EXECUTIVE SUMMARY: Pursuant to Clean Water Act (CWA) Section 401(a)(2), 33 U.S.C. § 1341(a)(2), the U.S. Army Corps of Engineers, St. Paul District (Corps) prepared this CWA Section 404 permit decision document following the Corps' public hearing on the objection raised by the Fond du Lac Band of the Lake Superior Chippewa (Band) to the Corps' issuance of a CWA Section 404 permit for the proposed PolyMet Mining, Inc.[1] (PolyMet) NorthMet mine project in northeastern Minnesota (project). Following EPA's June 4, 2021 "may effect" determination, the Band submitted its "will affect" determination, objection letter, and hearing request to the U.S. Environmental Protection Agency (EPA) and the Corps on August 3, 2021 (Band's Objection). The Corps held a public hearing on the Band's Objection on May 3-5, 2022, at which EPA submitted its evaluation and recommendations. In addition, the Corps received information at the hearing from the Band and PolyMet, as well as over 22,500 comments from the public. The Band contends that the discharges from the project will violate the Band's water quality requirements for mercury and specific conductance. EPA agreed with the Band's determination and recommended that the Corps not reinstate the suspended CWA Section 404 permit as EPA is unaware of any CWA Section 404 permit conditions that would ensure compliance with the Band's water quality requirements for Reservation waters. PolyMet disagrees with the Band and EPA's determinations and requests that the Corps reinstate the CWA Section 404 permit.

The Band claims that the project will contribute to ongoing violations of its water quality requirements for mercury. According to the Band, the construction and operation of the project will alter the hydrology of up to 6000 acres of wetlands, in addition to the approximately 939 acres of direct and fragmentation impacts. The Band contends that these wetland alterations, in addition to the loading of sulfates from the construction and operation of the NorthMet project, will both enhance methylation of mercury already present in the wetlands affected by the proposed mine and mobilize both total and methylmercury in those same wetlands. The Band claims that the mercury mobilized because of these wetland alterations will be exported from the NorthMet project site via the streams adjacent to the affected wetlands at the project site and be transported downstream to the Band's Reservation. The Band concluded that this mercury will further exacerbate ongoing exceedances of the Band's mercury criterion of 0.77 ng/L and ongoing nonattainment of the Band's designated uses.

In addition to the Band, EPA presented concerns at the hearing pertaining to the Band's water quality requirements for mercury. Minnesota has a water quality standard for mercury of 1.3 ng/L, which is higher than the Band's 0.77 ng/L mercury standard. EPA observed that the St. Louis River is already impaired for mercury and lacks assimilative capacity that would ameliorate any adverse impacts of additional mercury loading from the NorthMet project on downstream waters. EPA cited to gaps in data and expressed uncertainty about mercury methylation, mobilization, and discharges to downstream

[1] PolyMet Mining, Inc. is now known as NewRange Copper Nickel LLC, which is a 50:50 joint venture of PolyMet US, Inc. and Tech American Incorporated. This decision document will still refer to "PolyMet" throughout as "PolyMet Mining, Inc." is still the name of the entity listed on the suspended CWA Section 404 permit.

waters as a result of indirect effects to adjacent wetlands. EPA also determined that the project permit suite (consisting of various state and federal permits for the project) does not consider water quality impacts arising from changes in hydrology of wetlands due to the dewatering of the mine pit that will result in the methylation of mercury and mobilization of mercury from the impacted wetlands. EPA concluded that any addition of mercury from the NorthMet project could contribute mercury at a concentration greater than the Band's water quality criterion of 0.77 ng/L and thereby violate the Band's water quality requirements. Given these uncertainties, in addition to the reasonably foreseeable discharges that are unaccounted for in PolyMet's state and federal permits, EPA is unaware of any CWA Section 404 permit conditions that would ensure compliance with the Band's water quality requirements for mercury for Reservation waters, given current project design and discharges outside the CWA Section 404 permitted activities.

Conversely, PolyMet claims that because the project will reduce sulfate loading, it will lower downstream methylmercury. PolyMet has a plan to capture and treat both seepage from the project's tailings basin and any water that contacts mine features. In addition, PolyMet claims that its water management and treatment will also reduce total mercury loading to the watershed and that the large reduction in sulfate should similarly reduce methylmercury in the St. Louis River watershed. PolyMet disagrees with the Band's determination that the project will cause a widespread wetland drawdown and analogizes to a similar project, the Peter Mitchell pit, which PolyMet states did not involve such drawdown. PolyMet claims that even if there is uncertainty about compliance with the Band's water quality requirements, its monitoring and adaptive management plans will ensure that the project's discharges will not violate the Band's requirements.

The Band claims that discharges from the project will violate the Band's water quality requirements for specific conductance due to the contributions of mineral loadings to the St. Louis River watershed. The Band's numeric water quality standard for specific conductance is 300 us/cm to protect sensitive macroinvertebrate species and the relatively high biodiversity in the Band's waters. Both the CWA Section 404 permit and Minnesota CWA Section 401 certification predate the Band's adoption of its numeric specific conductance water quality criterion. EPA states that the St. Louis River has been exceeding this numeric water quality criterion in recent years and that the Clean Water Act 404 permit would authorize activities that would contribute additional mineral loadings to the St. Louis River and decrease the specific conductance dilution capacity currently provided by the existing undisturbed forested wetland mine site. EPA concludes that even relatively small increases in specific conductance loadings and/or decreases in dilution capacity would result in violations of the Band's water quality requirements pertaining to specific conductance and anti-degradation requirements of the Band within wetlands and streams on the Band's Reservation. In contrast, PolyMet claims that its water management and treatment will lower specific conductance and that its activities at the mine site will not increase specific conductance downstream.

Following the hearing, the Corps spent a significant amount of time reviewing a voluminous amount of scientific information and analysis provided by EPA, the Band and PolyMet – as well as other relevant information provided to the Corps by the public at the hearing. As outlined above, the Band and EPA assert that project discharges both within and outside of the Corps' purview under CWA Section 404 will violate the Band's water quality requirements for mercury and specific conductance. Neither the Band nor EPA offered permit conditions that the Corps could attach to a modified CWA Section 404 permit for the project to ensure compliance with the Band's downstream water quality requirements. In addition, PolyMet offered no permit conditions that would ensure compliance with the Band's water quality requirements. The Corps can confirm it did not include any conditions on the CWA Section 404 permit to address potential mercury mobilization, methylation and export to downstream waters from adjacent wetlands. Further, the Corps can confirm that the Section 404 permit predates adoption of the Band's numeric specific conductance criterion and potential for violations of the Band's water quality requirements for specific conductance were not considered. The Corps acknowledges that EPA and the Band have CWA authority on water quality matters concerning the Band's Reservation. Accordingly, the Corps has determined that, given the Corps' jurisdiction under CWA Section 404, the Band and EPA's water quality authorities, and the absence of any necessary permit conditions to ensure compliance with the applicable downstream water quality requirements of the Band as required by CWA Section 401(a)(2), the Corps cannot reissue or modify the suspended permit. Consequently, the Corps must revoke the currently suspended CWA Section 404 permit. This decision does not preclude PolyMet from submitting a new CWA Section 404 permit application that will meet all applicable water quality requirements for its project.

I. BACKGROUND: On March 21, 2019, the Corps completed a Record of Decision and authorized under CWA Section 404 the discharge of dredged and fill material into 901 acres of wetlands and indirect impacts to 27 acres of wetlands in association with the construction and development of the NorthMet mine, located in Minnesota's St Louis County. The Corps determined that the NorthMet Project was compliant with all applicable federal laws and regulations. Under CWA Section 401, the Minnesota Pollution Control Agency issued its Water Quality Certification on December 20, 2018, for impacts to regulated waters in and around the NorthMet mine site within Minnesota.

The Corps suspended its Section 404 permit on March 17, 2021, in response to the EPA's request that it be allowed to consider the effects from the NorthMet Mine Project under CWA Section 401(a)(2) in response to a prior court ruling. Specifically, EPA determined that it needed to consider, under Section 401(a)(2), effects from the NorthMet Project to the water quality of downstream neighboring jurisdictions, which included the state of Wisconsin and the Band. EPA issued a "may affect" determination to the Band and the State of Wisconsin on June 4, 2021. EPA's determination provided each party 60 days to determine if the discharge associated with the Clean Water Act Section 404 permit at the mine site would affect the quality of its waters so as to violate any water quality

requirements. The state of Wisconsin did not object to the Section 404 Clean Water Act permit. The Band did submit an objection to the CWA Section 404 permit on August 3, 2021 and requested that the Corps hold a public hearing on its objection pursuant to CWA Section 401(a)(2). The Band is a federally-recognized tribe and Sovereign Nation and its Reservation is downstream of the NorthMet mine. The Band is recognized as a "state" for purposes of CWA Section 401(a)(2).

The Corps conducted a three-day public hearing from May 3-5, 2022, to collect information to inform its decision. At that hearing the Corps sought information on the Band's objection and whether there were any new conditions that could be added to a modified CWA Section 404 permit to ensure compliance with applicable water quality requirements of the Band. The Corps was required to consider all relevant information presented at the public hearing to inform its final decision to either revoke the currently suspended CWA Section 404 permit, reinstate the permit, or modify the permit with new conditions.

II. INFORMATION FROM PUBLIC HEARING: The following section summarizes what was presented at the public hearing.[2]

1. Hearing Day 1

Opening statements from the Band and Objection Overview:

The Band stated its objection to the Corps' issuance of the Section 404 CWA permit not because the Band is against mining, but because the project as planned will not protect the Band's Reservation waters and its treaty resources. (Transcript Day 1, page 18). The Band claims federal and state agencies have ignored the science that shows the project raises significant and negative impacts that will reach the Band's downstream Reservation waters. (Transcript Day 1, page 19).

The Band provided information on the reason it adopted water quality standards: to protect and restore all the natural resources essential to the Band's way of life, its culture and homeland. According to the Band, there are no conditions that can be put in place to ensure the NorthMet project will meet its standards. (Transcript Day 1, page 19). The Band issued a comprehensive determination supported by multiple experts that the proposed PolyMet project will result in discharges that will reach downstream Reservation waters and violate the Band's federally approved water quality standards. (Transcript Day 1, page 20).

The Band believes Section 401 of the CWA was enacted to ensure that before a project is permitted, steps are taken to ensure that the project will not pollute waters. It is not intended to merely address pollution caused by the project after the fact through actions

[2] The following summary was derived from the transcripts of oral statements provided on days 1-3 of the hearing. To the extent this attempted summary misstates, mischaracterizes or is otherwise in conflict with or inconsistent with the transcripts, the transcripts shall govern for accuracy purposes.

like adaptive management. The Band claims PolyMet would try to address violations after the violations have already occurred with no concrete plans on how the problems could ever be fixed. (Transcript Day 1, page 22).

The Band summarized its "will affect" analysis by stating the discharges from the proposed PolyMet project will flow downstream to the Band's Reservation and violate many of the Band's water quality standards, including its anti-degradation policies, its numeric standards for mercury, narrative standards for the protection of aquatic life and culturally-important flora and fauna as well as designated uses for wildlife, warm water fisheries, and subsistence fishing. (Transcript Day 1, pages 18-22).

EPA Overview of its Evaluation and Recommendations:

EPA provided an overview of its evaluation and recommendations. As the NorthMet project is currently designed, there are no conditions that EPA can provide to the Corps that would ensure that the discharges from the Clean Water Act Section 404 permitted activities would comply with the Band's water quality requirements. (Transcript Day 1, page 26.)

EPA's evaluation and recommendations were informed by the Band's objection letter providing its "will affect" determination and supporting documents; documents EPA received from PolyMet during EPA's CWA Section 401(a)(2) "may affect" process and related documents; input received from the Fond du Lac Band during government-to-government consultation with EPA; PolyMet's CWA Section 404 application to the Corps for the NorthMet project and supporting documents; the Minnesota Pollution Control Agency's 401 certification for the Corps' CWA Section 404 permit; the Corps' ROD and Final Environmental Impact Statement for the CWA Section 404 permit for the NorthMet Project (FEIS); the Minnesota Pollution Control Agency's CWA Section 402 permitting documentation, including a general construction stormwater permit and individual surface water discharge permit for the NorthMet project and additional scientific review that EPA Region 5 obtained from its Office of Research and Development. (Transcript Day 1, page 30).

EPA's evaluation identified uncertainty regarding the full acreage of secondary impact to wetlands from the anticipated drawdown of groundwater from mine construction and operation; uncertainty in the mercury present in, and the fate, and transport of, such mercury from wetlands subject to secondary impacts from the anticipated drawdown of groundwater from mine construction and operation; uncertainty regarding the quantity of total mercury and dissolved ions contributing to elevated specific conductance that would be discharged during mine construction; uncertainty regarding the quantity of total mercury and dissolved ions that would be discharged from the mine through seepage; and uncertainty regarding the reduction in dilution capacity of water bodies affected by the NorthMet project that would contribute to elevated specific conductance. (Transcript Day 1, pages 31-32).

With respect to mercury, EPA summarized that the Band's water quality criterion for mercury to protect human health is .77ng/L. This standard is not currently attained in waters within the Band's Reservation. According to EPA, mercury released from wetlands adjacent to the mine site because of changes in hydrology due to construction and operation of the NorthMet mine is a significant potential source of mercury to the St. Louis River watershed. Such mercury releases could exacerbate the ongoing exceedances of the Band's water quality requirements. (Transcript Day 1, page 32). In addition, EPA determined that the data and analysis supporting the CWA Section 404 permit and CWA Section 401 certification is insufficient to fully evaluate the mercury impacts from the NorthMet project in terms of the area of wetlands affected and the effects on the Band's water quality. (Transcript Day 1, page 33).

According to EPA, understanding the scope of the anticipated impacts from the NorthMet project due to changes in wetland hydrologic regimes resulting from the CWA Section 404 permitted activities is essential to estimating the quantities of mercury that may be subject to mercury methylation, mobilization, and export downstream to the Band's already impaired waters. EPA noted that the CWA Section 402 permit for construction of the project does not contain numeric water quality based effluent limitations for mercury that would ensure compliance with the Band's water quality requirement. (Transcript Day 1, page 33). The CWA Section 402 permit includes operating limits on mercury at an internal monitoring station set to Minnesota's water quality standard of 1.3 ng/L. However, this is not sufficient to ensure compliance with the Band's downstream water quality requirements. Technology based effluent limitations on mercury at 1,000 ng/L as a monthly average and 2,000 ng/L as a daily maximum are also not sufficient to ensure compliance with the Band's standards. (Transcript Day 1, pages 33-34). Based on this information, EPA concluded that the CWA Section 404 permit, 402 permit and 401 certification lack conditions sufficient to protect mercury mobilization, methylation and export at levels that would exceed the Band's water quality requirements given current project design and discharges outside of the CWA Section 404 permitted activities. (Transcript Day 1, page 34.).

Regarding specific conductance, EPA noted that the Band's numeric water quality standard for specific conductance is 300 us/cm. (Transcript Day 1, page 34). The CWA Section 404 permit and 401 certification predate the Band's adoption of its numeric specific conductance water quality criterion. Further, neither the CWA Section 404 permit nor the Section 401 certification account for the potential impact of increased specific conductance of the Band's water quality requirements. The St. Louis River has been exceeding this numeric water quality criterion in recent years. (Transcript Day 1, page 36). According to EPA, the CWA Section 404 permit would authorize activities that would contribute additional mineral loadings to the St. Louis River and decrease the specific conductance dilution capacity currently provided by the existing undisturbed forested wetland mine site. EPA also concluded that even relatively small increases in specific conductance loadings and/or decreases in dilution capacity would result in violations of the Band's water quality requirements pertaining to specific conductance and anti-degradation. (Transcript Day 1, pages 35-36).

Based on its review, EPA is unaware of any CWA Section 404 permit conditions that the Corps could add to the NorthMet Section 404 permit to ensure compliance with the Band's water quality requirements for specific conductance, given the current project design and discharges outside the CWA Section 404 permitted activities. (Transcript Day 1, page 36). EPA recommends the Corps not reissue the permit for the project as currently proposed. (Transcript Day 1, page 39).

EPA also summarily addressed other issues raised by the Band pertaining to the risk of tailings basin failure, future mine expansion, treaty rights and environmental justice. (Transcript Day 1, pages 36-38). However, these considerations did not appear to play a role in EPA's conclusions on the CWA Section 404 permit based on CWA Section 401(a)(2) considerations. Ultimately, EPA determined that based on significant uncertainties related to the extent of potential discharge and release of mercury and the potential for additional mineral loadings contributing to specific conductance from the CWA Section 404 permitted activities related to the project, in addition to the reasonably foreseeable discharges of methylmercury, mercury, and mineral loadings contributing to specific conductance that are unaccounted for in the CWA Section 404 permit, 402 permits and 401 certification, EPA is unaware of any CWA Section 404 permit conditions that would ensure compliance with the Band's water quality requirements – given current project design and discharges outside the scope of the CWA Section 404 permitted activities. (Transcript Day 1, pages 38-39).

Views, Opinions and Recommendations from the Band:

The Band provided information on work its Resource Management Division does to care for the Band's way of life and what projects like NorthMet imperil in its current form as proposed. The Band shared information about history of the land, the ceded territories, connection of the Band to the land and its waters, the importance of plants and animals, and especially the importance of wild rice. (Transcript Day 1, pages 41-60).

The Band presented information on how it developed its water quality standards 25 years ago that were ultimately approved by EPA. (Transcript Day 1, pages 61-62). The Band's consideration for off-reservation impacts has evolved as it realized that some of the problems it was seeing through monitoring did not originate on the Reservation but rather were coming to the Band from upstream sources. (Transcript Day 1, page 62). The Band has tribally-specific designated uses that include such things as wild rice, cultural resources, and aesthetic resources. Numeric and narrative criteria were established to protect the Band's water resources so that it can continue to support and provide the kinds of resources that its community relies upon for subsistence. The Band's water quality requirements are not intended to simply provide a basement level of protection. Instead, the Band's requirements are in place to protect the qualities and conditions that allow for diversity, healthy and highly functioning ecosystems. (Transcript Day 1, page 64).

According to the Band, all of its Reservation waters are at least tier 2 or exceptional use waters. The Band's wild rice waters are tier 3, and no degree of degradation is permitted to occur in these waters. Based on 20+ years of monitoring, the only impairment the Band has determined that needs to be addressed for Reservation waters is mercury.

Mercury concentrations in the water and in fish are problematic. (Transcript Day 1, page 65). The Band stated its challenges with consuming contaminated fish while trying to balance the need for encouraging the practice of traditional life ways. (Transcript Day 1, page 75).

With respect to specific conductance, the Band is seeing elevated dissolved constituents contributing to specific conductance, or total hardness, of Reservation water on account of impacts from mining features upstream. (Transcript Day 1, page 79). The Band has measured upstream water chemistry inputs 79 miles downstream of where the impact may have originated. (Transcript Day 1, page 96). The Band is concerned that the rising level of specific conductance will thwart its investments in reestablishing a sustainable population of lake sturgeon. (Transcript Day 1, page 94). The Band also noted that its water quality standard for specific conductance, which was approved in 2020, is being exceeded 100 percent of the time. (Transcript Day 1, page 96).

During this session, the Band also provided an overview of the work the Great Lakes Indian Fish and Wildlife Commission (GLIFWC) has done since the project was first proposed, as well as recent mapping in support of Band's "will affect" determination. Information was presented to help characterize the effects of large-scale land use alterations on natural resources on which tribal members depend. The Band described different models that have been used to evaluate potential indirect effects to wetlands adjacent to the mining pits and contested the idea that wetlands at the project site are so disconnected from groundwater that no amount of drawdown can have an effect on the hydrology. (Transcript Day 1, pages 107-141).

Next, the Band provided an overview of the mercury cycle and its concerns with the formation of methylmercury. According to the Band, fish have about one million times more mercury than the water in which they live. (Transcript Day 1, page 150). The Band described methylmercury concentration in wetland soils and stated that even small amounts of additional sulfate can significantly increase methylmercury. (Transcript Day 1, page 156). However, there is a lack of background data in the project's EIS and permitting related to concentrations of inorganic mercury and methylmercury in sediments, water, and biota even though methylmercury presents the greatest risk to downstream resources and fish consumers and the St. Louis River has the right conditions for methylation. (Transcript Day 1, page 166).

The Band called attention to the exclusion of mercury from the Gold Sim model assessment due to PolyMet's belief that there was insufficient data to include it. The Band stated this further demonstrates insufficient baseline monitoring in the first place and that the mass balance model included no uncertainty and did not incorporate the interactions between sulfate, organic matter, and inorganic mercury through the biomethylation process. (Transcript Day 1, pages 174-176).

The Band stated there is no physical evidence that wetlands at the site are perched and not coupled to regional groundwater. (Transcript Day 1, pages 183, 204). The Band provided an overview of the University of Minnesota's study at the Marcell Experimental Forest. This study concluded that periods of extended drought released sulfate and inorganic mercury, up to 400% more inorganic mercury upon rewetting, and that the

enhanced production of methylmercury during rewetting happened because of the recycling of sulfate associated with the water table rising and falling. (Transcript Day 1, pages 143-186).

The Band asserts that there is potential for additional project impacts to riparian wetlands along the St. Louis River and to streams and wetlands along and within the Band's Reservation. (Transcript Day 1, page 206). The Band claims that the fish and wildlife resources that use the St. Louis River and its riparian wetlands and the streams and wetlands of the Reservation will be exposed to elevated levels of methylmercury. The Band asserts that the project discharges will affect biogeochemical functions of these impacted wetlands, which will in turn substantially affect ecological functions. (Transcript Day 1, pages 207-208). The Band asserts that the discharged waters from the mine and plant sites containing elevated levels of mercury and sulfate will interact with dissolved organic matter to generate methylmercury, which will be transported downriver to Reservation waters and wetlands, especially in the event of high flows and floods. (Transcript Day 1, pages 208-209). The Band concludes that these impacts will result in noncompliance with the Band's designated uses and antidegradation provisions of its water quality standards. (Transcript Day 1, pages 206-212).

The Band asserts it "must be treated as an expert on its own water quality standards. Our experts have been clear and there are no permit conditions that can be applied or placed on the 404 permit that would ensure compliance with the Band's downstream water quality standards." (Transcript Day 1, page 228).

2. Hearing Day 2

PolyMet Views, Opinions and Recommendations:

PolyMet claims it will not violate the Band's water quality standards. First, because PolyMet is cleaning up a legacy brownfield site, which in turn will also clean up the St. Louis River. And second, because the project is located 116 river miles upstream from the Band's Reservation and the project discharges will only be about 0.5 percent of the flow at the Band's Reservation. (Transcript Day 2, page 5).

According to PolyMet, the Biden Administration has focused on transition to electric vehicles and renewable energy and has taken many steps over the last year to strengthen and boost the domestic supply chains of critical metals needed. In a June 2021 White House report, the NorthMet project is cited on page 99 as a fully permitted domestic nickel mine. (Transcript Day 2, pages 6-7).

PolyMet provided information on mercury at two locations: the Forbes USGS site 50 miles downstream of NorthMet and 66 miles upstream of the Band (average flow is 570 CFS); and the Cloquet River, 143 miles downstream from NorthMet and 5 miles downstream from the Band (average flow is 2300 CFS). For context, PolyMet provided the following information about flows from the mine site: 4 CFS of flow including storm water and runoff; plant site: 8 CFS of flow, with 1 CFS going to the Partridge and 7 CFS going to the Embarrass River from mainly wastewater treatment system discharge and some storm water. Downstream of NorthMet, a Partridge River location has 49 CFS of flow and an

Embarrass River location has 87 CFS of flow. (Transcript Day 2, pages 9-10).

Next, PolyMet presented on the brownfield site it plans to use for its plant. This site contains a legacy taconite mine that has water quality issues on-site. (Transcript Day 2, page 11). PolyMet has an appropriation permit to take water if needed to run the plant (brownfield) site from Colby Lake, which is high in mercury. Any water taken from Colby Lake will be treated prior to discharging back to the lake. (Transcript Day 2, page 12). The tailings basin holds over 800 million cubic yards of taconite tailings. These tailings are the cause of the legacy water quality problems downstream and around the project site. (Transcript Day 2, pages 12-13). The tailings basin is covered under a consent decree and is the source of several elevated constituents to downstream waters including sulfate and specific conductance. PolyMet's water management plan will account for these issues. However, this plan is omitted from the Band's "will affect" letter and descriptions of the project site. (Transcript Day 2, page 13).

PolyMet next described its proposed management of mine water and stormwater during project construction and operation, which includes seepage containment systems and a cut off wall tied into bedrock to stop further seepage from leaving the tailings basin. PolyMet referenced the Band's statement from Day 1 of the hearing where the Band stated it has seen cut-off walls only 50-60% effective. (Transcript Day 2, pages 16-17). According to PolyMet, these types of controls have been used for decades around the world in landfills, remediation sites and dams. (Transcript Day 2, page 17). Membrane treatment technology is used at Eagle Mine in Michigan. This mine is required to use a detection limit of 0.5 ng/L of mercury. However, the mine has been measuring nondetects in its discharge. (Transcript Day 2, pages 18-19). PolyMet ran a test pilot plan with 3 million gallons of water and showed it could meet the 10 mg/L sulfate standard, which PolyMet agreed to meet for a rice standard even though the stated federal drinking water standard is 250 mg/L. (Transcript Day 2, page 19). PolyMet has measured mercury in rainfall at the site at 11-12 ng/ and runoff at 3.5 to 6 ng/L. PolyMet says it will treat discharge to 1.3 ng/L and its brownfield cleanup will remove 100 grams of mercury from the St. Louis River over the life of the mine and 28 million kilograms of sulfate from the system. (Transcript Day 2, pages 19-21, initially cited as "billion" was later corrected to "million", see Transcript Day 2, page 77).

PolyMet provided information about mercury loading and stated the loading is driven by atmospheric processes, primarily precipitation (29.8 inches per year average). (Transcript Day 2, pages 26-27). The least significant source of natural mercury input into the St. Louis River watershed is the sub-watershed around the NorthMet project. Rather, the behavior of mercury in the St. Louis River near the Reservation is really driven by these other watersheds and what's occurring there naturally via precipitation. (Transcript Day 2, page 27). PolyMet asserts that sulfate is one of the constituents that drives methylmercury behavior. (Transcript Day 2, page 30). During project operation, water will be collected at the tailings basin through the seepage collection system. (Transcript Day 2, page 31). Therefore, methylmercury will be inhibited by a reduction of sulfate. (Transcript Day 2, page 34-35).

PolyMet addressed the Band not accounting for the project's water management and

treatment plans. According to PolyMet, non-mining watersheds, particularly the Cloquet River and Whiteface River watersheds, are primary contributors of methylmercury loading to the Lower St. Louis River that come in below the mining district and impact the Band's waters. (Transcript Day 2, page 44). Wetlands within the Partridge River are providing methylmercury load. PolyMet states that the project will not increase flows and it will not flush more organic matter carrying more mercury and methylmercury downstream, but rather the project will stay within existing conditions and water loading is not an issue. (Transcript Day 2, pages 44-56).

PolyMet next addressed the Band's drawdown claims (i.e., the Band's claims that massive drawdown will lead to methylmercury creation and transport to the St. Louis River). Drawdown scenarios as presented in the FEIS were based on an analog method from the nearby Canisteo Mine. This mine is in the Biwabik formation, which is permeable relative to the Duluth Complex and the Virginia formation, where the project would be developed. PolyMet contends that the analog method at NorthMet is conservative and overestimates drawdown. (Transcript Day 2, pages 62-63). But even considering an overestimated amount of drawdown, the project would still result in a net reduction in methylmercury creation. (Transcript Day 2, pages 63-64).

According to PolyMet, MODFLOW is a good tool for estimating groundwater inflow to a mine pit. (Transcript Day 2, page 66). However, PolyMet disputes that the model is a good predictor of wetland impacts for the project. (Transcript Day 2, pages 61, 69). MODFLOW contains some important limitations, which makes the model unusable for predicting directly what is happening in wetlands and how sulfate, mercury and wetland sediments may mobilize down gradient. (Transcript Day 2, page 70). Based on PolyMet's assessment, any sulfate, methylmercury, and mercury that's created in the pores of the wetland sediments, instead of reporting down to the Partridge River and downstream waters, is actually going to report to the mine, or otherwise, not go downstream and would be pumped over to the plant site where it would be treated by the reserve osmosis and membrane treatment system. (Transcript Day 2, page 71).

While the Band claims that there will be larger drawdown than claimed in the FEIS, which will increase oxidation and methylmercury production, PolyMet presented important mitigating factors that would tend to pull any increased sulfate, mercury, and methylmercury into the mine where it would be treated before discharge. (Transcript Day 2, pages 75- 76). For instance, the hydraulic gradient will be reduced, therefore the driving force that would push groundwater to the Partridge River is reduced which will result in a lower load of water, of sulfate and other constituents to the Partridge River. (Transcript Day 2, pages 72-73). Further, during snowmelt and high flow events, there will likely be less wetland pore water discharging up into runoff and making it to the Partridge River and downstream waters. So, during high events, there will be greater infiltration, a greater balance of more infiltration and less discharge, less runoff and less sulfate and methylmercury making it into rivers. (Transcript Day 2, page 73). Third, there will be some vertical redistribution of methylmercury downward into the soil column once there is some drawdown underneath, which will effectively sequester some of the mercury into a deeper portion of the sediment column. (Transcript Day 2, pages 73-75). And finally, demethylation of mercury. (Transcript Day 2, page 75). In conclusion,

PolyMet asserts that sulfate, mercury, and methylmercury would decrease rather than increase on account of the project and that PolyMet's monitoring and adaptive management plan would ensure that this is the case. (Transcript Day 2, page 76).

PolyMet next provided an overview of its monitoring and adaptive management for the project. PolyMet will have 280 monitoring locations to include stream water quality, stream flow, groundwater quality, groundwater levels, wetland hydrology, wetland vegetation, wetland water quality, industrial water collection, treated water discharge, macroinvertebrate, and fish monitoring. Specifically, PolyMet has 66 locations to monitor mercury. (Transcript Day 2, pages 78-79). PolyMet has adaptive engineering controls that can be changed because of monitoring data or modeling data (e.g., water treatment plant is an engineering control that's designed to be modular so if PolyMet is seeing higher flows or higher loads, additional units can be added to it to be able to expand the engineering control in order to meet permit conditions). (Transcript Day 2, page 82). According to PolyMet, "speculation is not enough to show a violation of a water quality standard." (Transcript Day 2, page 83). Through reuse of existing infrastructure, PolyMet will be bringing the site up to modern standards and cleaning up legacy issues. The project is the only mining discharge in the state that will meet 10 mg/L wild rice standard for sulfate. (Transcript Day 2, pages 83-84). EPA gave the project's Supplemental Draft EIS a rating of EC-2, which is the highest rating a mining company in the United States has ever received. (Transcript Day 2, page 85).

Band's Rebuttal:

The Band opened its rebuttal by stating "[s]ignificantly, EPA agrees with the Band that its downstream [R]eservation water will be impacted by the proposal." (Transcript Day 2, page 87). PolyMet ignores there are already exceedances of numeric standards for mercury and specific conductance under existing conditions. PolyMet's assumption that Minnesota's standards will be met have nothing to do with the Band's downstream standards. (Transcript Day 2, page 87). PolyMet's studies are insufficient to show all hydrologic impact. The Band has not ignored PolyMet's assertions regarding reductions in mercury and sulfate due to project operations and its conclusions are not speculative. (Transcript Day 2, pages 87-88). The project's CWA Section 402 permit authorizes continued exceedance of the Band's water quality standards for mercury because it allows a discharge from the wastewater treatment plan in excess of the Band's water quality standards for mercury of .77 ng/L. (Transcript Day 2, page 90). While PolyMet claims it is subject to 7,000 permit conditions, importantly, not one of those conditions is keyed to the Band's downstream standards. (Transcript Day 2, page 91). The Band presented information on its government-to-government relationship with the United States, dam failure and environmental justice concerns. (Transcript Day 2, page 91). The Band concluded its opening rebuttal by stating EPA agrees with its conclusions, and that there are no conditions that could be placed on the suspended 404 permit that would ensure compliance with the Band's downstream water quality standards. (Transcript Day 2, page 92).

Next, the Band addressed concerns regarding the project's seepage capture system at the tailings basin. According to the Band, there is another taconite facility with a seepage

capture system a few miles away from the project site constructed 8-9 years ago and touted to have virtually a 100% capture rate. Instead, the system is performing at 50-60%. (Transcript Day 2, pages 95-96). At the U.S. Steel Minntac project, the cutoff wall was supposed to be keyed into bedrock to provide a no flow boundary. However, due to similar geology as the PolyMet site, the project was not able to key in its sheet piling to bedrock. (Transcript Day 2, page 96). In addition, there has been no accounting for wetlands just outside the tailings basin cutoff wall, north of the tailings basin, that are currently saturated with contaminated tailings water from past operations and will continue to impact the Embarrass River watershed. (Transcript Day 2, pages 97-98). There will continue to be a northward migration of that plume of contaminants for years to come. (Transcript Day 2, page 98).

The Band responded to PolyMet's position that it did not account for water treatment at its plant and discussed concerns with the project's NPDES permit. (Transcript Day 2, pages 98-99). The crux of the Band's concern is not the sulfate or mercury loading from the project. Rather, it is the massive wetland destruction and disturbance to the watershed and the profound hydrologic changes the project will have that will contribute to or exacerbate existing exceedances of the Band's water quality standards and cause an increase in mercury methylation and subsequent bioaccumulation to the Band's detriment. (Transcript Day 2, pages 100-101).

Next, the Band provided its views of the differences between the Eagle Mine and the project. According to the Band, Eagle is a very small mine. Its surface footprint is a fraction of the NorthMet footprint, and the wetland fill for Eagle was under 10 acres. (Transcript Day 2, page 102). In addition, the Eagle Mine is completely underground and indirect impacts due to drawdown were not an issue. In short, this mine is not a comparable example to NorthMet. (Transcript Day 2, page 102).

The Band responded to statements that MODFLOW is not a good tool to assess hydrologic impacts to wetlands. The Band purports that MODFLOW can be and has been used throughout the country to assess impacts to wetlands, including the DeBeers Diamond mine to predict impacts to surface water features including wetlands. (Transcript Day 2, pages 102-103). The Band never suggested that MODFLOW should be the one tool used in a quantitative wetland assessment. (Transcript Day 2, page 103). The Band re-affirmed that GLIFWC's analog analysis and the USGS groundwater modeling results both support its contention that the FEIS underpredicts drawdown adjacent to the mine site. (Transcript Day 2, 103-104).

The Band provided some information on the impact of wetland removal and cumulative impacts. It is not so much the total distance between NorthMet and the Band's Reservation that matters according to the Band, but the fact that the mine site is inextricably linked to the Reservation via streams, wetlands, and the St. Louis River. (Transcript Day 2, page 104). The Band disregarded PolyMet's use of percentages as a way to trivialize the appearance of adverse impacts. Instead, absolute numbers, not percentages, are what matter. (Transcript Day 2, page 105). PolyMet's assertion that removal of wetlands from the project will be a benefit because it will reduce inputs of methylmercury, the Band claims, is "an absurd argument." (Transcript Day 2, page 105).

The Band responded to PolyMet's statements about the way mercury is delivered to the environment. According to the Band, mercury from rainfall is not the largest source of mercury to watersheds, but rather the primary source is atmospheric gaseous mercury taken up by plants which become part of the soil. Mercury that falls from the atmosphere is incorporated almost completely into soils and is slowly released from that pool to soil water, groundwater, and runoff. (Transcript Day 2, page 107). The large pool of mercury that exists in soils is the main source of mercury to surface waters and streams. (Transcript Day 2, page 108). The Band stated that while mercury in rainfall is decreasing, there's probably several hundred years of mercury still in the soils to continue to contribute to mercury exceedances in streams and lakes. PolyMet's emphasis on precipitation draws attention away from indirect project impacts on account of hydrologic changes and interactions with souls. (Transcript Day 2, pages 108-109).

The Band took issue with PolyMet's precise numbers for mercury despite the inherent uncertainty. It also highlighted areas where PolyMet's analysis did not take into consideration the changing environment and increasing frequency of wetting and drying extreme events and the potential for flushing events that exceed those which are currently experienced. (Transcript Day 2, pages 109-110).

The Band also addressed PolyMet's assertions regarding the fluctuation of the water table and the formation of methylmercury. According to the Band, water table fluctuation influences methylation, but methylation is driven more strongly by interactions with the catchment hydrology than the input of mercury from the atmosphere as suggested by PolyMet. (Transcript Day 2, pages 110-111). Underdrainage amplifies the natural fluctuation that is expected because of both annual variability and climate change induced increases in fluctuation variability. (Transcript Day 2, page 111).

In regard to demethylation, the Band claims that demethylation is not a process that is going to offset increases in methylation because the concentrations of methylmercury that are in the environment are actually the result of the competitive processes of methylation and demethylation that are happening all the time. (Transcript Day 2, page 112). The Band provided additional information on the methylation and demethylation process. Ultimately, demethylation will not remove mercury and methylmercury from the system and prevent export to downstream waters. (Transcript Day 2, pages 113-116).

The Band addressed how its findings are not "speculation". Speculation implies no scientific basis to findings. This is not true of the Band's findings. (Transcript Day 2, page 117). The Band's work is better described as a conceptual model or hypothesis that is based on knowledge and scientific understanding of the way the world works and that these measurable parameters could be evaluated for relative importance. (Transcript Day 2, page 118). PolyMet provided information on direct effects but did not cover indirect effects of wetlands and the processes of methylmercury and methylation in the environment in the proximal regions associated with the project. (Transcript Day 2, page 118).

Lastly, the Band summarized its rebuttal by addressing the federal government's responsibilities to tribes, treaty rights, environmental justice, and the importance of the wetlands at issue. (Transcript Day 2, pages 119-120).

PolyMet's Rebuttal:

PolyMet provided an overview of the major project changes between the Draft EIS and Supplemental Draft EIS, including adding a containment wall around the tailings basin to capture all the water around the tailings basin; membrane treatment plant to meet the 10 mg/L sulfate standard; and a plan to take all waste rock that could have potential acid rock drainage and backfill that into the pit so it will not be a concern long-term. (Transcript Day 2, pages 122-123). These changes resulted in PolyMet receiving an EC-2 rating from EPA, which was much higher than EPA's prior rating of EU-2 (environmentally unsatisfactory). (Transcript Day 2, page 123). EC-2 is the highest rating that a mining project has ever received in the United States and is the same rating as the St. Croix Bridge project and St. Paul to Minneapolis light rail project. (Transcript Day 2, page 123).

Next, PolyMet summarized statements EPA made in response to that Preliminary Final EIS. EPA concluded that the project contained extensive improvements and that the environmental review was clear and complete. EPA's extensive discussions with the co-lead and cooperating agencies for the EIS have helped to resolve virtually all of its previous comments. (Transcript Day 2, pages 124-125). In December 2015, EPA issued a letter resolving its comments pertaining to base flow and cumulative impacts, model calibration and contradictory information. According to PolyMet, the FEIS found no exceedances of the Band's mercury standard as the project would cause an overall reduction in mercury loadings to the downstream St. Louis River, upstream of the Band's Reservation boundary. (Transcript Day 2, page 125). This determination on overall reduction in mercury loadings was also present in the Corps' ROD for the CWA Section 404 permit. (Transcript Day 2, pages 125-126). PolyMet also addressed similar findings in its MPCA permits. (Transcript Day 2, pages 126-127).

PolyMet addressed concerns on its seepage containment system and provided information on the unique aspects of its design and function. (Transcript Day 2, pages 127-128). PolyMet's seepage containment system works differently from the Minntac cutoff wall that was alluded to by the Band. (Transcript Day 2, page 128). According to PolyMet, the NorthMet system will capture 93 percent or more of seepage. (Transcript Day 2, page 128). PolyMet provided information in a memo to the co-lead agencies on the degree of use of this type of system in the industry, and that it's been used around the world for decades. (Transcript Day 2, page 129). PolyMet's permit conditions require that it maintain a system of paired monitoring wells and piezometers so that it can make sure it maintains an inward gradient between the outside and inside of the cutoff wall. (Transcript Day 2, pages 129-130).

PolyMet then provided information on its membrane treatment system, which is its best available technology for water treatment. (Transcript Day 2, page 130). PolyMet plans to employ a reverse osmosis system like the one used at Eagle Mine and its mill for water treatment. Data from Eagle Mine shows over several years of operation. It is

successfully removing mercury, with one point above the detection limit of 0.5 ng/L, in 3.5 years of treatment, sampling and discharge. (Transcript Day 2, 130-131).

PolyMet addressed how its project compares to Eagle Mine and the water management and treatment that its project will entail. (Transcript Day 2, pages 132-135). The Eagle Mine tailings basin at its mill site contains a cutoff wall (slurry wall) that goes own about 75 feet and is keyed into bedrock. This wall holds back contaminated pit water from seeping into waters that drain to Escanaba River. The same type of technology that's being used at the Eagle Mine is being employed in the perimeter of the tailings basin. (Transcript Day 2, page 135). Water that is collected out of this treatment will be routed through a wastewater treatment plant, which contains membrane technology like reverse osmosis. (Transcript Day 2, page 136). PolyMet also explained how water at the mine site would be treated and reused to augment wetlands and streams around the perimeter of the tailings facility, (Transcript Day 2, pages 136-137), as well as project stormwater. (Transcript Day 2, page 138). PolyMet concluded this phase of its presentation with remarks on the benefit of its project due to the reduction of contaminate loading into the system and reductions in sulfate, mercury, and specific conductance. (Transcript Day 2, pages 137- 140). According to PolyMet, NorthMet is really about a brownfield redevelopment effort. (Transcript Day 2, page 133).

PolyMet next provided additional information on project modeling and addressed concerns with the USGS model relied on for the GLIFWC analysis and the Crandon Method use of MODFLOW. (Transcript Day 2, pages 141-145). More information was also provided on the alleged drawdown impacts and the proposed mitigation steps to counteract this concern. (Transcript Day 2, pages 145-147).

Following this discussion, PolyMet presented on sulfate and methylmercury reduction. According to PolyMet, mass balance is informative in expanding watershed processes. (Transcript Day 2, page 149). A cross-media analysis was prepared to specifically address the Band's concerns about sulfide mineral dust adding sulfur to wetlands that would then create more methylmercury to be flushed downstream to the Reservation. (Transcript Day 2, page 150). Mass balance was used to predict what might happen during certain water flow events. (Transcript Day 2, page 150). The modeling confirmed that there would be a reduction in mercury, sulfate, and methylmercury. PolyMet's modeling also assessed that there would be no measurable change to fish tissue mercury in the Embarrass and Partridge River sites closest to the project. (Transcript Day 2, page 151). PolyMet purports, if there is no measurable change near the project, it would be very hard to ever see change in fish mercury down the St. Louis River. (Transcript Day 2, page 151).

More information was provided by PolyMet on adaptive water management, which has been recommended by EPA as a good way to react and respond to changes that occur in a project. PolyMet's state permits require an adaptive management plan. (Transcript Day 2, page 152). According to PolyMet, there is always uncertainty and natural systems are complex. (Transcript Day 2, pages 152-153). The models have been reviewed and accepted by the agencies as a conservative way to predict impacts. (Transcript Day 2, pages 153-154). Also, adaptive management will help identify a problem before it exists

and water quality issues can be addressed before violation occurs. (Transcript Day 2, page 154).

PolyMet's then provided its legal views on the Section 401(a)(2) hearing process and the Band's burden of persuasion. (Transcript Day 2, pages 154-158).

PolyMet concluded its rebuttal by analogizing this project to the Eagle Mine and the similar obstacles present in both situations. (Transcript Day 2, pages 158-161). PolyMet worked very hard to achieve its EC-2 rating from EPA on the EIS and the technology that will be implemented to protect water quality is proven. (Transcript Day 2, pages 161-162). PolyMet believes its project is important for strategic national reasons and that cleaning up the environmental and producing medals are not a mutually exclusive proposition. (Transcript Day 2, pages 162-165).

3. Hearing Day 3

On Day three of the hearing, members of the public were given the opportunity to express their verbal comments to the Corps. Numerous commenters expressed statements of support both for and against reinstating the permit. Many comments expressed concern with the project's environmental impacts while others expressed the importance of permitting the project for both national and regional economic reasons.

4. Summary of Post-Hearing Public Comments

After the close of the hearing on day three, the public was provided until June 30, 2022, to submit written comments for Corps consideration. In total, over 22,500 public comments were received including written comment briefs from PolyMet and the Band. No comments were received by EPA during the public comment period.

The Band provided a comment letter, dated June 6, 2022. The Band claimed that the proposed project relies on flawed and misconceptualized modeling and that PolyMet's assertions regarding a new reduction in mercury are incorrect. The Band also took issue with PolyMet's assertions regarding a standard of proof for providing a violation under CWA Section 401(a)(2). According to the Band, no evidence was presented at the hearing that changed either the Band's or EPA's determination that the CWA Section 404 could not be re-issued. The Band also alleged other shortcomings involving the project's tailings basin dam and issues concerning treaty rights, environmental justice, and the Corps' Section 404(b)(1) analysis for the original permit issuance.

PolyMet also provided a comment letter, dated June 10, 2022. PolyMet emphasized that its project will capture and treat tailings basin seepage and wetland runoff that currently contributes sulfate, mercury, methylmercury, and specific conductance to the St. Louis River watershed, and that due to this treatment, the project will lower the amount of those pollutants in the St. Louis River. PolyMet claimed that its project will not violate the Band's water quality requirements due to wetland drawdown at the mine site. PolyMet emphasized the agencies in the EIS were right to reject the Band's claims

of widespread drawdown. PolyMet claimed that the USGS model the Band used at the hearing to predict drawdown is only a teaching tool consistent with USGS warnings about its use and that it was not developed or calibrated to make specific predictions for real-world mining projects. Moreover, PolyMet argued that to prevail on its objection, the Band must prove that the project's discharges will violate the Band's water quality requirements. PolyMet claimed that this has not been proven by the Band. PolyMet does not accept EPA's premise that simply showing an upstream pollutant discharge proves a downstream violation. A discharge 116 river miles away into watersheds that represents 0.5% of the St. Louis River flow at the Band's Reservation makes it hard – if not impossible – for the Band to prove an effect. According to PolyMet, the claim that a discharge from its project would exceed the Band's numeric standards is not enough to prevail under CWA Section 401(a)(2). In addition, uncertainty about violations of the Band's water quality requirements and downstream effects is not enough to revoke PolyMet's CWA Section 404 permit. Ultimately, PolyMet believes that adaptive management will ensure that its discharges will not violate the Band's water quality requirements and that adaptive management is inherently a proactive approach that accounts for uncertainty and variability by using flexible engineering controls that can respond to actual conditions. PolyMet further claimed that the Band's allegations concerning treaty rights and environmental justice are issues that are not within the scope of the hearing.

While many of the other comments received were form letters, the Corps did receive detailed letters supporting permit revocation from the Northern Lakes Scientific Advisory Panel, Clean Up the River Environment (CURE), a coalition of medical doctors, Public Employees for Environmental Responsibility, State Senator Mary Kunesh, the Sierra Club, Minnesota Environmental Partnership members, WaterLegacy and the Minnesota Center for Environmental Advocacy. Many of those comments largely raised issues regarding the project's insufficient engineering controls to protect water quality and wastewater; mine construction impacts to wetlands and water quality; and tailings basin fill among other concerns. Commenters also claimed that the mine project is not needed to support the "green economy", contrary to various assertions otherwise.

The Corps likewise received about 150 form letters in support of issuing the Section 404 CWA permit. More detailed letters of support were provided by Minnesota Power, Laborers' International Union of North America, City of Babbitt, Operating Engineers Local 49 and North Central States Regional Council of Carpenters, 19 of 37 Iron Range Mayors, Grand Rapids Area Chamber of Commerce, Mining Minnesota, ME Global, International Union of Operating Engineers, APEX, MN State Building and Construction Trades Council, Hibbing Area Chamber of Commerce, Range Association of Municipalities and Schools (RAMS), Jobs for Minnesotans, eight State House and Senate Members of the Iron Range Delegation, and the St. Louis County Commissioner.

Comments in support of the project provided examples of similar mines that are meeting success criteria for water quality and environmental protection. In addition, some comments raised concerns regarding economic disparity and human rights should the project not proceed. For instance, if the permit were rescinded, concern was expressed that the United States would need to import the metals from other countries and companies that have little regard for the environment and utilize child labor. Some comments raised concerns with EPA's analysis on "uncertainty" and that EPA was creating too high of a standard for projects going forward under CWA Section 401(a)(2).

No conditions were identified in any of the 22,500-plus public comments that the Corps could add to the CWA Section 404 permit for the project that would ensure compliance with the Band's water quality requirements.

III. Corps Assessment of CWA Section 404 Permit Conditions to Ensure Compliance with the Band's Water Quality Requirements

A. Both EPA and the Band expressed concerns about the project's permit suite failing to include conditions to ensure that mercury is not mobilized, methylated, and exported to the Band's waters. In the Corps assessment of information presented by the Band and EPA, and conversely presented by PolyMet, we acknowledge substantial disparity in the scientific views presented. For example, one major point of disagreement between the EPA and Band's views in comparison to PolyMet's centers on the full acreage of secondary impacts to wetlands from the anticipated drawdown of groundwater from mine construction and operations, as well as the uncertainty regarding the likely transport of such mercury from wetlands subject to secondary impacts from the anticipated drawdown of groundwater from mine construction and operation.

The Corps can confirm that there may be dewatering of wetlands adjacent to the mining pit and this issue was studied extensively throughout the EIS in coordination with EPA and other stakeholders. (See Corps ROD, pages 35-37). Because of the uncertainty related to the extent of potential dewatering, the Corps included CWA Section 404 permit conditions that PolyMet monitor for these secondary adverse effects and provide compensatory mitigation to offset any indirect loss of wetlands. (See CWA Section 404 Permit Condition Nos.16-21). No conditions to ensure mercury is not mobilized, methylated, and exported to downstream waters from adjacent wetlands were included in the CWA Section 404 permit for the project. These issues are largely outside of the Corps' regulatory authority under CWA Section 404. While PolyMet claims it will treat all water impacted by the Project and ensure compliance with downstream water quality requirements, the FEIS considered by the Corps in its 2019 Section 404 CWA permit and ROD do not appear to fully assess the potential for mercury methylation in adjacent wetlands, the fate of such methylmercury, or whether any mobilized methylmercury will effectively be treated by PolyMet's water treatment system in such a manner that will ensure compliance with the Band's downstream water quality standards.

We understand PolyMet claims to have completed new bounding calculations and that its approach was based on highly protective and unreasonable worst-case assumptions.

For instance, PolyMet concludes that even under a new calculation scenario based on the Band's assertion of a 6,000-acre drawdown around the mine, there will still be a net loss of sulfate, mercury and methylmercury to the pore waters and wetland sediments. (See Transcript Day 2, pages 64-69). Nevertheless, the rebuttal information that PolyMet has provided is not sufficient for the Corps to resolve the scientific differences of opinion that have been presented by the Band, EPA and other commenters on project discharges affecting the Band's water quality standards. The Corps was unable to find fault with either the Band or EPA related to their concerns about mobilization, methylation and export of mercury to the Band's waters. In addition, the Corps notes that EPA and the Band have determined that other non-CWA Section 404 discharges from the project, which are regulated under CWA Section 402, will also impact the Band's waters. Accordingly, the Corps gives great deference to EPA's and the Band's views and recommendations as the water quality authorities on matters affecting the Band's waters. As suggested by EPA, additional mercury/methylmercury load analysis could assist PolyMet in developing measures to minimize, adapt, and mitigate for increased mercury/methylmercury. The Corps also recognizes EPA's assertions regarding the limitations of the mercury mass-balance model used in the FEIS and the potential need for a process-based mass balance model of the system, and further PolyMet's concern that a process-based mass balance model would not be reasonable to carry out.

B. Both EPA and the Band expressed concerns with project discharges meeting the Band's requirements for specific conductance. EPA concluded that the project would contribute additional mineral loadings to the St. Louis River and decrease the specific conductance dilution capacity currently provided by the existing, undisturbed forested wetland mine site, and that there are no corrective actions specified in the permits that would reverse trends showing that specific conductance downstream of the project is increasing. According to EPA, the increase in loadings from the project and decrease in dilution from the loss of the wetlands and forested areas will result in increased specific conductance in the Band's waters as a result of the discharges from the CWA Section 404 permitted activities, as proposed. In addition, EPA determined that the project's CWA Section 402 permit does not contain any conditions that would limit the discharge of dissolved ions contributing to elevated specific conductance to a level that would ensure compliance with the Band's water quality standards. And even the smallest amount of increase in specific conductance would result in violations of the Band's numeric water quality standards. EPA notes that the Corps' CWA Section 404 Permit Condition No. 14 is intended to minimize indirect effects to wetlands and streams by requiring erosion control and slope stabilization during construction. While this condition would result in decreasing some contribution of mineral loadings (which would otherwise result in increased specific conductance), EPA determined that best management practices alone cannot eliminate the discharges contributing to increased specific conductance downstream. EPA also notes that the CWA Section 404 permit application, MPCA's CWA Section 401 certification, Corps' ROD, and permit suite all predate adoption of the Band's numeric specific conductance criterion and therefore do

not consider the potential for violations of the Band's water quality requirements for specific conductance.

Outside of CWA Section 404 permit condition #14, which is specific to erosion control measures, the Corps can confirm that the permit does not contain any conditions pertaining to specific conductance that would remedy concerns from either the Band or EPA for project discharges occurring under CWA Sections 404 and 402. In addition, the Corps can confirm that FEIS did not address whether the project would meet the Band's water quality standard for specific conductance of 300 µS/cm or the Band's narrative or antidegradation standards. PolyMet claims that activities at the mine site will not increase specific conductance downstream and all stormwater that touches mining-disturbed surfaces will be routed to lined basins for treatment. The Corps acknowledges this claim. However, for similar reasons stated above, the Corps is not able to resolve the scientific differences of opinion that have been presented by the Band, EPA and other commenters on this issue. The Corps is not aware of any conditions that could be added to the CWA Section 404 permit that would ensure compliance with the Band's requirements for specific conductance, particularly as some of the project discharges at issue are regulated under CWA Section 402.

C. Based on the information provided at the hearing, the Corps has determined that the existing permit conditions in the suspended CWA Section 404 permit are not sufficient to ensure that there will be no violation of the Band's downstream water quality requirements. The Corps understands from information offered throughout this process that PolyMet is committed to constructing and operating a responsible mine project in compliance with applicable water quality standards and also that neither the EPA nor the Band are opposed to responsible mining that would be done in a way that will comply with applicable water quality standards. Notwithstanding the preceding, the Corps finds the information provided by EPA and the Band to be compelling and determinative with respect to the impact that the project will have on the Band's waters. In addition, no new conditions were provided at the hearing that the Corps could add to the suspended CWA Section 404 permit that would ensure compliance with the Band's water quality requirements. Based on all information provided at the hearing, to include the absence of such conditions, the Corps is unable to issue a modified CWA Section 404 permit that would ensure compliance with Band's water quality requirements.

IV. Other Topics Raised at the Hearing

The Band presented on additional reasons to revoke the CWA Section 404 permit aside from water quality impacts. Those reasons included issues regarding the Corps' CWA Section 404(b)(1) analysis for the permit, the U.S. Government's treaty right obligations, tailings basin dam failure and environmental justice, among other concerns. Because the Corps has decided to revoke the CWA Section 404 permit for reasons concerning water quality under CWA Section 401(a)(2), those additional reasons that the Band presents for revocation are not germane to the Corps' decision and do not need to be addressed at this time.

V. CONCLUSION:

For the reasons discussed herein, the Corps is unable to include sufficient conditions in the CWA Section 404 permit that would ensure compliance with the applicable downstream water quality requirements of the Band as required by CWA Section 401(a)(2). In accordance with the procedures of CWA Section 401(a)(2), the Band and EPA have determined that discharges from the project would cause a violation of the Band's water quality requirements for mercury and specific conductance. Based on information submitted to the Corps during the public hearing process, the Corps was not able to identify conditions under CWA Section 404 that would ensure compliance with the Band's water quality requirements. Therefore, the Corps cannot reissue or modify the suspended CWA Section 404 permit and must revoke the permit. See CWA Section 401(a)(2); 40 C.F.R. § 230.10(b)(1). The permitting authority granted by regulations empower the District Engineer to suspend, modify and revoke DA permits when it is in the overall public interest to do so. See 33 CFR. § 325.7(a)-(e). With the finding that there are currently no conditions that can ensure compliance with the water quality requirements of the Fond du Lac Band of Lake Superior Chippewa, I have determined that revocation of the subject DA permit would be in the public interest. Further, consistent with the Corps public interest review process as described at 33 C.F.R. § 320.4(a)(1), the Corps cannot issue a permit if such permit would not comply with the EPA's 404(b)(1) Guidelines or with any other applicable guidelines or criteria.[3] The discharges authorized by this permit do not comply with the applicable criteria of CWA Section 401(a)(2) because there are no conditions that can ensure compliance with the water quality requirements of the Fond du Lac Band of Lake Superior Chippewa. This failure to ensure compliance with the Band's appliable water quality standards also means it would not comply with EPA's 404(b)(1) Guidelines (see 40 C.F.R. § 230.10(b)(1)). Therefore, because the discharges authorized by the permit would not comply with the criteria established by CWA Section 401(a)(2) and would not comply with EPA's 404(b)(1) Guidelines, the Corps must revoke the permit.

The decision to revoke the CWA Section 404 permit will not have a significant effect on the human environment. While the permit was issued on March 21, 2019, no major construction has commenced due to the litigation filed against the project in both federal and state court and due to the Corp's decision to suspend the CWA Section 404 permit on March 17, 2021. The environmental consequences of the Corps' revocation decision are similar to the effects described as a part of the No Action Alternative in the project's FEIS and in paragraph 8 of the Corps' ROD.

The Corps received many comments from the public hearing from many people who were both against and in support of the project. The Corps acknowledges these comments but recognizes that its decision on the CWA Section 404 permit following the hearing must be based on water quality impacts consistent with the requirements of the CWA Section 401(a)(2) process. While the Corps is unable to reinstate the permit or

[3] 33 C.F.R. § 320.4(a)(1) references §§ 320.2 and 320.3 as other applicable guidelines and criteria. Section 401 is the first law referenced in § 320.3.

modify the permit with new conditions, this decision does not preclude PolyMet from submitting a new CWA Section 404 permit application that will meet all applicable water quality requirements for its project.

Eric R. Swenson
Colonel, Corps of Engineers
District Commander

APPENDIX A: References[4]

NewRange Copper Nickel LLC letter to Corps regarding name change from PolyMet Mining, Inc. to NewRange Copper Nickel LLC., March 9, 2023

Public comments submitted to Corps following the hearing during comment period that ended June 30, 2022

Corps Public Notice providing additional time for public comments, June 15, 2022

PolyMet Mining, Inc. submittal to Corps with attachments, June 10, 2022

Fond du Lac Band submittal to Corps with attachments, June 6, 2022

Day 1 Public Hearing Transcript May 3, 2022, Reported by Lisa Thorsgaard

Day 2 Public Hearing Transcript May 4, 2022, Reported by Lisa Thorsgaard

Day 3 Corps Public Hearing Transcript May 5, 2022, Reported by Brenda Foss

Information presented or submitted at Public Hearing May 3 and May 4:

1. Corps Public Hearing Presentation, May 3, 2022
2. From EPA:
    a. U.S. Environmental Protection Agency Region 5 Clean Water Act Section 401(a)(2) Evaluation and Recommendations with respect to the Fond du Lac Band's Objection to the Proposed Clean Water Act Section 404 Permit for the NorthMet Mine Project, April 29, 2022 (with appendices)
    b. Tera Fong, Overview of EPA's Clean Water Act Section 401(a)(2) Evaluation and Recommendations on Fond du Lac Band's Objection to the Proposed Clean Water Act Section 404 Permit for the NorthMet Mine Project, May 3, 2022.
3. From the Band:
    a. Brian Branfireun, Effects of the PolyMet NorthMet Mine on Downstream Mercury in Water and Biota, May 3, 2022
    b. Esteban Chiriboga, John Coleman and Scott Cardiff, Mapping of Wetlands Upstream of the Fond du Lac Reservation, May 3, 2022
    c. Thomas Howes, Fond du Lac Resource Management presentation, May 3, 2022
    d. Nancy Schuldt, Fond du Lac Office of Water Protection, Protecting Natural and Cultural Resources in the St Louis River watershed: Fond du Lac

[4] Although this list represents the documents and sources of information specifically referenced in or reviewed for this decision memorandum, it may not be an exhaustive list of the information before the Corps and is not necessarily the same list of documents that would represent the Corps' administrative record in litigation.

Engagement in Environmental Review and Permitting of the PolyMet NorthMet copper-nickel mine project, May 3, 2022

e. Matt Schweisberg, Wetland Strategies and Solutions, LLC, PolyMet Mining Inc.'s NorthMet Mine Project: Adverse Impacts to Wetlands & Other Aquatic Resources, especially on the Fond du Lac Reservation, May 3, 2022
f. Brian Branfireun, Fond du Lac Rebuttal to PolyMet's Public Hearing Information, May 4, 2022

4. From PolyMet:
   a. PolyMet Mining, 401(a)(2) Hearing Presentation, May 4, 2022
   b. PolyMet Mining, Inc. Section 401(a)(2) Hearing Brief, May 3, 2022
   c. NorthMet Project Comprehensive Water and Wetland Monitoring Plan, Version 1, April 2022
   d. Cliff Twaroski memo, Barr Engineering, 401(a)(2) public hearing on PolyMet's NorthMet project Section 404 permit NorthMet Project supplemental evaluation of baseline wetland water levels, water chemistry (sulface, total mercury and methylmercury) and export to downstream waters, May 2, 2022
   e. Steve Donohue et al, Foth, 401(a)(2) public hearing on PolyMet's NorthMet project Section 404 Permit: Mercury and Sulfate Loadings via Precipitation to the St Louis River Watershed upstream of the Fond du Lac Reservation in Comparison to the PolyMet NorthMet project, May 2, 2022
   f. Steve Donohue, Foth, 401(a)(2) public hearing on PolyMet's NorthMet Project Section 404 Permit: review of Fond du Lac Band of Lake Superior Chippewa Claims that the NorthMet Mine Project Will Affect Water Quality on the Fond du Lac Reservation, May 2, 2022
   g. Steve Donohue et al, Foth, 401(a)(2) Public Hearing on PolyMet's NorthMet Project Section 404 Permit: Methylmercury Formation and Release and the Role of Seasonal Wetland Water Table Fluctuations in Peat Environments at the NorthMet Project
   h. Steve Donohue et al, Foth, 401(a)(2) Public Hearing on PolyMet's NorthMet Project Section 404 Permit: Project-related effects on Specific Conductance and Salinity in the St. Louis River at the Fond du Lac Reservation
   i. Tetra Tech, Greg Council and Scott Simpson, 401(a)(2) Public Hearing on PolyMet's NorthMet Project Section 404 Permit Response to Fond du Lac Band's Concern Regarding Mine-Induced Drawdown Affecting Downstream Water Quality
   j. PolyMet Mining, 401(a)(2) Hearing Rebuttal Presentation, May 4, 2022

Corps Public Notice announcing public hearing to be held May 3-5, 2022, issued March 31, 2022

Corps letter to Chairman Kevin Dupuis, Fond du Lac Band of Lake Superior Chippewa, offering information on public hearing logistics, December 2, 2021

Sonosky, Chambers, Sachse, Endreson & Perry, LLP letter on behalf of Fond du Lac Band, expressing the Band's views on the public hearing, December 27, 2021

Venable LLP letter on behalf of PolyMet Mining, Inc, expressing PolyMet's views on the public hearing, December 14, 2021

Wisconsin Department of Natural Resources letter to U.S. EPA and Corps, notifying it did not object to the issuance of the CWA Section 404 permit, August 2, 2021

Fond du Lac Band letter and attachments to U.S. EPA and Corps, providing notification of the Band's determination that impacts from the NorthMet CWA Section 404 permitted activities "will affect" the Fond du Lac Band's waters, August 3, 2021

U.S. EPA notification (with attachments) to the Band and State of Wisconsin that the NorthMet Project "may affect" the Band and the State of Wisconsin, June 4, 2021

Corps letter to PolyMet Mining, Inc., suspending the Clean Water Act 404 permit while the EPA reconsidered effects on downstream water quality from the proposal under Section 401(a)(2), March 17, 2021

Corps memorandum, Findings for Suspension of Permit – 1999-05528-TJH, March 17, 2021

U.S. EPA letter and attachments to the Corps asking the Corps to suspend the CWA Section 404 permit it had issued for the NorthMet project to allow EPA to complete its CWA Section 401(a)(2) review, March 4, 2021

U.S. District Court for the District of Minnesota's order granting Federal Defendants' motion for voluntary remand and stay, Fond du Lac Band of Lake Superior Chippewa v. EPA, No. 19-cv-2489-PJS-LIB, slip op. at 2 (D. Minn., March 8, 2021)

Federal Defendants' motion requesting a voluntary remand and stay to allow EPA to make the "may affect" determination required by Section 401(a)(2), March 4, 2021

U.S. District Court for the District of Minnesota's ruling on defendants' motions to dismiss. See Fond du Lac Band of Lake Superior Chippewa v. EPA, 519 F.Supp.3d 549 (D. Minn. 2021), February 16, 2021

Fond du Lac Band of Lake Superior Chippewa's complaint against EPA and the Corps in the United States District Court for the District of Minnesota, No. 19-cv-2489-PJS-LIB, September 10, 2019

U.S. Army Corps of Engineers, March 22, 2019, PolyMet Mining, Inc. Permit No. MVP-1999- 05528-TJH

U.S. Army Corps of Engineers, March 22, 2019, Record of Decision for the NorthMet Mine Project

Final Environmental Impact Statement for NorthMet Mining Project and Land Exchange, November 2015