waters of the U.S. and may be the first waters receiving pollutants from mine site features.' 52 EPA repeated again the flaws in PolyMet's modeling and what must be included in an NPDES permit for the Poly Met project in order to comply with the Clean Water Act: Since the model predictions are based on the pollutants traveling the entire distance between the mine site and the Partridge River via a subsurface flow path, we note that pollutants may reach surface waters sooner than predicted in either or both of two ways. First, pollutants may be discharged to wetlands in close proximity to the mine site, a potential that is not considered by the modeling work that supported EIS development. Second, pollutants from discharges may reach the Partridge River evaluation locations sooner than predicted because the path pollutants travel to those locations may not be entirely in the subsurface. A complete NP DES permit application must include information detailing when and where pollutants originating from mine site activities and features will enter surface waters (40 CFR §. 122.21 and 124.3).53 Although the MPCA has yet to comply with the EPA's instructions, for at least five years the EPA has also advised the MPCA in connection with the U.S. Steel Minntac tailings storage facility that "Section 301 of the CWA prohibits point source discharges to surface waters, either directly or via dir ctly connected grov1d water, w11ess the discharge is in compliance with an NPDES permit 54 When the MPCA posted a pre-public notice draft NPDES permit for the Minntac tailings basin in 2014, the EPA cautioned that tbe Clean Water Act re~uired an NPDES permit for "the full extent of the discharges to surface water from this facility." 5 In 2016, when the MPCA proposed a draft NPDES permit for the Minntac tailings basin that only applied surface water quality standards to surface seeps, the EPA was yet more pointed: We are concerned that this draft permit as written does not address, under MPCA's approved National Pollutant Discharge Elimination System (NPDES) program and in accordance with the Clean Water Act (CW A), all discharges to surface waters from this tailings basin ... In this case the tailings basin is a point source which, according to MPCA's own documentation is discharging pollutants to nearby surface waters in the Sand and Dark River watersheds via direct, unmonitored surface seeps and subsurface pathways.56	See response to Comment 543-AB.
			Although the MPCA has yet to comply with the EPA's instructions, for at least five years the EPA has also advised the MPCA in connection with the U.S. Steel Minntac tailings storage facility that "Section 301 of the CWA prohibits point source discharges to surface waters, either directly or via dir ctly connected grov1d water, w11ess the discharge is in compliance with an NPDES permit 54 When the MPCA posted a pre-public notice draft NPDES permit for the Minntac tailings basin in 2014, the EPA cautioned that tbe Clean Water Act re~uired an NPDES permit for "the full extent of the discharges to surface water from this facility." 5 In 2016, when the MPCA proposed a draft NPDES permit for the Minntac tailings basin that only applied surface water quality standards to surface seeps, the EPA was yet more pointed: We are concerned that this draft permit as written does not address, under MPCA's approved National Pollutant Discharge Elimination System (NPDES) program and in accordance with the Clean Water Act (CW A), all discharges to surface waters from this tailings basin ... In this case the tailings basin is a point source which, according to MPCA's own documentation is discharging pollutants to nearby surface waters in the Sand and Dark	
543-AE	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	As explained in more detail in the next section, the proposed unlined Poly Met tailings basin, unlined Category 1 waste rock stockpile, unlined mine pits, and unlined overburden storage and laydown area and pond would all provide discharge pollutants to groundwater that is hydrologically connected to surface water. Even lined sedimentation ponds, sumps and basins for wastes and wastewater at the mine site and plant site would have some degree of discharge to groundwater from liner leakage that must be evaluated to determine propagation to the nearest surface waters in proximity to pollution sources.	See response to Comment 543-AB.
543-AF	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The Clean Water Act requires the MPCA to set enforceable NPDES permit limits to prevent Poly Met mine site and plant site discharge through hydrologically connected groundwater to surface waters, including proximate wetlands, creeks and tributaries in the Partridge River and Embarrass River watersheds from violating surface water quality standards.	Any discharges that are not specifically authorized by this permit are prohibited. Additionally, as a clarification, the MPCA added a prohibition against discharges that cause a violation of water quality standards.
543-AG	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The Draft NPDES/SDS permit for the PolyMet Project violates the Clean Water Act and its implementing regulations by failing to perform appropriate analysis or establish permit conditions to prevent discharge to surface water through hydrologically connected groundwater from causing or contributing to an exceedance of Minnesota water quality standards. Although the MPCA NPDES/SDS Fact Sheet acknowledges that there are mine site and plant ite features with the potential to affect groundwater,69 there is no information in any of the volumes of PolyMet's NPDES/SDS Permit Application characterizing the chemical composition of various wastes or sources of potential pollution to groundwater or surface water. Neither the MPCA's Fact Sheet nor the Draft Permit identify the chemical composition of any potential pollution source or even the chemical composition predicted for various waste streams constituting the influent for the Poly Met wastewater treatment system (WWTS). ' Without such information, any exercise in determining reasonable potential is, at best, wishful thinking. Even for discharge subject to water quality treatment, the resulting effluent is a function of the initial level of contamination as well as the efficacy of removal. Where pollutants will be released to groundwater untreated from thousands of acres of permanent unlined tailings and waste rock stockpile facilities, as well as stored in highly contaminated basins, detailed information on the concentration of contaminants, the volume of their likely release, and the paths by which they would soonest reach surface waters is essential to determine which pollutants in which sources have the reasonable potential to cause or contribute to a violation of water quality standards.	Wastewater flow rates, wastewater concentrations, and groundwater flow paths were all considered in the EIS. The GoldSim modeling conducted for the EIS included a range of flows and concentrations from the various pollution sources as inputs into the model. See EIS at 5-9. These inputs were all evaluated as part of the EIS; DNR and its third-party contractor found it to be reliable. MPCA supports the EIS modeling conclusions reached by DNR. MPCA independently reviewed the WWTS design, including engineer review. The commenter did not provide any facts to undermine that conclusion. The WWTS Design and Operation Report submitted as part of the permit application included information on WWTS influent flow and quality.
543-AH	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Data contained in other Poly Met permit applications and in environmental review documents is relevant and representative data that should have been used by the MPCA to analyze the reasonable potential of PolyMet's discharge to hydrologically connected groundwater to violate surface water quality standards.	The comment identifies other information the MPCA should consider, such as other permit applications and the EIS. MPCA did fully consider information from the EIS and to the extent that information from other permit applications was relevant to the NPDES/SDS permitting process, that information was also considered by MPCA.

543-AI	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	In addition, it cannot be emphasized enough that the MPCA and other regulatory agencies should have required monitoring of proximate stream and wetlands hydrology for the past thirteen years to identify the most likely pathways for discharge to groundwater to reach surface water and the geologic conditions influencing that flow. Arguably, the failure to require such monitoring, before permit issuance as well as during operations provides an insurance policy to PolyMet that Clean Water Act violations and harm to ecosystems or human beings won't be detected and proven for decades. By then, Poly Met could well be long gone.	Monitoring has been conducted over the past 13 years at numerous locations. The comment states that additional data should have been considered in drafting the permit. The EIS incorporated a wide range of water quality and other data in its effects analysis. This same data, plus additional data collected during the permitting process, was considered by MPCA and was sufficient for permitting purposes. The comment also indirectly argues that the proposed monitoring is inadequate. The draft permit provides for a monitoring program that will be sufficient to appropriately assess the performance of engineering controls as well as to monitor the overall environmental effect of the project. In addition, the draft permit requires an annual assessment of the suitability of the monitoring program, and requires the proposal of additional/alternative monitoring locations in the event the original program is not sufficient, based on the ongoing collection of data (including flow rates, flow direction and water quality). See also response to Comment Water-711.
543-AJ	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The data below, although not intended to be complete, suggest that failure to conduct a reasonable potential analysis and set appropriate limitations on effluent that can be discharged through groundwater places wetlands, streams, rivers and downstream lakes in the Partridge River and Embarrass River watersheds at grave risk. PolyMet's modeling of seepage concentrations at the tailings toe is likely to understate actual tailings chemistry. Leachate from copper-nickel tailings from MinnAMAX bulk sampling was not considered in modeling of Poly Met North Met ta il ings seepage.72 Mi.nnAMAX tai lings leachate contained levels of cobalt more than 30 times the tailings seepage concentration predicted for the Poly Met project, levels of nickel more than 21 times the predicted Poly Met concentrations, and sulfate concentrations more than 11 times higher than predicted Poly Met concentrations. 73	The DNR did consider the MinnAMAX data as part of the GoldSim modeling process for the EIS, the results of which were directly considered in the NPDES permitting process. See FEIS at 5-62.
543-AK	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Although the MPCA seems to have accepted PolyMet's claims,78 experts challenged these assumptions during the course of environmental review. Geologist J.D. Lehr criticized the "cursory and simplistic treatment" of the role that bedrock fractures play in the transmission of groundwater at the tailings site, the assumption of a "no-flow boundary" beneath the tailings waste facil ity and the resulting implication that groundwater flow tlu·ough bedrock at the tailings site "is so insignificant that it can be conceptually ignored."79 Mr. Lelu- also explained that geology at the tailings site would not be favorable for a trench to be ' keyed into" bedrock and cobbles (often huge boulders) would impede construction of an effective slurry trench.80 Anthony Runkel, the Chief Geologist for the Minnesota Geological Survey, echoed the concern that fracture zones of relatively high hydraulic conductivity and multiple flow systems within bedrock had not been modeled.81 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, and nearby fractures in the same bedrock have transported pollutants for miles with significant environmental effects. 82 Engineer and hydrologist Donald Lee cautioned that lack of data on bedrock groundwater at the tailings basin precludes calculation of how much groundwater is currently flowing in bedrock at the site; in addition, increased seepage and hydraulic head created in the tailings piles during PolyMet operations could result in more water flowing deeper into groundwater.83 Dr. Lee explained that Poly Met s claim that a sl.urry wall would be nearly impermeable for the indefinite future were unjustified.84 After reading predictions for tailings basin performance, Dr. Lee determined, "The analytical support for these conclusions is based on assumptions of performance that are not justified or supported by data. "85 For more than five years, Water Legacy requested disclosure of any evidence received from Poly Met showing that the inexpensive slurry system it proposed could achieve the claimed capture efficiency. PolyMet's 2017 Permit to Mine Application cites a single three-page Barr memo from 2012 to support its claims that a cutoff wall and containment system is commonly used and will capture seepage from its tailings basin. 86 However, this 2012 memo doesn't support PolyMet's claims for seepage capture efficiency. Instead it provides a cautionary tale.	To the extent that the comment relates to the capture efficiency of the FTB and Category 1 seepage capture systems, it raises a factual question, but provides no reasonable basis for dispute. The comment questions the efficacy of controls required in the NPDES permit and presumes failure of control systems without justification. The same issues were raised in the EIS and DNR, in consultation with MPCA, considered those issues. See RGU Consideration of Comments on the FEIS at 169. See response to Comment Water-711, explaining why maintaining an inward gradient ensures no release.
543-AL	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The only mine tailings seepage example offered as an example of successful use of slurry walls to keep mine tailings seepage out of downgradient water is the Fort McMurray tailings pond seepage containment system in Alberta Canada. To quote Barr, 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 ofless than lxl0-7 cm/sec. The cutoff wall was used lo isolate /he tailings pond from downgradient surface water features including wetlands and the Athabasca River. 87 However, information available since 2012 demonstrates that Fort McMurray tar sands tailings seepage containment has had disastrous results. Canadian news media reported four years ago that federal research found that "toxic chemicals from Alberta's vast oil sands tailings ponds are leaching into groundwater and seeping into the Athabasca River" despite a seepage collection system that includes ditches and cut-off walls to capture seepage and runoff water groundwater interception wells and pumps to return captured water to the tailings ponds.88 Canadian federal research u ed chemical profiling to confam that the source of contaminants in the Athabasca River was oil sands process-affected water from tailings ponds welling up through groundwater to the Athabasca River. 89 In 2014, it was reported, "Industry is working to address the tailings seepage issue, budgeting more than $1 billion in tailings-reduction technology."90 By January 2018, provincial regulators estimated that cleanup of oil sands facilities represented a $27 billion liability.91 Unsurprisingly, "Critics say the industry could end up sticking taxpayers with the bill, estimated at $27 billion."92 Minnesota has some experience with seepage containment at taconite tailings basins. Pollutants from the U.S. Steel Minntac tailings basin have seeped from groundwater to downstream wetlands, rivers and lakes, affecting water quality and beneficial uses for a quarter of a century.93 At the LTV SMC tailings facility, surface seepage collection has been unsuccessful in preventing groundwater seepage of pollutants to Second Creek. Given the unknown bedrock conditions beneath PolyMet's proposed tailings basin, its location on historic wetlands,94 and the immediate proximity of downgradient wetlands, it cannot be assumed that seepage escaping through or beneath PolyMet's proposed dirt trench collection system would not daylight to surface water and cause or contribute to exceedance of water quality standards.	See response to Comment 543-AK.

543-AM	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	On the south side of the tailings facility, the need for a reasonable potential analysis is even more obvious. South Toe seepage daylights to surface water almost immediately. As stated in the Poly Met FEIS, Along the southern side, bedrock and surface topography create a narrow valley at the headwaters of Second Creek. Due to this topography and experience on the site, it is expected that all existing seepage from the Tailings Basin to the south emerges as surface seepage within a short distance of the embankment toe.95 The MPCA's NPDES/SDS Fact Sheet confirms that "seepage from the tailings basin is continuing,"96 and that "pumpback systems are effective at capturing and removing surface seepage, but they are not designed to capture the seepage from the existing tailings basin to the surficial groundwater aquifer."97 Yet more problematic, the MPCA reveals, "Unlike the seepage capture systems along the northern and western sides of the tailings basin, the South Seepage Management System will capture almost exclusively surface seepage. "98 Based on the underlying hydrogeology, groundwater seepage from the south side of the Poly Met copper-nickel mine tailings facility could be voluminous. Geologist J.D. Lehr examined U.S. Geological Survey topographic maps from 1949 that predate taconite tailings basin construction. These maps show that about one-third of the area currently beneath the southern portion of the Tailings Basin or about 1,000 acres, historically drained to the south and formed the headwaters of Second Creek.99 These maps illustrate the historic and potential drainage flow100 :	To the extent that the comment relates to the capture efficiency of the FTB South seepage capture system, it raises a factual question, but provides no reasonable basis for dispute. The comment questions the efficacy of controls required in the NPDES permit and presumes failure of control systems without justification. The comment notes that existing flow from the south side of the basin is greater than zero, but also cites the fact sheet statement that the goal of the existing system is not to eliminate discharge. The same issues were raised in the EIS and DNR, in consultation with MPCA, considered those issues. See RGU Consideration of Comments on the FEIS at 169.
543-AN	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Recent Data Monitoring Reports, long after surface seepage pumpback at the SD026 south outfall of the existing LTVSMC was instituted, confirm that flow from the tailings facility may remain at high levels. During 2017, flow at the LTV SMC measuring station SD026, where the tailings basin constitutes the headwaters of Second Creek averaged 3 3 .6 million gallons per month. Applying the gallons per minute (gpm) metric to the 2017 DMR data, south side tailings flow to Second Creek averaged 766.8 gpm. Even in 2016, a year where seepage collection may have been more effective, flow from the existing L TVSMC tailings basin to the headwaters of Second Creek averaged 140 gpm.101 As noted above, to date Poly Met and the agencies have predicted O gpm of groundwater flow from the tailings basin to Second Creek. 102 Although MinnAMAX data previously cited suggests that Poly Met underestimates the level of tailings seepage contamination,103 even PolyMet's predictions predict solute concentrations in South Toe Tailings Basin seepage far exceeding Minnesota water quality standards. The Poly Met Permit to Mine Application predicted mine year 20 South Toe concentrations of nickel at 1,249 parts per billion (µg/L) -- more than 24 times the aquatic life surface water quality standard of 52 µg/L, and levels of copper at 695 parts per billion - nearly 75 times the water quality standard of 9 .3 µg/L. Lead, a particularly dangerous neurotoxin with no safe level, would reach levels of 100 parts per billion -- more than 31 times the aquatic life water quality standard of 3.2 µg/L. South Toe Tailings Basin seepage is also predicted by Poly Met to have sulfate concentrations of 553 parts per million (mg/L) - more than 55 times the water quality standard of 10 mg/L applicable in downstream wild rice to protect wild rice for wildlife as well as human beneficial use. 104 The MPCA has provided no justification for its failure to perform a reasonable potential analysis to determine, under the Clean Water Act and the Great Lakes Initiative, whether PolyMet's discharge to groundwater of nickel, copper and lead, among other pollutants would cause or contribute to exceedances of Minnesota water quality standards in Second Creek.	See response to Comment 543-AK above. The factors listed in the comment were considered during the EIS review of the information provided. MPCA considered these same factors while preparing the draft permit.
543-AO	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The most egregious failure to conduct a reasonable potential analysis and set water quality-based effluent limitations to protect surface water pertains to PolyMet's proposed tailings facility, including but not limited to its discharge to Second Creek through groundwater. However, there are other sources of contaminated seepage to groundwater that similarly require analysis and potential control. Even under PolyMet's assumptions that lower-sulfur rock can be readily characterized and sorted, Category 1 waste rock stockpile seepage contain solute concentrations far exceeding water quality standards. In Mine Year 20, PolyMet predicts that nickel concentrations in Category 1 seepage would be 2,228 µg/L, nearly 77 times the surface water quality standard of 29 µg/L, and copper concentrations would be 237 µg/L, more than 45 times the water quality standard of 5.2 µg/L. Sulfate concentrations would be 1,393 parts per million (mg/L), 139 times Minnesota's water quality standard that protects wild rice downstream in the Partridge River. Concentrations of lead would be 11 µg/L, more than eight times the aquatic life water quality standard of 1.3 µg/L and concentrations of arsenic, a class 1 carcinogen, would be 100 µg/L, nearly twice the water quality standard of 53 µg/L to protect aquatic life and 50 times the downstream water quality standard of 2 µg/L applicable to Colby Lake. 105 By Mine Year 75, chemical concentrations in Category 1 seepage would not have attenuated. Nickel concentrations would increase slightly to 2,230 µg/L, approaching 77 times the water quality standard of 29 µg/L, and copper concentrations would remain at 23 7 µg/L, more than 45 times the water quality standard of 5.2 µg/L. Arsenic would remain at 100 µg/L, nearly twice the aquatic life standard of 53 µg/L and 50 times the downstream health-based standard of 2 µg/L. In addition, by Mine Year 75, sulfate concentrations would double to 2,793 mg/L, 279 times the wild rice sulfate standard of 10 mg/L. Lead concentrations would increase nine times to a level of 100 µg/L, a level which is 77 times the water quality standard of 1.3 µg/L. 106 The Category 1 waste rock pile is proposed as a 526-acre permanent, unlined facility. 107 The Poly Met FEIS predicted that, during operations, more than 98% of groundwater seepage from the Category 1 waste rock pile would be captured by the containment system or flow through groundwater into the mine pits. 108 PolyMet and the FEIS also assumed that the geomembrane cover that would eventually be placed on the rock pile would reduce infiltration by more than 99% (from 360 gpm to 2.8 gpm). I09	See response to Comment 543-AK above. The factors listed in the comment were considered during the EIS review of the information provided. MPCA considered these same factors while preparing the draft permit.

543-AP	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Although the FEIS characterized the Category 1 seepage capture system as a "low-permeability cut-off wall keyed into bedrock," I1 0 Poly Met has proposed that "compacted soil" could serve as the barrier for seepage capture. 111 The Category 1 drainage system would rely only on gravity for seepage collection, and Poly Met admitted that along the west, north, and east sides of the stockpile, there may be areas where drain pipe could not be installed at an elevation low enough to ensure that groundwater will not flow beneath the cutoff wall. 112 Dr. Lee evaluated the efficacy of the proposed seepage collection system for the Category 1 waste rock pile: The gravity driven drainage system for moving collected water to the NE and SW corners of the stockpile with subsequent pumping to the WWTF will not work as currently proposed. The bedrock surface is uneven and not uniformly sloped ... The conductivity of the cutoff wall for the Category 1 facility is quite high ... The effect of freeze thaw and other degradation mechanisms on the long-term performance of the cutoff wall have not been fully considered in the modeling. The degradation of the cutoff wall over hundreds of years is a certainty, but the consequences are not established. 1I3 Dr. Lee concluded,"[T]he proposed drainage system is unlikely to work as anticipated." 114 Neither the PolyMet NPDES/SDS Permit Application nor the Permit to Mine Application specifies limits on the amount of untreated seepage that will be released from the Category 1 waste rockpile. Poly Met defers setting "the required performance of the groundwater containment system" to final designs not included in its permit application. 115 Although PolyMet claims that geomembrane cover systems are widely used the Company admits, there has not been significant demand for geomernbranes in waste rock stockpiJe covers. 116 The longest studies on geomembrane degradation cited by Poly Met were 10 years in duration, 117 but the geomembrane Poly Met proposes would have to resist degradation for hundreds of years, if not forever. PolyMet's claims for the efficacy of the Category 1 seepage collection system are based on the same Barr 2012 Containment Memo on which PolyMet used to claim tailings seepage success. I18 PolyMet cites no examples demonstrating that an inward gradient has been maintained for decades, let alone hundreds of years, to prevent leakage of groundwater through a soil or slurry trench.	See response to Comment 543-AK above. The factors listed in the comment were considered during the EIS review of the information provided. MPCA considered these same factors while preparing the draft permit.
543-AQ	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	There are other features at the Poly Met plant site and the mine site which raise serious concerns about discharge through groundwater to hydrologically connected surface water. The hydrometallurgical waste facility (HRF) would receive 313,000 tons ofresidue annually119 and would contain highly toxic and concentrated wastes. Neither PolyMet's NPDES/SDS Application nor the Company's Permit to Mine Application disclose the chemical composition ofHRF residues. However, PolyMet groduced a technical report everal years ago chara terizing hydrometallurgical waste residue. 20 This report di closed that copper concentrations in the residue would be 945 parts per million121 - more than 100,000 times Minnesota's water quality standard for copper (9.3 parts per billion) set to protect fish in surface water near the proposed plant. 122 Total sulfate would be 13.78% of the residue or 14.91 % when residue is combined with gypsum: 123 in other words, residue would have a staggering 138,000 to 149,100 mg/L of sulfate. The level of sulfate in HRF residue would, thus, be more than 10,000 times Minnesota's wild rice sulfate standard of 10 mg/L,124 applicable downstream in the Partridge River. Poly Met has also identified a number of toxic and reactive chemicals that would be used as hydrometallurgical plant consumables. 125 PolyMet's Facility Mercury Mass Balance Analysis states that 164 pounds of mercury would be deposited in the HRF each year. 126 If the Poly Met autoclave processing were to operate for 18 years, as currently proposed in the PTM Application, 127 by the time it closes the hydrometallurgical residue facility would contain an astonishing 2,952 pounds of mercury. To get a sense of the significance of this amount of mercury, the water quality standard for mercury in Minnesota's Lake Superior basin is 1.3 nanograms per liter (ng/L); and one would need more than 450 billion nanograms to equal just one pound.	To the extent that the comment relates to the design of the HRF, it raises a factual question, but provides no reasonable basis for dispute. The design components of the HRF were raised in the EIS and DNR, in consultation with MPCA, considered those issues. See RGU Consideration of Comments on the FEIS at 188. The issue of foundation stability was considered in the EIS and requirements for a detailed process of investigation, design and MPCA approvals are included in the draft permit to address that issue. The MPCA and DNR worked with a third-party consultant to evaluate the stability of the HRF foundation and construction methods. In addition, the MPCA added language in part 5.181.234 of the draft permit to state that if the MPCA determines that site conditions at the proposed HRF location preclude the construction and operation of the HRF in compliance with applicable water quality standards, construction of the HRF at that location is prohibited.
543-AR	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Although the HRF has a liner system, its location on an unsuitable site and an unstable foundation make this liner system vulnerable to stress deformation and failure, as well as dam instability. The pro~o ed sjte for the hydrometallmgical residue facility would be located on 36.1 acre of wetlands, 1 8 a site tbat is unsuitable for a facility storing highly concentrated and toxic wastes. Although location of industrial solid waste facilities on wetlands is generally prohibited tmder Minnesota law 129 in 2015 mining jndu try lobbyists successfully secured a loophole that creates an exemption for disposal of mining wastes. 130 Engineers retained by the Minnesota Department of Natural Resources (DNR) to review HRF safety have cautioned, "The soft ground beneath the proposed residue facility consists of up to 30 feet of slimes peat and tailings concentrate. This wilJ not be an adequate foundation for the 80 foot high basin. 131 The review explained, "The ba in will have a geomembrane or geosynthetic liner. The liner could deform and fail if the existing underlying material cannot support the material added to the basin."132 The HRF is a permanent waste facility, and its liners would have to perform for hundreds of years, if not forever. DNR' s Area Fisheries Supervisor has expressed concerns about downstream hazards that would result from release of waste from the HRF, particularly over the long term: How long does such a liner last and what happens when it inevitably degrades as nothing lasts forever? Even if it takes 200 years, the waste will still be there and in its location would be very susceptible to leaching into nearby wetlands and groundwater. There is no mention of the expected longevity of the liner and leakage system in the long term closure description. There is mention of a monitoring plan but no mention of how the liner could be maintained or repaired or replaced ... I don't understand how a liner could be replaced, or even repaired, under a 97 acre site with 50 feet of fill on top ... The Hydrometallurgical Re idue Facility is a concern to Fisheries because of its potential impact on water quality as the system ages. 133	See response to Comment 543-AQ.

543-AS	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The mine site sumps, ponds, and equalization basins are all potential sources of seepage to surface water through hydrologically connected groundwater as a result of liner leakage, while the mine pits and the overburden laydown and storage area are unlined sources of potential contamination. The equalization basins will have a single liner and a rate of leakage approximately 10 times that of the ore surge pi le and ategory 2/3 waste rock t ckpile. 134 Solute concentrations in the mine site East ("Low" Concentration) and West (High Concentration) Equalization Basins are useful to understand the level of contaminants that would result from copper-nickel mining in the Partridge River headwaters. The East Equalization Basin would aggregate seepage from the mine pits, haul roads, rail transfer hopper and Category 1 waste rock stockpile. During operations, this "Low" Concentration Basin would contain wastewater more than three orders of magnitude above water quality standards. Copper concentrations of 7,410 µg/L would be 1,425 times Minnesota's water quality standard and nickel concentrations of 24,600 µg/L would be 848 times the water quality standard. Manganese concentrations of 2,223 µg/L would be 22 times Minnesota's health-based limit in drinking water. 135 The West Equalization Basin would aggregate seepage from the Ore Surge Pile and the Category 2/3 waste rock stockpile. During operations, this Basin would contain reactive wastes more than four orders of magnitude above water quality standards. The wastewater in this Basin would have copper concentrations of 110,000 µg/L, more than 21,150 times Minnesota's water quality standard that protects aquatic life; nickel concentrations of 405,000 µg/L, more than 13,965 times the water quality standard; and lead concentrations of 361 µg/L, nearly 278 times the water quality standard. Manganese concentrations of 39,500 µg/L would be 39.5 times the Minnesota's health-based limit. 136 Sulfate concentrations in the East Equalization Basin would be 2,450 mg/L, 245 times the wild rice sulfate standard, and sulfate concentrations in the West Equalization Basin would be 9,010 milligrams per liter (mg/L), more than 900 times the wild rice sulfate standard applicable downstream in the Partridge River. 137 The MPCA failed to perform a reasonable potential analysis for any mine site or plant site discharge to surface water through hydrologically connected groundwater. The Draft NPDES/SDS Permit also provides no enforceable conditions that would control such discharge.	The design components of the wastewater collection and storage system at the Mine Site were raised in the EIS and DNR, in consultation with MPCA, considered the issues in the comment. See RGU Consideration of Comments on the FEIS at 175. The proposed equalization basin design was reviewed by MPCA and determined to be consistent with requirements applied statewide for similar industrial wastewater pond applications.
543-AT	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The Draft NPDES/SDS Permit appears to allow Poly Met to discharge water from its tailings facility to surface waters through hydrologically connected groundwater. The Draft Permit only states that there will be "no direct discharge from the FTB (Flotation Tailings Basin) Pond to any receiving waters"138 and that "Direct discharge to surface waters from the FTB Seepage Containment System is prohibited."139 The Draft NPDES/SDS Permit imposes no limits or enforceable requirements for Poly Met to improve the South Seepage Management System, which is known to be ineffective in capturing groundwater seepage at the headwaters of Second Creek, let alone to achieve the promised 100% collection rate. The Draft Permit merely says, "During Project operations, Poly Met will upgrade the existing system to enhance the degree of seepage collection as necessary."140	The commenter questions whether controls required in the NPDES permit are enforceable. The MPCA revised the language of the permit in light of the comment to state that a direct discharge from the south seepage management system to former SD026 is prohibited. See draft permit at 5.175.52. In addition, the MPCA has added the following requirements to the permit to address concerns regarding requirement for constructing/upgrading the South Seepage Management System: "The Permittee shall construct the FTB South Seepage Management System as an upgrade or replacement of the existing temporary surface seepage pumpback system located upstream of former Cliffs Erie outfall SD026. The South Seepage Management System shall be designed and constructed to collect seepage from the FTB in this area such that there will be no direct discharge of seepage to surface waters."
543-AU	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Although the Draft Permit states, "The Permittee shall maintain an inward hydraulic gradient across the FTB Seepage Containment System as determined from water level measurements from the paired monitoring wells and piezometers," this condition is qualified to take into account "temporary conditions that may result from short-term precipitation or snowmelt events."141 Should either a decrease in pumping rates or monitoring detect that an inward gradient is not being maintained at the tailings seepage containment system, this engineering failure would not constitute an enforceable violation of the Draft NPDES/SDS permit. Such a finding would merely trigger a long and non-exclusive list of potential mitigation measures and submittal of a Seepage Containment System Corrective Action Evaluation Report. 142 A permit violation could, theoretically, be found if PolyMet reported in an Annual Comprehensive Performance Report that an inward gradient was not being maintained to prevent impact to ground or surface waters from the tailings seepage system, submitted a mitigation plan, the MPCA disapproved the plan and PolyMet did not address the MPCA's disapproval within a deadline specified at that time. 143	The commenter questions whether controls required in the NPDES permit are enforceable. The MPCA revised the language of the permit in light of the comment to state that if an inward gradient is not reestablished within 14 days of detection, it is a violation of the permit. The permit also requires monitoring of the Category 1 stockpile paired wells/piezometers weekly following a 100-year storm event to ensure that monitoring and any necessary preventative maintenance occur promptly.
543-AV	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The MPCA Fact Sheet states for the hydrometallurgical residue facility that "no leakage is expected through the lower composite liner."144 But the Draft NPDES/SDS Permit imposes no limit on discharge of HRF pollutants through groundwater. The Draft Permit only says, "Direct discharge from the HRF Pond and/or the HRF Leakage Collection system to surface waters or to the FTB is prohibited."145 The Draft Permit provides a lengthy investigation work plan for a preload design, but no specifications that would result in revocation of the authority already granted in the permit that the "HRF is permitted to receive hydrometallurgical residue and process water."146 Both the DNR and the MPCA propose to issue permits for the HRF, although neither agency nor permit has resolved concerns regarding the site, its unstable foundation, and the risks of dam instability and liner deformation releasing highly toxic wastes from the HRF.	The commenter questions whether controls required in the NPDES permit are enforceable. In light of the comment, the MPCA added language in part 5.181.234 of the draft permit to state that if the MPCA determines that site conditions at the proposed HRF location preclude the construction and operation of the HRF in compliance with applicable water quality standards, construction of the HRF at that location is prohibited.
543-AW	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The Draft NPDES/SDS Permit states for the mine site Category 1 seepage containment system, as with the tailings system, that "The Permittee shall maintain an inward hydraulic gradient across the Category 1 Waste Rock Stockpile Groundwater Containment System as determined by comparing water level measurements from the paired monitoring wells and piezometers" and that this condition should take into account "temporary conditions that may result from shortterm precipitation or snowmelt events." 147 If monitoring detects that an inward hydraulic gradient is not being maintained at the Category 1 seepage containment system, this engineering failure, as at the tailings basin, would not be an enforceable violation of the Draft NPDES/SDS permit. The finding could lead to potential mitigation measures. 148 But, irrespective of the ineffectiveness of containment, the only way a permit violation could be triggered would be if PolyMet disclosed in an Annual Comprehensive Performance Report that failure to maintain the inward gradient resulted in a "measurable" impact to groundwater, proposed a corrective plan and schedule, the MPCA disapproved the plan and PolyMet failed to address the Agency's d1. sapprova1.1 49	See Response to Comment 543-AU.
543-AX	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	It is unclear whether the Draft NPDES/SDS Permit for the mine site is intended to prohibit indirect as well as direct discharge to surface waters. The Draft Permit states, "There will be no discharge of mine water or other process wastewater to surface waters from the Mine Site," 150 and "The Permittee shall not discharge any process wastewater from the Mine Site to surface waters under this permit."151 However, the Draft Permit also states, "This permit does not authorize a direct discharge from the Mine Site Equalization Basins or any other industrial mine water pond system to surface waters," 152 the Draft Permit also states with respect to the Category 2/3 Waste Rock Stockpile, Category 4 Waste Rock Stockpile, OSLA, Ore Surge Pile, and Equalization Basins, "The Permittee shall operate and maintain its engineering controls associated with these infrastructure facilities to ensure there is no discharge to surface waters from the Mine Site." 153 These inconsistencies in language could interfere with enforcement.	The commenter questions whether the "prohibition of discharge" provisions in the NPDES permit are enforceable. In light of the comment, the MPCA reevaluated and clarified the phrasing of the requirements in the permit prohibiting a direct discharge from the mine site/FTB pond/FTB seepage capture system and believes the requirements are enforceable. See parts 5.175.51, 5.175.52 and 5.175.75 of the draft permit.

543-AY	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The EPA has emphasized to the MPCA that, if the PolyMet NPDES permit does not cover discharge through groundwater to hydrologically connected surface water "then the company will be discharging without a permit in violation of the CW A."154 The EPA explained, repeating discussions that the Agency had had many times before with both the MPCA and PolyMet: [T]here is no minimum threshold of predicted pollutant load needed to trigger the requirement to submit a permit application. The CW A [Clean Water Act] does not include exemptions that would limit NPDES permit coverage to only "excess" wastewater discharges that are deemed to have a "statistically significant" impact on receiving waters at property boundaries. There is no exclusion or exemption for discharges from facilities based on technology or engineering ontrols. Failure to obtain NPDES coverage for discharges of pollutants to waters of the United States would place the discharger at risk of violating the CWA. 155 Of course, a violation of the Clean Water Act could only be prosecuted if it were detected. That is why monitoring of surface water quality in relationship to groundwater seepage of pollutants is so important.	The MPCA clarified the phrasing of the relevant “no discharge” requirements throughout the permit to read “there shall be no direct discharge to surface waters....” This phrasing is explained in the Fact Sheet at 63. The scope of NPDES coverage under the Clean Water Act is a question of law.
543-AZ	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The Draft NPDES/SDS permit for the PolyMet Project violates the Clean Water Act and Minnesota law by providing inadequate monitoring to detect if Poly Met discharge through groundwater causes or contributes to violations of Minnesota water quality standards or results in unpermitted discharge. In the environmental review process, modeling was set up to exclude data on where and when pollutants in bedrock or surficial aquifer groundwater would first day light to surface water. The Poly Met FEIS states, "Several decisions were made while setting up the GoldSim models. An approach was taken not to represent in those models the interactions between bedrock groundwater and surficial deposits groundwater, or between groundwater and wetlands."156 Although the EPA has stated in writing for five years that such an analysis was necessary in order to prepare an NPDES permit in compliance with the Clean Water Act, 157 the MPCA did not require PolyMet to rectify this deficiency. There is no information in PolyMet's NPDES/SDS Application evaluating the most likely locations - whether based on hydrogeology, fractures, flows or monitoring data - where Poly Met mine site and plant site discharge of pollutants to groundwater would first reach surface water. The Draft NPDES/SDS does not grant Poly Met an exemption from the Clean Water Act requirements that regulate discharge of surface water through hydrologically connected groundwater. However, the Draft Permit makes it highly unlikely that PolyMet would face any consequences for discharging unpermitted pollutants through groundwater to waters of the United States. In effect, by requiring deficient monitoring of surface water and groundwater, the Draft Permit would Poly Met to evade the law's prohibitions.	The EIS evaluated possible flow paths through groundwater to reach surface water. See EIS Table 5.2.2-22 and 5.2.2-23. The draft permit requires monitoring along these flow paths to identify any groundwater that could reach surface waters with adequate notice to mitigate the effects.
543-BA	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Failure to provide sufficient monitoring to evaluate compliance with surface water quality standards conflicts with regulations implementing the Clean Water Act. Federal regulations, applicable to state NPDES permits, require monitoring "sufficient to yield data which are representative of the monitored activity." 158 State compliance evaluation programs should be capable of identifying noncompliance with permit requirements, verifying the adequacy of sampling aud monitoring and protecting surface waters and public health. 159 tate must also have remedies for enforcement of violations of State permit and program requirements. 160 These regulatory requirements would be meaningless if a state's monitoring was so deficient that no violations would be detected. Minnesota rules similarly requires that every permit issued by the MPCA contain monitoring requirements "that are sufficient to yield representative data to determine whether there is compliance with the terms and conditions of the permit or compliance with Minnesota and federal pollution control statutes and rules." 161 Minnesota statutes contain civil and criminal penalties to enforce violation of MPCA permits, 162 remedies that would become moot if permit violations could not be detected.	See response to Comment 543-AZ. With respect to legal requirements for developing a permit, the permit complies with federal and state requirements for NPDES permits.
543-BB	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Although any mine site discharge to surface water through hydrologically connected groundwater may be permit violation under the Clean Water Act, mine site surface water quality monitoring seems to be designed to preclude detection of such a violation. The map below163 shows the mine site layout, along with the potential sources of contamination. Lined features, which could leak to groundwater, include the Ore Surge Pile and the Category 2/3 Waste Rock Stockpile (yellow), sumps and ponds (small pink squares) and the Equalization Basins (blue). These sumps, ponds and basins could also overflow during heavy rain events. Unlined features with higher seepage rates to groundwater include the Category 1 Waste Rock Stockpile (yellow), the West, Central and East Mine Pits (grey) and the Overburden Storage and Laydown Area (yellow lines). Mine pits would not seep during dewatering but could seep to groundwater during temporary as well as final closure or due to seasonal and rain events. The proposed PolyMet mine site contains many wetlands and several small creeks that could be hydrologically connected to the sources of mine site contamination of groundwater. This map illustrates some of these proximate surface water features: 164 The map below shows the location of the only surface water monitoring sites near the mine site proposed in the Draft NPDES/SDS Permit: 165 Proposed monitoring sites for baseline conditions are shown in green and proposed sites to identify surface water impacts are red. The sites on Longnose Creek and Wyman Creek are intended to monitor impacts of ~ills or leakage from the raj I way and pipeline corridor between the mine site and the plant site. 1 6 The single surface water site proposed to monitor impacts from discharge through groundwater to surface water from the entire mine site is identified on this map as SW004c. This monitoring site is located on the Partridge River approximately a mile south of the mine site. 167	The comment concludes that the monitoring location is inadequate to detect groundwater discharges by relying on facts already considered by the MPCA. The MPCA evaluated the surface water monitoring needed at the facility during the development of the permit, considered the facts presented in the comment, and determined that the proposed location was adequate to evaluate effects from the mine site. Also see response to Comment Water-711-B.

543-BC	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Surface water quality monitoring to detect impacts to surface water as a result of both direct discharge and discharge through groundwater to waters of the United States at the tailings waste facility is similarly deficient. The Draft NPDES/SDS Permit would authorize 11 discharge outfalls at the four-and-a-half mile square tailings facility, each of which is indicated in orange and is at or near the edge of the facility. As the map shows, the Draft NPDES/SDS Permit would provide five surface water quality, monitoring stations, the nearest one of which is about a mile from the northern edge of the tailings facility. 168 As evident in the map above, there are streams originating much closer to the tailings facility than the surface monitoring stations selected. In addition, similar to the mine site, there are wetlands up to the very edge of the sources from which tailings site contamination would originate - both the discharge outfalls and the seepage containment system.169	The MPCA evaluated the surface water monitoring needed at the facility during the development of the NPDES/SDS permit and determined that the monitoring in the draft permit is adequate to evaluate effects from the plant site and that additional surface water monitoring in wetlands is not necessary. The comment considers the same information that the MPCA considered and reaches a different conclusion. In addition, the MPCA's 401 Certification for the project does include wetland monitoring. Also see response to Comment Water-711-B.
543-BD	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	After several commenters explained that seepage could also escape from the east side of the tailings facility due to changes in elevation and hydraulic head, Poly Met represented and the Poly Met final EIS asserted that the collection system on the east side of the tailings facility would capture 100% of both surface seepage and groundwater seepage. 170 The Draft NPDES/SDS Permit proposes no surface water monitoring sites to the east of the tailings facility .	The MPCA evaluated the surface water monitoring needed at the facility during the development of the NPDES/SDS permit. The comment considers the same information and reaches a different conclusion.
543-BE	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The Draft Permit suggests that monthly inspection of HRF pond and HRF leakage collection system will "evaluate the effectiveness of the liner and Leakage Collection System."171 Although there are monitors for internal waste streams at the hydrometallurgical residue facility (HRF), there are no monitoring sites at all that could detect liner leakage at the HRF: no bedrock groundwater monitoring sites, no surficial aquifer monitoring sites and no surface water quality monitoring sites. 172	The MPCA evaluated the surface water monitoring needed at the facility in the development of the NPDES/SDS permit. The MPCA evaluated the groundwater monitoring needed at the facility, including the FTB and Category 1 stockpile, in the development of the permit. The comment considers the same information and reaches a different conclusion.
543-BF	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Similarly, there are no monitoring sites of any kind - groundwater or surface water -- to detect leakage of the Equalization Basins, the highly contaminated single-lined ponds on the southern edge of the Poly Met mine site. The MPCA relies on typical liner characteristics to assume, without verification, that leakage will be minimal, and will affect neither groundwater nor nearby surface water. 173	The MPCA evaluated the surface water monitoring needed at the facility in the development of the NPDES/SDS permit. The MPCA evaluated the groundwater monitoring needed at the facility, including the equalization basins, in the development of the permit. The comment considers the same information and reaches a different conclusion.
543-BG	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The Poly Met Draft NPDES/SDS permit must be revised to include many additional surface water monitoring sites on the mine site and in wetlands and streams in proximity to mine site sources of contamination in order to determine if Poly Met is violating the draft permit prohibition of discharge of pollutants to surface water. Surface water monitoring sites should consider the groundwater contours of the mine site, which reflect a reduced groundwater gradient on all sides of the mine, 174 the 100-year flood plain for the mine site that overlaps the Category 1 seepage containment system and its sump, 175 and the many faults and fractures identified at and in the vicinity of the mine site, shown on this map as well as on the attached exhibit. 176	The MPCA evaluated the monitoring needed at the facility, including around the tailings basin and Category 1 stockpile, in the development of the permit. As described in response to Comment Water-711, the primary purpose of the paired piezometers and monitoring wells located adjacent to the barrier in the FTB and Category 1 stockpile capture systems is to monitor water levels to verify that an inward gradient across the barrier is being maintained. Monitoring of the monitoring well pairs for sulfate, chloride, specific conductance and TDS is sufficient to assess whether any uncaptured seepage is moving beyond the barrier; additional monitoring for metals is redundant and not needed.
543-BH	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	These, and all other monitoring results from the Poly Met project, should be immediately posted online so that members of the public will have timely and transparent information as to the compliance of Mim1esota's first copper-nickel sulfide mine with Minnesota water quality standards and the requirements of the federal Clean Water Act.	All monitoring data is reported to the MPCA on monthly Discharge Monitoring Reports (DMRs) which is posted online on the MPCA website (available at https://www.pca.state.mn.us/quick-links/eda-surface-water-data) and is also available by request to the agency.
543-BI	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Surface water monitoring sites located in wetlands should specifically measure sulfate, mercury, methylmercury and water fluctuations, among other parameters to address concerns about increased mercury contamination resulting from the PolyMet project.	See response to Comments 543-BC and 543-BG.
543-BJ	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The PolyMet Draft NPDES/SDS permit must also be revised to include multiple surface water monitoring sites in wetlands adjacent to the tailings waste facility and the closest points of creeks to determine whether tailings seepage containment failure is resulting in discharge to surface waters. Such monitoring should reflect groundwater contours at the tailings site 177 as compared to the eventual height of the tailings deposits, as well as the faults and fractures identified at and near the tailings site. 178	See response to Comments 543-BC and 543-BG.
543-BK	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	MPCA's current plan to have only three surficial aquifer monitoring wells downgradient of the tailings site179 is also insufficient. Additional monitoring sites in the plant site surficial aquifer are required to identify likely flowpaths from groundwater seepage to surface water. Such monitoring of surface and groundwater is also important to assess the impacts on both human health and natural resources in the event of spillage, overflow or partial or complete dam failure at the tailings site. Surface water monitoring sites located in wetlands should specifically measure sulfate, mercury, methylmercury and water fluctuations, among other parameters to address concerns about increased mercury contamination resulting from the Poly Met project. Locations of groundwater monitoring sites should be re-evaluated to ensure that they follow potential pathways from sources of contamination along faults and fractures. In particular, the Draft NPDES/SDS Permit should locate surficial groundwater monitoring stations radiating out from the seepage collection systems for the Category 1 waste rock seepage at the mine site and the tailings seepage at the plant site.	See response to Comment 543-BE.
543-BL	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The Poly Met Draft NPDES/SDS permit should also include strategically located groundwater and surface monitoring sites to ascertain whether the liners for the HRF are leaking. Particularly since this waste facility is proposed to contain highly toxic wastes, including a large mass of mercury, on an unsuitable site with an unstable foundation, effective leakage capture must be verified, not assumed. Similarly, the Draft NPDES/SDS Permit should require surficial groundwater and surface monitoring sites to ascertain whether liners for the Equalization Basins and other mine site sources of contamination are performing as hoped.	The MPCA evaluated the surface water monitoring needed at the facility in the development of the NPDES/SDS permit. The MPCA evaluated the groundwater monitoring needed at the facility, including the HRF, in the development of the permit. The comment considers the same information and reaches a different conclusion. However, in light of the comment, a provision has been added to the permit that requires the HRF Liner Plan to include a specific analysis of the suitability of the proposed monitoring to detect leakage from the HRF.

543-BM	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	In addition to the deficiencies in the location of monitors, there are gaps in the nature of parameters proposed to be monitored. The Draft NPDES/SDS Permit sets a priority on groundwater monitoring at and around the seepage containment systems at the tailings facility and the Category 1 waste rock stockpile and in monitoring to detect northward flow. The parameters tested in these monitors should be expanded. The Draft Permit proposes that monitoring at the tailings seepage trench and the Category 1 seepage trench would include only water levels within the containment trench, would include no metals or parameters indicative of copper-nickel mining or processing outside the trench. 180 Such limitations would hamper the use of seepage data to determine whether pollutants found in bedrock groundwater, surficial aquifer or in surface water monitoring originated from seepage failure and whether action would need to be taken in order to avoid violation of water quality standards. In order to determine the role of seepage in contamination of groundwater or surface water, metals including at least the following should be monitored at both the tailings seepage system and the Category 1 seepage system: arsenic, cadmium, copper, lead, mercury, nickel and zinc. In addition, an effort should be made to identify and monitor for parameters that are chemical signatures for the Poly Met mining project.	The MPCA evaluated the monitoring needed at the facility, including around the tailings basin and Category 1 stockpile, in the development of the permit. As described in response to Comment Water-711, the primary purpose of the paired piezometers and monitoring wells located adjacent to the barrier in the FTB and Category 1 stockpile capture systems is to monitor water levels to verify that an inward gradient across the barrier is being maintained. Monitoring of the monitoring well pairs for sulfate, chloride, specific conductance and TDS is sufficient to assess whether any uncaptured seepage is moving beyond the barrier; additional monitoring for metals is redundant and not needed.
543-BN	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Another, even more significant deficiency in the quality of monitoring is the monitoring to evaluate northward flow, which will only detect water levels and no other parameters. 181 Given potential changes affecting hydrology from operations at the Northshore Mine Peter Mitchell Pit, even if changes in water levels were detected in groundwater north of the Poly Met mine site, attribution would be difficult absent additional information as to the constituents of that groundwater. Again, monitoring the suite of metals associated with copper-nickel mining and the particular rock formations at the proposed Poly Met mine site would provide evidence of the source of the flow and yield the data necessary to represent the monitored activity.	The MPCA evaluated the monitoring needed at the facility, including that needed to ascertain whether a north flow may occur in the future, in the development of the permit. Similar to the approach around the tailings basin and Category 1 stockpile described in response to Comment Water-711, the purpose of the north flow path wells is to monitor the hydrogeologic conditions such that it can be confidently predicted whether a north flow path may develop in the future. This can be accomplished by monitoring current and future groundwater elevations along the potential north flow paths; monitoring of groundwater quality is not needed to accomplish this purpose.
543-BO	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The Draft NPDES/SDS permit for the PolyMet Project violates the Clean Water Act, its implementing regulations and Minnesota law by failing to set limits for direct discharge to surface water with the reasonable potential to cause or contribute to violation of Minnesota water quality standards. Federal regulations require that any new copper mine project must comply with new source performance standards which provide technology-based effluent limitations (TBELs). 182 The only effluent limits contained in the Draft NPDES/SDS Permit for the Poly Met copper-nickel mine project are based on TBELs and apply to SD001, the monitoring station for surface discharge from the tailings site wastewater treatment system (WWTS). 183 Wastewater discharged at the contaminant levels allowed under new source technology based effluent limits (TBELs) for copper mining would far exceed Minnesota water quality standards. At the PolyMet copper mine tailings site, the new source TBEL for zinc is more than 4 times Minnesota's water quality standard (120 µg/L); the TBEL for arsenic is 9.4 times Minnesota's standard (53 µg/L); the TBEL for cadmium is 20 times Minnesota's standard (2.5 µg/L); the TBEL for copper is 16 times Minnesota's standard (9.3 µg/L); the TBEL for lead is almost 94 times Minnesota's applicable standard (3.2 µg/L); and the level of mercury in discharge allowed by the TBEL for mercury is more than 769 times the level to which mercurl i.s limited under Minnesota water quality standards for the Lake Superior Basin (1.3 ng/L). 1 4 Minnesota's water quality standards were enacted and approved by the EPA to implement Clean Water Act section 303 requirements to protect beneficial uses of water185 and federal and international agreements pertaining to the Great Lakes. 186 Each NPDES permit must include technology-based effluent limitations (TBELs), where applicable. 187 But these TBELs serve as a floor, not a ceiling: Generally, the Clean Water Act uses two different types of standards "to restore and maintain the chemical, physical, and biological integrity of the Nation's waters": technology-based standards and water-quality standards. 33 U.S.C. § 1251(a). Technology-based standards set a minimum level of treatment that must be performed by those who discharge pollutants into waters. That level is predetermined by EPA to be both technologically available and economically achievable .... In contrast, water quality standards depend on the purpose for which a particular body of water is used. 40 C.F.R. § 13 l .J(i) .... States are primar ily responsible for creating and revising water quality standards, but they must al o submit those standards to EPA for approval. 188 Each NPDES permit must also include water quality-based effluent limits (WQBELs) and requirements in addition to or more stringent than technology based standards to the extent necessary to achieve water quality standards established under section 303 of the Clean Water Act, including state narrative criteria for water quality." 189 Federal courts have consistently held "If the TBELs are insufficient to attain or maintain water quality standards, the CW A requires NPDES permits to include additional water quality-based effluent limits ('WQBELs')." 190 Under federal regulations implementing the Clean Water Act, limitations must control all pollutants or pollutant parameters which "are or may" be discharged that a level which will have the reasonable potential to "cause, or contribute to an excursion above any State water quality standard, including State narrative criteria for water quality." 191 By definition, a water designated as impaired for a pollutant or failure to attain a narrative criterion already represents an excursion above water quality standards.	See MPCA's detailed responses in response to Comments Water-717 through Water-720-E.
543-BP	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Minnesota rules require that an NPDES permit issued by the MPCA "must contain conditions nece sar1 for the permittee to achieve compliance with all Minnesota or federal statutes or rules." 19 As explai11ed in Section 2 of these comments, even using PolyMet's modeling and projections, if seepage from the Poly Met flotation tailings basin (FTB) were not treated, that discharge would cause or contribute to the violation of both State numeric and narrative water quality criteria. The MPCA has not disregarded the potential of Poly Met FTB pollutants to violate Minnesota water quality standards. What the Agency maintains is that the water quality treatment proposed and pilot-tested by Poly Met would reduce the levels of pollutants in FTB seepage sufficiently so that there would be no reasonable potential for direct discharge from the tailings facility to cause or contribute to violation of Minnesota water quality standards. 193	The comment interprets the Clean Water Act. The MPCA concurs that NPDES permits must comply with federal and state requirements. The final permit meets those requirements. To the extent this questions the MPCA's substantive determination of the need for water quality-based effluent limits, see response to Comments 543-BO and Water-718-A.

543-BQ	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	There are several problems with this rationale: A) PolyMet has not actually "pilot tested" treatment of influent similar to that proposed in its copper-nickel mine project, and the NPDES/SDS public record contains evidence of similar treatment at a similar scale; B) Even if the treatment proposed by Poly Met were likely to be effective in reducing other metals, there is a reasonable potential that effluent from its wastewater treatment plant would cause or contribute to violation of mercury standards for mercury in receiving waters that are already impaired by elevated mercury in fish and in the water column; C) The MPCA has performed no analysis to determine if the specific conductance predicted for WWTS effluent would cause or contribute to toxicity, reflected in fish assessment impairments in the Embarrass River; and 4) The NPDES/SDS Permit places no limitations on surface water discharge from the existing LTVSMC tailings facility, which will transfer to Poly Met prior to the construction of a seepage collection system or treatment facility. Each of these deficiencies must be corrected before an NPDES/SDS permit can be issued to PolyMet in compliance with federal and state law A) Undemonstrated treatment efficacy for copper-nickel mining influent. The MPCA Fact Sheet states that a reasonable potential analysis was conducted for a wide range of metals, "based on available data submitted with the permit application," including estimated effluent quality data reported in EPA Form 2D, results from the pilot testing of the proposed wastewater treatment technology, modeling projections from the FEIS, and design engineering modeling conducted after the FEIS. The MPCA apparently concluded based on this information that there is no reasonable potential that any parameter would cause or contribute to an excursion from water quality standards. 194	The comment relies on the information provided in the NPDES application, which the MPCA has reviewed and considered during permit development. Specifically, MPCA reviewed design modeling and pilot testing information referenced in the comment and determined it was sufficiently similar to the expected WWTS influent for the proposed project. The design modeling provided in the permit application accounted for variability in the volume and quality of the wastewater that are expected to occur as the Project progresses. It demonstrated the proposed design can be optimized so the discharge will meet the Operating Limits proposed in the draft permit. To demonstrate that membrane treatment technologies were capable of meeting treatment targets, the company conducted a 6-month pilot testing program using seepage water from the existing tailings basin. For a portion of the test, additional metals were added to the test influent to more closely simulate projected effluent quality. Results of the pilot testing were used in the MPCA's reasonable potential analysis and again, determined the proposed design is capable of meeting the Operating Limits proposed in the draft permit. The MPCA concluded that there is not reasonable potential for the discharge to cause or contribute to an excursion above water quality standards.
543-BR	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The data cited by MPCA is deficient and is not the full extent of data available in this record to evaluate the reasonable potential for exceedances. The estimated effluent characteristics reported by PolyMet to the EPA on Form 2D are either "based on treatment target" or on the "GoldSim model WWTS influent."195 Stating that effluent characteristics will be based on a target a discharger hopes to attain is a tautology, not performance-based information. Even if PolyMet's influent modeling were verifiable, rather than based on exclusion of pertinent data, 196 a demonstration of removal efficacy would be required to find that there is no reasonable potential for exceedance. Absent effective removal, the concentrations of many parameters in predicted wastewater treatment system (WWT) influent far exceed applicable water quality standards. 197 Although the MPCA NPDES/SDS Fact Sheet refers to "pilot" testing of PolyMet's proposed wastewater treatment technology for tailings seepage, this is a misnomer. The only pilot treatment cited by PolyMet in its October 2017 NPDES/SDS Application is a 2013 test conducted for seven months on water from a seep and a shallow well at the existing LTV SMC taconite tailings facility, not on Poly Met copper-njckel mine flotation tailings. 198 Concentrations of parameters are quite dissimilar. Where the L TVSMC seepage had copper and nickel concentrations averaging less than 3 µg/L PolyMet WWTS influent is predicted to have copper concentrations up to 200 times higher and nickel concentrations up to 300 times higher. 199	The comment claims that MinnAMAX data was excluded and should have been considered in the permit development. As discussed above at response to Comment 543-AJ, the MinnAMAX data was considered in the GoldSim water quality model, which itself was part of the information that MPCA reviewed in developing the permit.
543-BS	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The influent flow rate for this test ranged from 19 to 22 gallons per minute (gpm), more than two orders of magnitude smaller than the predicted flow rate (3,030 gpm) for the Poly Met wastewater treatment system.200 Some of the significant problems with reverse osmosis efficacy, such as fouling of membranes, would be more significant with higher concentrations of metals and higher flows than in a small-scale test using taconite tailings.	MPCA reviewed pilot testing information and determined it was sufficiently similar to the expected WWTS influent for the proposed project. To demonstrate that membrane treatment technologies were capable of meeting treatment targets, the company conducted a 6-month pilot testing program using seepage water from the existing tailings basin, which was described in the permit application. For a portion of the test, additional metals were added to the test influent to more closely simulate projected effluent quality. Results of the pilot testing were used in the MPCA's reasonable potential analysis, and again MPCA determined the proposed design is capable of meeting the Operating Limits proposed in the draft permit. The MPCA concluded that there is not reasonable potential for the discharge to cause or contribute to an excursion above water quality standards.
543-BT	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Poly Met seems to consider the results of this "pilot" testing sufficiently unreliable that it has proposed that wastewater treatment at its facility be considered "Adaptive Management:"201 Flexibility in operation of the mine water treatment trains will allow operators to adjust to changing or unforeseen conditions, as described in Section 2.2.4 of Reference (1). Because the actual water that will be generated by the Project will not be available until after the mine operations are initiated, pilot-testing with former LTV Steel Mining Company (LTVSMC) Area 5 pit water has been used to provide a basis for design (as described in Section 3 .1 of Reference (10)). The composition of the actual mine water that will be realized at the Mine Site will likely vary from the pilot-test water source. For these reasons, treatment equipment has been selected such that component operation may be modified to account for unforeseen changes in influent water quality, reaction kinetics, sludge characteristics, or other factors that may modify the underlying chemistry in the process unit . 202 A treatment technology that a discharger describes as requiring flexibility due to unforeseen changes in influent quality and other factors does not obviate the need for effluent limitations to prevent excursions above water quality standards. Adaptive engineering risks decades of uncertainty, contaminant release, violations and unforeseen costs.	The comment states a conclusion reached by the commenter. The comment did not identify new facts and the claimed issue is not material to the permit. The MPCA relies on technical review of the permit application and plans submitted to determine if proposed wastewater treatment systems will adequately treat waste from the proposed industry. The MPCA has reviewed the available information and believes the permit conditions can be met and the WWTS will work as designed. Whether PolyMet considers the pilot testing unreliable is not material to the permit, because the MPCA separately evaluated the pilot testing. Adaptive management is commonly required in NPDES permitting to address issues as they arise. The incorporation of adaptive management as a failsafe does not invalidate the conditions; it allows a more rapid response in case of a problem.
543-BU	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	A treatment technology that a discharger describes as requiring flexibility due to unforeseen changes in influent quality and other factors does not obviate the need for effluent limitations to prevent excursions above water quality standards. Adaptive engineering risks decades of uncertainty, contaminant release, violations and unforeseen costs.	See response to Comments 543-BQ and 543-BS. The MPCA regularly reviews wastewater treatment systems of various sizes. The comment did not provide evidence suggesting why MPCA's conclusion may be incorrect.

543-BV	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Pilot tests should have been required during the past 13 years since environmental review began, to test actual leachate from copper-nickel mine tailings. And now, in the permitting process, due diligence must be applied to review whether there are any similar treatment processes at a similar scale succeeding to such a degree as to support a massive new discharge source. As disclosed in the Form 2D information provided by Poly Met, existing secondary membrane treatment systems - those at the Eagle Mine and Calpine - are more than an order of magnitude smaller than what PolyMet has proposed.203 More information is needed to evaluate whether the Consol Buchanon Coal Mine primary membrane system (1900 gpm), required by EPA after $200 million in violations, has been constructed and, if so, what its operating removal rate has been. Similarly, the Queensland coal-seam gas desalination application (1,500 gpm) should be evaluated to determine its efficacy. The University of Queensland has reported, "Desalination of produced water is severely impacted by mineral scaling on reverse osmosis (RO) membranes." The University has begun a new project in May 2017 to address this problem.204	See response to Comment 543-BQ. The comment identified alternative facilities that MPCA could review, but MPCA has extensive experience in reviewing wastewater treatment systems and the suggested sites process different wastes. The comment did not include any specific information regarding the applicability of those sites to the proposed facility. The MPCA has experience permitting other facilities using membrane filtration and the comment did not demonstrate why the sites with which MPCA has experience would be any less applicable than the natural gas/desalination sites identified in the comment. The MPCA regularly reviews wastewater treatment systems of various sizes. The design modeling provided in the permit application accounted for variability in the volume and quality of the wastewater that will be expected to occur as the Project progresses. It demonstrated the proposed design can be optimized so the discharge will meet the operating limits proposed in the draft permit.
543-BW	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Tailings seepage proposed to be treated by the Poly Met wastewater treatment system contains pollutants far exceeding Minnesota water quality standards. Absent clear evidence from a similar pilot or successful experience at a treatment facility of similar scale, there is a reasonable potential that high levels of pollutants in tailings seepage predicted by Poly Met for parameters including copper, nickel, lead and sulfate - would not be controlled sufficiently to comply with water quality standards.	See response to Comments 543-BU and 543-BV.
543-BX	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Reasonable potential that direct discharge of mercury will exceed water quality standards and contribute to impairment of a Great Lake bioaccumulative substance of immediate concern. The MPCA's NPDES/SDS Fact Sheet states that a reasonable potential analysis for mercury was conducted as part of the permit application review and the Agency determined there is no reasonable potential for concentrations of mercury to cause or contribute to an exceedance of water quality standards.205 The MPCA also states generally that the degree of treatment necessary to accomplish an effluent concentration of 10 mg/L sulfate in the discharge from the WWTS will also result in the effective removal of other parameters of concern from the wastewater.206 But the Fact Sheet contains no discussion of any treatment methods, influent data, or any other information indicating that Poly Met surface water discharge will not cause or contribute to exceedances of water quality standards for mercury. The available evidence does not show that treatment proposed by Poly Met is capable of treating tailings seepage so that effluent that meets Minnesota's Lake Superior Basin 1.3 nanograms per liter (ng/L) water quality standard for mercury. This is particularly important since the receiving waters for Poly Met discharge, including the Partridge River and Embarrass Rivers; Embarrass, Sabin, Wynne, Esquagama and Colby Lakes; the Whitewater Reservoir and many downstream segments of the St. Louis River -- are all listed under the Clean Water Act 303(d) as impaired due to mercury.207 Under law, mercury is a bioaccumulative substance of immediate concern.208 The Poly Met Form 2D generally cited by the MPCA to suggest that wastewater treatment effluent will meet water quality standards bases projected compliance with mercury tandards on the "target' for mercury of 1.3 ng/L the Minnesota water quality standard. 209 As stated before, a claim that treatment will meet a target, without more, is an unsupported allegation.	The EIS concluded that the demonstrated ability of the NorthMet tailings to adsorb mercury, in combination with the previously documented mercury removal capabilities of the underlying taconite tailings, would be expected to result in an overall increase in mercury adsorption and subsequently lower concentrations of mercury in FTB seepage. (MPCA notes that this is an existing taconite facility.) Thus, the influent to the WWTS is expected to be approximately equal to the water quality standard of 1.3 ng/L. Further removal by the greensand filtration and reverse osmosis components of the WWTS is expected. MPCA used this information in conjunction with the results of the pilot testing and the design modeling in the reasonable potential analysis, and determined there is no reasonable potential for mercury from the permitted facility to cause or contribute to an exceedance of water quality standards. To address the commenter's concerns regarding mercury, the MPCA has added an operating limit of 1.3 ng/L for mercury, additional dissolved mercury monitoring, and requirement to submit a Mercury Minimization Plan in accordance with the Agency's mercury strategy.
543-BY	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	In its NPDES/SDS Application, Poly Met states that the use of an "organic metal scavenger" with greensand filtration technology has been demonstrated to be capable of achieving Minnesota's water column mercury standard in other indu tries in the Iron Range.210 Although treatment proposed in the Draft Permit includes membrane separation and a greensand filter, it does not include an organic metal scavenger or other treatment specifi to mercury removal.211	Because of the expected low concentration of mercury in the influent to the WWTS, the use of an organic metal scavenger is not being proposed for the project. The influent to the WWTS is expected to be at approximately the water quality standard primarily because of the adsorption that filtration through the taconite tailings provides prior to the seepage water being collected in the FTB Seepage Capture System. Additional mercury removal is expected from the greensand filtration and the reverse osmosis components of the WWTS. The comment appears to have misinterpreted the intent of the reference to an organic metal scavenger in the antidegradation review. The statement in the review was included not to say it was being proposed, but to provide additional support that mercury removal to below 1.3 is technically feasible since it has been demonstrated elsewhere in Minnesota.
543-BZ	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The only "pilot" test done by Poly Met, the seven-month test of LTVSMC tailings influent reported in 2013 by Barr, did no testing to evaluate mercury removal. Mercury was below detectible levels in the influent chosen for the test.212 Conclusions regarding mercury in Barr's report were based on literature and inquiries 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. "213 The Barr 2013 report continued, Mercmy removal by RO is highly variable and dependent upon its speciation and the membrane selection. For these reasons, its removal is difficult to quantify."214 PolyMet's NPDES/SDS Application does not commit to any level of mercury removal efficacy for its proposed treatment. PolyMet states, "Some mercury removal is expected across the greensand filter. However, the influent concentration of mercury to the tailings basin seepage treatment train is expected to be below the WWTS discharge treatment target."215 To make this statement, PolyMet cites a "bench-scale study" of the effectiveness of flotation tailings in removing mercury216 and states that the concentration of future FTB seepage "is expected to be similar to the concentrations in the seepage from the existing L TVSMC tailings basin, which is approximately 1.0 ng/L."217	The comment relies on information that was addressed in the EIS and that the MPCA considered in developing the permit. The EIS concluded that the demonstrated ability of the NorthMet tailings to adsorb mercury, in combination with the previously documented mercury removal capabilities of the underlying taconite tailings, would be expected to result in an overall increase in mercury adsorption and subsequently lower concentrations of mercury in FTB seepage. See FEIS at 5.2.2.3.4, page 5-229. MPCA acknowledges that the referenced testing was of short duration, but no new information is presented that would lead the MPCA to conclude that the testing was invalid or to disagree with the conclusion presented in the EIS.

543-CA	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Although neither PolyMet's Permit to Mine nor its NPDES/SDS application provides underlying data to evaluate these claims, documents obtained during the course of environmental review provide the missing information. Neither the bench-scale study of effectiveness of flotation tailings adsorption of mercury nor monitoring data from the existing L TVSMC tailings basin support PolyMet's claims that PolyMet's tailing seepage would have mercury concentrations below the levels required to comply with Minnesota's 1.3 ng/L standard. The only bench-scale study of mercury adsorption to NorthMet tailings was performed by NTS in 2006. This test was only eight hours long. Poly Met stated and the FEIS reported that this 480 minute test showed that NorthMet tailings would reduce mercury concentrations by 73 percent (from 3.3 ng/L to 0.9 ng/L).218 But the actual 2006 bench study both showed that plain water in a control flask (Jug D) reduced mercury concentrations by 22 percent in this short test and that the trend in the study, when it was discontinued after only eight hours, was that also mercury was desorbing from the tailings. From the fourth hour of the experiment, when mercury was beneath the detection limit, to the eighth hour when the experiment was discontinued, mercury concentrations may have doubled.219 Since PolyMet's tailings seepage will be a permanent feature on the site subject to fluctuations in chemical and water inputs, it is unreasonable to rely on a 480 minute test to predict that mercury will not desorb from tailings and increase concentrations in wastewater influent. PolyMet's claim that existing LTVSMC tailings seepage is below the 1.3 ng/L mercury water quality standard is also based on selective and misleading reporting of available information. Although PolyMet claims that passage through LTVSMC reduces mercury, FEIS data on existing conditions at the tailings site belies this claim. 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 ranges as high as 153 ng/L and has a mean concentration of 4.9 ng/L. Using simple arithmetic, the FEIS shows that in passing through existing LTVSMC tailings mean mercury more than triples. 220 [Table 4.2.2-23] This failure of tailings to remove mercury is particularly salient given PolyMet's annual authorized appropriation of 1,800 million gallons per year from Colby Lake for use in the NorthMet beneficiation plant.221 Colby Lake water has an e timated mercury concentration of 5 to 6 ng/L.222 After the beneficiation process, its water would be released to the tailings pond.	The groundwater information presented in the comment was cited from the EIS (Table 4.2.2-13; pg 4-126) and was considered in the EIS evaluation. Additionally, if the clearly anomalous single value of 153 ng/L was removed from the calculation of the mean, the resulting mean would be 2.8 ng/L rather than 4.9 ng/L. If two additional values for which QA/QC criteria were not met were removed, the resulting mean would be 2.0 ng/L. This value is not meaningfully different from the projected tailings basin pond water and when the body of data is considered, including the number of nondetectable values reported from the wells, it supports the conclusion that the concentration of mercury in the influent to the WWTS is at or near the 1.3 ng/L water quality standard. Additional reductions are expected through treatment, as described in response to Comment 543-BX. The MPCA considered this information in its reasonable potential evaluation to support its conclusion that the seepage captured by the FTB seepage collection system (which is the influent to the WWTS) would have low mercury concentrations prior to treatment and that the filtration and membrane treatment provided by the WWTS would be able to reliably meet the mercury water quality standard.
543-CB	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The available information shows that Poly Met surface discharge from its WWTS, lacking treatment specific to mercury, has the reasonable potential to cause or contribute to the exceedance of Minnesota's Lake Superior Basin water quality standard for mercury and to impairments for mercury in the water column and in fish tissue in the Embarrass River, its chain of lakes and other downstream waters.	See response to Comments Water-722 through Water-722-B. The MPCA has revised the permit to include an operating limit for mercury of 1.3 ng/L. Although some downstream waters are impaired for mercury in the water column and in fish tissue, the MPCA determined that the discharge would not cause or contribute to an excursion above the water quality standards in the impaired waters.
543-CC	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Reasonable potential that direct di charge to surface water will exceed narrative standard preventing aquatic toxicity and contribute to fishes assessment impairment. Federal regulations require water quality-bas d eft1uent limitations to ensure compliance with state narrative water quality criteria as well as numeric criteria..223 Where biologic indicators demonstrate impairments of aquatic uses, and new mining discharge would contribute to an existing violation of narrative water quality standards, that discharge is prohibited. An NPDES permit must set conditions to prevent further impairment not merely monitor for pollutants.224 The Embarrass River is listed under the Clean Water Act 303(d) program as impaired for fishes assessment from its headwaters to the St. Louis River, and a stressor identification has been done, including Spring Mine Creek and the Embarrass River, finding that, "Both of these streams are discharge points for mine pit dewatering, and water quality sampling results from these streams show elevated specific conductance and sulfate concentrations."225 Minnesota rules contain a numeric criterion for specific conductance to protect water quality for agricultural use.226 They do not yet contain numeric criteria to aquatic life from specific conductance; the combination of ionic pollutants lu,own to adversely affect fish and aquatic insects.227 However Minnesota rules do contal11 narrali e criteria requiring protection of aquatic life from the toxic effects of pollutants through site-specific numeric criteria in the absence of broadly applicable numeric standards in order to "protect class 2 waters for the propagation and maintenance of aquatic biota. '228 Minnesota's rules define "protection of the aquatic community from the toxic effects of pollutants" to mean "the protection of no less than 95 percent of all of the species in any aquatic community."229 This is the same extirpation standard used by the EPA to develop the hazardous concentrations of specific conductivity detailed in its 2011 Conductivity Benchmark Report, its 2016 Field-Based Methods report,230 and in peer-reviewed publications. During the PolyMet environmental review process, EPA advised that Minnesota's "narrative water quality standard - no toxics in toxic amounts - is relevant to NPDES permitting for the NorthMet project and its receiving waters" and that this narrative standard must be addressed in the NPDES permitting process "in the context of permitting regarding approaches to protecting aquatic life and habitat in receiving waters. "231 The Draft NPDES/SDS Permit contains no water quality-based effluent limitation for specific conductance and no chronic whole effluent toxicity limit.232 Even if a test on surface discharge at PolyMet's monitoring location were to demonstrate whole effluent toxicity, such toxicity would not result in a permit violation, but only in repeat testing.233 The MPCA Fact Sheet generically states that the Agency found no reasonable potential that Poly Met discharge would cause or contribute to a violation of water quality standards,234 but the Agency provided no analysis of PolyMet's predicted discharge of specific conductance nor its potential effect on fishes assessment impairments in Embarrass River receiving waters. Throughout the environmental review process, Poly Met refused to disclose predictions of specific conductance in any waste stream or the basis for such predictions. 235 Concentration tables in PolyMet's Permit to Mine Application236 and in PolyMet s -orm 2D cli closul'es to the PA237 contained also contain no information on specific conductance. However, PolIMet's NPDES/SDS Application contained specific conductance data near the tailings site.23 Surface water quality data on the north side of the tailings basin at Mud Lake Creek site (MLC-1) had an average specific conductance measured in µmhos/cm at 25 °C239 of 492, with a maximum of 1,362 µmhos/cm; at Trimble Creek (TC-la) had average specific conductance of 723 µmhos/cm, with a maximum of 1,150 µmhos/cm; and at Unnamed Creek had average specific conductance of 793 µmhos/cm, with a maximum of 1,386 µmhos/cm. 240 Specific conductivity at PM-12.2, impaised by Spring Mine Creek but not by LTVSM tailings seepage, averaged 539 µmhoslcm	See response to Comment Water-721. The 1.0 TUc WET limit in the permit addresses the narrative standard against toxicity in the discharge.
543-CD	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Based on the sensitivity data described below, existing specific conductance levels in the Embarrass River watershed are high enough to impair aquatic life.	The MPCA was aware of the referenced MPCA-produced report during the permit development and considered the comment. The MPCA revised the permit to include an effluent limitation for toxicity.
543-CE	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The level of specific conductance that Poly Met predicts from its modeling will be released in its wastewater treatment system (WWTS) effluent is 753-960 µmhoslcm. 242 Even if this prediction could be verified, it is high enough to contribute to an impairment of aquatic insects in the wetlands and creeks where effluent would discharge from the Poly Met tailings facility and to contribute to the fishes assessment impairment in the Embarrass River. The weight of evidence from EPA reports, peer-reviewed literature and data from the Minnesota ecoregion where the Poly Met Project would be located demonstrates that the level of specific conductance proposed to be released by the WWTS would exceed the level toxic to sensitive genera of aquatic insects (benthic macroinvertebrates) and the fishes that rely on them for food. A field-based method of determining aquatic life numeric criteria for specific conductivity was finali zed by the EPA in 2011 .243 Since 2011, environmental takeholders have reque ted that the MPCA set WQBEL limiting specific conductivity in wastewater discharge permits and conduct ruJemaking to set numeric criteria for specific conduct ivity to protect aquatic life.244	The MPCA was aware of the referenced predictions for effluent conductivity during the permit development and considered the comment. The MPCA revised the permit to include an effluent limitation for toxicity.

543-CF	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	In 2015, retired Minnesota regulators Bruce Johnson and Maureen Johnson undertook a review of background levels of specific conductivity in a portion of northeastern Minnesota's Ecoregion 50, along with data pertaining to bentbic macroinvertebrate (aquatic in ects) in impacted and unimpacted water in the ecoregion.245 They concluded that the EPA prntocols for field-based specific conductivity criteria were applicable to Northeast Minnesota surface waters. In addition, they recommended adoption of a numeric criterion of 300 µSiem as a chronic value of yearround application in order to protect benthic macroinvertebrates according to the criteria (prevent 5% extirpation of invertebrate genera/protect 95% of genera) et by the EP A.246	The MPCA was aware of the referenced report during the permit development and considered the comment. The MPCA revised the permit to include an effluent limitation for toxicity.
543-CG	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The EPA's Office of Research and Development reviewed the Johnson & Johnson Specific Conductance Evaluation and concluded in a memorandum dated February 4, 2016, that the weight of evidence supported the inference that effluents that increase specific conductivity to more than 300 µSiem are likely to extirpate more than 5% of genera common to both Minnesota and Appalachia the ecoregion EPA initially studied, and have adverse effects in northeast Minnesota waters.247 The EPA secured a broader set of data on benthic invertebrates and water quality from the MPCA to independently validate the conclusions reached in the Johnson & Johnson Evaluation. The EPA concluded as follows: [T]he inference that 5% extirpation of benthic invertebrates would occur at similar conductivity levels in central Appalachia and Ecoregion 50 in Minnesota was supported by analysis of an independent data set of paired benthic invertebrate and SC data from Ecoregion 50 in Minnesota. We estimated that more than 5% of genera would be extirpated in streams greater than 320 µS/cm. 248 In December 2016, after extensive peer-review, the EPA released to the public its field-based methods for States (and Tribes with Treatment as a State authority) to use in developing aquatic life criteria for specific conductivity in regions outside central Appalachia.249 Appendix D to the EPA' s 2016 report detailed the method that should be used by states to develop a numeric criterion for specific conductance where there is sufficient water chemistry and biological data to calculate extirpation concentrations and hazardous concentrations. The EPA reviewed biological and specific conductivity for 62 Ecoregions across the United States, including Minnesota Ecoregion 50 (Northern Lakes and Forests), where the PolyMet Project would be located. The EPA map below shows Minnesota's Ecoregions, along with paired biological and water quality sampling sites.250 Although data in other Ecoregions was less robust, EPA found sufficient data to recommend a provisional specific conductivity value for aquatic life in Ecoregion 50, the Northern Lakes and Forests region in northeast Minnesota. In the Ecoregion where Poly Met proposes to locate its copper-nickel mine and flotation tailings facility, based on 734 samples, the EPA recommended a provisional hazardous concentration of 320 µSiem to protect aquatic life from toxicity.25 1 Since December 2016, the EPA has published in peer-reviewed journals the scientific basis for establishing the proposed specific conductivity hazardous concentrations based on the weight-ofevidence process, the use of extirpation to evaluate tolerance of specific conductivity, and the step-by-step calculation to predict specific conductivity levels that extirpate freshwater aquatic benthic invertebrates. The EPA has also developed spreadsheet tools to conduct this analysis and predict stressor levels that extirpate genera and specie .252	The MPCA was aware of the referenced review during the permit development and considered the comment. The MPCA revised the permit to include an effluent limitation for toxicity.
543-CH	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Based on federal law, Minnesota narrative standards, existing specific conductivity concentrations in impaired receiving waters, and the application of the EPA's specific conductivity benchmark methods to Minnesota data consistent with peer-reviewed literature, there is a reasonable potential that PolyMet's surface discharge of specific conductivity from the WWTS would cause or contribute to violation of Minnesota water quality standards.	The MPCA was aware of the referenced MPCA-produced report during the permit development and considered the comment. The MPCA revised the permit to include an effluent limitation for toxicity.
543-CI	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Failure to set effluent limits for surface discharge from existing L TVSMC tailings. Although it seems at first glance that the Draft NPDES/SDS Permit precludes direct discharge to surface water from the PolyMet tailings basin, the actual limits are less inclusive. The Draft Permit states, "Water from the Tailings Basin will be recycled back to the Beneficiation Plant and will not be directly discharged during operations."253 The Draft Permit explains that the FTB (Flotation Tailings Basin) will contain flotation tailings generated during operation and will be constructed atop the existing L TVSMC tailings basin. The Draft Permit states "there will be no direct discharge .from the FTB Pond to any receiving waters."254 Similarly, "Direct discharge to surface waters .from the FTB Seepage Containment System is prohibited. "255 The Draft NPDES/SDS Permit prohibits deposit of nonferrous mining tailings in the FTB until its seepage containment system is operating, and requires PolyMet to maintain the existing pumpback systems for the former LTVSMC tailings basin until operation of the wastewater trea tment system has begun.256 These provisions of the Draft NPDES/SDS Permit are not problematic on their own. However, the failure of the Draft Permit to set water quality-based effluent limitations for direct discharge from the existing LTV SMC tailings basin prior to the construction of the FTB and its seepage containment system fails to comply with the Clean Water Act, its implementing rules or Minnesota water quality standards. During the pendency of construction or under a scenario where the PolyMet Project does not proceed for any reason, existing LTVSMC tailings seepage discharge to surface waters would have the potential to cause or contribute to exceedances of Minnesota's water quality standards. The MPCA must conduct a reasonable potential analysis for existing L TVSMC discharge, and the Draft NPDES/SDS Permit must water quality-based effluent limitations (WQBELs) for any parameters that have the potential to cause or contribute to exceedances of Minnesota's numeric and narrative water quality criteria.	The comment addresses conditions in an existing permit and consent decree. As explained in the fact sheet, the consent decree will continue to require pumpback until the containment system is constructed and will remain the regulatory control document until that time. See Fact Sheet at 75-78. The NorthMet permit does not authorize a discharge from the LTV tailings basin.

543-CJ	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The failure of the MPCA to establish WQBELs for the existing LTVSMC tailings discharge is particularly troubling given the Agency's assertion in a memo contained in the PolyMet Permit to Mine Application that should the Poly Met copper-nickel mine project never become operational (scenario II), no treatment or mitigation would be required for potential exceedances of mercury sulfate alkalinity, hardness, total dissolved salts and specific conductance at the LTVSMC tailings facility. 257 For mercury, the MPCA offered that high concentrations of mercury exceeding Minnesota water quality standards in surface water surrounding the L TVSMC Basin "are most likely due to influences from precipitation and background concentration, not from seepage from the existing Basin."258 Thus, under scenario II, "no treatment/mitigation is necessary in final closure for mercury. "259 For sulfate, MPCA proposed that high sulfate at the Basin "will likely not result in an exceedai1ce of the calculated sulfate standard {or alternative sulfate standard in the proposed ruJe} if the MPCA prop sed rule revision goe into effect."260 If the propo ed wild rice rulemaking revision were not completed, the MPCA offered, "another regulatory option available to the State would be to consider developing a site-specific standard based on the science at that time."261 In any case, under scenario II, "no treatment/mitigation for sulfate would be required for protection of wild rice."262 For a range of Class 3 and Class 4 pollutants from the L TVS MC tailings site - alkalinity, hardness, total dissolved salts and specific conductance, MPCA offered that the Agency "has made this rulemaking a high priority and expects to propose revisions in 2018." Ann Foss, the memo's author continued, "Based on current information, MPCA expects that these standards will either remain unchanged or become less stringent."263 MPCA also suggested that, even if the rules were not weakened, "At any point, the MPCA can consider other regulatory options such as site-specific standards {SSS}, a use attainability analysis {UAA}, a use and value demonstration {UVD}, or a variance."264 Thus, if the Poly Met project did not become operational {scenario 11}, "no treatment/mitigation for alkalinity, hardness, TDS and specific conductance would be required. "265 Both factual and legal concerns are raised by this memorandum. Data comparing existing tailings pond and tailings toe mercury concentrations previously cited suggests that tailings as well as rainfall contribute to mercury exceedances. Sulfate standards based on the MPCA's proposed rulemaking are no longer applicable. In January 2018, an Administrative Law Judge, with the concurrence of the Chief Judge, disapproved both repeal of Minnesota's 10 parts per million {mg/L} wild rice sulfate standard and replacement of the standard with an equation-based formula. 266 Among other grounds, the ALJ concluded that repeal of Minnesota's existing wild rice sulfate standard would conflict with the Clean Water Act and its implementing regu 1a t1· ons. 267 A water quality standard may only be removed or made less stringent in compliance with the Clean Water Act and its implementing regulations, which require a scientific basis for the change and a demonstration that the uses of water for aquatic life, recreation and wildlife have all been preserved.268 There is extensive peer-reviewed science establishing that pollutants regulated in Minnesota under Class 3 and Class 4 rules {hardness, total dissolved salts and specific conductance} affect fish and other aquatic life so that removal or weakening of these standards would impair Clean Water Act protected uses.269	The comment addresses a memo that was written to aid DNR in estimating future financial assurance needs for the Permit to Mine. It does not relate to terms and conditions of the proposed NPDES/SDS permit. Although the Legacy Memo is not relevant to the draft NPDES/SDS permit, a recent supplement to the memo addresses the issue of the ALJ disapproval of MPCA's proposed wild rice sulfate standard.
			Both factual and legal concerns are raised by this memorandum. Data comparing existing tailings pond and tailings toe mercury concentrations previously cited suggests that tailings as well as rainfall contribute to mercury exceedances. Sulfate standards based on the MPCA's proposed rulemaking are no longer applicable. In January 2018, an Administrative Law Judge, with the concurrence of the Chief Judge, disapproved both repeal of Minnesota's 10 parts per million (mg/L) wild rice sulfate standard and replacement of the standard with an equation-based formula. 266 Among other grounds, the ALJ concluded that repeal of Minnesota's existing wild rice sulfate standard would conflict with the Clean Water Act and its implementing regu 1a t1· ons. 267 A water quality standard may only be removed or made less stringent in compliance with the Clean Water Act and its implementing regulations, which require a scientific basis for the change and a demonstration that the uses of water for aquatic life, recreation and wildlife have all been preserved.268 There is extensive peer-reviewed science establishing that pollutants regulated in Minnesota under Class 3 and Class 4 rules (hardness, total dissolved salts and specific conductance) affect fish and other aquatic life so that removal or weakening of these standards would impair Clean Water Act protected uses.269 The EPA has advised MPCA that enforcement of Minnesota surface water quality standards is not discretionary under the Clean Water Act,270 and internal MPCA documents confirm that ' Minne ota is required to enforce the state assembled and federally approved water tandards, including the wild rice sulfate standard."271 Whether the duration prior to Poly Met operations is three years or an indefinite period, the MPCA has no discretion under applicable federal or state law to leave direct discharge from the existing LTVSMC to waters of the United States unregulated.	

543-CK	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The Poly Met Project is likely to cause or contribute to violations of Minnesota water quality standards for mercury, increase mercury impairments, and degrade water quality by increasing mercury levels, precluding NPDES permit issuance or assurances for 401 certification under federal and state law. Benjamin Franklin once said, "Half a truth is often a great lie." The Poly Met cross-media analysis of project impacts on water quality relative to mercury272 and the MPCA's conclusion that PolyMet had demonstrated to the Agency's satisfaction that its sulfide mine would have no effects on mercury273 epitomize that maxim. The length of PolyMet's report may create an impression ofrigor, and there are selective pieces of the mercury methylation problem that are highly detailed. But, the cross-media analysis by Poly Met and its acceptance by the MPCA reflect a systematic and strategic exclusion of most of the factors that would result in a "perfect storm" of Poly Met Project impacts on mercury release, methylation and transport to downstream receiving waters impaired due to mercury in the water column and mercury contamination of fish. The waysin which mercury impacts are measured and modeled also minimize project impacts and increase the risk that the Poly Met project will degrade water quality and endanger the environment and human health. Under federal and Minnesota law, Section 401 certification for a Clean Water Act Section 404 wetlands dredge and fill permit can only be issued if there is a reasonable assurance that the activity as a whole will be conducted in a manner that will not violate applicable water quality standards.274 For receiving waters downstream of the Poly Met Project or water within range of its local air deposition of sulfate and mercury275 that are already impaired due to excessive mercury, the Draft NPDES/SDS Permit may not be issued, and certification may not be granted if the project would cause or contribute to violations of Minnesota s standards limiting mercury in the water column and mercury that bioaccumulates in fish tissue.276 For receiving waters not yet assessed as impaired due to mercury, the PolyMet Project cannot be permitted or certified if it would violate federal regulations and state rules by allowing activities that lower the high quality of water with respect to mercury, when there are one or more practicable alternatives, including prevention or treatment, to prevent or lessen the degradation.277 In outstanding international resource waters (OIRWs) of the Lake Superior Basin, including all receiving waters downstream of the Poly Met project, if a designated use of the water body is impaired, "there can be no lowering of the water quality with respect to the GLI [Great Lakes Initiative] pollutants causing the impairment."278 In Lake Superior Basin waters impaired due to mercury in the water column or methylmercury in fish tissue, no further impairment is allowed. Minnesota rules also require that the MPCA deny section 401 certification if the permitted facility endangers human health or the environment and the danger cannot be removed by modifying permit conditions.279 Minnesota's section 401 certification and permitting requirements are particularly salient for the Poly Met Project, an activity that would contribute to water quality violations and lower water quality in mercury-impaired waters, degrade waters yet not assessed, increase the concentration of mercury in aquatic insects, fish, wildlife and the bodies of pregnant women, fetuses, infants and children, and endanger the environment and human health. Bioaccumulation of methylmercury in the aquatic food chain harms piscivorous (fish-eating) mammals and birds, along with insectivorous bats. 280 Vulnerable wildlife may include species protected by state law and under the federal Endangered Species Act, such as the Northern Longeared Bat, for which the proposed Poly Met site and adjacent areas are critical habitat.281 The harmful effects resulting from human consumption of methylmercury-contaminated fish are well-known. Dr. Margaret Saracino, a Duluth child and adolescent psychiatrist has explained the particular vulnerability of fetuses, infants and children to morbidity resulting from methylmercury exposure: 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.282 From 2007-2011 the Minnesota Department of Health (MDH) conducted a study of Mercury in Newborns in the ake Superior Basin.283 This was a large study testing a total of 1,465 babies in Minnesota, Wisconsin and Michigan. About 30% of the Minnesota babies born in the study area were tested. In this study, 10% of the newborns in Minnesota's Lake Superior region had mercury levels above the EPA mercury dose limit, 3% of the Wisconsin newborns were above the mercury dose limit, and none of the Michigan samples exceeded the mercury limit. Babies born during the summer months were more likely to have an elevated mercury level, which, the MDH explained, suggests that increased consumption of locally caught fish during the warm months is an important source of pregnant women's mercury exposure in this region.284 Minnesota medical, nursing and health organizations representing more than 30,000 health professionals requested an open and transparent public health impact assessment of risks from the Poly Met project. Among the public health concerns they identified were risks posed by increased methylmercury contamination of fish.285 Their requests for a health impact assessment were denied by State Agencies.	The comment primarily contains background information and perspective on the 401 certification. See the 401 response to comment document for detailed responses.
			From 2007-2011 the Minnesota Department of Health (MDH) conducted a study of Mercury in Newborns in the ake Superior Basin.283 This was a large study testing a total of 1,465 babies in Minnesota, Wisconsin and Michigan. About 30% of the Minnesota babies born in the study area were tested. In this study, 10% of the newborns in Minnesota's Lake Superior region had mercury levels above the EPA mercury dose limit, 3% of the Wisconsin newborns were above the mercury dose limit, and none of the Michigan samples exceeded the mercury limit. Babies born during the summer months were more likely to have an elevated mercury level, which, the MDH explained, suggests that increased consumption of locally caught fish during the warm months is an important source of pregnant women's mercury exposure in this region.284 Minnesota medical, nursing and health organizations representing more than 30,000 health professionals requested an open and transparent public health impact assessment of risks from the Poly Met project. Among the public health concerns they identified were risks posed by increased methylmercury contamination of fish.285 Their requests for a health impact assessment were denied by State Agencies.	
543-CL	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The threat to water quality, aquatic life, wildlife and human health requires careful scrutiny of PolyMet's dismissal of mercury and methylmercury impacts. Our concerns are cumulative, and they reflect the following important errors and omissions in PolyMet's analysis: A) Exclusion of the impacts of sulfate and mercury groundwater seepage to wetlands and streams; B) Failure to evaluate the impacts of sulfate and mercury in surface water discharge or released to wetlands; C) Failure to analyze the effects of changes in wetland and stream hydrology on mercury release, methylation and transport; D) Exclusion of multiple sources of sulfur and sulfide air deposition at both the mine site and the plant site; E) Exclusion of mine site mercury deposition, water bodies closest to mercury sources, and mercury deposition to wetlands; (F) Misleading analysis of mercury methy lation in a single wetland of interest; (G) Modeling that systematically minimizes the cumulative potential for mercury and methylmercury impacts on water quality, aquatic life, fish, wildlife and human beings.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-CM	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Exclusion of impacts of sulfate and mercury seepage from groundwater. The "water component" of PolyMet's cross-media analysis of mercury and methylmercury specifically excludes the effects of mercury concentrations in tailings basin seepage, which PolyMet assumes "will be collected by the FTB seepage capture systems."286 The impacts of mercury seepage cannot be included in the mercury analysis, since Poly Met has failed to characterize mercury in wastes or wastewater either during environmental review or in either its Permit to Mine or NPDES/SDS permit applications. Poly Met Permit to Mine Application appendices contained 26 separate tables estimating water quality in various Project locations where water contacts waste, from the tailings toe to mine pits and waste rock seepage. None of these tables estimated levels of mercury in the seepage or wastewater.287 In PolyMet's mass balance calculations for mercury, which provide its theoretical offset for mercury increases resulting from air deposition, average mercury concentrations in seepage and groundwater, among other sources of loading simply "were assumed constant between existing conditions and operating conditions."288	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-CN	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	As described in Section 2 of these comments, there is no question that the Poly Met Project will result in potential sources of seepage with highly elevated concenh'ations of sulfate. 289 As with mercury seepage, sulfate seepage from either unlined sources (tailings storage, Category 1 waste rock stockpile, mine pits, OSLA peat storage area and pond) or lined sources (hydrometallurgical residue facility, mine site Category 2/3, Category 4 and Ore Surge piles and mine site sumps, ponds and equalization basins) none of these potential sources of sulfate loads were considered in PolyMet's cross-media analysis.290	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-CO	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	There is no basis for PolyMet's claims for nearly perfect capture of seepaije from the unlined Category 1 waste rock stockpile and the unlined tailings storage facility.29 Although seepage from lined facilities is likely to have far less volume, contaminants at the hydrometallurgical residue facility (HRF) and mine site stockpiles, ponds and basins are likely to be concentrated and toxic.292	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-CP	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The HRF is proposed on an unsuitable site and an unstable foundation and would receive 164 pounds of mercury per year, or as much as 2,952 total pounds of mercury in total.293	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-CQ	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	As explained previously, the Draft NPDES/SDS permit would not require PolyMet to capture additional groundwater eepage from the south side of the tailings ba i.n not captured by the exi ting Cliffs Erie pwupback system.294 Groundwatet flow from this tailing site headwater of Second Creek averaged 766.8 gpm in 2017 and 140 gpm in 2016.295 In 2017 this groundwater seepage from the Second Creek south side headwaters alone was 38 times the total seepage predicted by Poly Met to escape uncaptured from containment systems at the tailings basin; even in 2016, the uncaptured seepage from the Second Creek south side of the tailings site was seven times the total predicted for the entire tailings site. 296 Sulfate concentrations predicted by PolyMet for South Toe tailings seepage are 553 mg/L, more than five times the average concentration of sulfate in LTVSMC tailings seepage.297	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.

543-CR	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	During environmental review, both Poly Met and regulatory agencies argued that there is no established relationship between sulfate and mercury methylation.298 However, it is now clear that the MPCA does not dispute that sulfate loading and resulting sulfide production increase both mercury methylation and to mobilize inorganic mercury release from sediments.299 Research by Amy Myrbo, Ph.D., co-authored by staff scientists at the MPCA, has demonstrated that increased sulfide production resulting from sulfate loading both increases release of inorganic mercury from sediment into the water and increases the proportion of mercury that is converted to toxic methylmercury.300 Dr. Myrbo found that in mesocosms with sulfate loading of either 100 mg/L or 300 mg/L, methylmercury increased 5.9 times as compared to the control experiment where no sulfate was added.301 Sulfate loading also increased release of inorganic mercury from sediments to the water, with a maximum increase at sulfate loading of 300 mg/L of 2.2 times over the experimental control. 302 It has long been suggested that that there is a "sweet spot" where sulfate and sulfide concentrations are optimal for mercury methylation. Dr. Myrbo concluded that there is substantial evidence that sulfide levels above concentrations of 300-3000 µg/L have an inhibitory effect on mercury methylation.303 It is not known whether sulfate loading at the concentrations predicted in tailings seepage or the Category 1 waste rockpile would be within the "sweet spot" for mercury methylation when they first reach wetlands or sediments. But, since Poly Met sulfate seepage would surface in the headwaters of Second Creek, the Partridge River or the Embarrass River, it is highly likely that this sulfate would also be carried downstream and diluted, creating a potential for sulfide formation and mercury methylation in downstream wetlands and sediments from the PolyMet site to the St. Louis River estuary.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-CS	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Brian Branfireun, Ph.D., in his expert opinion on the Poly Met Project FEIS, concluded that "potential for seepage of sulfates and associated impacts to wetlands in the vicinity of both the project mine site and tailings basin" should not be discounted and that "Such seepage would enhance methyl mercury production in the project area and could also contribute directly to water quality impairments in sulfate-poor sediments downstream of the project site." 304 Dr. Branfireun explained that "the small tributaries that are more proximal to the proposed NorthMet mine site location clearly demonstrate sulfate-limited conditions. The mean sulfate concentrations in Longnose Creek, West Pit Outlet Creek and Wetlegs Creek are 0.91, 2.6 and 3.9 mg/L respectively." Increases in sulfate above these low background levels would promote mercury methylation in creek sediments in even in these relatively sulfate-poor and undisturbed tributaries. 305	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-CT	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The "wetland of interest" where sulfur compound air deposition was modeled by Poly Met is located south of the Dunka Road in an alder thicket.306 The location of PolyMet's wetland of interest 1. s shown on the map below. 307 This wetland location is immediately adjacent to the east of the Equalization Basins (blue), which have a single liner and south of the Ore Surge Pile (yellow) with its sump and pond (pink).308 With this proximity, even if liners work as planned, they may seep to adjacent wetlands.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-CU	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Failure to evaluate the impacts of sulfate and mercury in surface water di charged or released to wetlands. In addition to assuming that no seepage would affect wetlands or stream sediments where methylation could take place, the Poly Met cross-media analysis failed to consider the impacts of surface water on mercury release and mercury methylation. This restriction of the scope of analysis will be significant in wetlands on and near the mine site, including the "wetland of interest" upon which Poly Met focused. Although complete information on stormwater management is not provided in PolyMet's NPDES/SDS Application, Poly Met is proposing that water that has contacted surfaces directly disturbed by mining, such as drainage collected on the liners of the Ore Surge Pile or Category 2/3 waste rock stockpile, will be intercepted by ditches, dikes, sumps, ponds and pipe, and will be conveyed by pipe to the plant site tailings facility or, in later years to help flood the East and Central mine pits.309 Water from construction and from the unlined Overburden Storage and Laydown Area (OSLA) that would contain peat as well as overburden, would also be channeled to the Construction Mine Water Basin, which also appears to be an unlined pool.310 Poly Met proposes that any mine site water not in direct contact with mining surfaces, OSLA storage or construction will be considered non-contact "stormwater." This stormwater will be given no special handling to protect surrounding waters from loading with chemical parameters. The stormwater "will be separated from mine water and controlled through a system of ditches, dikes and ponds· and will discharge off-site either directly or after being routed through on-site sedimentation ponds to reduce total suspended solids (TSS)."311 Neither the Poly Met cross-media analysis nor any other document pertinent to the Draft NPDES/SDS Permit or the requested 401certification evaluates the likely concentrations of chemical parameters in mine site "stormwater." However, it is likely, due to air deposition as well as any difficulty in routing water in ditches across the mine site, that mine site "stormwater" will have elevated levels of sulfate and metals, including mercury, as a result of mineral dust deposition.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-CV	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Despite excluding from its analysis both the sulfide mineral deposition from blasting and that from wind erosion at the massive mine site waste rock stockpiles,312 PolyMet has predicted that total sulfide mineral deposition on some portions of the mine site within the watershed draining to its "wetland of interest" could exceed 1,000 milligrams per square meter per year (mg/m2/yr).313 This level is approximately four times that predicted by PolyMet for sulfide deposition to the "wetland of interest" itself.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-CW	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	A technical memorandum prepared by Barr Engineering pertaining to PolyMet's "wetland of interest" explains that this wetland will not be dewatered or experience drying and wetting cycles exacerbating mercury methylation because water levels are assumed to remain constant. 314 Specifically, the memo explains that parts of the upland watershed on both sides of the Dunka Road will be removed by mine site infrastructure and will no longer contribute stormwater to the wetland, but, "Additional areas on the north of Dunka Road that do not currently drain to the wetland will have stormwater directed across Dunka Road and into the wetland during Project operations. "315 This drainage to the "wetland of interest," presumably by a culvert under the road as well as by ditching, is illustrated by this drawing.in the memo: 316 Neither the Barr hydrology memo nor the Poly Met cross-media analysis evaluate the effect of sulfate or mercury in mine site "stormwater" on mercury release or methylation within the "wetland of interest" or on any other wetlands to which mine site "stormwater" may be conveyed. However, from the perspective of solute chemistry, it is highly likely that all water channeled off the proposed PolyMet copper-nickel mine would effectively be "contact" stormwater. The consequences of this surface water drainage to the wetlands and streams adjacent to the proposed PolyMet mine must be considered in any cumulative analysis of the impacts of the mine on mercury release, methylation and transport.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.

543-CX	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Similarly, the PolyMet cross-media analysis assumes that there will be no overflow from any mine site features affecting the concentrations of surface water flowing to and through wetlands on and near the mine site. As described previously, the mine site Equalization Basins, which are located immediately adjacent to the "wetland of interest" as well as other surface waters have high concentrations of a number of solutes. 317 Poly Met predicts that the "Low" Concentration (East) Equalization Basin would have markedly elevated sulfate levels of 2,450 mg/L and the High Concentration (West) Equalization Basin would have sulfate levels of 9,010 mg/L per year.31s To provide a basis for comparison, although wetlands sulfate sampling at the mine site has not been provided, the PolyMet FEIS did provide water quality data for the three creeks to the south and west of the mine site. Mean sulfate concentrations were 0.91 mg/Lin Longnose Creek, 2.6 mg/Lin the unnamed creek identified by Poly Met as West Pit Outlet Creek and 3.9 mg/Lin Wetlegs Creek.3 19 With more than tlu-ee orders of magnitude difference in sulfate concentrations, even a small leak or spill over from the Equalization Basins could have a substantial effect on mercury release from sediments and methylation in nearby wetlands and creeks.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-CY	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The potential for overflow as a result of a storm event or flooding of mine site wastewater collection features is particularly salient since none of these features is designed to prevent overflow in the event of a maximum precipitation event. In fact, the Equalization Basins, the nearby pond for runoff of process water at the rail transfer hopper where ore is loaded, and the sumps collecting seepage from the Category 1 waste rock pile would be designed with only the capacity to contain a 100-year, 24-hour rainfall event.320 Various sumps and mine-water ponds containing highly contaminated mine process water would be designed for a 10-year 24-hour rain event with an overflow back-up to accommodate only a 100-year 24-hour rainfall; these include sumps and ponds for the Category 2/3 waste rock pile, the Category 4 waste rock pile an d t h e ore surge p1·1 e. 321 The 100-year 24-hour rainfall used for these designs appears to be 5.2 inches.322 That level of rain is approximately half of the highest locally reported rainfall resulting in widespread flooding in northeastern Minnesota in June of 2012.323 The overburden storage and laydown area (OSLA) on the south side of the site, which will contain excavated peat with the potential to release mercury as well mineralized overburden materials, would provide even less protection from flooding, since it is designed to accommodate only a 25-year 24--hour rain event.324 Prevention of overflow from the Equalization Basins and other wastewater storage locations at the mine site depends on pumping contaminated water through the pipeline between the mine and the plant site using pumps at the central pumping station.325 A sensor is proposed to provide a warning before Equalization Basins reach full capacity to prevent overfilling so that pumping to the plant site can be done at a faster rate.326	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-CZ	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	However, no redundant pumps or pipelines are planned to protect water quality in the event of an extended power outage or a storm event exceeding the 100-year 24-hour design volume.327 In a heavy rainfall, Poly Met proposes an emergency operating procedure where temporary portable pumps may be used to return mine water in various sumps to the mine pits and temporarily stop pit dewateri ng.328 No additional plans to prevent Equalization Basin overflow are described. Neither PolyMet's predictions for the "wetland of interest" nor any other discussion in the crossmedia analysis evaluated the impact of overflow from pollutant sources on the mine site, either directly into wetlands or into channels for non-contact "stormwater."	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-DA	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	PolyMet's cross-media analysis states that the intentional discharge from the wastewater treatment facility (WWT) at the Poly Met tailings site was included in the mercury massbalance calculations for the Partridge River and Embarrass River watersheds.329 However this analysis was constrained by unsupported assumptions and monitoring failures. First, the WWTS discharge concentration assumed in the mass-balance calculations was 1.3 ng/L, the water quality standard applied to mercury in the Lake Superior Basin.330 As explained in Section 4 of these comments, PolyMet's assumptions regarding low mercury levels in flotation tailings seepage are unsupportable and the Draft NPDES/SDS permit has required no treatment to effectively remove mercury before discharge of effluent to surface waters.331 Absent a water quality-based effluent limit on mercury intentional discharge, there is no basis to assume that mercury in tailings site discharge will not exceed 1.3 ng/L.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-DB	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	In addition, the cross-media analysis fails to consider the impacts of loading inorganic mercury directly to wetlands, the primary sites for methylation. Despite more than 13 years of planning for the NorthMet project, Poly Met has apparently failed to monitor the wetlands into which treated tailings basin seepage would be discharged. As summarized in the Barr memo on mercury mass balance calculation to explain why degradation analysis would be performed a mile or more away from the north side of the tailings facility, rather than the Trimble Creek and Unnamed Creek headwater wetlands, "No mercury monitoring has been conducted in these wetlands. "332	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-DC	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	As discussed at length in Section 3 of these comments PolyMet's failure to monitor any wetlands near either the mine site or the tailings site and the failure of the Draft NPDES/SDS Permit to require such monitoring in the future will conceal any violations of permit conditions prohibiting discharge of untreated pollutants to surface water.333 PolyMet's failure to monitor existing mercury, methylmercury and sulfate levels in mine site and plant site wetlands has additional consequences for antidegradation analysis and evaluation of cumulative Project effects on mercury and methylmercury in receiving waters. The effect on antidegradation analysis is immediately evident. On the north side of the tailings site, where the nearest monitoring sites were creeks a mile or more away, mercury discharge at 1.3 ng/L predicted levels would not result in degradation. On the south side of the tailings site, at Second Creek (SD026), where there was monitoring data for existing conditions, predicted mercury discharge of 1.3 ng/L would more than double the 0.6 ng/L existing concentration of mercury. 334 Yet more significant, the MPCA's failure to require monitoring of wetlands for mercury, methylmercury and sulfate prior to permit approval and throughout the course of Poly Met operations, closure and maintenance prevents effective cumulative analysis of whether Project activities will cause or contribute to mercury impairments and endanger Minnesota's environment and human health.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.

543-DD	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Failure to analyze the effects of changes in wetland and stream hydrology on mercury release, methylation and transport. There is no question that the wetlands surrounding the Poly Met mine site and plant site are highly methylating environments. Dr. Brian Branfireun has explained that the methylmercury data collected by Poly Met during environmental review demonstrates that the ratio of methylmercury to mercury in the Partridge and Embarrass Rivers surface water sampling sites and mine site creeks are all indicative of a highly methylating environment. This data shows the fraction of methylmercury in the Partridge River as 2.2% at SW-001, increasing to 14.6% at SW-004a and remaining at about 10% at the next two stations. For the two surface water sampling sites on the Embarrass River, mean percentages of methylmercury are 10.4% and 8.8%. Although Wyman Creek, which is impacted by mining has the highest percentage of methylmercury (12.5% at PM-5), the relatively unimpacted mine site creek al o have high methylmercury ratios of 6.0% at Longnose Creek, 5.5% at proposed West Pit Outlet Creek and 9.6% at Wetlegs Creek.335	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-DE	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Dr. Branfireun also emphasized, "The high percentage of methylmercury in these surface waters speaks to sensitivity of their watersheds to both a) hydrological impact from a change in either surface or subsurface hydrology, and b) deposition of any additional sulfate either from surface water flows, or wet/dry atmospheric deposition."336 The data also shows that "surface waters in the small tributaries at the proposed mine site, the Partridge, and the Embarrass Rivers are all strongly influenced by the presence of wetlands in their watersheds." In fact, Dr. Branfireun stated that he is not professionally aware of any other surface waters where the fractions of methyl mercury as a percentage of total mercury are as high as the waters reported in documents prepared as part of Poly Met environmental review.337 Dr. Branfireun cited peer-reviewed literature explaining that in wetlands exposed to sulfate loading, "prolonged water table drawdowns lead to greater sulfate release in all treatments." As a result of a natural drought in experimental wetlands, wetlands drawdown increased methylmercury desorption and flux from peatlands, drove sulfate-reducing-bacteria activity that increased mercury methylation, and made sulfate "available for export to downstream aquatic systems (e.g. lakes and other wetlands) that could be equally susceptible to in situ net methylations."338 Based on his field experience and this important peer-reviewed study, Dr. Branfireun concluded for the NorthMet site that "a significant proportion of bog wetlands that are within the zone of drawdown from the proposed mine proposed development will also exhibit sulfate regeneration and increased export of methylmercury, under natural rewetting cycles as well as storm events. 339 Hydrologic changes at both the mine site and tailings site would increase mercury and methylmercury and release sulfate to downstream waters: [D]evelopment-induced change in hydrology, such as those proposed at both the NorthMet mine site and tailings basin, could amplify those drought-rewetting cycles (in terms of magnitude, frequency, or both). These implications should not be understated. Independent of any additional releases of uncaptured sulfate or mercury from the proposed NorthMet development, dewatering of wetlands surrounding the tailings basin through seepage collection and even modest impacts on water table position by underdrainage of mine site peatlands through open pit dewatering could increase total mercury, methylmercury and sulfate in the Partridge, Embarrass, and ultimately the St. Louis River. 340	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-DF	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The drying and rewetting of peat overburden in the NorthMet unlined laydown area could also impact mercury release and methylation. Dr. Branfireun cautioned that this storage would "result in repeated flushes of methylmercury as well as inorganic mercury."341 Based on the ColemanWasik (2015) research, Dr. Branfireun cautioned, "The continuous process of drying and rewetting of overburden peat stockpiled in laydown areas may not only continue to release inorganic mercury, but may also continuously regenerate sulfate, and in anaerobic locations, promote methylmercury formation."342 Poly Met has not disputed that mine site wetlands, including the "wetland of interest" selected for review are highly methylating environments. The Poly Met cross-media report notes that potential export of methy lmercury from the "wetland of interest" under existing conditions was estimated at ~O. 08 to O .16 µg/m2/yr, which is 2 to 4 times higher than the estimates for similar boreal wetlands (0.03 to 0.04 µg/m2/yr) in the Marcell Experimental Forest studied in the peerreviewed literature. 343	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-DG	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	One result of the elimination of dewatering, drying, and rewetting of wetlands from PolyMet's cross-media analysis was to remove the potential that this process would enhance weathering and permit the release of sulfide minerals over a period of years. This assumption affects predictions of the release of sulfide from chaJcopyrite particles although PolyMet's modeling that all sulfide in pyrrhotite particles will react within a year is protective. 44	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-DH	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	In addition, rather than analyzing the effects that hydrologic changes resulting from the NorthMet Project would have on the "wetland of interest" and other highly methylating wetlands, Poly Met proposed that targeted upland drainage would obviate the need to analyze the impacts of water fluctuations on its selected "wetland of interest." 345 Poly Met then failed to analyze the impacts of drying and rewetting on any other wetlands affected by dewatering at the mine site or due to tailings site seepage collection in any part of its cross-media analysis. This omission may be one of the most significant deficits in PolyMet's cross-media analysis. As Dr. Branfireun explained with respect to the Poly Met Project, "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."346	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-DI	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Exclusion of multiple sources of sulfur and sulfide deposition at both the mine site and the plant site. Increase in mercury methylation as a result of sulfur and sulfide emissions and deposition is the primary factor addressed by the PolyMet cross-media analysis. But, even PolyMet's evaluation of sulfur compound emissions suffers from exclusions that distort and minimize the effects of sulfur compouncl on mercury methylation. PolyMet s air modeling for the cross-media analysis was pe1formed according to the modeling protocol appended to the report.347 This Protocol excluded many significant sources of sulfur and sulfide deposition. First, the cross-media modeling protocol excluded from analysis PM 10 fine particulates from either plant site stacks or vehicle exhaust, whether on the plant site or mine site,348 asserting that stack particulate emissions are assumed to include only smaller PM2.5 particles based on the control technologies for sources at the facility.349 However, both PolyMet's air emissions permit application and the draft air permit itself undermine this claim. For both PM 10 and PM2.s particles, emissions control technology markedly reduces potential emissions. 350	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.

543-DJ	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	But, even with controls placed on stack emissions, Poly Met Project potential point source and fugitive air emissions of PM10 exceed those for PM2_5. As shown in the table below from the air emissions permit application, controlled point sources of particulates are much higher at the plant site than at the mine site and potential controlled point source total PM lo particulates would be 168.34 tons per year, as compared to 164.43 tons per year of PM2_5 particles.35 1 Controlled fugitive emissions sources at both the mine site and plant site, which include vehicle emissions as well as dust, model more than seven times as much PM10 as PM2_5 and include 262 tons per year of PMw fugitive emissions at the plant site, as well as 454.90 tons per year at the mine site.352 The significance of excluding PM10 air emissions when evaluating the effects of local sulfide mineral deposition on mercury methylation is even greater than would be evident by the tonnage of sources alone. PM10 particles are heavier and are more likely to be deposited locally than PM2.5, impacting wetlands and proximate watersheds. As Barr explained in the application for PolyMet's air emissions permit, "Fine particles (PM2.5 and smaller) and gases tend to remain suspended for long periods of time (days to weeks) and travel away from the emission source: they are generally not associated with local deposition."353	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-DK	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	PolyMet's cross-media modeling protocol also excludes wet deposition of stack emissions, and models only the dry deposition of gas-phase/aerosol/fine particles (PM2.s), stating that, even if wet deposition sulfur emissions are important, since their volume is much less than that of dust, including them wouldn't change PolyMet's conclusions.354 This exclusion may only affect a few percent of the total sulfur mass, but once again the protocol decreases the likelihood that sulfur compounds in stack emissions will be deposited on local wetlands and watersheds.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-DL	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Next, at the mine site, the cross-media modeling protocol excluded from analysis fugitive dust generated both by blast hole drilling and by handling of overburden, ore and waste rock.355 According to the PolyMet Permit to Mine Application, ore blasting will use approximately 8 million pounds of blasting agents (ammonium nitrate and fuel oil) annually, while planned waste rock movement, to place waste rock into stockpiles will use approximately an additional 7.3 million pounds of blasting agents.356 PolyMet's air emissions permit listed "blasthole drilling" as one of the primary sources of fugitive emissions. 357 Although there are no data in the record to quantify the significance of this omission, it is widely recognized that blasting is a large contributor to dust at open-pit mines: Modern surface mining often involves huge tonnages thus increasing the potential for greater dust hazard. Blasting is one of the operations that is carried out in most mines, and may produce very large quantities of dust. The dust cloud can be raised to substantial heights depending on the blasting parameters. The blasting dust cloud is normally visible for several minutes. Most of the dust settles in and around the mining area, although some may be dispersed to long distances before settling down. Some of the settled dust is raised again by mining activities such as moving vehicles. Depending on meteorological conditions this dust can disperse to substantial distances adversely affecting local communities."358	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-DM	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Dust resulting from wind erosion at mine site Category 1, Category 2/3 and Category 4 waste rock stockpiles was also excluded from the cross-media analysis modeling protocol. 359 No rationale was provided in the modeling protocol or the cross-media analysis for this exclusion of sulfur deposition sources proximate to mine site wetlands. Tailings basin wind erosion from beaches was included in the modeling protocol. 360	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-DN	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Receptors within large rectangular boundaries surrounding the mine pits and also encompassing a number of wetlands that will remain intact during Poly Met mine operations were excluded from cross-media modeling. The rationale provided for this exclusion was that it would eliminate the "complications" with trying to model a receptor within an emission source.361 These various mine site exclusions may help explain why PolyMet's map of "total" sulfide mineral dust in Large Figure 7 has unexpectedly low predictions of sulfide in several areas. In addition to the red rectangles specifically mentioned for exclusion, sulfide mineral deposition depicted on vast areas adjacent to and downwind of the Project's massive mine pits and stockpiles would reflect neither blast hole drilling, blasting of rock for handling or stockpile wind erosion. 362	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-DO	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The cross-media modeling protocol also excluded particles greater than 30 microns in diameter (PM30) on the grounds that these "larger" particles (at least 1/1,000 of an inch) would be less likely to disperse more than 20 to 30 meters from an emission source. 363 Although excluding PM30 from air emissions analysis is appropriate if the concern is inhalation risks or dispersal to a regional air shed, this exclusion minimizes the effects of dust and rail car spillage at the mine site, at the plant site, and along eight miles of tracks between them. Many sources of dust and spillage are less than 30 meters away from wetlands or are proximately upgradient from wetlands and streams that could be sites of mercury methylation. The Poly Met FEIS concluded that surface water quality in the mine site Upper Partridge tributary streams (sulfate-limited Wetlegs Creek, Longnose Creek, and proposed West Pit Outlet Creek) "would be affected by ore spillage from the rail caJ although the FEIS did not analyze how ore spillage to wetlands or creek sediments would affect mercury methylation.364 The FEIS did state, 'Approximately 543 acres of wetlands along the railroad corridor could be affected by releases of solutes resulting from rainfall contacting spilled ore and fines. "365 It is difficult to see these modeling exclusions as anything but a way to minimize rather than evaluate the effects of Poly Met Project sulfate deposition on mercury methylation. Based on maps of dust deposition and calculations of sulfate loading previously provided in environmental review or supplied for the draft air emissions permit, it is highly likely that modeling exclusions reduce the projections made for sulfide deposition in the "wetland of interest" selected by Poly Met and render these predictions unsound. Supplemental information from other parts of the Poly Met record is also useful to define which other wetland areas should have been investigated to obtain a more rigorous and comprehensive analysis of impacts on mercury and methylmercury exceedances and degradation that would result from permitting and certification of the Poly Met copper-nickel mine project.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.

543-DP	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Exclusion of mine site mercury deposition, water bodies closest to mercury sources, and mercury deposition to wetlands. The Poly Met cross-media analysis of mercury deposition adds to growing concern that its objective may be to dismiss concerns about Poly Met Project effects rather than evaluate them. This is accomplished by failing to analyze water bodies and monitoring locations likely to show effects from mercury deposition and by explicitly excluding mercury air deposition to wetlands. The Poly Met cross-media analysis states, "The primary potential source of mercury emissions for the Project is the Autoclave Stack, which will be located at the Plant Site." 366 Mercury emissions are concentrated at the plant site, particularly on the south side of the site, where the plant facilities are, contributing as much as 3 percent of mercury background concentrations south of the tailings site. The cross-media analysis notes that, in addition to increased surface discharge of mercury from the wastewater treatment system at Second Creek discharge point (SD026),367 "Mercmy deposition from Project air sources is also focused in the Second Creek watershed."368 Mercury air deposition isopleths are shown on the map below:369 The Poly Met cross-media analysis fails to evaluate mercury air deposition from plant site stack emissions at any site proximate to the emissions. The first site at which air deposition to Second Creek is evaluated is 11 miles downstream at MNSW8.370 The Poly Met cross-media analysis states, "mercury stack emissions (Autoclave; fuel combustion) have not changed from those estimated in 2012, building and stack parameters related to the autoclave have not changed, and the air model and meteorological input data have not changed appreciably." The 2012 modeling results were brought forward and used unchanged in the cross-media analysis. 371 In the intervening years neither PolyMet nor the MPCA saw fit to locate a monitoring site in closer proximity to mercury, sulfate dust and particulate air deposition in the Second Creek watershed.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-DQ	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Large Figure 13 above shows that the monitoring site on Unnamed Creek (PM-11) is within the isopleth showing elevated mercury deposition to wetlands. This site is listed in the cross-media table showing potential cumulative effect on total mercury loads and concentrations. But no methylmercury changes are calculated either at PM-11 or even at MNSW8. The table suggests that methylmercury load increased "is not assessed at these locations but is incorporated downstream," further from the site of potential impacts. 372	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-DR	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Although most of the lakes in the Embarrass River watershed are farther away, Heikkilla Lake appears to be within the area where mercury stack emissions would represent up to 1 % of background, and Sabin Lake far outside it. The map below shows the locations of Heikkilla Lake and Sabin Lake.373 The exclusion of Heikkilla Lake from cumulative analysis is troubling. Poly Met argues that the lake may not support a fish population, so that Sabin Lake was a better candidate for cumulative analysis. 374 Since Sabin Lake is outside the isopleth showing impacts of mercury air deposition, it would seem like a less appropriate candidate for analysis.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-DS	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	In addition to modeling sites with less proximity to plant site air emissions, rather than closer sHes the Poly Met cross-medja analysis completely excludes the impacts of mercury air deposition to uplands or wetlands, except at the "wetland of interest.' 375 The analysis argues that "only mercury deposited directly to the water surface will result in an increase in water column mercury concentrations because mercury deposited to the terrestrial watershed will be retained in the watershed."376 However, the peer-reviewed literature is more complex and does not support the blanket exclusion from analysis of all mercury deposited to wetlands. The Harris et al. 2007 article cited in the Poly Met report cautioned that the "low level of new mercury export and methylation would not be expected to occur in all wetlands" and cited a pilot study in a wetland with a water table near the p.eat surface where "added spike mercury was quickly methylated and transported into the lake." 77 A report from the Mercury Experiment to Assess Atmospheric Loadings in Canada and the United States (METAALICUS) found that experimentally applied stable mercury isotopes migrated vertically and/or horizontally in peat and pore waters from an experimental plot to the lake margin. The authors concluded, When we couple the biogeochemical dynamics with the evidence of a surface hydrologic transport mechanism, we conclude that wetlands can be very dynamic environments for the transport and transformation ofrecently deposited lg, contributing significantly to the total load to adjacent aquatic ecosystems in some watersheds.378	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-DT	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Although the PolyMet cross-media analysis summarized mercury emission estimates and speciation assumptions from various sources, mercury loading analysis was done based on the stack emissions modeled in 2012 and an estimate ofrelease of mercury from the mineral matrix of fugitive sulfide mineral dust.379 No mercury air emissions from mine site sources were considered, even though they are predominantly vehicle emissions, likely to be locally deposited and not particle-bound. The table below is derived from Table 2-1 in the PolyMet cross-media analysis.380 If local deposition of mine site mercury from vehicle emissions and fugitive dust were to be analyzed, this calculation would add up to 317.5 grams of mercury deposited to proximate mine site watersheds. When the "mercury mass balance" for the project is measured in tenths of a gram, exclusion of mine site local mercury deposition may be quite significant. Although excluding local mine site deposition may affect the results of the cross-media analysis, removing from the analysis any mercury deposition to uplands or wetlands makes a striking difference in the assessment of mercury risks. As with stack emissions from the plant site, except at the "wetland of interest," only emissions of dust to the area of "open surface water" were included in PolyMet's mercury calculations."381 As illustrated in the table below derived from PolyMet's Table 5-3,382 by restricting the calculation of mercury air deposition impacts only to open surface water, the cross-mercury analysis effectively reduced the perceived potential impact of mercury air emissions by more than 99 percent. Reviewing the Poly Met cross-media analysis of the effects of air deposition of mercury, it appears that unreasonable exclusions substantially and inappropriately minimize the effects of mercury air deposition on the wetlands and watersheds near the proposed Poly Met mine site and plant site.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.

543-DU	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Misleading analysis of mercury methylation in a single "wetland of interest." The Poly Met cross-media analysis of mercury methylation in a single "wetland of interest" suffers from several flaws. The cross-media analysis, as every other analysis done by Poly Met to date, precluded consideration of the impacts of surficial aquifer seepage surfacing in wetlands and affecting mercury methylation by completely failing to analyze this important factor. Perhaps more striking, even as the cross-media analysis proposes channeling of mine site stormwater to maintain hydrology in the "wetland of interest," the analysis fails to consider sulfate loading from mine site surface water in calculating methylation potential. Although the cross-media analysis makes an exception and considers loading of mercury from fugitive dust to one designated wetland, the analysis excludes mine site mercury vehicle emissions, which (Table 2-1 on the preceding page) have six times the mass of mercury in mine site fugitive dust. Dr. Branfireun's report on NorthMet effects on mercury methylation included a quantitative analysis pertaining to the one factor for which numeric data was provided where Barr identified the mine site location with highest sulfate loading from du t deposition.383 Using Barr's numbers for sulfate deposition, validating assumptions for sulfate background with peer-reviewed literature and expressing both the background and NorthMet mine site sulfate deposition numbers in the same units, Dr. Branfireun calculated that the sulfate load from dust deposition at this proposed mine site location would be 12.6 kilograms per hectare per acre (kg/ha/yr) as compared to the background rate of 4.58 kg/ha/yr. The sulfate load would, thus be 3.76 times or 376% of the background deposition rate.384 Comparing this additional loading with peer-reviewed studies measuring methylmercury export after adding sulfate to experimental wetlands, and using the conservative assumption in the FEIS that all sulfur in dust is converted to sulfate, Dr. Branfireun calculated that methylmercury export from sensitive mine-site peatlands may be increased up to 1.88 times as a result of sulfate air deposition alone. Given the magnitude of this potential impact, he explained, even if less than the total sulfate deposited is liberated to the environment, "there will still be a substantial stimulatory effect on peatland m thylmercury production. '385 Based on the finding in the Coleman-Wasik 2015 study that portions of an experimental wetland recovering from high sulfate loading had methylmercury levels intermediate between those of unimpacted and current experimental treatments, Dr. Branfireun opined that sulfate loading impacts would continue even after deposition stops. "It can be expected that effects of elevated sulfate deposition on peatlands will persist to some degree even after additional sulfate loading has ceased. "386 Without quantifying the other factors, such as mercury and sulfate loading through water, changes in wetland hydrology or mercury air emissions, Dr. Branfireun explained that increased methylmercury export from methylating peatlands would be reflected "in methylmercury concentrations in the upper tributaries, and the Embarrass and Partridge Rivers, given the role these wetlands play in supplying water to these streams and rivers." Increased methylmercury "would also be expected to impact the upper St Louis River, given the direct hydrological connection and known methods of methylmercury transport."387	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-DV	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	PolyMet's cross-media analysis concluded that the total potential atmospheric load of sulfate to the "wetland of interest" during operations is 6.4 kg/ha/yr, of which 1.55 kg/ha/yr is related to the Project. 388 The analysis contains no explanation of the differences between this result and Barr's 2015 sulfate load projections. The change from sulfate to sulfide mass and the more conservative assumption made in 2015 that all sulfur deposited is liberated to the environment, as contrasted with modeling that a fraction of the chalcopyrite particles will react,389 could substantially reduce predicted sulfate loading. Since the 2015 Barr report does not exclude dust sources from its analysis, the cross-media modeling protocol may also have affected predictions of sulfate loading. Finally, because the cross-media analysis is narrowly focused on dust from haul roads and rail transfer, the selection of wetlands south ofDunka Road may have reduced the predictions of sulfate loading. The maps in subsection (A) of this Section of comments390 show where the "wetland of interest" is located, next to the blue Equalization Basins and south of Dunka Road, and the map below shows haul roads with black cross-hatching.391 Large Figure 7 in the Poly Met cross-media report models sulfide dust levels range from 102 to 212 milligrams per meter squared per year (mg/m2/yr) in the "wetland of interest" while higher sulfide mineral dust levels can be found on the mine site itself. This map also suggests that background sulfide mineral deposition at the mine site may be less than 10 mg/m2/yr.392 In order to evaluate, rather than minimize project impacts on mercury, the assessment of impacts at the "wetland of interest" on the south side of the mine site must be redone. First, the sulfate and mercury loading to the wetland through surficial aquifer seepage must be calculated.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-DW	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Then, if existing hydrologic condi tions at this wetland will in fact be maintained by channeling mine site surface water from the rail spur and raH transfer hopper side slopes 393 sulfate and mercury loading from this surface water must be added.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-DX	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Third, mine site sulfide mineral dust loading should not exclude blasting or wind erosion, both of which are likely to take place at the Ore Surge Pile and Category 2/3 waste rock stockpile, in proximity to the wetland. Next, in addition to estimating the impacts of mercury in fugitive dust, as the cross-media report has already done, the impacts of mercury vehicle emissions on mercury methylation as well as on mercury loading must be calculated. Finally, in the interest of transparency, the cross-media analysis should clearly explain assumptions made and their effects, including the calculations used to estimate methylmercury production from total sulfate and mercury loading. It is likely that an analysis including these readily discernable contributors to mercury methylation would arrive at a very different conclusion as to the impact of Poly Met operations on the "wetland of interest" south of Dunka Road.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.

543-DY	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Even more important, given the number of factors in PolyMet operations that could increase mercury methylation and the variability of inputs and wetlands types across a vast area at the plant site and the mine site, no analysis restricted to a single wetland could be adequate to evaluate methylmercury impacts. Selection of additional wetlands to study in depth should take into account sources and composition of seepage, locations of intentional surface discharge and mine site stormwater release, locations most likely to be affected by mine dewatering and tailings seepage collection, proximity to both point source and fugitive dust deposition of sulfur compounds, and mercury air deposition, considering deposition to wetlands as well as to open waters. If all of these factors are considered cumulatively, it is clear that wetlands should be studied at the plant site as well as at the mine site. In addition to the south mine site location already selected in PolyMet's cross-media analysis, a minimum of three other wetland of interest sites are recommended for analysis: a South Tailings Site wetland, a North Tailings Site wetland, and a North Mine Site wetland. The first additional wetland study area proposed is a South Tailings Site wetland, near the headwaters of Second Creek. As explained previously, the headwaters of Second Creek will be the site of groundwater seepage with highly elevated sulfate levels emerging within a short distance into a headwaters creek. 394 In addition, surface water discharge at the headwaters of Second Creek (SD026) expected to increase mercury concentrations and mercury deposition from Project air sources is also focused in the Second Creek watershed. 395 The PolyMet cross-media analysis suggests that, after the south mine site wetland, the highest sulfide deposition based on fugitive dust and PM2.s from stacks was in the watershed of Unnamed Creek, monitoring location PM-11 on the northwest side of the tailings basin.396 It is difficult to determine where the highest levels of dust deposition will be predicted at the mine site once modeling includes drill core blasting in mine pits; blasting of overburden, waste rock; and wind erosion from waste rock stockpiles on the mine site. There are also locations on the south side of the tailings site and on both the north and south sides of the mine site where PM 10 is at least three times the background level. 397 Cumulative cross-media analysis of the South Tailings Site considering mercury loading, mercury release from sediments and mercury methylation would include impacts of sulfate and mercury seepage through groundwater and direct discharge, sulfate deposition from dust and stack emissions and mercury air deposition. There are wetlands that would provide a South Tailings Site at which to model methylation. The wetlands include slu-ub swamps (alder thicket), deep and shallow marsh and small areas of coniferous and hardwood swamp:398	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-DZ	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Selection of a North Tailings Site wetland would allow analysis of cumulative effects on mercury loading and methylation reflecting hydrologic changes from tailings seepage collection, sulfate and mercury loading from uncaptured tailings seepage, direct discharge of sulfate and mercury to wetlands, and air deposition of mercury and sulfur compounds through dust and stack emissions. 399	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-EA	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	A North Mine Site wetland would allow analysis of cumulative effects on mercury methylation resulting from sulfate and mercury loading through Category 1 seepage and East Pit seepage, hydrologic changes resulting from East Pit dewatering, sulfide deposition, including PM10, from vehicle emissions and fugitive dust from blasting and stocpile wind erosion, and mercury emissions from vehicles and mineral dust. North Mine Site wetlands near the East Pit and the Category 1 waste rock stockRile, include coniferous bog wetlands, are likely to be particularly methy lating enviromnents. 400	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-EB	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Modeling and analysi that systematically miinimize the cumulative potential for mercury and methylmercury impacts. Comments to this point have highlighted assumptions and exclusions that undermine the integrity of the cross-media analysis and suggest that it systematically minimizes the effects of the PolyMet mine project on mercury loading, mercury release from sediments, and mercury methylation and transport to downstream waters. This final section addresses two overarching issues that further undermine the application of PolyMet's analysis to support either an NPDES/SDS permit or Section 401 certification. First, PolyMet's mercury mass balance is erroneous as well as simplistic. Second, PolyMet's "cumulative" analysis reflects watershed-wide dilution of selected sources of loading rather than stream-watershed dynamics reflecting the full range of potential factors could affect mercury and methy !mercury production, release and transport. Although Poly Met' s cross-media analysis makes a brief and contrived foray into assessment of mercury methylation, its cumulative assessment returns to the mercury mass balance model promoted during the course of environmental review. Even without the level of detail contained in the cross-media report, Dr. Branfireun criticized the mass balance model as "cheaper and easier" method that "can be presented as definitive to a non-expert," emphasizing 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 Poly Met proposal."401	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.

543-EC	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	With PolyMet's method of deriving its mercury and sulfate mass balance calculations exposed more thoroughly in the cross-media analysis and NPDES/SDS application, this criticism seems prescient. As in the environmental review process, Poly Met claims that an increase in mercury resulting from project activities is more than balanced by the capture of stormwater and groundwater containing mercury in the Partridge River watershed and by water capture resulting from operation of tailings seepage collection affecting the Embarrass River watershed.402 In the NPDES analysis, Poly Met assumes that there are no project contributions to Partridge River watershed mercury loading at the mine site; there are only reductions in mercury as a result of capture of non-contact runoff and groundwater that contain mercury at concentrations above the Great Lakes standard (1.3 ng/L) under background conditions.403 No seepage, overflow or channeling of surface water from mine site lined or unlined sources of potential mercury loading are even considered.404 At Second Creek, PolyMet assumes mercury loading from the tailings site is only from treated wastewater discharge, even though an average of 140 gallons per minute seeped untreated from the ex.isling tailings basin to Second Creek in 2016 despite the pumpback system and an average of767 gallons per minute of untreated wastewater si milarly escaped capture in 2017.405 PolyMet also assumes, althou@h no mercury removal treatment has been tested, demonstrated or required for tailings seepage 4 6 that the only tailing ite mercw-y input i surface discharge with a mercury concentration of 1.3 ng/L, and credits the Project for the "loss" of mercury loading from Colby Lake pumping to the tailings site as a further reduction of mercury to the Partridge River watershed.407 No leakage from the large quantity of mercury in the hydrometallurgical residue facility is modeled. In the Embarrass River watershed, PolyMet's mass balance model assumes only 21 gallons per minute of tailings basin seepage and claims that mercury concentrations in the seepage will be only 1.5 ng/L to derive credjt for seepage capture. The only Project additions to mercury loading are small runoff and background groundwater redirections from a drainage swale.408	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-ED	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	In addition to making the unsupportable assumptions noted above, all of which minimize Project mercury impacts, PolyMet's NPDES mercury mass balance analysis considers no mercury air deposition and no mercury methylation resulting from sulfate loading.409 The Poly Met cross-media analysis does not improve on the basic errors in the underlying mercury mass balance in order to estimate mercury methylation. It merely compounds them. As discussed previously in this section, the cross-media analysis considers no sulfate loading from bedrock groundwater, surficial aquifers or surface water affected by sulfate in estimating mercury methylation potential in any wetlands or sediments. The cross-media analysis does not evaluate the effects of hydro logic changes from seepage collection and mine dewatering on wetlands that are already highly methylating, as compared to the controls in peer-reviewed literature.410 Even where the cross-media analysis adds atmospheric deposition of mercury and sulfate to its calculations, the underlying assumptions and methods preclude significance in its findings. For mercury air deposition, PolyMet's cross-media analysis fails to model local deposition to the mine site, even though its own estimates identify 317 grams of mercury that could impact the Upper Partridge River watershed. Then, PolyMet's assessment excludes 100 percent of the mercury deposited to uplands and wetlands, reducing the watershed area modeled for mercury air deposition impacts by more than 99 percent.411	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-EE	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	A modest change in any of these assumptions would change conclusions reached about mercury impacts from the PolyMet Project. Even in evaluating mercury methylation resulting from sulfate air deposition, PolyMet's cross media analysis excluded stack emissions most likely to deposit locally (PM 1 o and wet deposition of finer particles and gases) and multiple sources of mine site and transportation corridor particles, including dust from blasting in mine pits and of overburden, waste rock and ore, dust from wind erosion of ore and waste rock stockpiles and any particles larger than 1/1000 of an inch in size.412 Poly Met further assumed that particles would only weather for a year, so that much of the sulfide deposited in mineral dust would not be released.413 Even with all of the exclusions and limiting assumptions applied by Poly Met, the single wetland of interest assessed by Poly Met was predicted to experience a 32% increase in sulfate loading as compared to background and a 16% increase in methy lmercury as a result solely of sulfide dust impacts.4 14	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-EF	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	However, for its "cumulative" analysis, the cross-media report did not estimate the various factors, including but not limited to sulfate air deposition, that would increase mercury methylation in localized wetlands and sediments impacted by the Project. Instead Poly Met diluted its calculation of sulfur air deposition - which already excluded numerous emission sources - over entire watersheds and concluded that sulfate increases from air sources were not sufficient to increase mercury methylation. 415 The analysis excluded seepage and surface water sources of sulfate or mercury loading to methylating wetlands and sediments, assumed project mercury loading was limited to wastewater discharge at 1.3 ng/L, and credited the Poly Met project with substantial reductions in methylmercury as a result of reducing flows in the Partridge River and Embarrass River watersheds. 416 Having reduced the perfect storm of factors with the potential to increase mercury release, methylation, and transport to the effects of dispersing some atmospheric sources of sulfate over large watersheds, the unsurprising if deceptive conclusion reached in the Poly Met cross-media analysis was that neither methylmercury increases in the water column nor methylmercury increases m'f i1hs would be significant. 417 PolyMet concluded that sulfate from Project air emissions could cause a small increase (0.003 to 0.005 ng/L) in water column methylmercury in the Partridge River and Embarrass River watersheds, but this small increase would not be "measurable."418 The only "measurable" change Poly Met admitted was an increase in mercury due to surface discharge of treated water at the headwaters of Second Creek (SD026).419 The MPCA accepted the conclusion reached in PolyMet's cross-media analysis that there would be no measurable change of mercury in water or fish as a result of sulfur deposition, without questioning the exclusions on which this conclusion was based.420 More generally, the MPCA also denied that the Project would result in measurable changes to water quality downstream in the St. Louis River.421	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.

543-EG	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The Poly Met cross-media analysis, however detailed in its calculations, appears to be willfully blind to the cumulative scope of project impacts on mercury in the water column and mercury in fish from mercury air emissions to wetlands as well as open waters; mercury loading from treated and untreated surface water and from seepage through groundwater; mercury release from sediments and mercury methylation resulting from sulfate seepage through groundwater, sulfate release from surface water, sulfur air deposition, and hydrologic changes affecting wetlands and streams at both the mine site and the tailings site. It is in PolyMet's interest to provide regulators and the public with a lengthy analysis of the elephant's trunk and to insist that it has proved that the elephant is a small and pliable creature incapable of crushing damage, let alone a rampage. We should know better. If the MPCA were to evaluate the full scope of mercury and sulfur compound emissions and releases that would result from the Poly Met Project, the impacts of hydrologic changes, and the mechanisms for methylmercury export and bioaccumulation to downstream waters, the Agency would be forced to conclude that there is no reasonable assurance that the Poly Met copper-nickel mine project would not contribute to mercury impairments in downstream waters, degrade downstream waters not yet designated as impaired for mercury, and endanger the environment and human health. As Brian Branfireun summarized at the close of environmental review, "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."422	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-EH	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The antidegradation analysis performed for the Poly Met Project with respect to pollutants other than mercury and methylmercury is inadequate for NPDES/SDS permitting or for Section 401 certification. Both federal and state laws preclude permitting of facilities or certification of activities that degrade water quality when there are one or more possible alternatives available to prevent or lessen the degradation.423 In the Lake Superior Basin, if the pollutants in question are not bioaccumulative chemicals of concern, Chapter 7050 antidegradation standards apply. The MPCA may not approve a proposed activity if prudent and feasible prevention, treatment, or loading offset alternatives exist that would avoid degradation of existing high water quality. Even if the MPCA finds that prudent and feasible prevention, treatment, or loading offset alternatives are not available to avoid degradation, a proposed activity shall be approved only when the commissioner makes a finding that degradation will be prudently and feasibly minimized and that the proposed activity is necessary to accommodate important economic or social changes in the geographic area in which degradation of existing high water quality is anticipated.424 Minnesota rules also set policy to prevent degradation of groundwater, requiring that industrial waste be controlled "as may be necessary to ensure that to ensure that to the maximum practicable extent the underground waters of the state are maintained at their natural quality." To relax this protection, a determination must be made not only that a change is justifiable by reason of necessary economic or social development, but that the degradation "will not preclude appropriate beneficial present and future uses of the waters. "425 This analysis cannot be performed tautologically. It must consider all impacts of a project on water quality, not just those that the regulator has already decided will be prudently minimized under the existing plan for a facility that has been deemed necessary for an economic objective. The MPCA's analysis of degradation resulting from the Poly Met is deficient in at least the following respects: A) The MPCA fails to analyze the degradation of surface water and groundwater at the mine site and plant site that would result from releases of pollutants by the Poly Met project to bedrock groundwater and surficial aquifers; B) The MPCA fails to consider best practices that would serve as feasible and prudent prevention and mitigation measures to would avoid or minimize that degradation. A) Failure to analyze degradation resulting from release of pollutants to bedrock groundwater and surficial aquifers. In the first and second Sections of these comments, we detailed requirements under the federal Clean Water Act to protect waters of the United States from discharge through hydrologically connected groundwater and the deficiencies in PolyMet's proposed plans for mine site and plant site waste and seepage containment that may cause or contribute to a violation of Minnesota water quality standards.	The comment presumes failure of controls required in the NPDES permit. The MPCA has reviewed the available information and concluded the permit conditions can be met and will result in meeting water quality standards. The Annual Groundwater Evaluation Report required by the permit specifically requires an annual assessment of the current and future potential and timeframe for migration of groundwater towards surface water from the mine site and plant site. Also, as described in response to comment 37 above, the Annual Comprehensive Evaluation specifically requires that the performance of engineering controls be assessed for any impact to groundwater. Together, these annual reports provide early warning for the potential for impact such that adaptive management can be implemented before impacts occur. If the permittee does not comply with the permit, the permittee may be subject to enforcement action to correct the violations.
543-EI	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The same deficiencies in siting and seepage containment at the tailings basin, deficiencies in seepage containment at the Category 1 waste rockpile, poor choices in location of hydrometallurgical residue waste storage, and failure to address movement of contaminants from mine pit walls would result in degradation of both surface water and groundwater and the mine site and the plant. Liner leakage and potential overflow of waste storage basins, particularly where they have not been designed to accommodate maximum precipitation, could contaminate the mine site surficial aquifer as well as mine site surface water. As noted previously in discussing mercury and methylmercury concerns, there is no assurance that mine site "noncontact" stormwater won't in fact be contaminated - by blasting, vehicle exhaust, dust, and air deposition - even that stormwater doesn't actually touch mine pits or stockpiles.	The comment appears to be based on incorrect assumptions. See response to 543-DJ and 543-DL. As shown in the Cross Media analysis, contributions from project-generated dust have little, if any, effect on downstream water quality.
543-EJ	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The Poly Met Project environmental review contained no analysis of propagation through fractures or faults in bedrock and only a minimal examination of the potential effects on water quality of pollutants propagating through surficial groundwater. The NPDES/SDS permitting record is yet more deficient. As summarized by the Agency, "The MPCA's review of the Antidegradation Evaluation presented in the NPDES/SDS permit application focused on the proposed discharge from the Plant Site WWTS. For the duration of the first permit cycle, and for at least the proposed active mining period of the project, this will be the only process water discharge to surface waters authorized under this permit."426	The issue of faults and fractures was addressed in the EIS and MPCA did directly consider this information in the groundwater nondegradation review associated with the NPDES/SDS permit. See FEIS section 3.2.2.1.2, page 3-33; Nondegradation Review at pages 1-2, 5, 17-19.

543-EK	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The MPCA acknowledged that the discharge of treated effluent from the plant site wastewater treatment system (WWTS) would result in degradation of water quality parameters, but chose to disregard the environmental review modeling subjected to federal and public review in favor of a new Poly Met design model that would reduce findings of degradation.427 In any case, the MPCA assumed without analysis that neither increased levels of contaminants in Poly Met tailings seepage as compared to seepage from a closed taconite project, the level of groundwater flow that will remain despite the pumpback system at the headwaters of Second Creek, or the seepage that will escape capture from the dirt trench around the north side of the tailings basin that the Poly Met project will result in degradation. According to MPCA's overly trusting predictions, the Poly Met tailings plan will "cut off movement associated with former L TVSMC tailings basin" and thus result in an improvement in water quality for sulfate and salty parameters. 428 The MPCA did not discuss the effects of tai lings eepage on groundwater contamination with lead or surface water contamjnation with copper nickel and other metals toxic to aquatic life 429 which contaminants are far less elevated in existing tailings seepage. Although the Poly Met FEIS failed to determine where mine site surficial contaminants would first daylight to surface waters, this document provided a prediction of the level of contaminants in mine site surficial aquifer flow paths at the property line. These locations may be at or near the places where seepage first surfaces to wetlands. For the East Pit Category 2/3 flowpath, the Proposed Action aluminum is predicted at 339 µg/L, an increase to 576% of the modeled continuation of existing conditions (CEC) scenario and nearly three times the 125 µg/L water quality standard. Cobalt is predicted at 10.5 µg/L, an increase to 1, 117% of the modeled CEC scenario and more than twice the 5 µg/L water quality standard. For the Overburden Storage and Laydown Area at the old property boundary, aluminum is predicted at 139 µg/L, an increase to 236% of the CEC level, also above the 125 µg/L water quality standard. For the West Pit flowpath at the property boundary, a cobalt concentration of 3 3 .1 µg/L is predicted for the Proposed Action, which would be an increase to 3,521 % of the modeled CEC scenario and more than six times the 5 µg/L water quality standard. Lead concentrations in the West Pit Flowpath are predicted at 5.2 µg/L - an increase to 800% of the modeled CEC scenario and four times the applicable 1.3 µg/L water quality standard for lead.430 If the concentrations of solutes modeled for the CEC in the flowpaths when they reach the Partridge River are the same as CEC levels modeled for the same flowpaths at the property line,431 applying the ratios of relative differences provided in the FEIS, cobalt, aluminum, and lead would still violate applicable water quality standards at the point where they reach the Partridge River a mile away. In the PolyMet FEIS, cobalt reaching the Partridge River from the West Pit Flowpath could reach 24.3 times the CEC level, thus estimated at 22.8 µg/L -- four times the 5 µg/L water quality standard. Aluminum from the East Pit Category 2/3 Flowpath could be 2.9 times the CEC level, thus estimated at 171 µg/L -- considerably above the 125 µg/L water quality standard. Lead from the West Pit Flowpath could be 5.8 times the CEC level, thus estimated at 3.8 µg/L -- nearly three times the 1.3 µg/L chronic water quality standard for the Partridge River. Mine site seepage to the Partridge River would also reflect substantial increases in flowpath concentrations of chloride, sulfate, beryllium, cadmium, selenium, and zinc.432 The FEIS data cited above suggest a potential that substantial degradation of water quality would result from mine site seepage of pollutants. None of these sources of degradation were analyzed in the MPCA's antidegradation review.	The MPCA has reviewed the available information regarding modeled estimates of effluent and determined the design model was a more representative estimate of discharge concentrations. The FEIS model (GoldSim) included assumptions that overestimated the potential effects, which was appropriate for the environmental review process. As described in MPCA's antidegradation review, the MPCA determined that the design modeling provided a more realistic estimate.
543-EL	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	In the course of environmental review of the Poly Met project the Commissioner of the Minnesota Department of Health, Dr. Edward Ehlinger, expressed concern that fracture patterns may affect the Duluth Complex in St. Louis County, suggesting that fractures "may act as possibly conduits for higher rates of groundwater flow" through bedrock. 433 The map of tailings site fractures, first prepared by J.D. Lehr and then produced by a consultant for Poly Met, shows fault lines on both the northwest and northeast sides of the proposed Poly Met tailings basin.434 Since the proposed Poly Met plant and tailings site is located along the highest reaches of their Embarrass River subwatershed, groundwater in the surficial aquifer flows across the tailings site and toward the Embarrass River.435 Between the tailing site and the Embarrass River, there are 38 wells (all dots), only 23 (red dots) of which were sampled by PolyMet during the course of environmental review. 436 The Poly Met FEIS illustration of the groundwater flowpath from the tailings site flows toward many of these residential wells, as well as to the Embarrass River and its tributary creeks.437 Manganese contamination of groundwater and residential wells between the Poly Met tailings site and the Embarrass River raises particular concerns. EPA's secondary maximum contaminant level for manganese is 50 micrograms per liter (µg/L), and Minnesota's health-based limit on manganese in drinking water, based on neurotoxic effects on infants, children and adults, is 100 µg/L _438 Concentrations of manganese draining north toward residential wells would be 863.6 µg/L at the north toe; 1,311.5 µg/L at the west toe; and 1,378.2 µg/L at the northwest toe.439 These levels range from 86 to more than 137 times the groundwater level set by the Minnesota Department of Health to prevent deficits in learning, memory attention and motor skills.440 Concentrations of lead in tailings toe seepage would be 13.7 at the west toe and 57.8 at the north toe.441 The EPA's maximum contaminant level goal for lead is zero "based on the best available science which shows there is no safe level of exposure to lead. "442 The MPCA may have relied on the sanguine and unsupported assumptions in the PolyMet FEIS about the rate of seepage collection from unlined facilities to assume copper-nickel mine tailings seepage would not degrade groundwater. If these assumptions are the basis for MPCA's conclusions that degradation will be avoided, they should be reflected clearly and specifically as NPDES/SDS permit conditions, the violation of which will be directly enforceable. If neither the MPCA nor Poly Met wish to be bound by the performance specifications used to justify the choice of a dirt trench around an unlined mound as seepage containment, consideration of other and better practices to minimize degradation becomes essential.	See response to Comment 543-EJ above. All residential wells were sampled for which the property owner gave permission and access. The MPCA has reviewed groundwater well data in the region, and found natural background conditions for these parameters to be highly variable, including in the proposed project area. In addition, a holistic review of the entire dataset that considered "tracer" and indicator parameters showed that localized elevated concentrations of these parameters were not the result of seepage from the existing tailings basin. The MPCA did not make any specific statements on this topic in the Fact Sheet, but considered this during the EIS process and during permit development.
543-EM	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Failure to consider best practices to prevent and minimize degradation. Focusing primarily on PolyMet's proposed treatment of tailings seepage with reverse osmosis, the MPCA determined "there is no prudent and feasible prevention, treatment, or loading offset alternative available to completely avoid degradation of these waters." The MPCA continued, "The only way the project could eliminate degradation would be to not discharge any water at all."443 WaterLegacy believes that, apart from the need to require specific treatment for mercury removal,444 reverse osmosis may be the best available technology to treat tailings and process wastewater. Although we believe that the economic benefits of the project are overstated, we understand that the environmental review record contains evidence to support the MPCA' s conclusion that the Poly Met Project would have economic benefits. In addition to endorsing the reverse osmosis water quality treatment system, the MPCA more generally concluded, after reviewing a list of alternatives adopted by Poly Met in the environmental review process, "The proposed project will implement the best technology in practice and treatment. "445 MPCA also determined that due to a "combination of controls and mitigation" the proposed PolyMet Project would meet rule requirements for protection of groundwater. 446	See response to comments Water-707-D and Water-720-E.The comment argues that alternative designs and practices should have been considered in the antidegradation analysis. Alternative project designs were considered during the EIS, which was found adequate by the Minnesota DNR and was not subsequently challenged. See FEIS section 3.2.3. The EIS found that the alternatives did not meet the purpose and need of the project, and/or did not have less impact. The MPCA's antidegradation review also considered the alternatives to the project, including those evaluated in the EIS. In its review of the overall design of the facility and the application of engineering controls and wastewater treatment technologies, MPCA did consider best practices that would feasibly avoid or minimize degradation. The draft permit includes requirements for the construction of engineering controls; these are consistent with the design reviewed for the antidegradation review. The antidegradation review took into account the operating limits for sulfate and other parameters that are included in the draft permit to conclude that feasible measures are being taken to minimize degradation.

543-EN	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	With respect to preventing the release of untreated wastewater and contamination to groundwater and surface water, we believe that many aspects of the Poly Met project reflect outmoded technology and unreasonable rejection of best available alternatives for siting, design and management. The MPCA's antidegradation review did not conduct sufficient analysis to determine that there are no prudent and feasible alternatives to prevent or minimize degradation. The Poly Met FEIS predicted that its tailings facility would produce 3,880 gallons per minute (gpm) of seepage,447 equivalent to 2,041,000,000 gallons per year. As detailed in Section 2 of these comments and in the preceding discussion in this Section, tailings seepage will be highly contaminated for many parameters that affect aquatic life, wildlife and human health. Despite PolyMet's representations, it is clear from experience at the LTVSMC tailing basin with the Second Creek pumpback system as well as the examples cited by Poly Met, that tailings seepage will escape capture and degrade both surface and groundwater at a much higher rate than in PolyMet's rosy predictions. Nothing in the Draft NPDES/SDS permit would prevent this disadvantageous outcome. A dry stack tailings facility on a liner system sited on a secure foundation, rather than on tailings and slimes, is the best available technology to limit the potential impacts of Poly Met tailings leachate and seepage on groundwater and surface water quality. Dry stack tailings disposal reduces seepage rates, as compared with slurry tailings. It is estimated that the seepage rate from slurry tailings is 6.4 gallons per minute (gpm) per acre, the seepage rate from paste or thickened tailings 0.06 gpm per acre and the seepag from dry filtered tailings 0.007 gpm per acre.448	See response to comment Water-720-E. Alternative tailings basin designs and locations were considered in the EIS process. See DEIS sections 3.2.3.1 and 3.2.4.1, and Table 3.2-2; FEIS section 3.2.3. Dry stacking of tailings, in particular, was addressed in the FEIS in thematic response to comment theme ALT 10 (FEIS, pg. A-314) where it was determined by DNR that this alternate technology does not have significant environmental benefit over the proposed project. The response concluded that: dry stacking of tailings would require a lined facility; construction of a liner over the LTV tailings would not be feasible; and constructing a new lined tailings basin in a different location would be counterproductive because it would increase footprint effects of the project. The MDNR found the EIS adequate and that decision was not subsequently challenged. The conclusions from the EIS were incorporated into MPCA's antidegradation review.
543-EO	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Although WaterLegacy understands that the MPCA may appreciate the opportunity to secure treatment of seepage from the LTVSMC taconite tailings basin, the Poly Met Project must stand on its own. Action can and should be taken separately by the MPCA to update and issue permits and compel remediation at many mining facilities operating and polluting under expired and unenforced permits, including but not limited to the LTV SMC tailings basin. A copper-nickel mine facility proposed in 2018 should not use a site and technology adopted in the 1950s and since shown to be inadequate to protect water quality even from less toxic taconite wastes. In addition to adoption of best available tailings waste storage practices, Water Legacy believes that there are several feasible and prudent measures that should be required by MPCA to prevent and minimize degradation of water quality under routine operations and to minimize the threat of yet more severe degradation.	The NPDES permit was written to meet the requirements of the Clean Water Act and state law, without reliance on the beneficial side effect of collection of the existing seepage.
543-EP	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	First, the MPCA should deny any NPDES/SDS permit that allows Poly Met to site the hydrometallurgical residue facility (HRF) on the site currently proposed. Even if all wetlands were excavated and a sound foundation built, the proximity to the flotation tailings dam could result in seepage to the HRF or instability of dams on the south side of the tailings basin.449 The threats of HRF liner deformation or dam instability are substantial and the results could be catastrophic; the feasible and prudent alternative is to find a better site. At the mine site, there are several feasible and prudent alternatives that would avoid or minimize degradation of water quality. Each should be required by the MPCA as conditions of an NPDES/SDS permit that will degrade water entering the Partridge River and may result in violations of water quality standards as well as degradation in surface waters more proximate to contaminant sources.	See response to Comments 543-AP through 543-AR. This comment does not raise any new facts for MPCA to consider, it merely disagrees with MPCA's conclusion. The design components of the HRF were raised in the EIS and DNR, in consultation with MPCA, considered those issues. The issue of foundation stability was considered in the EIS and requirements for a detailed process of investigation, design and MPCA approvals are included in the draft permit to address that issue.
543-EQ	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The Category 1 waste rock stockpile should be lined, if in-pit disposal has a legal impediment.	See response to Comment Water-707-C. The adequacy of the Category 1 waste rock stockpile design was assessed in detail in the EIS and the consideration of alternatives has been adequately addressed in the EIS. The MDNR found the EIS adequate and that decision was not subsequently challenged. The conclusions from the EIS were incorporated into MPCA's antidegradation review.
543-ER	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The overburden storage and laydown area (OSLA) and its associated pond should also be lined, and	This comment does not raise any new facts for MPCA to consider, it merely disagrees with MPCA's conclusion. The comment questions the efficacy of controls required in the NPDES permit. The same issues were raised in the EIS and DNR, in consultation with MPCA, considered those issues. See RGU Consideration of Comments on the FEIS at 420. The proposed equalization basin design was reviewed by MPCA and determined to be consistent with that required statewide for similar industrial wastewater pond applications. MPCA concluded that this design will protect water quality.
543-ES	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	the Equalization Basins should have a dual liner system. All sumps, ponds and basins at the mine site should be designed and managed to contain a maximum precipitation event - rather than a 25-year or 100-year rainfall - without overflow, and a back-up system should be in place to prevent overflow of untreated wastewater should the primary system of pumps and pipes to the mine site fail.	This comment does not raise any new facts for MPCA to consider, it merely disagrees with MPCA's conclusion. The comment questions the efficacy of controls required in the NPDES permit. The same issues were raised in the EIS and DNR, in consultation with MPCA, considered those issues. See RGU Consideration of Comments on the FEIS at 175. The proposed equalization basin design was reviewed by MPCA and determined to be consistent with that required statewide for similar industrial wastewater pond applications. MPCA concluded that this design will protect water quality.

543-ET	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The Draft 401 Certification for the PolyMet Project is premature given the substantive deficiencies of the Draft NPDES/SDS Permit; the absence of an up-todate Section 404 application; and the lack of a current evaluation of the effects of Project water appropriations on the Upper Partridge River headwaters. In addition to the substantive grounds for denial of the Section 401 certification requested by PolyMet for its NorthMet copper-mine project, the MPCA should deny the Draft 401 Certification because it is premature due to substantial unresolved controversy regarding the Draft NPDES/SDS permit, the absence of an up-to-date Clean Water Act Section 404 application, let alone a draft permit, and due to the lack of any evaluation of the effects of Poly Met Project water appropriations on Upper Partridge River stream resources that may include degradation of class 2 beneficial uses and may require mitigation. MPCA precedent justifies denial of Section 401 certification until such time as the NPDES/SDS process is complete. In 2011, the MPCA was asked to certify under Section 401 an Aitkin AgriPeat operation that would have opened several hundred acres of wetlands for harvesting. Public comments on the draft permit raised questions about the adequacy of its limits on mercury effluent, and the MPCA determined that certification was premature until the permitting concerns had been resolved: At this time, the MPCA is unable to provide the requested Section 401 Water Quality Certification, which would indicate that the proposed project can reasonably be anticipated to comply with the applicable state water quality standards ... The process for issuing the required MPCA NPDES/SDS permit for this project, which would regulate the project's proposed wastewater discharges to ensure compliance with the applicable water quality standards, has not yet concluded (due, in part, to substantive comments received on the draft permit placed on public notice.450 The MPCA also found that Section 401 certification was premature due to the ongoing process not yet completed to address compensatory wetland mitigation with the U.S. Army Corps of Engineers ("Army Corps"). Certification was denied without prejudice. The MPCA did not make a final determination on the project's ability to comply with water quality standards, and allowed the applicant to reapply for certification after "the required wastewater permitting process is concluded" and "after a final proposed compensatory mitigation plan is furnished."451 In the Poly Met Project case, the MPCA has only recently placed the Draft NPDES/SDS Permit on public notice. As reflected in the preceding pages of substantive comments and our request for a contested case hearing, the NPDES/SDS process for the Poly Met Project is far from concluding. The discharges proposed in the current Draft Permit would not comply with Minnesota or federal law, and it remains to be seen whether the Draft Permit can be modified so that the Poly Met Project could be certified under Section 401. The time is not ripe for Section 401 certification. The MPCA noted in its 401 Certification Fact Sheet that PolyMet has arranged for and secured regulatory approvals for the purchase of 1282 wetland mitigation credits from the Superior Mitigation Bank, and has secured the option to purchase up to 1,800 wetland credits , hich the MPCA perceived were suffi ient to address wetland mitigation requirements.452 However the MPCA did not suggest that the additional purchase option had obtained regulatory approval.	The statute does not require the completion of an NPDES permit, and in many cases a 401 certification is issued in the absence of an NPDES permit. In addition, section 401 requires that state certification of a project precede issuance of a 404 permit. The comment does not identify a legal basis requiring a 404 permit to be available at the time of 401 certification.
543-EU	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	The MPCA is undoubtedly aware that there is no current Section 404 application for the PolyMet Project, and that the last Revised Wetland Permit Application for the PolyMet NorthMet Project was submitted on August 19, 2013. The August 19, 2013 Application, for which a second public notice was issued in November 2015, contained a description of mitigation requirements and a proposal for wetland mitigation that are substantially different from PolyMet's current proposal,453 summarized in the MPCA's 401 Certification Fact Sheet. No current Section 404 permit application has been submitted by PolyMet and no public notice has been provided for the new assessments of wetlands mitigation requirements and the new compensatory mitigation plan. The Army Corps is continuing to work on a compensatory mitigation plan for wetlands that will be directly or indirectly impacted by the Poly Met mine project.	The MPCA evaluates the application materials submitted to draft a 401 certification. Any discrepancies between the proposals to the USACE and MPCA must be resolved before 404 permit issuance.
543-EV	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	However, after environmental review was completed, Poly Met submitted requests for water appropriations permits reflecting uses of water from the Partridge River watershed an order of magnitude greater than the appropriation that had been described in the final environmental impact statement for the Poly Met Project. In the FEIS, the highest aggregated estimate of appropriations from the mine site Partridge River headwaters watershed was 2,845 gallons per minute (gpm).454 The total of all draft Poly Met Water Appropriations Permits from the Partridge River headwaters watershed for the mine site is now 28,820 gpm.455	MPCA assessed existing uses in the Partridge River (AUID 04010201-552) in 2011. The appropriations permit requires listing the maximum possible water usage, which is not equal to the actual anticipated usage necessary for the project. In addition, condition 4(b) of the 401 certification requires evaluation of existing and beneficial uses if hydrology changes by 20 percent, and mitigation if there is any loss.
543-EW	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Our comments on the Draft PolyMet Water Appropriations Permits requested an evaluation of whether the proposed mine site appropriations would assure an adequate supply of water in the Partridge River headwaters, would preserve groundwater use for future generations, and would not harm ecosystems under applicable State law in Chapter 103G. We also requested, under applicable law, that the Minnesota Department of Natural Resources (DNR) set a protective elevation for th Upper Partridge River and define periods of low flows when during which appropriations that remove at r from the head aters watershed must be disallowed.456	This is beyond the scope of the 401 certification. The conditions of the appropriations permit are under the jurisdiction of the DNR. In addition, the comment does not have a reasonable basis because it misconstrues the appropriations permit application. The appropriations permit requires identification of the maximum possible water usage, which is not equal to the actual usage. Simultaneous maximum use from each of the many appropriation sources is unlikely.
543-EX	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	In addition to the requirements pertinent to DNR water appropriations permits, Minnesota water quality standards set a narrative standard for all class 2 waters that includes degradation resulting from "material alteration" of the physical qualities of a water body "to the extent that attainable or previously existing beneficial uses are actually or potentially lost. "457 We know of no analysis done since Poly Met applications for water appropriation permits were filed to determine whether the proposed appropriation would result in a material alteration of the Partridge River headwaters so that attainable or previously existing beneficial uses are actually or potentially lost.	The conditions of the appropriations permit are under the jurisdiction of the DNR. In addition, the 401 certification requires assessment of effects on uses for any hydrology change of greater than 20 percent, so there is not a reasonable basis to conclude that the appropriation can remove all flow from the river.
543-EY	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	Until this analysis is done, the MPCA has no assurance that PolyMet's proposed water appropriations from the Partridge River headwaters will comply with either water appropriations statutes or water quality standards. It is possible that degradation of the beneficial use of the Upper Partridge River for aquatic life will preclude permitting or Section 401 certification. It is possible that changes will need to be made in the Poly Met Project plan in order to comply with Minnesota law. At the least, it is possible that the Project will require a plan for stream mitigation to replace functions lost or impaired due to consumption of water resources in the Partridge River headwaters. Hydrologic information provided in an appendix to the Cross-Media Analysis done for Poly Met to support Section 401 certification suggests there are some discrepancies in assessment of hydrology and water consumption in the Partridge River headwaters where the mine site is proposed. The Hydrology Summary confirms, "Water that will be captured in the mine water system will be removed from the Partridge River watershed, resulting in a reduction in runoff and baseflow to the Partridge River during operations. '458 The Hydrology Summary states that average annual flow under existing conditions at SW004 in the Upper Partridge River south of the proposed mine site is 13.97 cubic feet per second (cfs), which will be reduced to 13.37 cfs during the time of maximum mine site impacts.459 However, as noted above, PolyMet's applications for water appropriations permits and the draft permits prepared in response to these applications would authorize 28,820 gallons per minute in appropriations from the mine site, equivalent to 64.21 cfs. Although it is anticipated that Poly Met, on average, would consume less water than allowed under the these permits, in their most recent drafts PolyMet's water appropriations permits would allow the Company to consume more than four-and-a-halftimes the average annual flow of water in the Partridge River at the mine site. The MPCA has already recognized that, under existing conditions, the Partridge River headwaters have a 7Q 10 flow (lowest 7-day average that occurs once every 10 years) of zero, so effluent limits cannot be protective if they allow any dilution of discharged pollutants. 460 In its detailed comments during environmental review, the EPA explained that "projected increased contaminant concentrations above baseline or 'no action' levels" and "the concomitant effect of projected lower stream flows" should be considered together to determine whether the Poly Met project would degrade water quality.461	See response to Comment 543-EX.

543-EZ	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	In a prior case involving headwaters stream impacts resulting from the expansion of U.S. Steel's Minntac mine, the MPCA denied Section 401 certification without prejudice until it could be determined whether stream impacts complied with state water quality law. The MPCA emphasized that tream mitigation for the project was required and that stream mitigation issues must be resolved before a 401 certification could be granted.462 WaterLegacy has provided the MPCA with compelling substantive grounds to deny issuance of the Poly Met Draft NPDES/SDS Permit and to deny Section 401 certification for the Poly Met copper-nickel mine project. In addition, based on the current state of the record, we believe that issuance of Section 401 certification is premature. Substantive issues pertaining to the NPDES/SDS permit are highly contested, the Section 404 application has not been made current, and new issues raised by PolyMet's applications for water appropriations permits have yet to be analyzed to determine whether appropriations from Partridge River headwaters would comply with either DNR permitting law or Minnesota narrative water quality standards.	This comment does not raise a factual issue, it merely opines a legal perspective on the relationship between the 401 certification process and NPDES permitting requirements. The comment does not cite a legal basis for delaying the certification or permit. The comment does not explain why the project-specific letter cited must apply to every instance.
543-FA	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	As detailed in Section 2 of the preceding comments, Petitioner disputes whether the Draft NPDES/SDS Permit violates the Clean Water Act and its implementing regulations by failing to perform reasonable potential analysis or establish permit conditions to prevent discharge to surface water through hydrologically connected groundwater from causing or contributing to an exceedance of Minnesota water quality standards. In addition to questions of federal and state law under the jurisdiction of the commissioner, material facts defined more thoroughly in the comment text are disputed, including but not limited to the following: A) whether Poly Met Project mine site and plant site discharge to surface water through hydrologically connected groundwater has the reasonable potential to cause or contribute to an exceedance of Minnesota water quality standards, particularly although not exclusively as a result of uncontained tailing seepage and Category 1 waste rock stockpile seepage;	See Response to Comments 543-AB through 543-AY, particularly 543-AB through 543-AI.
543-FB	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	B) whether the Draft NPDES/SDS Permit contains specific and enforceable conditions and limits to prevent Poly Met Project discharge from causing or contributing to exceedance of Minnesota water quality standards as a result of discharge to surface water through hydrologically connected groundwater.	See Response to Comments 543-AB through 543-AY, particularly 543-AB through 543-AI.
543-FC	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	As detailed in Section 3 of the preceding comments, Petitioner disputes whether the monitoring proposed in the Draft NPDES/SDS violates the Clean Water Act and · Minnesota law due to its insufficiency to detect if and when Poly Met Project discharge through groundwater causes or contributes to violations of Minnesota water quality standards or results in unpermitted discharge. In addition to questions of federal and state law under the jurisdiction of the commissioner, material facts defined more thoroughly in the comment text are disputed, including but not limited to the following: A) whether monitoring locations are insufficient to detect where and when Poly Met contaminants discharged through groundwater seepage daylight to surface waters of the United States;	See Response to Comments 543-AZ through 543-BH.
543-FD	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	B) whether monitoring locations are insufficient to detect whether PolyMet direct discharge to surface waters causes or contributes to exceedance of water quality standards or violations ofNPDES/SDS permit conditions;	See Response to Comments 543-AZ through 543-BH, particularly 543-BB through 543-BH.
543-FE	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	C) whether monitoring locations are insufficient to detect leakage from lined sources of contamination and propagation of Poly Met Project contaminants through the surficial aquifer; and	See Response to Comments 543-AZ through 543-BH, particularly 543-BB through 543-BH.
543-FF	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	D) whether monitoring parameters are insufficient or inappropriate to detect failure of seepage containment systems at the tailings waste facility and Category 1 waste rock stockpile and to detect northward flow of PolyMet pollutants.	See Response to Comments 543-AZ through 543-BH, particularly 543-BG.
543-FG	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	As detailed in Section 4 of the preceding comments, Petitioner disputes whether the Draft NPDES/SDS permit for the Poly Met Project violates the Clean Water Act and Minnesota law by failing to set limits for direct discharge to surface water with the reasonable potential to cause or contribute to violation of Minnesota water quality standards. In addition to questions of federal and state law under the jurisdiction of the commissioner, material facts defined more thoroughly in the comment text are disputed, including but not limited to the following: A) whether PolyMet has demonstrated the efficacy of the proposed water quality treatment at the large scale needed and for the influent resulting from its coppernickel mining Project;	See Response to Comments 543-BO through 543-CJ, particularly 543-BQ through 543-BV.
543-FH	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	B) whether there is a reasonable potential that mercury in PolyMet Project direct discharge to surface water will exceed the Lake Superior Basin water quality standard and contribute to mercury impairment in receiving waters due to faulty influent assumptions and the lack of mercury removal technology in the proposed wastewater treatment system;	See Response to Comments 543-BO through 543-CJ, particularly 543-BX through 543-CB.
543-FI	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	C) whether there is a reasonable potential that specific conductivity in Poly Met Project direct discharge to surface water will exceed Minnesota narrative water quality criteria precluding toxicity and will contribute to fishes impairment in receiving waters; and	See Response to Comments 543-BO through 543-CJ, particularly 543-CC through 543-CH.
543-FJ	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	D) whether the Draft NPDES/SDS would allow direct discharge to surface waters from existing L TVSMC tailings that have the reasonable potential to cause or contribute to exceedance of Minnesota water quality standards.	See Response to Comments 543-BO through 543-CJ, particularly 543-CI through 543-CJ.
543-FK	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	As detailed in Section 5 of the preceding comments, Petitioner disputes whether the Poly Met Project is likely to cause or contribute to violations of Minnesota water quality standards for mercury, increase mercury impairments, and degrade water quality by increasing mercury levels, thus precluding NPDES permit issuance or assurances needed for 401certification under federal and state law. In addition to questions of federal and state law under the jurisdiction of the commissioner, material facts defined more thoroughly in the comment text are disputed. Each of the disputed material facts A) through G) described below would demonstrate that the Poly Met cross-media analysis on which the MPCA relies for its Draft 401 certification is unsound, so that the MPCA has no reasonable assurance that the Poly Met Project would not result in violations of water quality standards, and endanger the environment and human health: A) whether the exclusion of impacts of sulfate and mercury seepage from groundwater renders the cross-media analysis of mercury unsound;	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-FL	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	B) whether the failure to evaluate the impacts of sulfate and mercury in surface water discharged or released to wetlands renders the cross-media analysis of mercury unsound;	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-FM	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	C) whether the failure to analyze the effects of changes in wetland and stream hydrology on mercury release, methylation and transport renders the cross-media analysis of mercury unsound;	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-FN	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	D) whether the exclusion of impacts on mercury methylation from multiple sources of sulfur and sulfide deposition at both the mine site and the plant site renders the crossmedia mercury analysis unsound;	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-FO	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	E) whether exclusion of mine site mercury deposition, water bodies closest to mercury sources, and mercury deposition to wetlands in analyzing mercury and methylmercury increases renders the cross-media analysis of mercury unsound;	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.

543-FP	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	F) whether the misleading analysis of mercury methylation in a single "wetland of interest, both because of distorting exclusions and because of its singularity, renders the cross-media analysis of mercury unsound;	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-FQ	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	G) whether modeling and analysis that systematically minimize the cumulative potential for mercury and methylmercury impacts renders the cross-media analysis of mercury unsound; and	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-FR	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	H) whether as a result of the above there is a reasonable potential that Poly Met Project effects on sulfate and mercury in groundwater seepage, sulfate and mercury in surface water discharged or released to wetlands, hydrological impacts including the drying and wetting of high methylating wetlands, and air deposition of both mercury and various forms of sulfur particulates and gases will have a cumulative effect to increase mercury in the water column and methylmercury in fish tissue in receiving waters, including Great Lakes Basin waters that are already impaired due to excessive levels of this bioaccumulative substance of immediate concern.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
543-FS	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	As detailed in Section 6 of the preceding comments, Petitioner disputes whether the antidegradation analysis performed for the PolyMet Project with respect to pollutants other than mercury and methylmercury is inadequate for NPDES/SDS permitting or for Section 401 certification. In addition to questions of federal and state law under the jurisdiction of the commissioner, material facts defined more thoroughly in the comment text are disputed, including but not limited to the following: (A)whether the failure to analyze impacts from release of pollutants to groundwater and surficial aquifers renders the antidegradation analysis inadequate to determine whether the Poly Met Project would degrade surface water and/or groundwater; and	See Response to Comments 543-EH through 543-ES, particularly 543-EH through 543-EM.
543-FT	Paula Goodman Maccabe	Just Change Law Offices/Water Legacy	(B) whether the failure to consider best practices to prevent and minimize degradation, including dry stack tailings, liners and relocation of a concentrated waste facility from an unstable foundation, renders the antidegradation analysis inadequate for NPDES/SDS permitting or to support Section 401 certification.	See Response to Comments 543-EH through 543-ES, particularly 543-EN through 543-ES.
544	BLANK	Citizen	Sulfide Mining is: A Type of mining that pollutes local waters with acid-mine drainage	Comment noted. General comments related to water quality and flow were considered during the environmental review process. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
545	BLANK	Citizen	Relies on outdated technology and a flawed tailings basin	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
546	BLANK	Citizen	Long-term risks to health and safety outweigh short-term benefits	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
547	BLANK	Citizen	Operational for 20 years BUT will need active water-treatment plants for 100's of years beyond!	Comment noted. This comment pertains to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to this comment.
548	Kevin Malmquist	Citizen	I attempted to submit my comments on the MPCA permits for the Polymet project at 6: 15pm CDT on Friday 3/16/18 and was informed the comment period had ended. This was noted as the final day comments would be accepted. It seems odd in the digital age to end the online day prematurely when comments can be accepted automatically throughout the evening unattended. In the hopes that my comment can still be viewed and/or put into the public record, I'm mailing it directly to you. If you need any more information to make it count, please don't hesitate to call me.	The public notice for the draft permit clearly states on page 1 that the public comment period ends at 4:30 p.m. on March 16, 2018.
549	Kevin Malmquist	Citizen	My comment is as follows: Many of my friends and family didn't make it to the public hearings and will likely not be commenting here. This is not because they are okay with the PolyMet mining project, but because they broadly assume that the MPCA exists to be good stewards and protectors of MN. I would have stood for myself, them, and the other 74% of MN that oppose this project at the hearing in Duluth, but was not given a chance. Too many others were bussed in from the Range and flooded the commenting opportunities. So, I would like to state my opposition to all MPCA permits and certifications for the PolyMet project here.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
550	Kevin Malmquist	Citizen	It seems to me beyond foolhardy to give the green light to PolyMet. I've heard a lot about "risk" and whether or not it is worth the risk. When the EPA concludes that the pollution control systems failure rate for sulfide mines is 93% during operation and 100% after the mine closes, how is that "risk"? That is CERTAINTY! I've also heard a lot of talk about "technologies" and "innovation", but the wet tailings dam waste storage method is a 1950s era "technology" that has had decades to show that it will fail, time and time again. Is this really innovation good enough for Minnesota?	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
551	Kevin Malmquist	Citizen	There's a reason we aren't being given adequate financial assurance ... it's because this dam WILL FAIL and this project will pollute our land and water long into a future we cannot comprehend. MN will end up footing the bill and the monetary and public health cost will be far more than the value of anything mined. It would probably be cheaper for MN to give a living wage for a couple decades to the 300 or so families on the Range that the mine would employ. There is no risk here, and what is certain is pollution in perpetuity. Is this the legacy you want to leave from your time in public service?! Is this what you want to let happen through YOUR DECISIONS?	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.

552	Kevin Malmquist	Citizen	I think it might be easier for me to take this position having grown up next to a Superfund site in the Gary/Morgan Park area of Duluth. We were raised with warnings not to swim in the St. Louis River or eat the fish. But of course, we did. We also occasionally played in the sludge piles US Steel abandoned and left behind broken fences and signs to not trespass. Now here we are finally trying to do right, cleaning up that mess and others in the St. Louis River Estuary ... large sums of money and effort spanning dozens of organizations and untold hours of person-power and you are setting us up for the next disaster before we are even finished. Please, reject this and all permits and certifications for the PolyMet Project and do the right thing for MN and for our children and grandchildren.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
553	Libby Bent, Deanna Erickson, JT Haines, Bridget Holcomb	Duluth for Clean Water	Please find enclosed an urgent new report detailing how the PolyMet Inc. NorthMet permit application did not adequately consider increasing precipitation resulting from climate change or the impact of snow melt in their tailings basin and dam design. The members of Duluth for Clean Water call for the PolyMet permit to mine to be denied. We are sharing the findings of this report in the hopes that you will join us.	Comment noted. This comment pertains to issues considered in the development of the DNR Dam Safety permit. No changes were made to the draft permit in response to this comment.
554	Libby Bent, Deanna Erickson, JT Haines, Bridget Holcomb	Duluth for Clean Water	Climate change has already resulted in marked decreases in extreme cold and increasing rain in every month of the year in Northern Minnesota. Duluth for Clean Water sought to understand how the PolyMet proposal accounts for anticipated climate change impacts in the future. With indefinite water treatment planned at the copper/nickel mine tailings basin, due diligence requires consideration of the impacts of long-range climate trends on the tailings basin and dam. This is absolutely essential to protect downstream and nearby communities. Through a grant from the Indigenous Environmental Network, we engaged respected hydrologist and engineer, Tom Myers, Ph.D1 , to analyze the underlying assumptions on precipitation events as they relate to the PolyMet permit applications.	The MPCA did not attempt to quantify the specific effects that climate change may have on wastewater flows at the project. However, the MPCA did consider storm event precipitation in its review of the permit application, particularly as it relates to the potential for sump and pond overflows to result in an unauthorized discharge. For example, the review indicated that mine water sumps and ponds typically have normal operating capacity for the 100-year, 24 hour precipitation event (approximately 5.2 inches), and have additional capacity within the freeboard as a safety factor. In the case of a larger 500-year or 1000-year storm event, water can be transferred to the Equalization Basins if needed, where sufficient freeboard capacity is available to contain the aggregate volume of a 1000-year storm event (estimated at 7.0 inches of precipitation in 24 hours) without an overflow. Overflows resulting from large storm events at other mine site features would flow to the mine pits where it would be removed for treatment as mine pit dewatering. For areas where an overflow could result in an unauthorized discharge, such as at the FTB seepage containment system and the mine site equalization basins, the permit requires that redundant pumping capacity be available.
555	Libby Bent, Deanna Erickson, JT Haines, Bridget Holcomb	Duluth for Clean Water	The resulting report shows that PolyMet did not plan for climate change impacts in its tailings basin design. The report (enclosed) compares the probable maximum precipitation (PMP) predicted in the proposed PolyMet tailings basin alongside local climate change models for Biwabik, MN. Not only did PolyMet fail to account for increasing precipitation resulting from climate change, the applicant failed to consider the impacts of melting snowpack at all. The PMP reflected in PolyMet's proposed tailings basin design is only 55°/o of the PMP when both snowpack and increasing heavy rainfall are considered (38 inches versus 68 inches in 72 hours). Such a discrepancy would significantly increase the chance of dam failure, either by overtopping, piping, or foundation failure.	Comment noted. This comment pertains to issues considered in the development of the DNR Dam Safety permit. No changes were made to the draft permit in response to this comment.
556	Libby Bent, Deanna Erickson, JT Haines, Bridget Holcomb	Duluth for Clean Water	This is unacceptable and dangerous to Minnesota, especially downstream communities. The agencies charged with protecting Minnesotans and our portion of the Lake Superior watershed have a duty to act. By not accounting for accurate precipitation events and by disregarding snowpack, the NorthMet permit as drafted is inadequate. Please join Duluth for Clean Water in speaking publicly about these concerns and request the permit be denied. Demand action from both the permitting agencies and our local, state and federal elected officials. The safety of our communities and the long-term future of Lake Superior lies in our hands today.	See response to comment 554.
557	Libby Bent, Deanna Erickson, JT Haines, Bridget Holcomb	Duluth for Clean Water	The attached report to this comment, "Risk Analysis of Probable Maximum Flood and Climate Change at the PolyMet Flotation Tailings Basin", details possible risks at the tailing basins as a result of climate change.	Comment noted.
558	197 Signatures	Citizen	Dear Commissioner Landwehr, Commissioner Stine, and Governor Dayton, These comments are submitted on behalf of the persons signing below. We also seek to remind you of the many comments from medical and health professionals that have been disregarded during the past four years in regards to PolyMet's EIS. During the past four years, medical associations representing over 30,000 physicians and health professional have tried repeatedly to have our voices heard regarding the need for an independent and transparent analysis of health risks, including a Health Impact Assessment (HIA), prior to the consideration of permits for the PolyMet project. These appeals for objective and open consideration of health impacts of the PolyMet mine project have been made by the following: Minnesota Medical Association (see attached letter) MAFP Minnesota Academy of Family Practice (see attached letters) Minnesota Nurses Association (see attached letter) Minnesota Public Health Association (see attached letters) Minnesota Department of Health (see attached letter).	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment. The issue related to a health study was addressed as part of the EIS process.
559	197 Signatures	Citizen	The final environmental impact statement (FEIS) for the PolyMet project was deemed "adequate" by the Minnesota Department of Natural Resources (DNR) even though no HIA was completed and minimal information was provided regarding the effects on human health from the impacts of first copper-nickel sulfide mine project ever permitted in Minnesota.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
560	197 Signatures	Citizen	Since the FEIS was completed, there has been no independent or transparent process to evaluate health impacts from air emissions and seepage of pollution from the PolyMet project, which are likely to disproportionately impact tribal and low-income communities, fetuses, infants and children. The Minnesota Pollution Control Agency (MPCA) has allowed PolyMet to propose its own studies without involving the medical community or the community of patients we serve.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
561	197 Signatures	Citizen	On many of the issues we raised as concerns during environmental review, the PolyMet project has not improved. In fact, it seems that the agencies have allowed PolyMet to take several steps backward. Although the DNR emphasized when deeming the FEIS adequate that PolyMet had promised to capture more than 99% of its polluted seepage from the tailings basin and more than 95% of its polluted seepage from the permanent waste rock pile at the mine, its draft permits place no limits on polluted seepage and require no enforceable standards for performance for any seepage capture.	See response to Comment Water-342.
562	197 Signatures	Citizen	The MPCA draft water pollution permit provides no control over contaminated wastewater that is collected in the tailings basin or waste rock pile, then seeps from groundwater into wetlands and streams. The MPCA, whether in its draft permit or its draft certification, seems to ignore one of the biggest threats posed by copper-nickel mining: the seepage of sulfates and toxic metals into both groundwater and connected surface water. MPCA doesn't even propose to monitor the nearest surface water where seepage is likely to cause violations of water quality standards.	See response to Comment Water-510.

563	197 Signatures	Citizen	The DNR has not required a modern dry stack tailings disposal method to reduce the risk of dam failure, failure which would cause downstream contamination with lead, arsenic and manganese as well as sulfates that increase mercury methylation. The DNR also hasn't required any study of the effects on downstream water quality, drinking water, mercury methylation and bioaccumulation resulting from potential dam failure at the PolyMet wet slurry tailings basin. This type of information is critical to assessment of health risks as well as downstream ecological and financial risks.	Comment noted. This comment pertains to issues considered in the development of the DNR Dam Safety permit. This comment also poses questions or contains statements about issues previously considered during the environmental review process and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
564	197 Signatures	Citizen	We know that contamination of our water supply with sulfates and heavy metals (see attached letter from Dr. Saracino) would have the potential to cause permanent damage to the brains and nervous system of our unborn children, infants and children.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
565	197 Signatures	Citizen	Changes allowed by the DNR since the PolyMet FEIS, such as eliminating the wastewater treatment facility at the mine site, seem to make the project more, not less, of a risk to water quality and human health. Neither DNR nor MPCA has required PolyMet to disclose just how contaminated each potential source of pollution at the mine site and tailings site will be.	See response to Comment Water-511. The GoldSim modeling conducted as part of the EIS specifically considered the flow rates and chemistry from the various project sources. The results of this modeling then informed the design of the different components of the WWTS; these were described in the WWTS Design and Operation Report that was submitted as part of the NPDES permit application.
566	197 Signatures	Citizen	Rather than being reassuring, the DNR and MPCA draft permits and certification of the PolyMet mine increase our concern that human health will be harmed in our communities which are downstream from the proposed PolyMet project. These permits set no enforceable standards to control polluted seepage and fail to require modern technology to reduce the risk of tailings pollution and dam failure.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
567	197 Signatures	Citizen	The scale and permanence of threats from PolyMet copper-nickel mining in the headwaters of the St. Louis River, America's largest tributary to Lake Superior, require a different approach. Minnesota's government agencies must not allow such a risky endeavor based on poor quality information and unprotective conditions. The weak draft permits proposed by the DNR and MPCA would protect PolyMet, not human health. They would be an egregious betrayal of the trust the people of Minnesota have placed in the very agencies that are meant to protect us. We oppose the draft permits and certifications currently proposed by the Minnesota Department of Natural Resources and Minnesota Pollution Control Agency for the PolyMet copper-nickel mine project.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
568	Minnesota Nurses Association	Minnesota Nurses Association	This attachment to Multiple-181 is a letter which was submitted on March 10, 2014 concerning the SDEIS.	Comment/submittal noted.
569	Donald M. Jacobs	Minnesota Medical Association	This attachment to Multiple-181 is a letter which was submitted on September 25, 2014 requesting a health risk assessment to be conducted.	Comment/submittal noted.
570	M. Tariq Fareed	Minnesota Academy of Family Physicians	This attachment to Multiple-181 is a letter which was submitted on July 22, 2015 requesting a health risk assessment to be conducted.	Comment/submittal noted.
571	M. Tariz Fareed	Minnesota Academy of Family Physicians	This attachment to Multiple-181 is a letter which was submitted on July 1, 2015 requesting a health risk assessment to be conducted.	Comment/submittal noted.
572	Dania Kamp	Minnesota Academy of Family Physicians	This attachment to Multiple-181 is a letter which was submitted on May 25, 2016 as a petition for rulemaking.	Comment/submittal noted.
573	Kristen Godfrey Walters	Minnesota Public Health Association	This attachment to Multiple-181 is a letter which was submitted requesting a health risk assessment to be conducted.	Comment/submittal noted.
574	Lindsey E.A. Fabian	Minnesota Public Health Association	This attachment to Multiple-181 is a letter which was submitted on June 17, 2016 as a petition for rulemaking.	Comment/submittal noted.
575	Edward P. Ehlinger	Minnesota Department of Health	This attachment to Multiple-181 is a letter which was submitted on March 13, 2014 concerning the SDEIS.	Comment/submittal noted.
576	Marlyn Swanson	Citizen	If it is so important to gain copper & other minerals her I ask are our electronics recycled in USA or China? If this is such a "good deal" for jobs here, why is a foreign country getting the profit?	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
577	Marlyn Swanson	Citizen	Has anyone looked at previous work sites to see resulting pollution? Will this be worth destroying our beautiful waters, forests, & critters?	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
578	Kathleen Anumn	Citizen	Sulfide Mining is: A Type of mining that pollutes local waters with acid-mine drainage	Comment noted. General comments related to water quality and flow were considered during the environmental review process. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
579	Kathleen Anumn	Citizen	Relies on outdated technology and a flawed tailings basin	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
580	Kathleen Anumn	Citizen	Long-term risks to health and safety outweigh short-term benefits	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
581	Kathleen Anumn	Citizen	Operational for 20 years BUT will need active water-treatment plants for 100's of years beyond!	Comment noted. This comment pertains to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to this comment.

582	Jane L. Soukup	Citizen	We respectfully request that you deny the NorthMet Mining Project Water Quality Permit for the following reasons: •As stated by the Environmental Protection Agency, sulfide mining is the most toxic industry and creates a much greater risk than iron ore mining. •It is a well-documented fact that sulfide mining has never been done without a breach. Never. •This draft permit proposes the same wet slurry storage method that caused a catastrophic collapse in the Mount Polley mine project in British Columbia, Canada in 2014 and the Samarco project in Brazil.	Alternatives for tailings disposal were addressed during the EIS process. Dam safety issues are addressed in the DNR's dam safety permit
583	Jane L. Soukup	Citizen	•This draft permit would allow PolyMet to use billions of gallons of water per year that would drain into the headwaters of the Lake Superior Water Basin without adequate protection.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
584	Jane L. Soukup	Citizen	•The Environmental Impact Statement provided by PolyMet concedes that water treatment from this mining proposal would be required for 200 years and the overall site for 500 years. Are we, as constituents of the MN DNR and homeowners near this proposed mine, to believe that PolyMet will continue to pay for this for the entire 500 years???? We think not!	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
585	Jane L. Soukup	Citizen	•According to the Minnesota Voter's Environmental Priorities Survey in February 2017, 74% of those polled oppose sulfide mining and nearly half are very concerned about rollbacks in environmental laws.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
586	Jane L. Soukup	Citizen	•In his State of the State address on February 21, 2018, proposed $477 million in clean water initiatives, which includes $214 million for the Clean Water Fund and supports efforts to protect sensitive groundwater and drinking resources. Please protect our water first... before it is put at risk! Protecting clean water should be our first and foremost objective.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
587	Jane L. Soukup	Citizen	•In the March-April, 2018 issue of the Minnesota Conservation Volunteer magazine, a magazine published by MN DNR, the article "The Long Reach of Legacy" made the following statement regarding the November, 2008 Clean Water, Land and Legacy Amendment: "More than $2.2 billion has been allocated as a result of the amendment, which increased the state sales tax from 6.5 percent to 6.875 percent in July 1, 2009 ". It goes on to list the projects that this money has been allocated to, such as "reduce harmful drainage into waters" and "monitoring aquifers to ensure the quality of drinking water". As taxpayers in the State of Minnesota, we vehemently oppose any approval of this or any sulfide mining project that will potentially require our tax dollars to clean up their mess! DENY THE NORTHMET MINING PROJECT WATER QUALITY PERMIT, AND PROTECT THE CLEAN WATER AND LAND THAT WE HAVE FOUGHT FOR SINCE NOVEMBER OF 2008!	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
588	Enrique Gentzsch	Citizen	Dear Governor Dayton, Congratulations, Governor Dayton, on your conversion to openly support the nightmare PolyMet Mining project for Da Range of Minnesota. The promise of "JOBS, JOBS, JOBS" is just too much of a carrot to resist, even for a Democratic Party Governor like you, Sir. This is very disappointing since it shows that you have given up advancing the claim of your political party's name, the party "OF, BY and FOR the PEOPLE", or democracy.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
589	Enrique Gentzsch	Citizen	Protecting the Waters is really the highest order of obligation in any system of government, as just one name will confirm it: Flint, MI. The government of the State of Michigan totally failed its people, and for what goal? It definitely was not democracy!	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
590	Enrique Gentzsch	Citizen	You have revealed your hand for the copper-nickel mining in northeast Minnesota. You have also made a judgement against the protection of our national Waters, by the release of the sulfides from such mining. The impact will be inevitable, Governor Dayton, as you approve such economic recklesness. It is regrettable that you moved so seamlessly into the corporate-dominated political domain, and away from the PEOPLE!	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
591	Enrique Gentzsch	Citizen	But then, your DNR Commissioner, Tom Landwehr, does not grasp the concept of the "Defense of the Land", even though that is what his name means in German, which includes "our Waters". As an active MPCA employee in Water Quality on a fish kill case, I met with DNR staff who accused me of leniency for the perps, even though the end result yielded more benefits to the State Waters. Where are these DNR employees now, when the threat from this mining to the Waters of Minnesota, and the nation, are irreversible?	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
592	Enrique Gentzsch	Citizen	It appears that our corporate-dominated politics is now willing to gamble to write the epitaph for human existence on this planet. You, Governor Dayton, took the lead role in that playbook, with full-throated support from your DNR Commissioner, against the People! Will this be how you will be remembered by Minnesotans? "Governor Dayton, helped turn Minnesota [i.e., Land of the sky-blue Waters] into the "Land of beer-colored Acid Waters". That, Governor, is a truly unenviable remembrance for any caring human being.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
593	Katie Krikorian	Citizen	It makes no sense to me that the Pollution control agency can give permission for copper-nickel-sulfide mining based only on the "beliefs" that it can and will be done safely and in a manner that won't pollute the air, land, and water around it. Scientifically, there is no reason to believe this. All the science points to guaranteed pollution, the question is only for how long and will there be enough money and effort to minimize what is sure to happen. Regardless, it will definitely destroy the life that currently lives in those forests and wetlands. The minute amount of metals per waste rock could be mined out of recycled technology, providing jobs and protecting our natural environment.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
594	Carla A. Arneson	Citizen	The One Hundred Mile Swamp was cut off before it crossed the Laurentian Divide on 10 Environmental Impact Statement (EIS) maps; these maps could have been corrected before the Final EIS was released to the public, but they were not. Minnesota's agencies have already allowed removal of bedrock pillars by taconite mining at the Peter Mitchell mine, essentially removing the Laurentian Divide. If permitted, PolyMet's toxic sulfide mining pollution could flow north, not only through the Peter Mitchell pit to Birch Lake, but also by way of the One Hundred Mile Swamp, following the directional flow of groundwater determined by geologic rock types and their associated structures beneath the Laurentian Divide. The contaminant migration pathways have had little to no scrutiny in PolyMet's EIS, and cannot be known with any certainty without detailed onsite hydro-geologic investigations.	The potential for a north flow path in the groundwater from the mine site was evaluated in the EIS. The EIS stated that such flow was not likely but could not be conclusively ruled out and recommended that the issue of north flow be further addressed during permitting. The NPDES/SDS permit requires the monitoring of water levels from 11 bedrock wells and 8 surficial aquifer wells. These water level data, plus information collected during installation of the monitoring wells, will be used to assess for the future potential of north flow. It should be noted that north flow, were it to occur, would not take place until many years after mine closure when NorthMet mine pits refill with water, so sufficient time is available to assess the potential and implement mitigation, if needed, to prevent the north flow from occurring .

595	Carla A. Arneson	Citizen	2."The BWCAW and Voyageurs National Park are located in different watersheds than the NorthMet Project area. Surface water flow and surficial groundwater flow from the NorthMet Project Proposed Action would not directly, indirectly, or cumulatively affect the water in these areas. Potential bedrock groundwater flow from the Mine Site north to the Northshore Mine, if determined possible through monitoring, would be prevented." (PolyMet) Prevented how? "Adaptive management strategy" is meaningless, unscientific, and makes all risk assessments invalid. All contamination management issues must have scientifically proven plans in place before permitting, not after.	Potential mitigation measures to prevent north flow through the bedrock aquifer are discussed on pages 58-59 of the DNR's Record of Decision on the EIS.
596	Carla A. Arneson	Citizen	A mythical water mound will not stop contamination from seeping into the Peter Mitchell Pit to be released into Birch Lake-into the Kawishiwi River watershed-flowing to the Boundary Waters Canoe Area Wilderness. The entire PolyMet permit has been based on PolyMet not polluting two watersheds. Only polluting waters of the St. Louis River watershed, as if that was acceptable. Absolutely not the Kawishiwi River/Rainy River watershed! The people of Minnesota are being deceived with an unproven, improbable scenario and with altered maps of a significant wetland area at the NorthMet mining site.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
597	Carla A. Arneson	Citizen	3.PolyMet testwork showed that LTVSMC tailings leached arsenic; indicating the basin should not be disturbed, nor the tailings used for covers and dams, due to the high potential for toxic releases of arsenic to groundwater-releases above water quality standards. Documented elevated arsenic risks-discussed within the agencies at the beginning of the permitting process- were tied to the No Action Alternative. Yet the agencies went ahead with a plan to deliberately disturb the basin and use the tailings for other purposes. Was the public ever informed in the EIS of this serious arsenic issue? The No Action Alternative was the only valid choice from the beginning; it is still the only valid choice. (Or building a new tailings basin.) It is not scientifically valid to reuse the LTVSMC tailings basin for copper -nickel sulfide mining. Apparently, since the LTVSMC tailings basin is already leaking, the agency solution is to risk releasing high levels of arsenic-then add massive amounts of toxic sulfide mining waste to the already leaking basin-and then capture the basin's legacy pollution, including arsenic, at the same time that PolyMet collects and treats the entire overwhelming mess. Whenever that may be. It is delusional.	Comment noted. This comment poses questions or contains statements about issues previously considered during the environmental review process and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment. The permit includes an Operating Limit for arsenic, set at the water quality standard, for the discharge from the WWTS. (The WWTS treats the seepage captured by the FTB seepage containment system.)
598	Carla A. Arneson	Citizen	4.Adding massive amounts of toxic sulfide mining pollution to an already leaking, polluted basin while risking the release of arsenic-then collecting everything-is scientifically impossible on such a scale. Where is the scientific proof, where has it been done on such a scale in a like environment? To experiment with Minnesota's waters is not in the best interest of the people of Minnesota. Requiring Cliffs Erie to put in a collection system and to clean up the mess it assumed responsibility for would have been the best choice for Minnesota. It is fiscally irresponsible for the state of Minnesota to permit sulfide mining. The monetary losses would far outweigh the gains. Our waters are Minnesota's most valuable resource, environmentally, economically, and strategically.	The effectiveness of the FTB seepage containment system was evaluated in the EIS. The permit has been revised to include the barrier design specifications (i.e., thickness, permeability) that were evaluated in the EIS and that it be constructed and operated so as to maintain an inward hydraulic gradient across the barrier. The containment systems function on the principle of maintaining an inward hydraulic gradient across the barrier wall that is part of the system design. If the hydraulic gradient is inward, hydraulic head is greater outside the basin and water cannot escape -- instead, water will tend to flow into the capture system. The Modflow modeling conducted for the EIS indicated that the capture efficiency for both systems would be in excess of 90% and the subsequent GoldSim modeling indicated that degree of capture would be sufficient to protect downgradient surface and ground water quality. See FEIS at 5-7. The MPCA has revised the language of the permit to state that if an inward gradient is not reestablished within 14 days of detection of an outward gradient, it is a violation of the permit. The permit also requires that the effectiveness of the seepage capture system be evaluated on an on-going basis.
599	Carla A. Arneson	Citizen	5.It is false that virtually all of the pollution can be collected. And if by some miracle that could occur, it would only weaken a tailings basin that is designed to leak for stability. Once tailings are deposited in the LTVSMC basin there are two choices, let the basin leak or return all polluted waters to a basin that would then only become increasingly unstable, leaving Minnesota with an ever greater risk of catastrophic failure.	See response to Comment Multiple 750. Dam safety issues are addressed in the DNR's Dam Safety permit.
600	Carla A. Arneson	Citizen	6.NorthMet would become a toxic pit; there is no feasible way to keep the exposed Virginia Formation from turning pit waters into a death trap for wildlife, particularly waterfowl. 7.The Duluth Complex is a sole-source aquifer. Exploration drilling has turned the area into a contamination network for proposed sulfide mining pollution. Destroying a region's water supply is criminal.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
601	Carla A. Arneson	Citizen	8.No cost/benefit analysis has been done for PolyMet.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
602	Carla A. Arneson	Citizen	9.The number of projected mining jobs would be highly questionable; the amount of mining waste generated annually by PolyMet's proposed NorthMet Project fluctuates significantly over the proposed 20 years of operations, which translates to fluctuating mining layoffs with significantly unstable economic benefits. This fact was not made clear in PolyMet's Environmental Impact Statement.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
603	Carla A. Arneson	Citizen	10.No adequate risk assessment (including for human health) has been done for PolyMet. PolyMet has not done a risk assessment, they have many disparate reports, and none are cumulatively put together as a human health or environmental risk assessment. A complete Human Health and Ecological Risk Assessment needs to be done to assess cumulative impacts to the human environment, as required under NEPA The Air Emissions Risk Assessment (AERA) in the FEIS cannot be reviewed for accuracy or completeness by anyone because the full report has not been provided anywhere. The AERA does not qualify as a human health risk assessment such as the USEPA uses (USE PA Risk Assessment Guidance for Superfund, EPA/S40/R95/132PB96-963203), and the LTVSMC plant site is a superfund site. The MPCA AERA process is not written in Rule but is an agency administrative policy. The AERA lacks outside scientific peer review by such agencies as USEPA. Thus the use of the AREA resulted in an inadequate human health evaluation for the air in PolyMet's Final EIS.	The issue of a human health risk assessment (or Health Impact Assessment) was addressed as part of the EIS process and the EIS was deemed adequate. AERA issues were addressed as part of the Air Quality permitting process.

604	Carla A. Arneson	Citizen	No other risk assessments have been performed for soils, sediments, surface or groundwater, even though impacts are documented currently in the FEIS references in both the surface and groundwater from the existing LTVSMC plant site. These impacts must be added to PolyMet's proposed use of tons of additional chemicals including the surfeit of waste minerals and elements that have been identified within in the rock from numerous reports from such sources as DNR minerals and the NRRI. These wastes will require perpetual treatment as stated in the FEIS. NEPA requires EIS's to protect the human environment (NEPA sec. 2). This requirement has not been met, and is a major omission invalidating PolyMet's FEIS. Since there was not a standard human health risk assessment performed on the air, soils, sediments, surface or groundwater, the DNR cannot certify that human health will be protected. The lack of protection of human health in air, soils, sediments and water means the DNR cannot issue PolyMet water appropriation permits under MN. Statute 103G.297 Subd. 3 (2) & (3). Nor can the MPCA issue an air quality permit, a water quality permit, or a 401 Water Quality Certification for PolyMet.	The issue of a human health risk assessment (or Health Impact Assessment) was addressed as part of the EIS process and the EIS was deemed adequate. The permit complies with Clean Water Act requirements identified by EPA, including permit coverage for all pollutant discharges expected from the facility. The permit contains limits consistent with 40 CFR part 440.
605	Carla A. Arneson	Citizen	11.No comprehensive, independent Health Impact Assessment has been done for the PolyMet Project, despite repeated requests from Minnesota's health professionals; all requests were denied, denying the utmost protection to the public, particularly to Minnesota's children.	The issue of a human health risk assessment (or Health Impact Assessment) was addressed as part of the EIS process and the EIS was deemed adequate.
606	Carla A. Arneson	Citizen	12.The addition of toxic sulfide mining waste-including dozens of chemicals that were unidentified in the EIS-to a basin already contaminated with high levels of arsenic, is putting the children of Minnesota at extreme risk for physical and neurological impairment. Also, chemicals associated with the PolyMet Project-identified and unidentified in the EIS-have not been studied synergistically. Total toxicity has been vastly under reported.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
607	Carla A. Arneson	Citizen	13.No cost/benefit analysis has been done for a sulfide mining industrial complex.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
608	Carla A. Arneson	Citizen	14.No cumulative impact/risk assessment, inclusive of human health, has been done for a sulfide mining industrial complex. The public needs to know what the probable impact of a sulfide mining industrial complex would be, before we begin to permit such a complex with PolyMet. A cumulative risk assessment-including for health- is critical for a massive sulfide mining industrial complex in such a rare water-rich environment as northeastern Minnesota. It is false to claim each mine is permitted on its own merits when the agencies are well aware that once the standards are set for PolyMet they are set for all sulfide mining companies seeking permits in Minnesota.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
609	Carla A. Arneson	Citizen	15.Minnesotans have not been given an accurate way to gauge the true cost of what the public is risking. The only acceptable financial assurance under such unknown risk -for a high-risk industry in a high-risk location-is total projected costs in cash- including reclamation costs-upfront. Or no permit. Must also include insurance for catastrophic failures or natural disasters, which it is highly doubtful PolyMet could obtain. Minnesota must not take on the industry's risk. All cash up front or no permit. The proposed financial assurance is far too low, and payment comes far too late in the mining process.	Comment noted. Comments related to this theme generally pertain to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to these comments.
610	Carla A. Arneson	Citizen	16.Who is lying? The taconite industry that says it cannot use reverse osmosis. Or PolyMet that claims it could use reverse osmosis for sulfide mining, but then uses taconite tailings leachate-contaminated water for its "Successful Water Treatment Plant." PolyMet cannot be permitted when its 'successful' use of reverse osmosis is suspect and unverifiable. And the concentrated contaminants that would remain after reverse osmosis have unknown levels of toxicity, and therefore unknown disposability. There are no other examples of sulfide mines of this scale in a comparable water-intensive environment and climate that have not polluted surrounding waters. The entire EIS is based on PolyMet's ability to use reverse osmosis successfully. No proof. No permit.	See response to Comment Multiple-488. The concentrate from membrane treatment portions of the WWTS will be routed to the chemical precipitation portion of the WWTS for metals removal. The waste sludges from this process will be disposed of in a permitted offsite landfill or in the HRF once it is built.
611	Carla A. Arneson	Citizen	17.When I asked for an explanation as to why information from Barr Engineering contradicted the DNR classification for a 100-year event, the DNR refused to answer. I was questioning the assertion in the Duluth News Tribune that PolyMet was now designing its tailings dam to withstand a 1,000-year event, and asking how that determination had been made. Initially the DNR sent me a portion of an email from Barr, "the proposer," to explain why a Duluth News Tribune article suddenly referenced a PMP. Part of that email stated the following: "The Flotation Tailings Basin has been designed to hold the 72-hour Probable Maximum Precipitation (PMP) event, which is approximately 38 inches, without overtopping. The PMP does not have an assigned return period. 10 year - about 4" in 72 hours, 100 year - about 6" in 72 hours, 1000 year - about 9" in 72 hours, PMP - 38" in 72 hours." I then questioned the fact that the PolyMet EIS consistently referred to a 100-year event as being in 24 hours. As did the DNR website, "A 24-hour duration 100-year storm for most Minnesota communities is roughly six to seven inches." It was when I asked the following questions that the DNR became less than forthcoming. I asked, "Why then has Barr or proposer decided to state that a 100-year event is about 6 inches in 72 hours, rather than 6 inches in 24 hours?" I added, "I am also wondering how it is possible to upgrade PolyMet's tailings basin to a so-called PMP, without also upgrading the entire interconnected EIS, which was based on a 100-year event?" The DNR response was as follows. "Thanks for your interest and questions. We will be addressing all comments during the permitting process." (I was responding to an email I received from the DNR, not a draft permit application.) So, why has Barr/proposer decided to state that a 100-year event is about 6 inches in 72 hours, rather than in 24 hours? It appears such a change would skew the results of a PMP. Spreading six inches over 72 hours, instead of six inches of rainfall in 24 hours, certainly makes a difference in flooding potential. Again, I am wondering how it is possible to upgrade PolyMet's tailings basin to a so-called PMP, without also upgrading the entire interconnected EIS, which was based on a 100-year event not a 1000-year event?" I am also aware that a 100-year event or a 1000-year event can occur at any time, it is a matter of percentages. 500-year events are no longer rare, yet PolyMet's EIS is still based on a 100-year event.	Comment noted. This comment pertains to issues considered in the development of the DNR Dam Safety permit. No changes were made to the draft permit in response to this comment. Permit review did consider extreme storm events for sizing of mine site pumps and ponds. Mine water sumps and ponds typically have normal operating capacity for the 100-year, 24 hour precipitation event (approximately 5.2 inches), and have additional capacity within the freeboard as a safety factor. In the case of a larger 500-year or 1000-year storm event, water can be transferred to the Equalization Basins if needed, where sufficient freeboard capacity is available to contain the aggregate volume of a 1000-year storm event (estimated at 7.0 inches of precipitation in 24 hours) without an overflow.
612	Carla A. Arneson	Citizen	18.Which raises the point that an EIS largely based on a 100-year event is wholly inadequate in a time of great climate change, when 500-year events are becoming more and more frequent, and 1000-year events are occurring as well.	See response to comment Multiple 612
613	Cecilia Wicklund	Citizen	I request that permits for PolyMet Mining be denied. This project is dangerous to the health of the Environment. Hazards abound to humans, wildlife, clean water and animals. I request that permits for PolyMet Mining be denied. This project is dangerous to the health of the Environment. Hazards abound to humans, wildlife, clean water and animals.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

614	Cecilia Wicklund	Citizen	There are no reasons that this project would be of any benefit to northern Minnesota. The very few jobs that may be available to residents cannot outweigh the dangers that loss of tourism dollars would occur without clean environment, continuation of good fishing, pristine waters and clean air.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
615	Cecilia Wicklund	Citizen	I respectively ask that permits for PolyMet are denied and the precious northern Minnesota ecosystems be protected. Thank you very much.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
616	Fran Kascielak	Citizen	Polymet can not prove that there is not a significant risk of disastrous damage to the pristine environment that now exists in Minnesota. Clean water cannot be sacrificed. So much is at stake and so many people's welfare is threatened if Polymet mines. This is a nightmare! The leaching of heavy metals into the environment poses hazards to humans such as brain development to infants and children.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
617	Fran Kascielak	Citizen	Toxic air emissions will cause health problems, death to plants and animals. Our valuable clean water will be permanently contaminated and aquatic life destroyed. Please do not let this happen to our area and earth. Protect the valuable place we call home.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
618	Brian White	Citizen	I'm writing to oppose granting of environmental permits for the proposed PolyMet mine in Northeast Minnesota. It is apparent that this project is not worth the serious and potentially devastating environmental risk it could cause to the local area's environment and natural resources (and economy). Breached toxic sulfide residue dams can cause permanent environmental damage. One breached mining residue dam in British Columbia ruined the ecology of a stream that fed into a tributary of the province's Fraser River. From what I've read, PolyMet cannot ensure that such a devastating occurrence would not occur in its proposed Minnesota mine project. I am currently an Oregon resident, but I grew up in northern Minnesota and will be moving back to the area in retirement. I care deeply about the environment of the state and trust that your agency, through its sound examination of scientific information on the risks of this project, will decide to deny permits associated with this project.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
619	Joy Turman	Citizen	Please protect our water our beautiful natural resources for our children and grandchildren, from the toxic sulfide mines in the Northeast Minnesota. Please say No!	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
620	Signature illegible	Citizen	Please do not approve the permit for the Polymet project in N. Minn. The risk to our water & our childrens children's water is too great. There is no guarantee this company will be around in the future to deal with problems if they even could clean it up.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
621	144 Signatures	Friends of the Boundary Waters	Also continuing for a thousand years or more are the dangers presented by the tailings basin dam. Because safer alternatives for dealing with mine waste exist, permitting a new mine to store toxic waste in liquid form behind a dam of this type is particularly unconscionable. I object to the State of Minnesota sanctioning this threat to future generations living downstream. Please protect the future of the people, wildlife and waters of northeastern Minnesota by saying "no" to this mine plan.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
622	Joy Davis	Friends of the Boundary Waters	Commenter added... "Don't let them destroy the Boundary Waters!!	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
623	Kristen Bon-Zorb	Friends of the Boundary Waters	This is completely stupid- who is getting "paid-off"? Why do we want this, why does DNR want this? Why does Governor Dayton want this? Why not do dry stacking?	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment. Alternatives were addressed as part of the EIS process.
624	Pat Tammen	Friends of the Boundary Waters	Please stop Polymet- we need to keep our water clean and save our wetlands- no mining in Superior National Forest- that forest belongs to all of us- no mining should be allowed. Thanks - Pat Tammen	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
625	Linda Kriel	Citizen	The proposed NPDES/SDS permit is weak and fails to control the biggest threat from sulfide mining – the seepage of contaminated Dear Commissioner Stine, I strongly urge the MPCA to deny water pollution (NPDES/SDS) permit and deny the Section 401 certification for the PolyMet copper-nickel wastes to groundwater and then to drinking water and surface water from mine pits, waste rock stockpiles, tailings basins and other sulfide mine waste storage facilities.	See response to Comment Water-510.
626	Linda Kriel	Citizen	The Section 401 certification relies on PolyMet's assumptions, exclusions and misleading information to claim that the PolyMet sulfide mine would not violate water quality standards, degrade water quality, and endanger the environment and human health.	This comment addresses the 401 certification. No changes were made to the draft NPDES permit in response to this comment.
627	Linda Kriel	Citizen	The PolyMet draft NPDES/SDs permit and draft 401 certification would conflict with federal and state laws and would jeopardize Minnesota water quality, natural resources, health and finances.	The draft permits were developed according to current state and federal law.
628	Linda Kriel	Citizen	*The MPCA draft water pollution permit for the PolyMet sulfide mine wouldn't set limits on polluted seepage through groundwater to drinking water or surface water.	See response to Comment Water-510.
629	Linda Kriel	Citizen	*The MPCA draft water pollution permit for the PolyMet wouldn't even provide appropriate monitoring; PolyMet's pollution seeping from groundwater and welling up in wetlands and streams in violation of the Clean Water Act could go completely undetected	See response to Comments Water-510 and Water-711-A.
630	Linda Kriel	Citizen	*The MPCA draft section 401certification would ignore the deficiencies in the water pollution permit and erroneously claims that the PolyMet sulfide mine project would not violate water quality standards or degrade Minnesota water quality.	This comment addresses the 401 certification. No changes were made to the draft NPDES permit in response to this comment.
631	Linda Kriel	Citizen	*The MPCA, along with other State agencies refused to evaluate impacts on human health from the PolyMet mine project through an open and public health impact assessment (HIA) process, even though groups representing 30,000 Minnesota medical and health professionals asked for an HIA to assess threats including brain damage to fetuses, infants and children from mercury contamination of fish.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.

632	Linda Kriel	Citizen	*Now, the MPCA draft section 401certification would accept PolyMet's exclusions, assumptions and junk science to erroneously claim that the PolyMet sulfide mine project would not endanger the environment and human health.	This comment addresses the 401 certification. No changes were made to the draft NPDES permit in response to this comment.
633	Linda Kriel	Citizen	Please accept your Agency's mission as a protector of Minnesota waters, fish, wild rice, wildlife, wetlands and human health not the protector of foreign mining companies seeking profit at our expense. I ask you to reject and deny the draft water pollution (NPDES/SDS) permit and the draft 401 certification for the PolyMet copper-nickel sulfide mine project. Sincerely,	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
634	JT Haines	Duluth for Clean Water	Dear Commissioner Stine, Duluth for Clean Water objects to the draft water quality permit, draft air quality permit, and draft Clean Water Act Section 401 certification (wetlands) related to the PolyMet Mining Co. NorthMet proposal. Our objections center on two fundamental problems with the permits as drafted: 1) long-term health impacts of the proposal on the residents of downstream communities are unknown, and 2) long-term water treatment of the proposal is undefined and unreliable.Duluth for Clean Water is a Minnesota nonprofit based in Duluth, with volunteers and members around the Duluth area. Our mission is to promote a safe and healthy future for the St. Louis River Watershed, Lake Superior, and the communities who reside thereon. We have participated in the administrative processes concerning the NorthMet Mine proposal by submitting comments, retaining expert consulting services, and attending and speaking at public hearings. Our members live downstream from the proposed PolyMet operation. We drink water from, eat fish from, and rely fully upon the St. Louis River and Lake Superior for our future. Our position is that the NorthMet draft permits are insufficient to protect Minnesota, especially downstream communities, and should be denied.	Background statement for comments to follow. See comment responses below.
635	JT Haines	Duluth for Clean Water	1. Cumulative human health impacts have not been assessed. PCA's mission to "protect and improve the environment and enhance human health" based on the core value that "decisions and policies are supported by data and analysis" is instructive and should guide this decision. Heavy metals are neurotoxins that affect brain development. Pregnant and nursing mothers, infants, and young children would be most impacted by exposure to these metals. Mine waste, especially from nonferrous hardrock mining, poses a significant human health threat downstream. Given these realities, we are extremely concerned that PCA and other state agencies have so far declined to evaluate impacts to human health from the proposed NorthMet project through an independent Health Impact Assessment. We are grateful that PCA promotes a "health in all policies" approach, and we are grateful for the work of the Minnesota Academy of Family Physicians (and other medical professionals) who requested that a "comprehensive, independently produced HIA be completed for the PolyMet NorthMet Project out of a concern for the health of Minnesotans." It is effectively impossible for us to respond fully to this new-to-Minnesota proposal for impacts to air and water quality, when the cumulative impacts to human health have not been analyzed and presented . There is ample reason to conclude -- based on the history of this type of mining as the nation's most toxic industry -- that an HIA is a necessity for a data-driven analysis of these 1 draft permits. The lack of an HIA for this dangerous proposal is a clear failure in the process. Our position is that it would be an unconscionable failure to issue permits for this proposal to bring this toxic and unfamiliar industry to Minnesota when long term health impacts have not been studied or communicated. We object.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. The issue of a human health risk assessment (or Health Impact Assessment) was addressed as part of the EIS process and the EIS was deemed adequate.
636	JT Haines	Duluth for Clean Water	2. Water Quality Permit would not protect downstream communities. It appears that the draft water quality permit would not set limits on polluted seepage through groundwater to drinking water or surface water, and would not provide necessary monitoring, meaning that pollution seeping from groundwater and upwelling in wetlands and streams in violation of the Clean Water Act could go undetected. We object to the draft water quality permit on this basis.	The MPCA assessed the location of each individual well as dictated by the purpose of each well and how each well fit into the overall monitoring well network. This approach was coupled with the incorporation of existing monitoring wells (with a record of baseline water quality) and practical considerations such as access and potential disturbance to wetlands. The monitoring well network in the permit was developed to meet multiple goals, which includes monitoring the performance of engineering infrastructure; serving as indicators for the early detection of potential project impacts; and determining compliance at downgradient locations closer to the property boundary. In addition, the draft permit requires an annual assessment of the suitability of the monitoring network, and requires the proposal of additional/alternative monitoring locations in the event the original network is not sufficient, based on the ongoing collection of data (including flow direction and groundwater quality). If the MPCA determines in the future that the monitoring well network is insufficient, the agency has authority under Minnesota Rule part 7001.0170 to modify the permit, and authority under part 7001.0150 to require sufficient monitoring to determine compliance.
637	JT Haines	Duluth for Clean Water	3. The draft water quality permit violates Minnesota law requiring maintenance free closure. Minnesota Administrative Rule 6132.3200 requires that a mining area "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." Closure is defined as "the process of terminating and completing final steps in reclaiming any specific portion of a mining operation. Closure begins when, as prescribed in the permit to mine, there will be no renewed use or activity by the permittee." The NorthMet proposal currently anticipates cessation of activity at year 30, meaning "closure" would theoretically be at that date. The DNR's permit to mine, meanwhile, has no set term, effectively meaning that there is no closure defined at all . Here is a scenario that concerns us, and one which we would request that you consider: Let's imagine that an applicant has an extensive system of water controls that they plan to use, and, if everything goes perfectly, things would be mostly fine for a while. The question, especially for downstream communities, is, what do those controls look like in twenty years? Problems with non-performing mines develop over decades, and applicant companies have a history of abandoning controls as soon as they are legally, or just financially, able. Claims about the future study of "passive controls," and an incredibly extensive system of liners, trenches, pumps, caps, and pipelines -- all of which would require perpetual maintenance to work -- do not reassure us. 2 The permits as drafted anticipate water treatment for centuries or longer, maintaining hydrologic impacts, release of substances, and continuing to pose potential hazards beyond any (undefined) "closure" date. This is a clear violation of Minnesota law, including with regard to the draft water quality permit. It appears, then, that under this permit regime as drafted, PCA's enforcement of any water quality permit it may issue would be difficult if not facially impossible We are, quite simply, not protected by these draft permits over the longer term. That's not only a legal problem under Minnesota's closure requirements, it is clearly an ethical problem as well. We object. 3	See response to Comment Water-510. The NPDES/SDS permit requires the submittal ofan Annual Comprehensive Performance Evaluation Report which specifically requires the annual assessment of the perfiormance of individual engineering controls and the implementation of adaptive management, mitigation or corrective actions before potential impacts actually occur. This annual assessment is required each of the five years of this permit issuance and some updated adaptation of this is likely in future reissuances of the permit. (These future reissuances of the permit will be subject to public review and comment prior to reissuance.) The DNR administers Minnesota Rule 6132 and their Permit to Mine for the facility includes financial assurance conditions that, in part, address the long-term maintenance of necessary controls.

638	JT Haines	Duluth for Clean Water	4. Downstream communities have not provided consent. Duluth, Carlton, Cloquet, and the many other communities downstream of the NorthMet proposal have not been directly consulted on the PolyMet proposal, and some have vocally objected. Simply put, these communities have not consented. This includes the sovereign Fond du Lac Band of Lake Superior Chippewa, whose concerns have not been fully integrated into permits or the NorthMet project design. Copper sulfide mining would be new to Minnesota, and the legal and regulatory regime is untested and dated. Downstream consultation and consent should be required for a proposal as dangerous as this. We view the lack of downstream consent, including the absence of downstream consent with regard to the so-far-undetermined cumulative health impacts, as a fundamental failure in this process to date, and we request that PCA recognizes this failure in its evaluation of the proposal. We object to the draft NorthMet permits on the basis of the lack of consent of downstream communities and urge that they be denied.	Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
639	JT Haines	Duluth for Clean Water	Conclusion. The future health and prosperity of northeastern Minnesota depends on protecting our rare freshwater complex. We appreciate PCA's caution that groundwater levels have declined, and that "the prognosis turns downright grim" when the growing problem of groundwater contamination is factored in. "The bottom line on groundwater? We can run out of it." 4 If permitted, the NorthMet project would put us at substantial, and insufficiently accounted for, risk. Minnesotans should anticipate, based on the significant history of promises and non-performance by applicants for similar permits around the US, violations, exceedances, and regular permit revision applications at best, and at worst, outright failures to control pollution at unimaginable cost to our communities. The citizens of Duluth and other downstream communities are relying on the Minnesota Pollution Control Agency to fulfill its vision that "clean water, air, and land support healthy communities and ecosystems, and a strong economy in Minnesota." We urge that you deny the draft water quality permit, draft air quality permit, and draft Clean Water Act Section 401 certification (wetlands) for the proposed Northmet project. We would appreciate an opportunity to discuss our concerns with you in person as well and can be reached at the below contact information for scheduling. We have included a poem about our watershed from one of our members below.	Comment noted. This comment poses questions or contains statements about issues previously considered during the environmental review process and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). The draft permits were developed according to current state and federal law. No changes were made to the draft permit in response to this comment.
640	David Showalter	Citizen	I strongly urge the MPCA to deny water pollution (NPDES/SDS) permit and deny the Section 401 certification for the PolyMet copper-nickel mine project.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
641	David Showalter	Citizen	The proposed NPDES/SDS permit is weak and fails to control the biggest threat from sulfide mining – the seepage of contaminated wastes to groundwater and then to drinking water and surface water from mine pits, waste rock stockpiles, tailings basins and other sulfide mine waste storage facilities.	See response to Comment Water-510.
642	David Showalter	Citizen	Minnesota needs strong protections against sulfide mining pollution. The MPCA is the State's only way to provide for our my children and grandchildren. Please prove you are on the right side of this serious debate.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
643	Karen Graham	Citizen	Dear Minnesota Pollution Control Agency Commissioner, I ask you to light the "torch for nature" spreading the light of so many notable heroes before you, in particular President Theodore Roosevelt! Please deny the Permit to Mine for the proposed PolyMet sulfide mine.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
644	Karen Graham	Citizen	This mine is projected to offer jobs for 20 years of operation. In exchange for a few years, you will usher in many hundred years of sulfuric acidic runoff, 500 years of toxic pollution by PolyMet's own calculation.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
645	Karen Graham	Citizen	The estimates for requiring the holding and treating of water outflow from this mine is almost twice the years the USA has existed. What building? What structure? What company? What of our creation has lasted as long in this our country? We are not the ancient Romans.	Comment noted. This comment pertains to issues considered in the development of the DNR Permit to Mine. No changes were made to the draft permit in response to this comment.
646	Karen Graham	Citizen	We, you, the Minnesota Department of Natural Resources is considering to offer the generations to come just such an inheritance! The partner of this dismal adventure, Polymet Mining has not run any project much less mining! In point of fact, it is a company established to protect a larger corporation from liability damage. The company offers 3 years as defined by the permit to protect from environment harm and bankruptcies. They also offer 1950's style of liners to collect contaminated water and osmotic filtration system.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments. Comment noted. The draft permits were developed according to current state and federal law. Comments related to this theme generally do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
647	Karen Graham	Citizen	The risk to Minnesota's communities is simply too great – this type of mining has a 100% track record of pollution, and a tailings dam breech could be catastrophic for downstream communities. The mine's toxic wastewater would have to be treated for 500 years, 25 lifetimes. This is an unacceptable legacy to leave for current and future generations of Minnesotans.	Comment noted. Comments related to this theme generally pose questions or contain statements about issues previously considered during the environmental review process and do not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to these comments.
648	Karen Graham	Citizen	The PolyMet mine would set a dangerous precedent for Northeast Minnesota, opening the door to an industrial acid mining corridor that threatens the Arrowhead region and Boundary Waters Wilderness, the crown jewel of our state. Minnesota's legacy hangs in the balance. In the public's interest, I urge you to deny the Permit to Mine for PolyMet.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
649	Lori Andresen	Save Our Sky Blue Waters	Friends of the Boundary Waters Wilderness and the Center for Biological Diversity {hereinafter, "Organizations"} submit this Petition for a Contested Case Hearing on the Minnesota Pollution Control Agency {MPCA}'s proposed Clean Water Act Section 401 Water Quality Certification for the Section 404 {Wetlands} Permit for PolyMet Mining, Inc.'s proposed NorthMet Project. The Organizations believe that the NorthMet Project may result in water quality standard violations on several bases. Some of these are covered by the Petition for Contested Case Hearing on the NPDES/SDS Permit that will be submitted by Minnesota Center for Environmental Advocacy, to which the Organizations are signatories, and will not be repeated here.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
650	Lori Andresen	Save Our Sky Blue Waters	This petition addresses potential water quality standard violations due to: 1.Air deposition of metals and sulfur; and 2.Spillage of ore from rail cars along the haul route between the mine and the processing plant.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.

651	Lori Andresen	Save Our Sky Blue Waters	Attached to the petition and incorporated herein is a report by geochemist Dr. Ann Maest addressing the issues we raise in regards to air deposition.1 This report is based on Dr. Maest's review of PolyMet Mining Co.'s Cross-Media Report.2 The Organizations appreciate the fact that MPCA has required an extensive analysis of the potential for water quality standard violations due to the deposition of metals and sulfur from fugitive dust and other mining-related emissions. However, we disagree with many assumptions that were used, both in the modeling and in reaching conclusions based on the modeling. These assumptions are addressed briefly in this petition and in the Maest Report; we believe that a contested case hearing is necessary to determine whether faulty assumptions have resulted in an analysis that does not accurately reflect the potential for water quality standard violations.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
652	Lori Andresen	Save Our Sky Blue Waters	The Draft Certification does not address rail spillage, and other than the monitoring included in the draft NPDES/SDS permit, it is unclear what attention MPCA has given this issue. Because the materials for the various permits and permit applications are so voluminous and many reports are hidden in appendices to other reports, we use the Final Environmental Impact Statement materials to address this issue.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
653	Lori Andresen	Save Our Sky Blue Waters	We ask that MPCA hold a consolidated hearing on the water discharge and air emissions permits and the 401 Certification. We also ask that MPCA and MDNR consolidate all of the permits and issues into one hearing. There is a great deal of overlap between the permits, including the 401 Certification. An example is whether it is realistic to believe that PolyMet will achieve 90% reduction in fugitive dust, which is a matter that is covered by the air permit but has implications for the air deposition analysis. Another example is the issue of railcar spillage, which overlaps with the permit to mine. A third is the cumulative effect of groundwater affected by leachate from mine features, which should have been addressed in the NPDES/SDS permit, combined with air deposition. Consolidating all permits and issues into one hearing is necessary to avoid conflicting decisions, and would conserve resources for all parties.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
654	Lori Andresen	Save Our Sky Blue Waters	I.Statement of interest 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 and the Quetico-Superior ecosystem." As the PolyMet mine site is within the Superior ecosystem, its protection falls squarely within our mission and within the interests of our 3,000-plus members and supporters. Our members recreate not only within the Boundary Waters Canoe Area Wilderness, but also in other parts of Minnesota's Arrowhead region, on federal, state, and county land. They paddle, fish, swim, and rice on the St. Louis River downstream from the proposed mine. Impacts on water quality from the mine could affect these activities. Many of our members hunt in the area, and many more enjoy seeing and being in the presence of wildlife in its natural habitat. The strictest water quality standards that apply to the mine site protect wildlife - both aquatic wildlife, and terrestrial and avian wildlife that ingest aquatic species. For example, the 1.3 ng/L mercury standard was intended to protect wildlife like otters, fishers, and loons from impacts from eating fish with high mercury levels. If the proposed mine results in exceedances of water quality standards in the Partridge River watershed, it will impact wildlife that is important to our members.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
655	Lori Andresen	Save Our Sky Blue Waters	Most Friends members are also Minnesota taxpayers. They are Minnesota residents who hope their grandchildren and great-great-grandchildren will live in Minnesota and enjoy the Superior National Forest and surrounding lands and waters as they do. The mining project as proposed presents risks to future generations that will include the descendants of Friends members. Those risks are both to natural resources, most especially clean water, and to financial well-being, which could be impacted if the mine results in a large contaminated area that eventually must be remediated.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
656	Lori Andresen	Save Our Sky Blue Waters	The Center for Biological Diversity is a nonprofit conservation organization headquartered in Tucson, Arizona, with offices in a number of states, including an office in Duluth, Minnesota. The Center is a leading organization fighting on behalf of wildlife and wild places, including threatened and endangered species such as the Canada lynx and gray wolf that would be adversely affected by the NorthMet Mine Project. The Center believes that the welfare of human beings is deeply linked to nature -the existence in our world of a vast diversity of wild animals and plants. Because diversity has intrinsic value, and because its loss impoverishes society, the Center works to secure a future for all species, great and small, hovering on the brink of extinction. The Center has over 63,000 members, including members who own land and recreate in northeastern Minnesota, including downstream from the proposed NorthMet Mine Project. These members' interests include fishing, canoeing, wild-rice gathering, camping, hiking, and seeking quiet remote places to recreate within the Superior National Forest. These interests would be negatively and potentially permanently impacted if the NorthMet Mine Project is permitted and allowed to proceed. The Center and some of its members have been actively engaged in the NorthMet Mine Project for many years, including submitting detailed comments to state and federal agencies and attending public hearings.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.

657	Lori Andresen	Save Our Sky Blue Waters	The Center for Biological Diversity is a nonprofit conservation organization headquartered in Tucson, Arizona, with offices in a number of states, including an office in Duluth, Minnesota. The Center is a leading organization fighting on behalf of wildlife and wild places, including threatened and endangered species such as the Canada lynx and gray wolf that would be adversely affected by the NorthMet Mine Project. The Center believes that the welfare of human beings is deeply linked to nature -the existence in our world of a vast diversity of wild animals and plants. Because diversity has intrinsic value, and because its loss impoverishes society, the Center works to secure a future for all species, great and small, hovering on the brink of extinction. The Center has over 63,000 members, including members who own land and recreate in northeastern Minnesota, including downstream from the proposed NorthMet Mine Project. These members' interests include fishing, canoeing, wild-rice gathering, camping, hiking, and seeking quiet remote places to recreate within the Superior National Forest. These interests would be negatively and potentially permanently impacted if the NorthMet Mine Project is permitted and allowed to proceed. The Center and some of its members have been actively engaged in the NorthMet Mine Project for many years, including submitting detailed comments to state and federal agencies and attending public hearings. Similarly, no assessment is made of increased mercury levels in wetlands based on the 1.3 ng/L standard. Mercury levels are considered in downstream lakes and in a very truncated way in the Partridge and Embarrass Rivers, and increased sulfate levels are considered in wetlands, but increased mercury levels in wetlands are simply ignored, even though they would contribute to higher methylmercury levels, which is the point of the sulfate exercise. Failure to consider water quality standard violations in wetlands is even more pronounced in the rail spillage analysis. The poor quality of the analysis is addressed below, but for the sake of argument here, the projected area of copper water quality violations ranges between 16 and 542 acres. MPCA's certification that water quality standards will not be violated completely ignores this analysis. Material issue of fact Ia: Do the modeling exercises show exceedances of water quality standards in wetlands that are ignored by MPCA's proposed certification? Material issue of fact Ib: Do the modeling exercises cover all potential violations of water quality standards, including in wetlands? Relief requested: Deny certification if analysis predicts water quality standard violations in wetlands.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
658	Lori Andresen	Save Our Sky Blue Waters	Issue 2: The evaluation points are not the points most likely to be impacted. In assessing the potential for water quality standard violations, MPCA should identify the wetlands and/or sections of streams where impacts could occur based on all or any combination of contributing factors - background concentration, concentration and load levels from all PolyMet sources, flow, water chemistry, etc. Only after conducting the analysis for all such points can MPCA certify that water quality standards will not be violated. For the air deposition analysis, an evaluation point should be located on Second Creek below SD026 but within the upstream reach where deposition from the Plant is likely to be highest. An evaluation point should also be located at SW003 on the Partridge River, which is the point where mine features are closest to the river. Concentrations of mercury, methylmercury, and other metals (copper, cobalt, nickel, and arsenic) should all be evaluated at those locations. The analysis should also not have been limited to one "Wetland of Interest." A number of factors will contribute to the concentrations of metals in wetlands; limiting the analysis to the wetland that will receive the highest deposition is an over-simplification that may result in a failure to recognize other areas where problems are likely to occur. While the Wetland of Interest may be the wetland that is most likely to be impacted, that does not mean that no other wetland will experience exceedances of water quality standards if the Wetland of Interest does not. For many of the same reasons that monitoring is needed in wetlands other than the Wetland of Interest (an issue that is discussed below), modeling should include additional wetland evaluation points. Material issue of fact 2: Do the evaluation points used for modeling miss stream and wetland locations that may have the highest impacts? Relief requested: Redo model including additional evaluation points as determined in contested case hearing.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
659	Lori Andresen	Save Our Sky Blue Waters	Issue 3: On-site baseline monitoring in wetlands is necessary to a valid analysis. Baseline water quality monitoring has not been done in wetlands at either the mine site or along the railroad tracks. Baseline monitoring is absolutely critical to the modeling effort at both locations; without knowing what the baseline water quality is, MPCA has no idea how much additional load can be accommodated before water quality standards are exceeded. Given the length of time that this project has been undergoing review and the knowledge on the part of everyone involved that significant water quality issues are presented by this mining proposal, there simply is no excuse for this lack of data. In regard to the air deposition analysis, please refer to the discussion in the Maest Report, pp. 4-5. In addition to Dr. Maest's points, we note that no baseline water quality data is provided for any wetlands with the exception of limited specific conductance field measurements for four wetlands. When other missing and biased elements are corrected, it is possible that a lower hardness values and therefore lower metal water quality standards would apply in other wetlands as compared to the Wetland of Interest. Material issue of fact 3a: Is the estimated hardness of 60 ug/L for mine site wetlands supported by sufficient evidence? Material issue of fact 3b: Is an accurate prediction of water quality standard exceedances possible without site-specific baseline data? Relief requested: Require baseline monitoring as determined in contested case hearing; redo model using site-specific data.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.

660	Lori Andresen	Save Our Sky Blue Waters	Issue 4: The proposed monitoring prior to and during operations is insufficient to ensure that water quality exceedances will be discovered. In addition to the lack of baseline monitoring, the proposed monitoring prior to start-up and during operations is completely insufficient. Please refer to the Maest Report, pp. 14-15. Regarding air deposition, the proposed monitoring is inadequate for all constituents: mercury, sulfate, methylmercury, and other metals. In regard to mercury, sulfate, and methylmercury, the proposal is to require monitoring for the two years prior to mining, but no monitoring is proposed during actual operations. We believe that this must be an oversight, and we ask that it be corrected. In regard to metals other than mercury, nickel should be added to the list of constituents for monitoring. Two years of initial monitoring should be done prior to start-up, similar to what is proposed for mercury and sulfate. Baseline monitoring should cover a representative number of wetlands that includes all wetland types and wetlands with varying hydrology. Baseline monitoring should be used to determine what wetlands might be most likely to experience water quality exceedances for each of the indicator metals (including nickel), taking account of all contributing factors (e.g., pH, organic carbon, proximity to fugitive dust sources, background concentrations of metals). Along the railroad track, monitoring is proposed only for the streams, on the upstream and downstream side of the tracks. Upstream locations immediately adjacent to the tracks should not be used as "background" against which downstream concentrations are measures, as upstream locations could also be affected by spillage. Baseline monitoring in both the stream locations and in wetlands prior to start of the project is critical to identifying impacts. The planned monitoring will not identify impacts on wetlands. Contaminants in streams are much more likely to be flushed downstream relatively quickly. PH levels will not reflect those found in bog wetlands, and other parameters may vary as well. Baseline monitoring and operational monitoring along the railroad tracks must include all wetlands that may experience water quality standard violation due to rail haulage and/or other factors. Material issue of fact 4: Is there potential for water quality standard exceedances that the proposed monitoring plans would not detect? Relief requested: Expand monitoring plan according to above recommendations, as further defined in contested case hearing.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
661	Lori Andresen	Save Our Sky Blue Waters	Issue 5: Predictions of water quality impacts should be based on a weight-of-the-evidence standard1 rather than limited by an arbitrary measure of significance. The Organizations strongly object to the use of "measurability" as a synonym for significance, and also to the manner in which MPCA has used this equation to allow impacts that are in fact significant. Although they come at it from different angles, and have different outcomes as to the level of measurability, both the Cross-Media Report and MPCA take the position that if an increase in a particular pollutant is within the margin of error at a lab that does water quality testing (or as set by the United States Environmental Protection Agency for a particular testing method), it is ipso facto not significant. Neither the Cross-Media Report nor MPCA provide a rationale for this position, which is tantamount to taking the position that if we can't see it, it doesn't exist. To begin with, it is unclear why MPCA is using a concept of significance to allow increases in pollution that the weight-of-evidence indicates will result in water quality standard exceedances. Throughout the Cross-Media Report and in MPCA's review, the study is repeatedly touted as "conservative," e.g., over-predicting impacts to ensure that resources are protected. While we disagree that the study is conservative for reasons outlined below, we agree that the study should be conservative and that the study (and thus decisions based on the study) should err on the side of protection. MPCA's decision to allow increases in pollutants if the predicted increase is within a particular lab's margin of error is contrary to MPCA's stance of protectiveness.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
662	Lori Andresen	Save Our Sky Blue Waters	In regard to mercury in the water column and methylmercury levels in fish tissue, any increase simply should not be countenanced. This is the reasoning behind the flat-out prohibition on any new or increased point source discharges of mercury within the Lake Superior basin, the zero- mercury emission goal of the Lake Superior Binational Program, and the decision by stakeholders in the Statewide Mercury TMDL process that any facility emitting three pounds of mercury (and in many cases, less) has to contribute to reductions. It does not really matter whether the amount of an increase could be accurately measured in the field; we already know that any increase is too large. In the FolyMet case, whatever the uncertainty as to the amount of the increase, there is no question that there will be an increase. And in the Lake Superior basin, any increase is a violation of water quality standards. If some level of significance is used to allow very small increases of pollutants, that level should be something that is truly de minimus. Lab margins of error simply bear no relationship to the meaning of the word "significant." If we go that route, larger and larger increases become "insignificant" as the levels in the environment go up, taking us in exactly the wrong direction. Using the Cross-Media Report value for total mercury,3 any amount that was within 23% of background would not be a significant increase. Thus if a stream had a background mercury level of 1 ng/L, an addition of only 0.23 ng/L would be considered significant. But if a stream had a background level of 12 ng/L, almost 3 ng/L of additional mercury would be considered insignificant. Similarly, in an example used in the Cross-Media Report, if fish tissue had a concentration of 0.535 mg/kg, the addition of 0.107 mg/kg, which is more than half of the 0.2 mg/kg standard, would be considered insignificant. Significance based on a percentage of background is simply not rational, and should not be used. At the NorthMet Project, predicted changes in fish tissue mercury in lakes downstream from the plant are as high as 0.026 mg/kg. This is thirteen percent of the standard of 0.2 mg/kg. Table 5-5 of the Cross-Media Report shows a potential increased mercury concentration in Second Creek of 0.3 ng/L, almost one-quarter of the standard. In light of all of the work that MPCA has done on mercury over the last twenty years, we find it astonishing that MPCA finds these to be insignificant increases. Furthermore, it is simply not the case that we can't know that mercury levels will increase if they can't be measured. There is no relationship between these two processes. The ability to measure an increase at some point in the future is irrelevant to the exercise of predicting increases now. In any event, we cannot know ahead of time what the actual increase will be regardless of the ability of a lab to measure the increase once the plant is operational. Minnesota environmental law incorporates the concept of cumulative impacts: the resulting significant impact of contributions from many sources, any one of which may seem insignificant on its own. Most of the critical environmental issues of our time are issues of cumulative impacts, including climate change and mercury contamination of fish. The seriousness of these problems does not allow us the luxury of waiting until we advance our technology to the point where we can physically measure seemingly insignificant individual sources (as opposed to predicting them based on inputs and processes) before we address them. If the weight of the evidence indicates that pollutants will be released to the environment in amounts that could either increase the concentration at identified endpoints (if standards are already exceeded) or cause standard exceedances (if they are not), the activity should not be permitted. Material issue of fact 5: Are the increases in mercury, sulfate, methylmercury, and/or other metals shown in the Cross-Media Report significant? Relief requested: Adopt a weight-of-evidence standard to determine whether water quality standards will be violated. Deny the 401 Certification due to predicted increases in mercury in fish tissue.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
663	Lori Andresen	Save Our Sky Blue Waters	Issue 6: Nickel should be included as a modeled and monitored constituent. Please refer to the Maest Report, pp. 11-14. Material issue of fact 6: Is there potential for violation of the nickel water quality standard even if the copper and cobalt standards are not violated, in the WOI or some other location? Relief requested: Redo the modeling and analysis, adding nickel.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.

664	Lori Andresen	Save Our Sky Blue Waters	Issue 7: Minerals with significant metals content appear to have been left out of the analysis. Please refer to the Maest Report, pp. 12-14. The Cross-Media Report and its appendices do not provide a clear explanation of the minerals that were included in the emissions and deposition analyses, or how they were included. We assume that all of the minerals listed in Table 2-2 of Appendix B were included in a manner that reflects the actual mean metals concentration for each category of rock. The report indicates that simplifying assumptions were made to treat other sulfide minerals as chalcopyrite and pyrrhotite. It is unclear whether this refers only to the dissolution rate, or whether it also relates to the concentration of copper, arsenic, and cobalt in the rock. If the latter, we would like to present another challenge to the analysis on this basis, but cannot articulate it until we receive a clear explanation of the inputs to the model. Regardless of the manner in which the sulfide minerals were treated, we object to the exclusion of metals from silicate minerals from the analysis. Material issue of fact 7: Were metals levels in emissions underestimated because non-sulfide minerals containing cobalt and nickel were omitted from the exercise? Relief requested: Redo the modeling and analysis including all minerals that contain any level of the target metals.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
665	Lori Andresen	Save Our Sky Blue Waters	Issue 8: Poor hydrological data and the use of average concentrations masks the potential for seasonal water quality standard exceedances. Please refer to the Maest Report, pp. 5-9. Dr. Maest concludes, The model was used to estimate outflow from the WOI that were used to estimate the potential for flushing metals and sulfur from the wetland to downgradient areas. Given the relatively poor calibration during high and low wetland water levels, a high degree of uncertainty exists in those estimates. This is especially important because the majority of particulates and metal are exported from wetlands during period of high flow following snow melt, as discussed in the following section. Material issue of fact Ba: Does the lack of adequate hydrological data result in a potential underestimate of export of constituents to downstream waters? Material issue of fact Bb: Does the use of averaging and mean values in the context of constituent concentrations and/or hydrological conditions mask seasonal water quality standard violations? Relief requested: Require robust baseline water quality and hydrological monitoring for a suite of wetlands representing all that may be affected by air deposition. Redo the model using appropriate hydrological data (including minimum and maximum conditions) and maximum concentration data.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
666	Lori Andresen	Save Our Sky Blue Waters	Issue 9: The Cross-Media Report ignores large fluctuations in water levels that would result in significant mobilization of metals. Please refer to the Maest Report, pp. 6-9. In addition to drought cycles, the operation of the mine will itself lower the water table in an undetermined number and acreage of wetlands. These wetlands will presumably resaturate after pit dewatering ends and during periods of high rainfall and snowmetl, resulting in the export of significant amounts of metals that the Cross- Media Report assumes will remain sequestered in the wetlands. Material issue of fact 9: Did the failure to consider mobilization of metals (including mercury) due to fluctuating water levels and snowmelt effects result in an under-prediction of the potential for water quality exceedances? Relief requested: Redo model to take account of fluctuating water levels and snowmelt effects.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
667	Lori Andresen	Save Our Sky Blue Waters	Issue 10: The Cross-Media Report ignores the role of organic carbon in mobilizing metals from wetlands. Please refer to the Maest Report, pp. 9-10. Material issue of fact 10: Did the failure to consider the role of organic carbon in metals (including mercury) sequestration result in under-prediction of water quality exceedances? Relief requested: Redo model, incorporating appropriate factors to reflect the role of organic carbon in the release of metals.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.

668	Lori Andresen	Save Our Sky Blue Waters	Issue 11: Mercury increases to the Partridge and Embarrass Rivers will not be limited to what falls on open water. In the mercury analyses done for the Environmental Impact Statement, mercury loads from air deposition were calculated for in-stream lakes, but not for the Embarrass and Partridge Rivers - despite the fact that for the most part, mercury that entered the lakes had to enter the rivers first. Furthermore, the analysis ignored mercury emissions at the mine site altogether, from both fugitive dust and mobile sources. In this iteration, fugitive dust is considered, but an assumption is made that only mercury that falls directly onto open water ends up in surface water. The attached report from Dr. Ann Maest includes a preliminary rebuttal of this assumption in relation to snowmelt. In addition, this assumption is in direct opposition to the Statewide Mercury TMDL, which applies a runoff coefficient to mercury deposited on land to calculate a total load from deposition: Atmospheric loading is the product of area and air deposition; total area can be split into water area and land area to distinguish direct atmospheric loading from indirect watershed loading. To account for mercury that is buried in the soil or volatilized to the atmosphere, the watershed loading can be discounted by a runoff coefficient, which remains constant for a given region as long as there are no significant changes in land cover/use. This was tested by comparing land cover changes between 1982 and 1997 (http://www.mn.nrcs.usda.gov/technical/nri/tables/lcu_change.htm), applying standard runoff coefficients to each of the general land cover types. Although there were obvious increases in urban land use, the effect of the change was not significant to the composite runoff coefficient for the state: composite runoff coefficients were 0.289 for 1982 and 0.287 for 1997.4 If only mercury falling on open water ends up in the water, the mercury TMDL has completely miscalculated both the amount of mercury load to waters of the state and the relative contributions from point and nonpoint sources. Material issue of fact 11: Is the assumption that zero mercury that falls on upland or wetland areas (versus open water) enters surface streams valid? Relief requested: Redo the model including a factor for mercury falling on upland and wetland areas.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
669	Lori Andresen	Save Our Sky Blue Waters	Issue 12: Cumulative impacts from air deposition and leachate from mine features into wetlands will violate water quality standards. The issue of leachate from mine features is addressed in comments on the NPDES/SDS permit. To our knowledge, no cumulative impact assessment has been done to predict the combined effects of that leachate with air deposition in wetlands across the site, despite acknowledgment in the Environmental Impact Statement that water quality impacts on wetlands from both sources are likely. Our position on this issue was submitted to the U.S. Army Corps of Engineers in comments on the Section 404 permit in 2014.5 Those comments are attached and incorporated into this petition. Material Issue of Fact 12: Will the combination of leachate from mine features and air deposition result in violations of water quality standards in wetlands at the mine site? Relief requested: Denial of the 401 Certification unless and until measures are added that will prevent violations.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
670	Lori Andresen	Save Our Sky Blue Waters	Issue 13: Multiple metals toxicity is not evaluated. Please refer to the Maest Report, p. 2. Material Issue of Fact 13: Will the additive effects of multiple metals impact fish toxicity? Relief requested: In remodeling and analysis, include quantitative analysis of multiple metals and qualitative analysis of toxicity.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
671	Lori Andresen	Save Our Sky Blue Waters	The amount of wetland acreage that will be affected by ore spillage has not been accurately determined. The first PolyMet analysis indicated that 542.7 acres could be affected by copper in the spilled material to the point of exceeding water quality standards.6 Smaller acreages of exceedances were predicted for cobalt and nickel. PolyMet subsequently agreed to refurbish the cars, and claims that spillage will be reduced by 97 percent, resulting in an estimated 16 acres of water quality exceedances for copper, a claim that the FEIS adopts.7 The document referenced in the FEIS does not explain how the 97 percent reduction figure was arrived at, and includes no author or date. A footnote refers to a consultant, but no consultant is named. The document refers to a PolyMet visit to another site using recently refurbished cars, but the site is not named. In short, the estimate of the reduction in spillage that will be achieved by refurbishing the cars cannot be accepted without more support. Material issue of fact 14: Is the analysis that claims a 97 percent reduction in ore spillage adequately supported? Relief requested: Redo the analysis in a transparent, verifiable manner.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
672	Lori Andresen	Save Our Sky Blue Waters	Issue 15: Modeling inputs resulted in underestimated impacts The original modeling that produced the 542 acre estimate also likely significantly underestimated the level of impact. First, the modeling used the "concentration caps" used for modeling leachate from waste rock piles.8 This is a complete misuse of data. The 2015 Waste Rock Characterization Data Package states, The maximum concentrations of dissolved metals observed under field conditions result from multiple competing geochemical processes such as mineral precipitation and dissolution, sorption, desorption, and solubility of secondary minerals. The concentration cap, therefore, is primarily an empirical method for modeling the combined effect of these complex processes in field-scale waste rock stockpiles.9 In addition, the modeling assumed a hardness of 100, an assumption that is almost certainly wrong for wetlands.10 The listed model input parameters do not reveal the range in pH; low pH in bogs could also result in higher metal mobilization. Due to these factors (and others that may become apparent on closer examination of the model), the impacts are likely to be underestimated. Material issue of fact 15: Did model inputs result in underestimation of the number of wetland acres that will be affected by ore spillage from railcars? Relief requested: Require baseline monitoring to support modeling. Redo model using appropriate data and assumptions (or range of assumptions).	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.

673	Lori Andresen	Save Our Sky Blue Waters	Issue 16: MPCA's 401 Certification must address aluminum. Aluminum has a high potential for exceedances of water quality standards along the haulage track. However, the analysis omitted aluminum because background surface runoff already has a 20 percent likelihood of exceeding the water quality standard. Modeling showed contact water leaving the spillage strip as containing aluminum at 80 times the water quality standard at the P50 level, and 360 times the water quality standard at the P90 level. Even if spillage is reduced by 97 percent, water leaving the spillage strip could contain aluminum at more than 10 times the water quality standard. This aluminum would be added to background levels that are already often near the standard. Aluminum therefore must be considered in regard to this issue despite the lack of quantification of impacts. Material issue of fact 16: Is the spillage likely to result in additional violations of the aluminum water quality standard and/or larger margins above the standard? Relief requested: After remodeling, include an analysis that identifies the increased likelihood of exceedances of the aluminum water quality standard.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
674	Lori Andresen	Save Our Sky Blue Waters	Issue 17: The measures designed to reduce spillage are not enforceable. The 97 percent reduction figure discussed above was arrived at by assuming that the gaps on refurbished rail cars will measure 0.25" for the hinge gap and 0" for the door gap. But these parameters are not included in the permit to mine application, required in the permit to mine Draft Special Conditions, or included in any other permit. Even if the proposed monitoring were adequate (which it is not), it is not sufficient to promise to address water quality problems after they develop. The record more than indicates that there will be water quality standard exceedances, and the permit must require measures to ensure that they do not occur. Material issue of fact 17: Are enforceable requirements needed to ensure the conditions on which the rail spillage analysis was based? Relief requested: Add enforceable provisions to the Certification (or to one of the permits) that requires PolyMet to maintain rail cars with a gap of 0.25" or less for the hinge gap and 0" for the door gap.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
675	Lori Andresen	Save Our Sky Blue Waters	Issue 18: Additional requirements should be adopted to eliminate water quality standard exceedances. PolyMet continues with its plan to use refurbished side-dump rail cars for hauling ore despite modeling indicating that exceedances of water quality standards are likely to occur in a significant acreage of wetlands due to spillage along the haul route. The Great Lakes Indian Fish and Wildlife Commission, a cooperating agency in the development of the EIS, has suggested using new cars with sealed compartments to address this problem.11 PolyMet also has reviewed several options in its Rail Car Modifications Evaluation.12 An enforceable condition should be added to the 401 Certification and/or the Permit to Mine that requires measures that would eliminate this source of water quality impacts. Material issue of fact 18: Are options available that would eliminate spillage for railcars, and thus eliminate the potential for water quality standard violations? Relief requested: Require that PolyMet use sealed cars or adopt other measures that would result in no water quality standard violations along the rail track; in the alternative, deny the certification.	This comment addresses the 401 certification. See the 401 response to comment document. No changes were made to the draft 401 certification in response to this comment.
676	Lori Andresen	Save Our Sky Blue Waters	III.Proposed Finding Supporting an MPCA Decision to Hold a Contested Case Hearing The Organizations propose the following finding: MPCA finds that Friends of the Boundary Waters Wilderness and Center for Biological Diversity have raised disputed material issues of fact for which there is a reasonable basis such that the holding of a contested case hearing would allow the introduction of information that would aid the commissioner in resolving the disputed facts in making a final decision on the matter. The issues of fact include: 1a. Do the modeling exercises show exceedances of water quality standards in wetlands that are ignored by MPCA's proposed certification? 1b. Do the modeling exercises cover all potential violations of water quality standards, including in wetlands? 2. Do the evaluation points used for modeling miss stream and wetland locations that may have the highest impacts? 3a. Is the estimated hardness of 60 ug/L for mine site wetlands supported by sufficient evidence? 3b. Is an accurate prediction of water quality standard exceedances possible without site- specific baseline data? 4.Is there potential for water quality standard exceedances the proposed monitoring plans would not detect? 5.Are the increases in mercury, sulfate, methylmercury, and/or other metals shown in the Cross-Media Report significant? 6.Is there potential for violation of the nickel water quality standard even if the copper and cobalt standards are not violated, in the WOI or some other location? 7.Were metals levels in emissions underestimated because non-sulfide minerals that contain cobalt and nickel were omitted from the exercise? 8a. Does the lack of adequate hydrological data result in a potential underestimate of export of constituents to downstream waters? 8b. Does the use of averaging and mean values in the context of constituent concentrations and/or hydrological conditions mask seasonal water quality standard violations? 9.Did the failure to consider mobilization of metals (including mercury) due to fluctuating water levels and snowmelt effects result in an under-prediction of the potential for water quality exceedances? 10.Did the failure to consider the role of organic carbon in metals (including mercury) sequestration rates result in a potential under-prediction of water quality exceedances? 11.Is the assumption that zero mercury that falls on upland or wetland areas (versus open water) enters surface streams valid? 12.Will the combination of leachate from mine features and air deposition result in violations of water quality standards in wetlands at the mine site? 13.Will the additive effects of multiple metals impact fish toxicity? 14.Is the analysis that claims a 97 percent reduction in ore spillage adequately supported?	This comment offers desired language for potential findings that would support a presumed, but speculative, MPCA decision on the request for a contested case hearing. See above for detailed responses to issues raised. Comment noted.

			13. Will the additive effects of multiple metals impact fish toxicity? 14. Is the analysis that claims a 97 percent reduction in ore spillage adequately supported? 15. Did model inputs result in underestimation of the number of wetland acres that will be affected by ore spillage from railcars? 16. Is the spillage likely to result in additional violations of the aluminum water quality standard? 17. Are enforceable requirements needed to ensure the conditions on which the rail spillage analysis was based?	
677	Lori Andresen	Save Our Sky Blue Waters	IV.Requested Relief The Organizations would request the following relief in the contested case hearing, as explained above. MPCA should: 1.Deny 401 certification if the analysis predicts water quality standard violations in wetlands, streams, or fish tissue due in whole or in part to air deposition or railroad spillage, based on a weight-of-the-evidence standard. That is, if the weight of the evidence indicates that water standards will be exceeded, the certification should be denied. 2.Require a new modeling effort and analyses that incorporate: additional evaluation points; site-specific baseline water quality and hydrological monitoring data; nickel as a modeled constituent; additional minerals in ore and waste rock that contain the modeled constituents; a range (including maximum} values for baseline water quality and modeled parameters, to capture episodic or seasonal exceedances; the impacts of fluctuating water levels and snowmelt; the role of organic carbon in mobilizing metals; mercury inputs from watershed runoff and snowmelt; multiple-metal toxicity; railcar spillage predictions based on measured and verifiable parameters; appropriate, defensible inputs to the railcar spillage model; potential for exceedances of the aluminum standard; 3.If the certification is granted, require additional monitoring as described above. 4.Require that PolyMet use sealed railcars or adopt other measures that would eliminate the potential for water quality standards along the rail track.	This comment offers desired language for potential findings that would support a presumed, but speculative, MPCA decision on the request for a contested case hearing. See above for detailed responses to issues raised. Comment noted.
678	Lori Andresen	Save Our Sky Blue Waters	V.Proposed witnesses and exhibits, and time required We propose to have Dr. Ann Maest appear as our primary witness. Dr. Maest's report on PolyMet's Cross-Media Report is attached and would be introduced at the hearing. The publications and references cited in Dr. Maest's report would be introduced along with additional material not yet identified. Dr. Maest may present testimony and exhibits on additional subjects covered by this petition. Additional witnesses and exhibits have not yet been determined. We expect the presentation of this matter to require one to two days. Thank you for this opportunity to review the proposed 401 Certification. The Organizations believe that a contested case hearing is necessary to correct errors in the air deposition and railcar spillage modeling exercises that could result in unpredicted or undiscovered water quality standard violations. Respectfully submitted, Jane Reyer Advocacy Director Friends of the Boundary Waters Wilderness 401 N. Third St., Suite 290 Minneapolis, MN 55401-1475 jane@friends-bwca.org Marc Fink Senior Attorney Center for Biological Diversity 209 East 7th St Duluth, MN 55805 mfink@biologicaldiversity.org	This comment offers logistical details that are based on a presumed, but speculative, MPCA decision on the request for a contested case hearing. Comment noted.
679	Chris Knopf	Executive Director, Friends of the Boundary Waters Wilderness	Dear Commissioners Landwehr and Stine, February 2018 I am writing to urge the Minnesota Department of Natural Resources and Minnesota Pollution Control Agency not to issue a permit to mine or wastewater discharge permit to PolyMet Mining Co. The proposed permits cannot and do not protect future generations from the long-term impacts of sulfide mining. Furthermore, they do not live up to the representations made in the Environmental Impact Statement.	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.
680	Chris Knopf	Executive Director, Friends of the Boundary Waters Wilderness	In Minnesota, groundwater belongs to the public even when it is located within private property, just as surface water does. However, the PolyMet permits are written to allow contamination up to the site's boundary line, which encompasses many square miles. Aside from having no justification in Minnesota law, this is extremely poor public policy that has not been vetted through the regulatory process.	The permit includes provisions intended to prevent the groundwater from being polluted. See response to Comment Water-510. The permit ensures that groundwater outside the seepage capture system will not become polluted.

681	Chris Knopf	Executive Director, Friends of the Boundary Waters Wilderness	The permits renege on the Environmental Impact Statement promise that an underground wall built to contain and collect groundwater in the most polluted areas will be at least 90 percent effective. The permits would deem the system acceptable if it works under "average annual conditions," effectively disregarding the potential for snowmelt and heavy rainfall to flush pollution through cracks in the wall. The permits provide no standards and no fines if the system fails -even if surface streams become polluted as a result.	See response to Comment Multiple 503. The MPCA has removed the "temporary conditions" language and has revised the language of the permit in light of the comment to state that if an inward gradient is not reestablished within 14 days of detection, it is a violation of the permit. The permit also requires monitoring of the Category 1 stockpile paired wells/piezometers weekly following a 100-year storm event to ensure that monitoring and any necessary preventative maintenance occur promptly. In the event of noncompliance with the permit, the assessment of penalties is determined through the MPCA's enforcement process. As with any NPDES/SDS permit in Minnesota, penalties are not "pre-established" as a term of the permit. MPCA enforcement actions include corrective actions to be taken by the regulated party.
682	Chris Knopf	Executive Director, Friends of the Boundary Waters Wilderness	The most disturbing aspect of this plan is that no one knows how long it will need to continue. Modeling suggests that the underground barriers will need to stay intact -- along with a continuously operating pump-and-treat system -- for centuries.	See response to Comment Multiple 504.
683	Chris Knopf	Executive Director, Friends of the Boundary Waters Wilderness	Also continuing for a thousand years or more are the dangers presented by the tailings basin dam. Because safer alternatives for dealing with mine waste exist, permitting a new mine to store toxic waste in liquid form behind a dam of this type is particularly unconscionable. I object to the State of Minnesota sanctioning this threat to future generations living downstream.	Comment noted. This comment pertains to issues considered in the development of the DNR Dam Safety permit. No changes were made to the draft permit in response to this comment.
684	Chris Knopf	Executive Director, Friends of the Boundary Waters Wilderness	Please protect the future of the people, wildlife and waters of northeastern Minnesota by saying "no" to this mine plan	Comment noted. This comment generally states an opinion and does not reference specific sections of the draft permit (Minn. R. 7001.0110, subp. 2). No changes were made to the draft permit in response to this comment.