

INTERAGENCY MEMORANDUM

**RE: NorthMet Mining Project and Land Exchange EIS
Co-lead Agencies Consideration of West Pit Water Elevation Alternative**

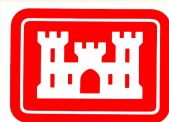
November 18, 2014

Maintaining a dry West Pit through perpetual pumping has been proposed as a project alternative by commenters on the NorthMet Mining Project and Land Exchange Supplemental Draft Environmental Impact Statement (SDEIS). Maintaining pit water levels below the elevation of the Partridge River has also been explored among Co-lead Agencies' staff. Both options are considered in this memo and are together called the West Pit Water Elevation Alternative or "*the Alternative*." The goal of both options is the same, which is to *eliminate* the potential seepage of West Pit water into surficial and bedrock groundwater flowpaths that connect the East and West Pits to the Partridge River during mine closure. *The Alternative* would create a "terminal" pit lake or a small pit-bottom pool where all groundwater flows are toward the West Pit and no groundwater flows away from the pit. Commenters assert implementing *the Alternative* would minimize leakage into bedrock, thus avoiding pollution of surface and groundwater resources, especially for drinking water purposes.

NorthMet Project Proposed Action Description

Under the NorthMet Project Proposed Action at the end of mining in year 20, the West Pit would be allowed to flood to a point just below its surface water outfall, through inflows of groundwater, precipitation, surface runoff from the watershed, and water transferred from the Plant Site. For a period of time prior to year 33, pit water would seep into the bedrock groundwater flowpath, and beginning in year 33, the West Pit water level would rise above the top of bedrock and begin to release into the surficial groundwater flowpath. The West Pit would reach its final fill elevation at year 43. After that time, the pit water level would be controlled by pumping to the Waste Water Treatment Facility (WWTF) to prevent surface water overflow, but there would be continued release of pit lake water into the bedrock and surficial groundwater flowpaths, with subsurface migration towards the Partridge River. The WWTF would discharge to the West Pit Outlet Creek at or below assigned effluent limits.

The ultimate water quality objective of long-term closure is to transition from the mechanical treatment provided by the WWTF to non-mechanical treatment. Non-mechanical treatment



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systems would be considered for long-term treatment of the West Pit water. Transition to the non-mechanical treatment systems would begin if and when the performance of the non-mechanical treatment methods has been proven.

West Pit Water Elevation Alternative Description

The Alternative assumes a depressed pit lake water level can be achieved by employing a higher flow rate pumping of the West Pit than the NorthMet Project Proposed Action. At progressively higher pumping rates, the water level could be incrementally lowered to: 1) reduce or eliminate pit lake seepage into the surficial and bedrock groundwater flowpaths; and/or 2) create a dry pit with a small sump, but without a pit lake. If the pumping rate is sufficiently high, the West Pit would be classified as a “terminal” pit lake where all groundwater flow is toward the pit and there is no seepage of pit lake water into the adjacent groundwater flow system. As identified in the comments, a measurable environmental benefit of *the Alternative* would be elimination of all potential West Pit impacts to water quality for groundwater and the Partridge River. Note that invoking *the Alternative* would not affect the East Pit area and during closure there would still be seepage from the backfilled East Pit into both the bedrock and surficial groundwater flowpaths that connect to the Partridge River.

Screening Criteria

In considering *the Alternative*, the Co-lead Agencies have screened the recommended changes to the Project using the same criteria applied to all alternatives considered in the EIS, both DEIS and SDEIS. Consistent with the National Environmental Policy Act and Minnesota Environmental Policy Act, for an alternative to be considered for detailed analysis in the EIS, it must meet the following criteria:

- Purpose and Need. Each alternative is assessed as to whether it would meet the respective proposer’s and Co-lead Agency’s Purpose and Need for the project.
- Technical Feasibility. Each alternative is assessed as to whether it could be implemented using currently available technology based on the current level of knowledge.
- Economic Feasibility. Each alternative is assessed as to whether it could meet economic and financial requirements to construct and operate the proposed project, including whether the cost of implementing the alternative would be economically feasible to meet the Purpose and Need.
- Availability. Each alternative is assessed as to whether surface rights, mineral rights, technologies, and other resources required are currently available.
- Environmental or Socioeconomic Benefits. Each alternative is assessed to determine if it could offer significant environmental or socioeconomic benefits over the proposed project.

Because this is a screening-level assessment relative to the NorthMet Project Proposed Action, the Co-lead Agencies have not requested PolyMet to provide:

- A modified mine plan that maintains a lowered pit lake elevation in closure as a feature of the Project.
- Quantitative assessment of pit lake water quality from the Mine Site GoldSim model under the lowered pit lake elevation condition.
- Detailed costs/savings estimates for increased pumping long-term, water treatment, and maintenance under *the Alternative*.

These constitute data and/or analyses appropriate to evaluation of the project's impacts and potential mitigation beyond the purpose of a screening-level alternative assessment.

Results of Screening

The screening assessment indicated that *the Alternative* would meet the purpose and need of the NorthMet Project Proposed Action, would be technically and economically feasible, and would meet the availability criteria. However, Co-lead Agencies found that it would not offer a significant environmental benefit as compared to the NorthMet Project Proposed Action as currently defined and may instead cause additional adverse environmental impacts (DNR, USACE, and USFS, 2013). These considerations are described below:

- *Neither option would cause the Partridge River to exceed applicable water quality standards.* The NorthMet Project Proposed Action does not elevate pollutant concentrations above evaluation criteria and the likelihood of additional exceedances of evaluation criteria due to the NorthMet Project Proposed Action is insignificant. The benefit of the West Pit Water Elevation Alternative would be the elimination of all surficial and bedrock flowpaths from the West Pit to the Partridge River.
- *The water quality of the West Pit lake would be worse.* The NorthMet Project Proposed Action results in a West Pit lake with elevated values of sulfate and other constituents. *The Alternative* would create additional pit wall exposure that would result in increased solute loading to a smaller pit lake water volume resulting in higher concentrations of pollutants in the pit lake than under the NorthMet Project Proposed Action.
- *The West Pit Water Elevation Alternative would be more expensive* because of the need to treat the pumped water from the West Pit lake. The reduced water quality of the West Pit lake would likely require a more robust treatment regime entailing additional expense. In addition, the treatment would be required for a longer period of time, which would increase the cost. The handling of additional treatment waste residuals would also increase the project cost.

- *Additional wetlands impact could be converted from temporary to permanent.* The NorthMet Project Proposed Action includes the drawdown of the water table near the West Pit lake that would be reduced after the West Pit lake is filled. Hence, some of the wetland impacts associated with the original drawdown would be temporary. *The Alternative* could make some of these wetland impacts permanent.
- *The West Pit Water Elevation Alternative is not consistent with the AWMP,* which allows for non-mechanical treatment of West Pit lake overflow as a type of long-term water quality treatment. Increased loading to the pit lake would likely impede the transition to non-mechanical systems of water treatment contrary to the AWMP.

Based upon these considerations, the screening results regarding the West Pit Water Elevation Alternative are summarized below:

Table 1: Summary of West Pit Water Elevation Alternative Screening

Criteria	Meet Criteria	Comment
Purpose and Need	Yes	
Technical Feasibility	Yes	
Economic Feasibility	Yes	Cost would increase without considered benefit to downstream water resources
Availability	Yes	
Environmental or Socioeconomic Benefits	No	Increase in treatment length and other environmental effects. Environmental benefits are not considered significant.

Recommendation / Conclusion

Based on the above considerations, the Co-lead Agencies conclude that maintaining a dry West Pit or lower pit lake elevation in the pit as provided in comments on the SDEIS would not provide significant environmental benefits compared to the NorthMet Project Proposed Action and subsequently is not a reasonable alternative requiring detailed analysis in the final EIS. The Co-lead Agencies, however, do recommend that *the Alternative* be considered as an adaptive mitigation measure¹ in the event that monitoring during operations and reclamation indicate that implementing this action is better able to meet future environmental objectives compared to the NorthMet Project Proposed Action.

¹ Pit water levels are controllable with the NorthMet Project Proposed Action, so *the Alternative* would not require additional technology or new infrastructure. Therefore the options identified in this memo are best termed “adaptive” as opposed to “contingency” mitigation.

References

MDNR and USACE. 2009. *NorthMet Project Draft Environmental Impact Statement*.

MDNR, USACE, and USFS. 2013. *NorthMet Mining Project and Land Exchange Supplemental Draft Environmental Impact Statement*