

NorthMet Mining Project and Land Exchange

Final Environmental Impact Statement

November 2015



Executive Summary

Prepared by

**Minnesota Department of Natural Resources
United States Army Corps of Engineers
United States Forest Service**



**US Army Corps
of Engineers**
St. Paul District



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INTRODUCTION

PolyMet Mining, Inc. (PolyMet) is proposing to develop the NorthMet copper-nickel-platinum group elements (PGE) mine and associated processing facilities in northeastern Minnesota. A land exchange is also proposed with the United States Forest Service (USFS).

- The mining proposal is known as the *NorthMet Project Proposed Action* consisting of the Mine Site, Transportation and Utility Corridor, and Plant Site. The NorthMet Project Proposed Action would represent the first copper-nickel-PGE mine in Minnesota. Figure 1 shows the general location of the NorthMet Project area and its geographic relationship within the northeast Minnesota region.
- The land exchange proposal is known as the *Land Exchange Proposed Action* consisting of USFS conveyance of Superior National Forest lands encompassing the Mine Site and surrounding lands to PolyMet, and USFS acquisition from PolyMet of up to five tracts of private land within the Superior National Forest proclamation boundary. Figure 1 shows the general location of the Land Exchange area and its geographic relationship within the northeast Minnesota region.

This Executive Summary provides an overview of the Final Environmental Impact Statement (FEIS). The purpose of the FEIS is to describe the process undertaken to evaluate the issues related to and predicted effects of the NorthMet Project Proposed Action and Land Exchange Proposed Action and alternatives.

As Co-lead Agencies, the Minnesota Department of Natural Resources (MDNR), United States Army Corps of Engineers

(USACE), and USFS have jointly prepared this FEIS under the National Environmental Policy Act (NEPA) for the two federal agencies and under the Minnesota Environmental Policy Act (MEPA) for the MDNR. The FEIS describes the process the Co-lead Agencies undertook to evaluate the effects of the NorthMet Project Proposed Action, the Land Exchange Proposed Action, and alternatives developed during the process.

The NorthMet Project Proposed Action would require a number of federal, state, and local permits, including a Department of the Army (DA) permit pursuant to Section 404 of the Clean Water Act (CWA) for the discharge of dredged or fill materials into waters of the United States, including wetlands. The USACE has determined that issuance of a DA permit for this project would be a major federal action that has the potential to significantly affect the quality of the human environment and, therefore, pursuant to NEPA, requires preparation of an EIS.

In addition, the NorthMet Project Proposed Action would require a Permit to Mine from the MDNR, which requires the preparation of a state EIS, with the MDNR as the Responsible Governmental Unit pursuant to MEPA. The State of Minnesota's environmental review process and ultimately the EIS are intended to inform the subsequent permitting and approval processes and describe mitigation measures that may be available.

National Forest System (NFS) lands are owned by the United States of America and administered by the U.S. Department of Agriculture, Forest Service. The NorthMet Deposit containing copper-nickel-PGE minerals is located on NFS lands within the

Superior National Forest. These mineral rights were reserved by the original private owner when the United States purchased the land for National Forest purposes under the authority of the Weeks Act. Those mineral interests remain privately owned and are now controlled by PolyMet. The USFS does not believe that the mineral reservation gives PolyMet a right to surface mine NFS land to access the minerals.

The USFS is willing to consider conveying the land to PolyMet in exchange for land of equal value, which would become a part of the Superior National Forest. Such an exchange would give PolyMet the property rights it needs to pursue its surface mining proposal, while at the same time allowing the USFS to be compensated by acquiring other land of equal value that can be managed as a part of the Superior National Forest.

Without this exchange, under the described conditions, the surface mining operation desired by PolyMet would not take place. For this reason, the Land Exchange Proposed Action is a connected action to the NorthMet Project Proposed Action and has been analyzed in this FEIS.

PolyMet's proposed mining project and associated land exchange is controversial. As the first proposed copper-nickel-PGE mine in Minnesota, it has garnered significant public interest regarding ground and surface waters, waste management, wetlands, cultural resources, cumulative effects, and financial assurance. The FEIS describes the Tribal Cooperating Agencies' major differences of opinion with aspects of the Supplemental Draft Environmental Impact Statement (SDEIS). The FEIS also responds to public comments received on the Draft Environmental Impact Statement (DEIS) and SDEIS.

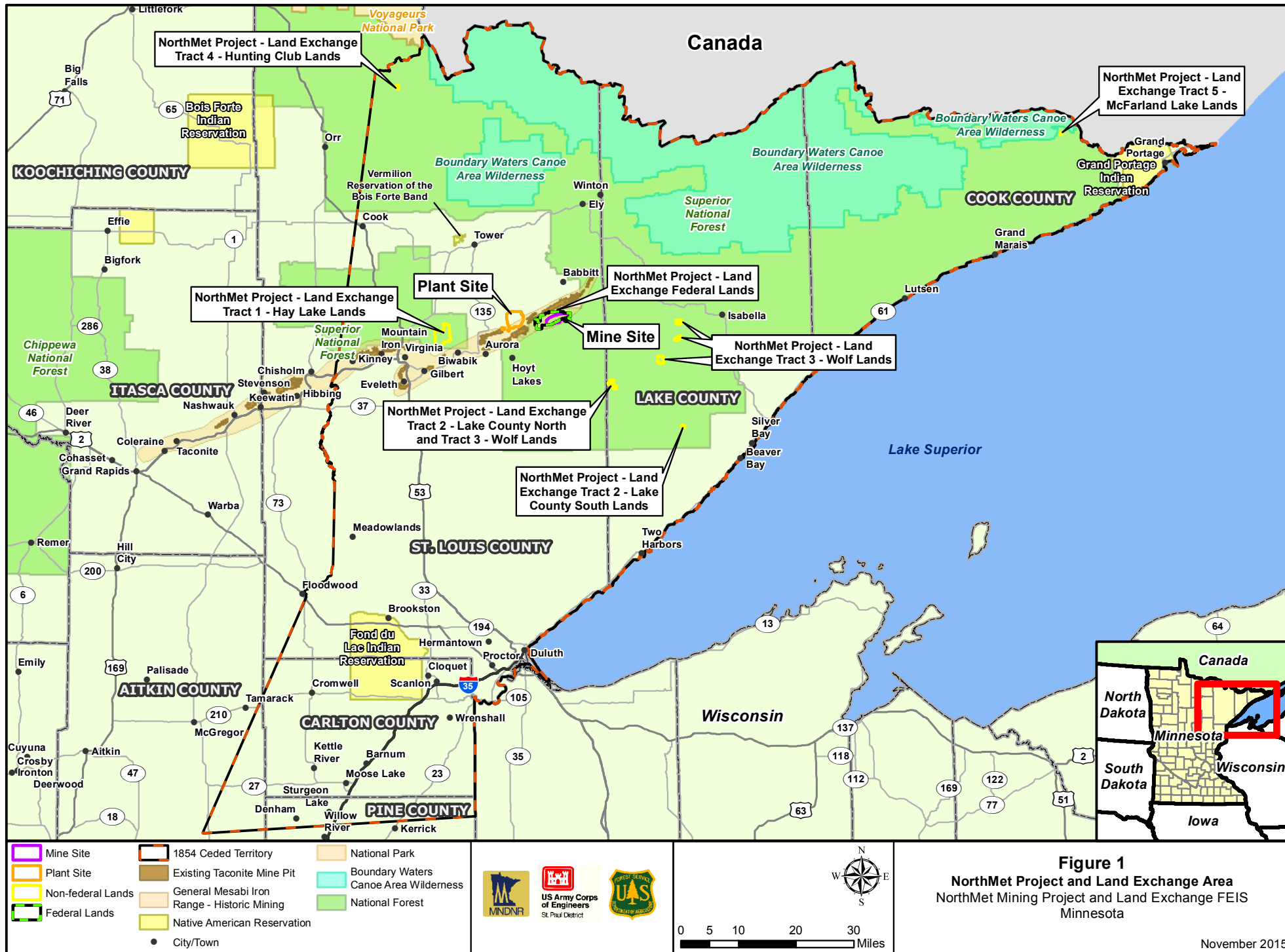


Figure 1
NorthMet Project and Land Exchange Area
 NorthMet Mining Project and Land Exchange FEIS
 Minnesota

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NEPA AND MEPA PROCESS

Development of the FEIS

As a major federal action and a project that meets or exceeds a state mandatory EIS threshold, the NorthMet Project Proposed Action and Land Exchange Proposed Action trigger the need for an EIS under NEPA and MEPA. The purpose of the EIS is to inform the public and decision-makers of the proposed actions, assess potential environmental consequences, identify potential mitigation measures and reasonable and feasible alternatives, and to address the no-action alternative. The NEPA/MEPA process provides for consultation and/or solicitation of comments from federal and state agencies, Native American Tribes, and the general public.

The Co-lead Agencies (the MDNR, USACE, and, as of 2010, USFS) have engaged in a joint federal-state process to consider PolyMet's project proposals as they have evolved over time based on external input and agency reviews of draft designs (see Figure 2).

Between 2005 and 2009, the USACE and MDNR evaluated PolyMet's original mining proposal. This process culminated in October 2009 with the publication of the NorthMet Project DEIS that analyzed the project as it was then proposed by PolyMet. After issuing the DEIS, the Co-lead Agencies—responding to public, other state and federal agencies' (including the United States Environmental Protection Agency [USEPA]), and tribal comments and concerns—developed an alternative in consultation with PolyMet that sought to resolve several major environmental concerns and permitting barriers raised during the DEIS process. This alternative was subsequently adopted by PolyMet and

became the current NorthMet Project Proposed Action.

In 2010, the USFS joined as a third Co-lead Agency for the purpose of analyzing the Land Exchange Proposed Action as a connected action. Under state and federal regulations, multiple actions or projects that are connected actions must be considered in total in preparing an EIS. Coincident review of these connected actions prompted the Co-lead Agencies' decision to prepare an SDEIS. The SDEIS included updated analysis of environmental impacts based on the revised NorthMet Project Proposed Action and added the Land Exchange. It was published in December 2013 and public comments were solicited during a 90-day comment period ending in March 2014.

This FEIS is being published to address public comments received on the SDEIS and to inform the completion of the Co-lead Agencies' EIS process under NEPA and MEPA.

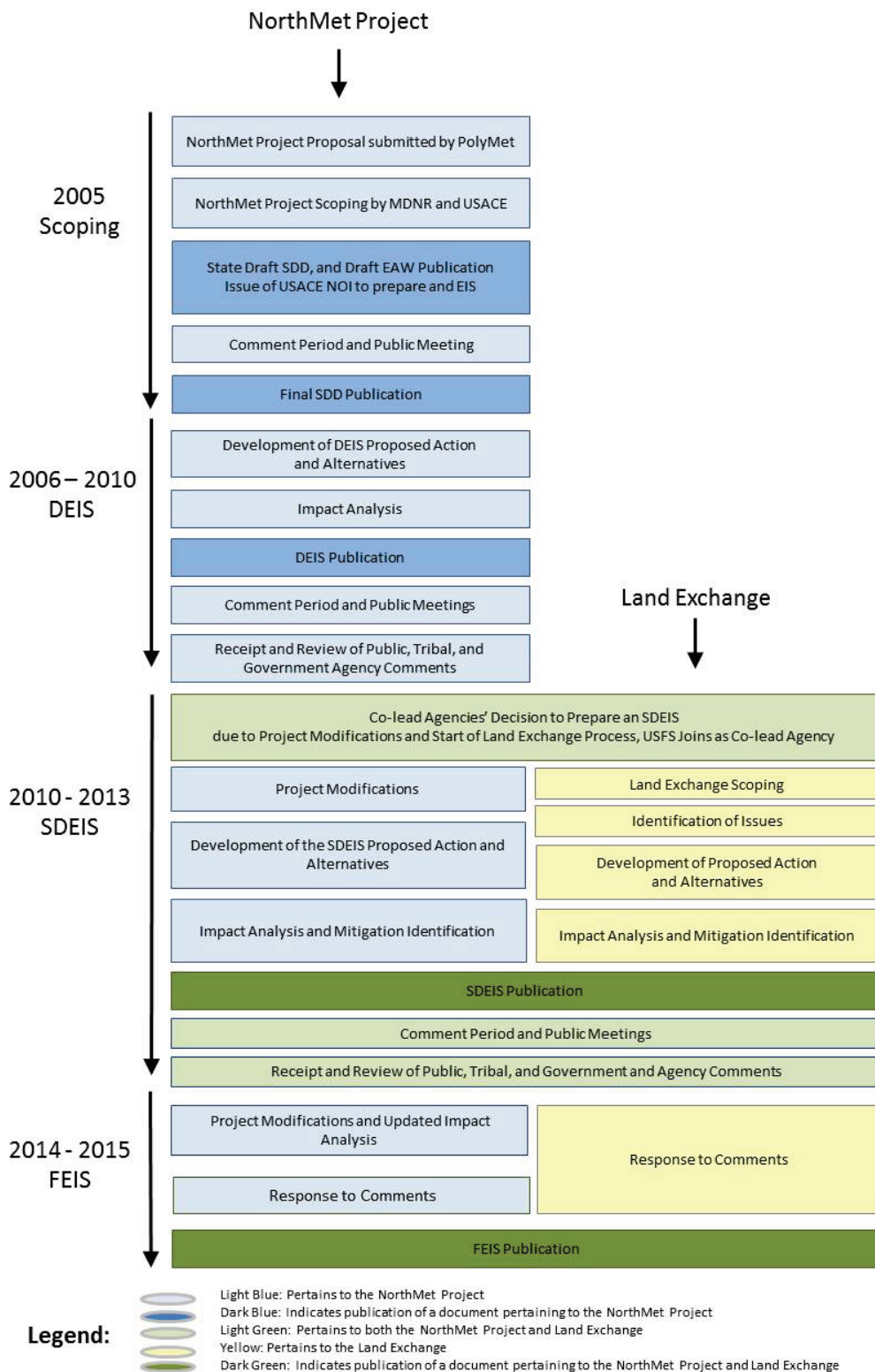


Figure 2 NEPA/MEPA Process, 2005 to Present

Structure of the FEIS

This Executive Summary provides an overview of the FEIS, which includes a full description and analysis of the proposed NorthMet Mining Project and Land Exchange and alternatives, as outlined below:

- Chapter 1.0 (Introduction) provides an overview and descriptions of the purpose of and need for the NorthMet Project Proposed Action and the Land Exchange Proposed Action, the regulatory framework, agency roles and responsibilities, and the organization of the FEIS.
- Chapter 2.0 (EIS Development) describes the process undertaken by the Co-lead Agencies for the NorthMet Project Proposed Action and Land Exchange Proposed Action. It includes discussion on the scoping process; identification of issues; development of the NorthMet Project Proposed Action and Land Exchange Proposed Action and alternatives; public and agency participation; consultation and coordination undertaken to prepare the DEIS, SDEIS, and this FEIS; incorporation of the Land Exchange Proposed Action; reevaluation of DEIS alternatives; and impact analysis approach.
- Chapter 3.0 (Proposed Action and Alternatives) describes the NorthMet Project Proposed Action and Land Exchange Proposed Action and alternatives including the No Action Alternative, Land Exchange Alternative B, as well as alternatives considered but eliminated from detailed consideration in the EIS.
- Chapter 4.0 (Affected Environment) summarizes the existing conditions of the NorthMet Project area and the

surrounding environment, as well as the proposed Land Exchange parcels, including the land and its physical, biological, cultural, socioeconomic, and recreational resources.

- Chapter 5.0 (Environmental Consequences) presents the direct and indirect environmental effects of the NorthMet Project Proposed Action and alternatives and the direct and indirect environmental effects of the Land Exchange Proposed Action and associated alternatives.
- Chapter 6.0 (Cumulative Effects) describes the cumulative effects of the NorthMet Project Proposed Action and Land Exchange Proposed Action when considered along with other past, present, and reasonably foreseeable future actions in the region.
- Chapter 7.0 (Comparison of Alternatives and Other Considerations) contains a comparison of the Proposed Connected Actions and alternatives, conclusions of the impacts (including human health), and Land Exchange Proposed Action public interest considerations, and also addresses other NEPA considerations including a discussion of agency-preferred alternatives.
- Chapter 8.0 (Major Differences of Opinion) describes the Tribal Cooperating Agencies' major differences of opinion with aspects of the SDEIS. Cooperating Agency comments on the SDEIS are addressed in Appendix A.
- Appendix A (Response to Comments on the DEIS for the NorthMet Mining Project and SDEIS for the NorthMet Mining Project and Land Exchange) identifies the process for public engagement throughout the EIS and

provides responses to comments received on the DEIS and SDEIS.

- Appendix B (Underground Mining Alternative Assessment for the NorthMet Mining Project and Land Exchange Environmental Impact Statement) describes the analysis that the Co-lead Agencies undertook in consideration of a potential Underground Mining Alternative.
- Appendix C (Tribal Agency Position Supporting Materials) includes verbatim comments and supporting documentation provided by the Tribal Cooperating Agencies for the SDEIS.
- Appendix D (Biological Assessment and Biological Evaluation) identifies whether activities related to the NorthMet Proposed Action and Land Exchange Proposed Action may affect listed or proposed species and critical habitat as required under the Endangered Species Act.

Agency Roles in the FEIS

Co-lead Agencies

The MDNR, USACE, and USFS are Co-lead Agencies for the joint state-federal EIS and, therefore, are responsible for the content of the FEIS and have final authority over the language used in the document.

Cooperating Agencies

The USEPA, under Section 309 of the Clean Air Act, is required to review and publicly comment on all federal EIS documents and publish its review in the public record.

Along with the USEPA, the Bois Forte Band of Chippewa, Grand Portage Band of Lake Superior Chippewa, and the Fond du Lac Band of Lake Superior Chippewa (the Bands) have been invited by the Co-lead

Agencies to participate in the EIS process and agreed to participate as formal Cooperating Agencies under NEPA. The NorthMet Project area and Land Exchange parcels are located within the 1854 Ceded Territory, within which the Bands reserve hunting, fishing, and gathering (usufructuary) rights. The Great Lakes Indian Fish and Wildlife Commission and the 1854 Treaty Authority have assisted the Bands in assessing issues with the NorthMet Mining Project and Land Exchange.

Other Agencies

Other federal and state agencies participating in development of the FEIS include, but are not limited to, the Minnesota Pollution Control Agency (MPCA) and the Minnesota Department of Health.

PURPOSE OF THE NORTHMET MINING PROJECT AND LAND EXCHANGE

The purpose of the NorthMet Mining Project and Land Exchange is multifaceted:

- PolyMet: The NorthMet Mining Project and Land Exchange would allow the company to exercise its mineral lease rights to mine the NorthMet Deposit.
- USACE and MDNR: The NorthMet Project Proposed Action would produce base and precious metal precipitates and flotation concentrates from ore mined at the NorthMet Deposit by uninterrupted

operation of the former LTV Steel Mining Company (LTVSMC) processing plant. The processed resources would help meet domestic and global demand by sale of these products to domestic and world markets.

- USFS: The Land Exchange Proposed Action is intended to resolve the conflict between the surface estate owned by the United States and the private mineral estate.

PROPOSED CONNECTED ACTIONS

The Proposed Connected Actions include the NorthMet Project Proposed Action and the Land Exchange Proposed Action as described below.

NorthMet Project Proposed Action

Located on the eastern flank of the Mesabi Iron Range, the proposed NorthMet Mine would be located 6 miles south of the City of Babbitt and the processing plant would be 6 miles north of the City of Hoyt Lakes in St. Louis County, Minnesota. The Mesabi Iron Range region has been mined for iron ore and lower-grade iron ore called taconite for over 100 years (see Figure 3). The entire mine is within the municipal boundaries of the City of Babbitt and the processing plant is mostly located within the municipal boundaries of the City of Hoyt Lakes (see Figure 4). Several other communities, including Aurora, Virginia, Ely, Hibbing, Eveleth, and Biwabik that are located within St. Louis and Lake counties, are within 50 miles of the NorthMet Project area. In addition, the project is about 50 miles southeast of Voyageurs National Park and 20 miles south of the Boundary Waters Canoe Area Wilderness (BWCAW).

A substantial portion of the land required by the NorthMet Project Proposed Action would reuse a former mining plant site (LTVSMC processing plant) for mineral processing, and use the existing Tailings Basin for tailings disposal.

Mining would occur on what is referred to as the Mine Site, which is relatively undisturbed land; however, there is previously logged land nearby. The Mine Site would be connected to the processing facilities and tailings basin (Plant Site) by an existing (upgraded) rail line, the Dunka

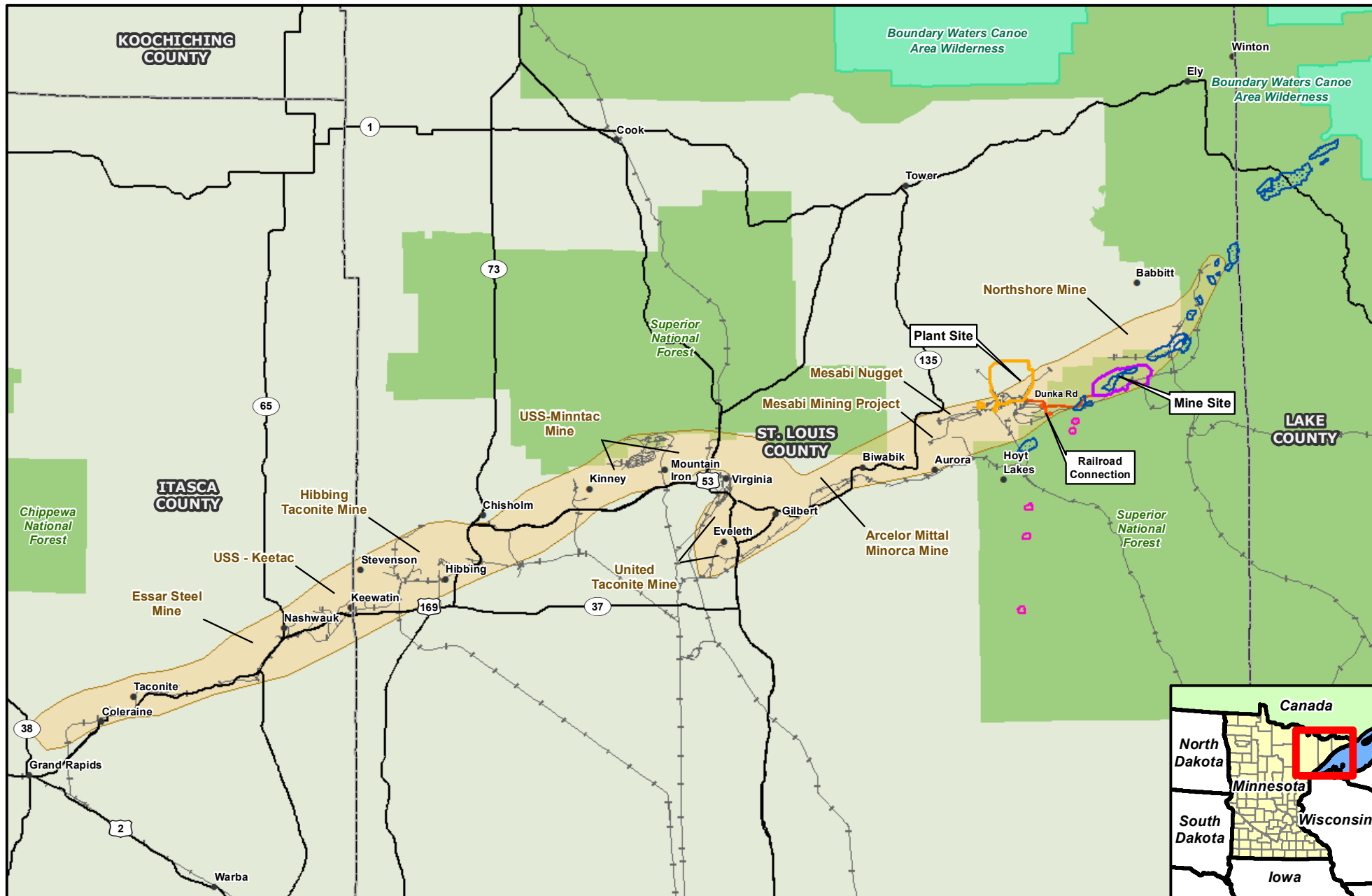
Road, and a water line, collectively referred to as the Transportation and Utility Corridor. The active Northshore Mine (taconite iron ore mine) is located about a mile north of the Mine Site.

There would be three distinct phases to the NorthMet Project Proposed Action:

- Construction would last for approximately 18 months and would include land clearing, building renovation and construction, stockpile preparation, and utility upgrades.
- Operations would last approximately 20 years, and would include ore mining and processing, waste rock stockpiling, continued construction, progressive reclamation, and water treatment.
- Final land reclamation, closure, and post-closure maintenance would occur after mining and would include infrastructure removal, long term water treatment, maintenance, and monitoring.

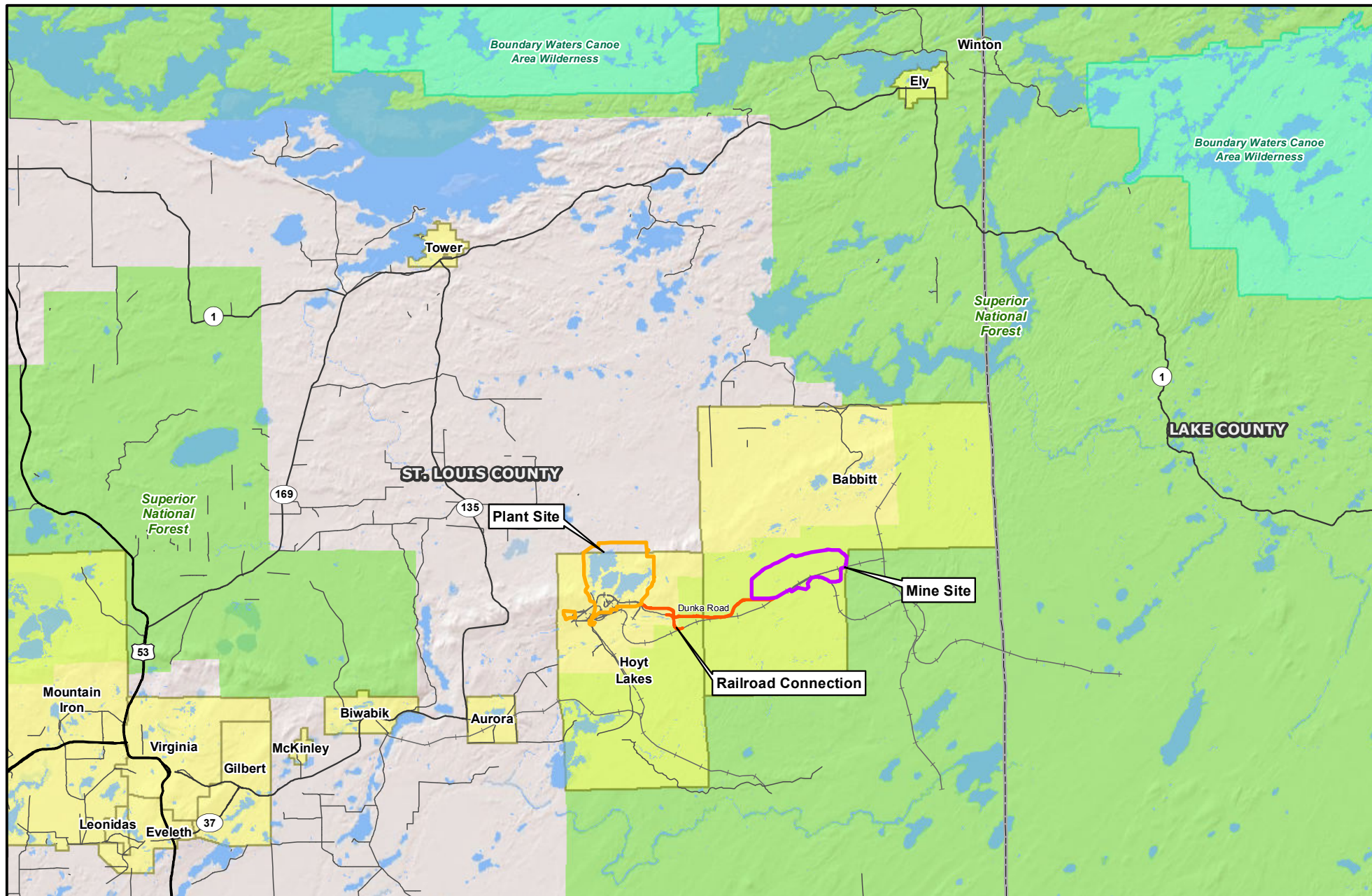
The NorthMet Project Proposed Action does not include actions to address existing environmental conditions for lands associated with previous LTVSMC operations outside the NorthMet Project area footprint.









An overview of the NorthMet Project Proposed Action construction, operations, closure, and post-closure maintenance is provided below.



<ul style="list-style-type: none"> Plant Site Mine Site Transportation and Utility Corridor Boundary Waters Canoe Area Wilderness 	<ul style="list-style-type: none"> National Forest General Mesabi Iron Range - Historic Mining Duluth Complex Copper-Nickel Deposits Duluth Complex Titanium-Iron Deposits 	<ul style="list-style-type: none"> City/Town Existing Road Existing Railroad 			<p>Figure 3 Mesabi Iron Range Region NorthMet Mining Project and Land Exchange FEIS Minnesota</p> <p>November 2015</p>
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- | | | |
|--|---|---|
|  Plant Site |  Municipal Boundary |  Existing Road |
|  Mine Site |  Boundary Waters Canoe Area Wilderness |  Existing Railroad |
|  Transportation and Utility Corridor |  National Forest | |

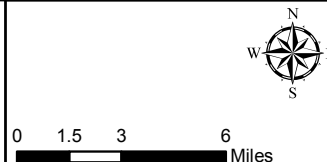


Figure 4
Area Municipalities
 NorthMet Mining Project and Land Exchange FEIS
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Construction

Construction would begin after permitting and about 18 months before mining and processing. Geochemical characterization has identified four types of waste rock that would be managed based on their potential to oxidize and release various solutes (Category 1 being the lowest potential and Category 4 being the highest). In preparation for mining at the Mine Site, existing vegetation would be cleared and overburden (i.e., soils and rock) would be removed. Additionally, a Mine Site Wastewater Treatment Facility (WWTF), Category 1 Stockpile groundwater containment system, and liner systems for the Category 2/3 Stockpile and Category 4 Stockpile would be constructed. At the Transportation and Utility Corridor, an existing road, railroad, and utilities would receive minor upgrades. These transportation routes and utilities would connect the Mine Site to the Plant Site, which are about 8 miles apart.

At the Plant Site, existing buildings would be refurbished and new buildings would be constructed. A portion of the existing LTVSMC Tailings Basin would be used as the base for a new NorthMet Project Tailings Basin. A surface and groundwater containment system would be installed around the northern, western, and eastern sides of the Tailings Basin to collect surface and groundwater coming from the Tailings Basin. The existing containment system along the southern side of Tailings Basin would be improved as necessary to meet performance requirements. The stability of the Tailings Basin would be enhanced by the addition of rock buttressing, and weaker LTVSMC tailings near the dam edge would be strengthened using cement deep soil mixing. A separate double-lined facility would be constructed to contain residue from the hydrometallurgical process. A mechanical Wastewater Treatment Plant (WWTP) (using reverse osmosis [RO]) or

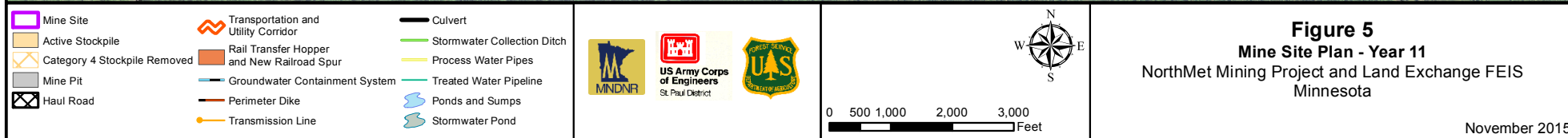
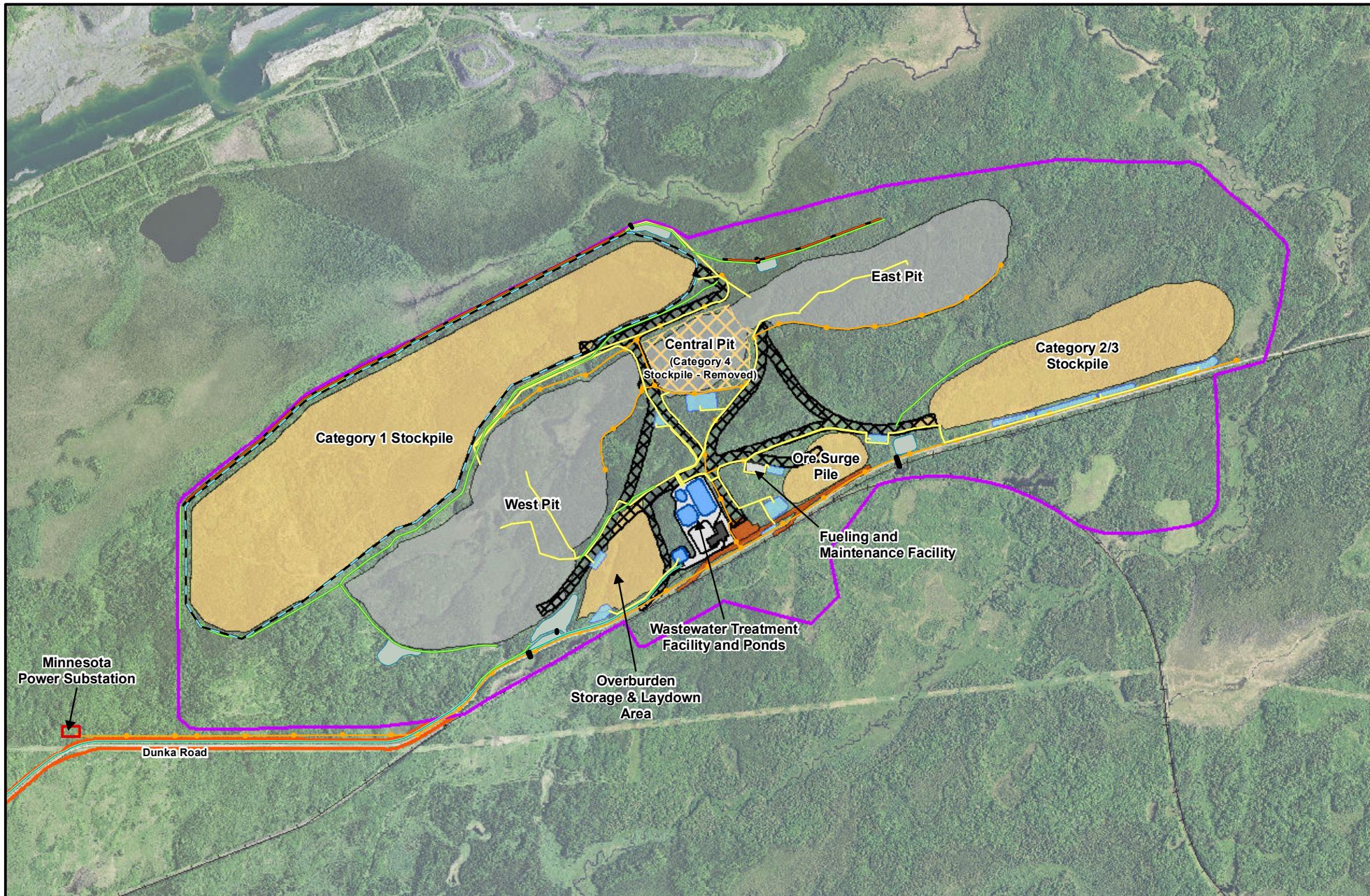
equivalently performing technology would be constructed.

Mining Operations

The mining operations would involve the use of conventional open-pit surface mining methods such as blasting and the excavation of rock from the NorthMet Deposit. The NorthMet Deposit is a low- to medium-quality copper-nickel-PGE deposit with low sulfide content. The Life of Mine (i.e., the duration of mining operations) would be 20 years, over which time approximately 533 million tons of waste rock and ore would be removed from the NorthMet Deposit. This includes a total of 225 million tons of ore and 308 million tons of waste rock. The average ore processing rate would be up to 32,000 tons per day.

Mining would be conducted in three open pits. The East Pit and West Pit would be mined simultaneously through the first 11 years of the mine life (see Figure 5). Mining would cease at the East Pit at approximately year 11 and continue at the West Pit until year 20 (see Figure 6). The Central Pit would be mined between years 11 and 16 and would ultimately be combined with the East Pit. The maximum depths of the pits below the original surface level would be 696 feet (ft) for the East Pit (at year 11), 356 ft for the Central Pit (at year 16), and 630 ft for the West Pit (at year 20).

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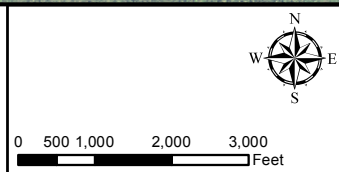
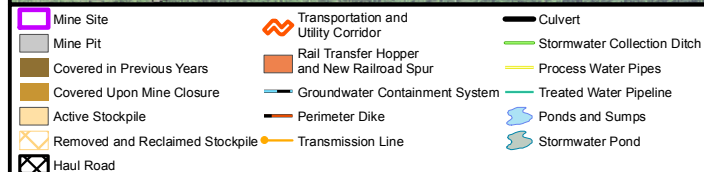
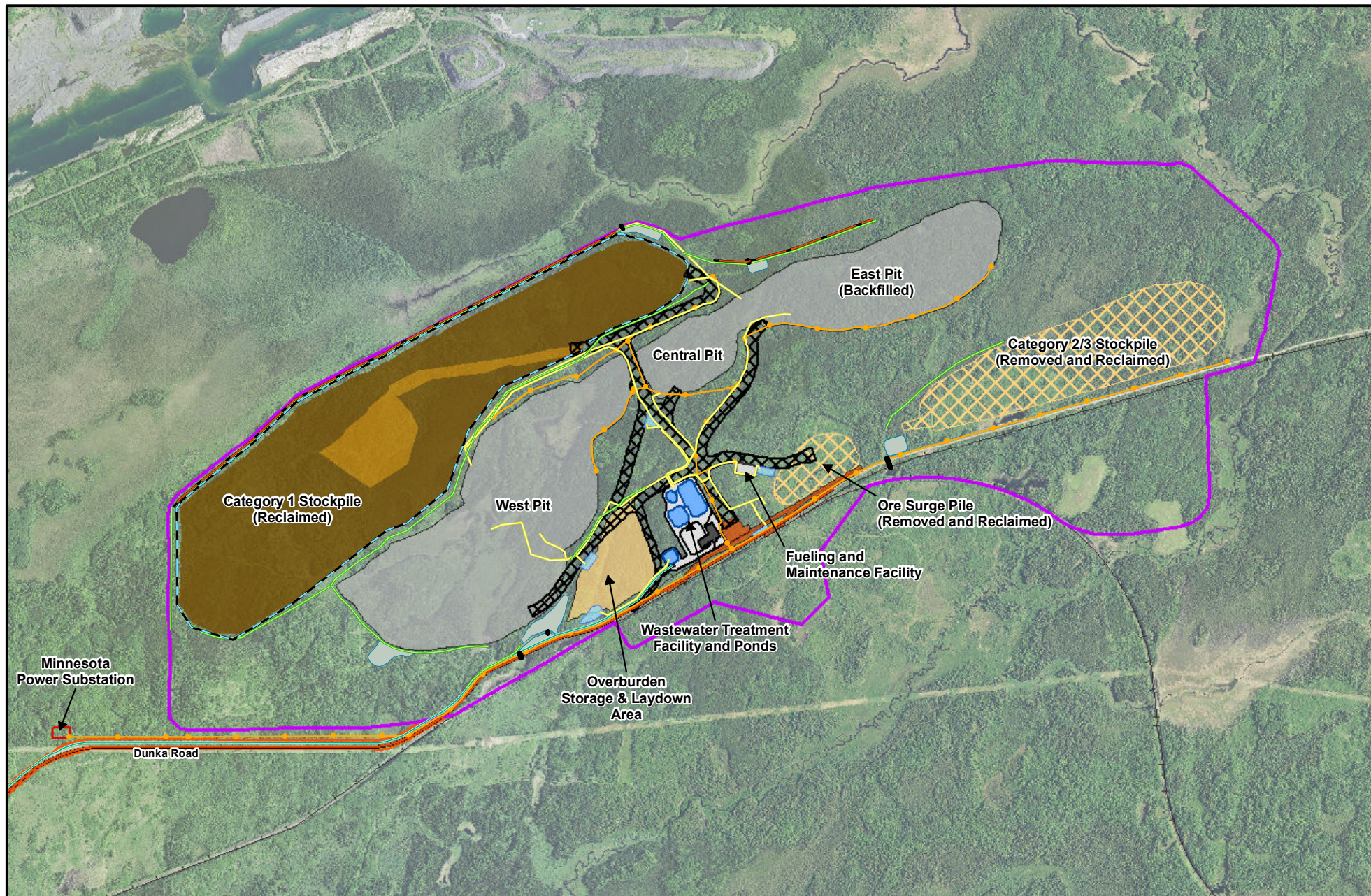


Figure 6
Mine Site Plan - Year 20
 NorthMet Mining Project and Land Exchange FEIS
 Minnesota

November 2015

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Until the completion of mining in the East Pit (approximately year 11), waste rock would be hauled to one of the following stockpiles at the Mine Site:

- Permanent Category 1 Stockpile (surrounded by a water containment system and covered at closure);
- Temporary Category 2/3 Stockpile (lined); or
- Temporary Category 4 Stockpile (lined).

After mining planned at the East Pit ends by year 11, the waste rock in the temporary Category 2/3 and 4 stockpiles would be moved into the East Pit for subaqueous disposal. This option is the preferred method of disposal for the more reactive waste rock. Waste rock generated from ongoing mining in the West Pit and Central Pit after year 11 would be directly disposed of in the East Pit. Some Category 1 waste rock would continue to be placed on the Category 1 Stockpile until year 13. Mining operations would continue in the West Pit until year 20, while backfilling the combined East Central Pit with waste rock.

Water control systems would be constructed to capture water that has contacted surfaces disturbed by mining operations, water collected on stockpile liners, and water collected by the Category 1 Stockpile containment system (i.e., collectively referred to as process water). Process water would be treated at a mechanical WWTF located at the Mine Site and either pumped to the Plant Site Tailings Basin for use as process make-up water or to supplement flooding of the East Pit after backfilling with waste rock. No process water would be discharged off site.

Processing Operations

Ore would be transported to the Plant Site (see Figure 7) by rail, for crushing and processing. Processing would involve

concentration using a flotation method to separate metallic sulfide minerals (ore concentrate) from feldspar and other non-ore minerals (tailings).

Ore concentrate would be dewatered and shipped off site as copper concentrate and nickel concentrate final products, or the nickel concentrate would be processed in an autoclave (oxidation and leaching method) at the Hydrometallurgical Plant and base/precious metal precipitates would be produced. These precipitates would be shipped off site and sold as final products. Based on the anticipated rate of mining, mineral processing of up to 32,000 tons per day of ore would yield annual production of about 113,000 tons of copper concentrate, 18,000 tons of mixed (nickel/copper) hydroxide, and 500 tons of PGE precipitate.

After passing through a secondary flotation cycle to remove as many sulfide minerals as possible, the tailings would be transferred as slurry to the Tailings Basin. Bentonite clay would be incorporated into the exposed outer side-slopes of the Tailings Basin as it is built up to create a barrier that would limit oxidation of sulfide minerals. This limiting of oxygen transfer would reduce pollutants generated from the Tailings Basin.

Water seepage from the Tailings Basin would be collected by the containment system and sent to either the Tailings Basin pond or the Plant Site WWTP for treatment. Treated water would be used to maintain flows (augmentation) in the streams that would otherwise receive reduced flows because of the Tailings Basin containment system.

Closure and Post-closure Maintenance

In general, the Mine Site area has been designed and would be operated to allow for progressive reclamation. After mining is completed, the West Pit would be filled with groundwater and surface water to become a

pit lake (see Figure 8). The Mine Site mechanical WWTF would be upgraded to include RO or equivalently performing technology and would be maintained to treat pit lake water quality for as long as necessary. Other unnecessary buildings and infrastructure would be removed and reclaimed. The Plant Site would be closed by removing unnecessary buildings and infrastructure, capping the Hydrometallurgical Residue Facility (double-lined), and adding bentonite amendment and vegetation to the beaches and pond at the Tailings Basin. The Tailings Basin collection system and Plant Site WWTP (RO or equivalently performing technology) would be maintained to treat Tailings Basin seepage for as long as necessary.

The water objective of closure is to provide water treatment for as long as necessary to meet regulatory standards at applicable groundwater and surface water compliance points. The NorthMet Project Proposed Action includes long-term mechanical treatment (RO or equivalently performing technology) at both the Mine Site and Plant Site with a goal of transitioning to a non-mechanical water treatment technology requiring less maintenance over the long term. Pilot studies for non-mechanical treatment would be conducted during operations (and post-closure as necessary) to demonstrate the ability to transition to non-mechanical water treatment. Both mechanical and non-mechanical treatment would require periodic maintenance and monitoring activities for as long as treatment is required.

The water models constructed to assess the potential effects from the NorthMet Project Proposed Action were not designed to predict the duration of treatment nor do they capture all the factors that influence the duration of treatment. Therefore, the water modeling cannot be used to predict when treatment would end and thus indicates that water treatment systems would be needed at the Mine Site and Plant Site indefinitely. Actual treatment requirements would be assessed on a recurring basis throughout operations and closure based on results of ongoing discharges, performance, and water resource monitoring, ensuring continuous protection of groundwater and surface water quality and compliance with applicable water quality standards. This reassessment process would rely on measured monitoring results (evaluated through modeling) rather than the results of the predictive modeling included in the FEIS. Regardless of the precise duration of effects or water treatment at either the Mine Site or Plant Site, there are measures available to address impacts to natural resources.

Monitoring, Adaptive Management, and Mitigation

The monitoring and maintenance of geotechnical stability, water, wetland, vegetation, and other resources would continue for as long as necessary.

One of the key elements of the NorthMet Project Proposed Action is the inclusion of several management plans that detail how PolyMet would monitor environmental conditions and perform predictive modeling to ensure that they would meet all permit requirements. Key among these plans is the Adaptive Water Management Plan, which describes how Mine Site and Plant Site water management would be managed and under what circumstances design changes to the following NorthMet Project Proposed Action facilities would be triggered:

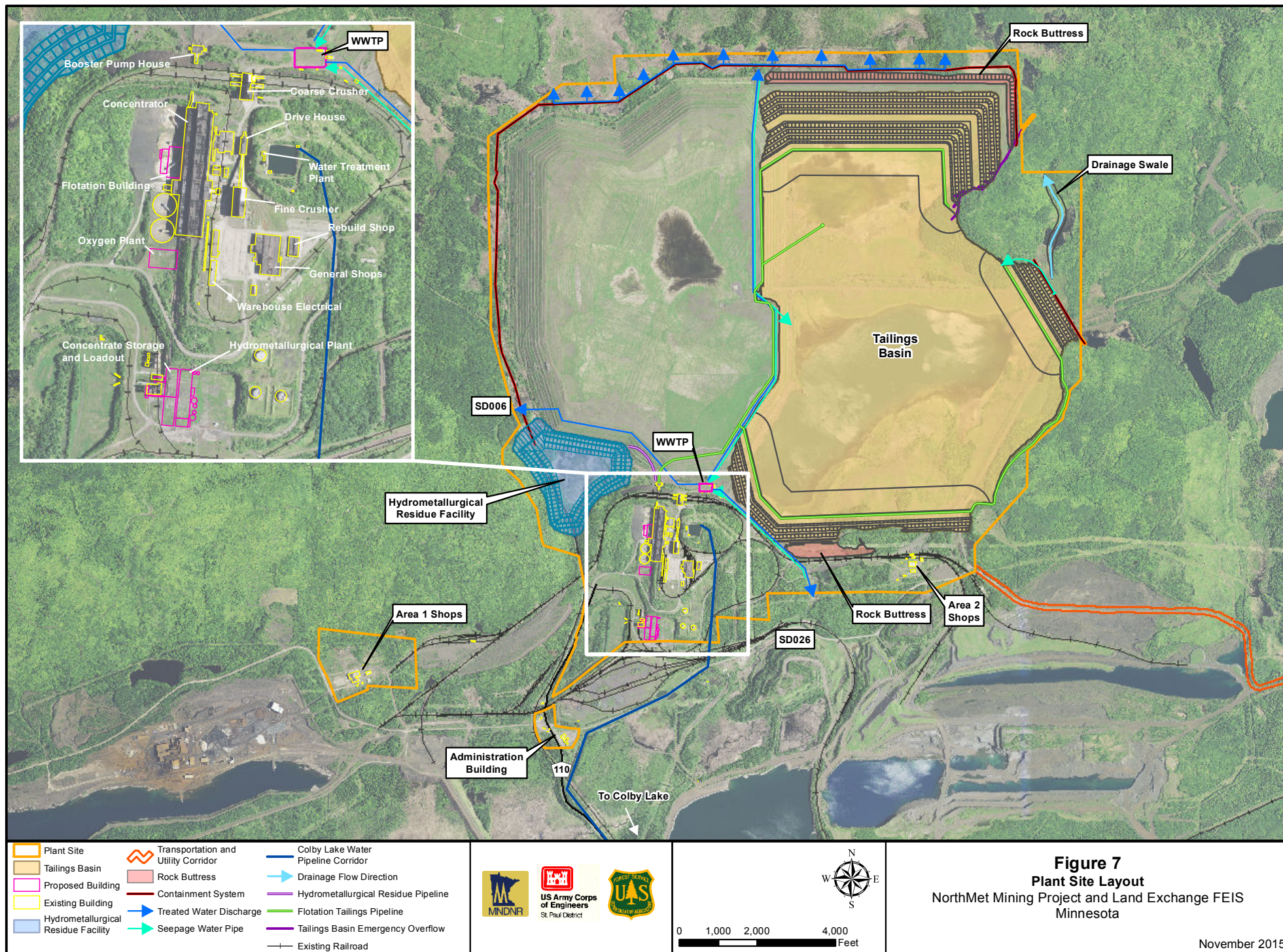
- Category 1 Stockpile Cover System – PolyMet proposes to install a geomembrane cover system to reduce the load of constituents that reach the West Pit via drainage from the Category 1 Stockpile. It is considered an adaptive engineering control as the cover system could be enhanced if monitoring identified the cover system was underperforming.
- Mine Site WWTF – the WWTF is considered adaptive engineering control as it would be upgraded to a RO or equivalently performing technology during closure and adjusted as needed to manage sulfate concentrations in the effluent.
- Plant Site WWTP – the WWTP would treat Plant Site process water. It is considered an adaptive engineering control because the operating configuration and requirements of the process units within the WWTP or the capacity of the WWTP could be modified to accommodate varying influent streams and discharge requirements.
- Tailings Basin Pond Bottom Cover System – PolyMet proposes to install a Tailings Basin pond bottom cover system during reclamation in order to reduce the diffusion of oxygen into the tailings. It is considered adaptive engineering control as additional bentonite could be added if the pond bottom cover system were underperforming.

Other proposed mitigation measures are also included in the FEIS and would be a part of the NorthMet Project Proposed Action. These may include measures to ensure geotechnical dam stability, reduce fugitive dust and noise, and effects on water quality,

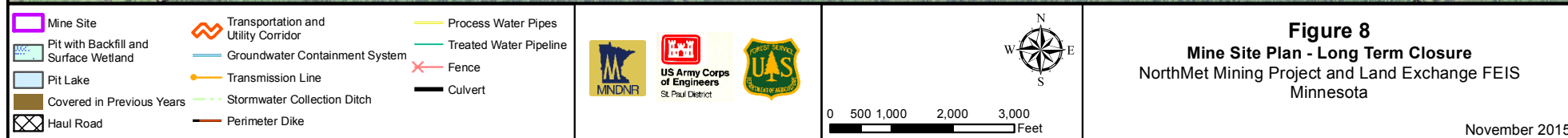
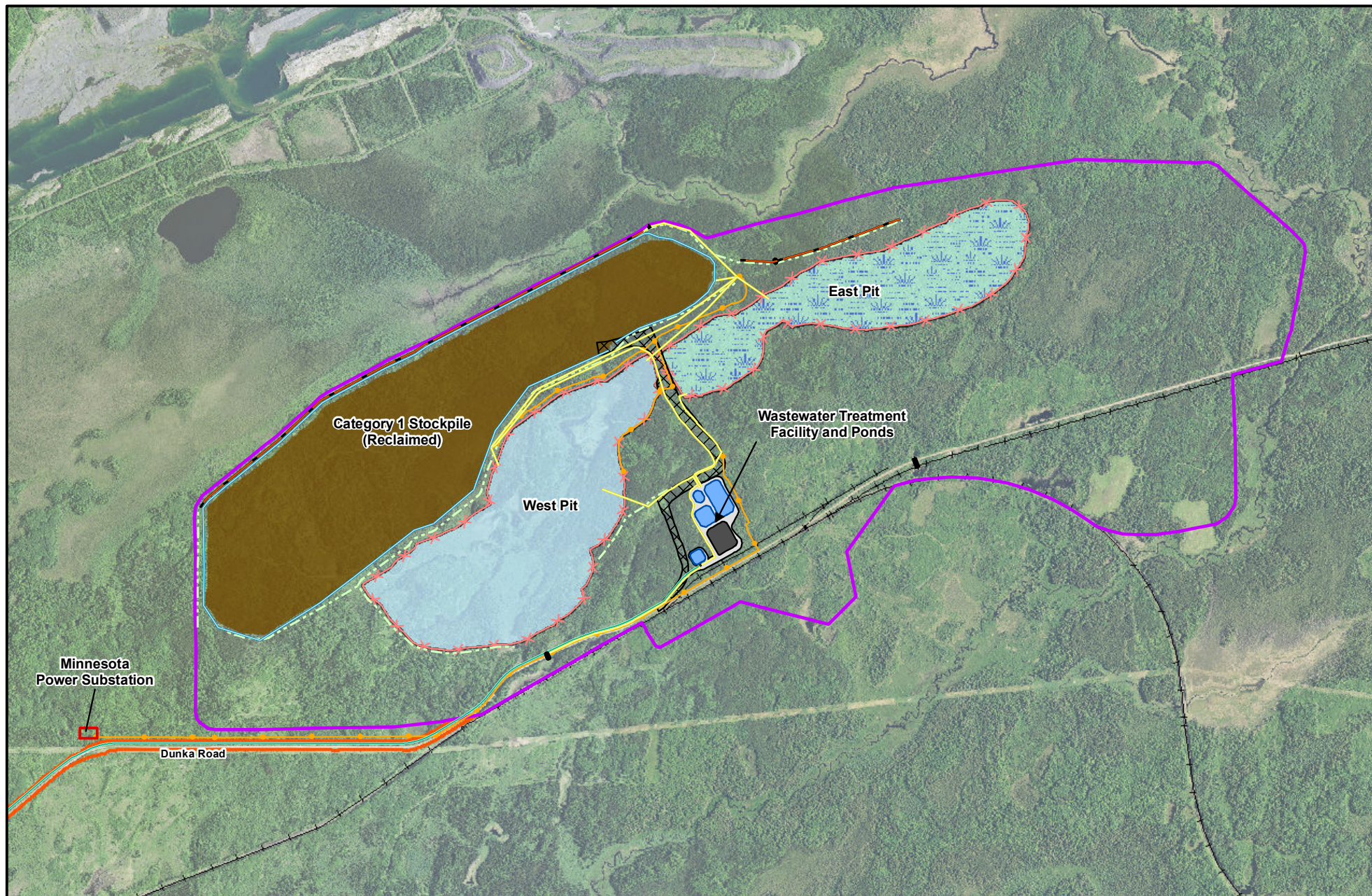
wetlands, cultural resources or historic properties, and other resources.

The FEIS describes these proposed measures and when they would be employed during construction, operations, and closure of the NorthMet Project Proposed Action. Monitoring and modeling would be used to determine the performance of the proposed measures and identify any needed revisions.

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Land Exchange Proposed Action

Disclosure of appraisal information in the EIS is not required. Any decision documented in the Record of Decision (ROD) to move forward with a land exchange will be supported by a current appraisal, approved by the USFS, which verifies that the exchange meets the equal value requirements of applicable federal law and regulation. Requests for appraisal reports and appraisal review reports are processed under Freedom of Information Act procedures.

Federal Lands

The federal lands proposed to transfer to PolyMet include a large black spruce, tamarack, and cedar wetland, and also contain Mud Lake. Yelp Creek and the Partridge River also flow through the property. These federal lands lie immediately south of the Superior National Forest proclamation boundary and are bounded on the south by the former LTVSMC railroad and Dunka Road, which are features of the NorthMet Project Proposed Action. Legal access to the federal lands is primarily via Dunka Road, which is privately owned and would require an approval for ingress and egress, and the former LTVSMC railroad.

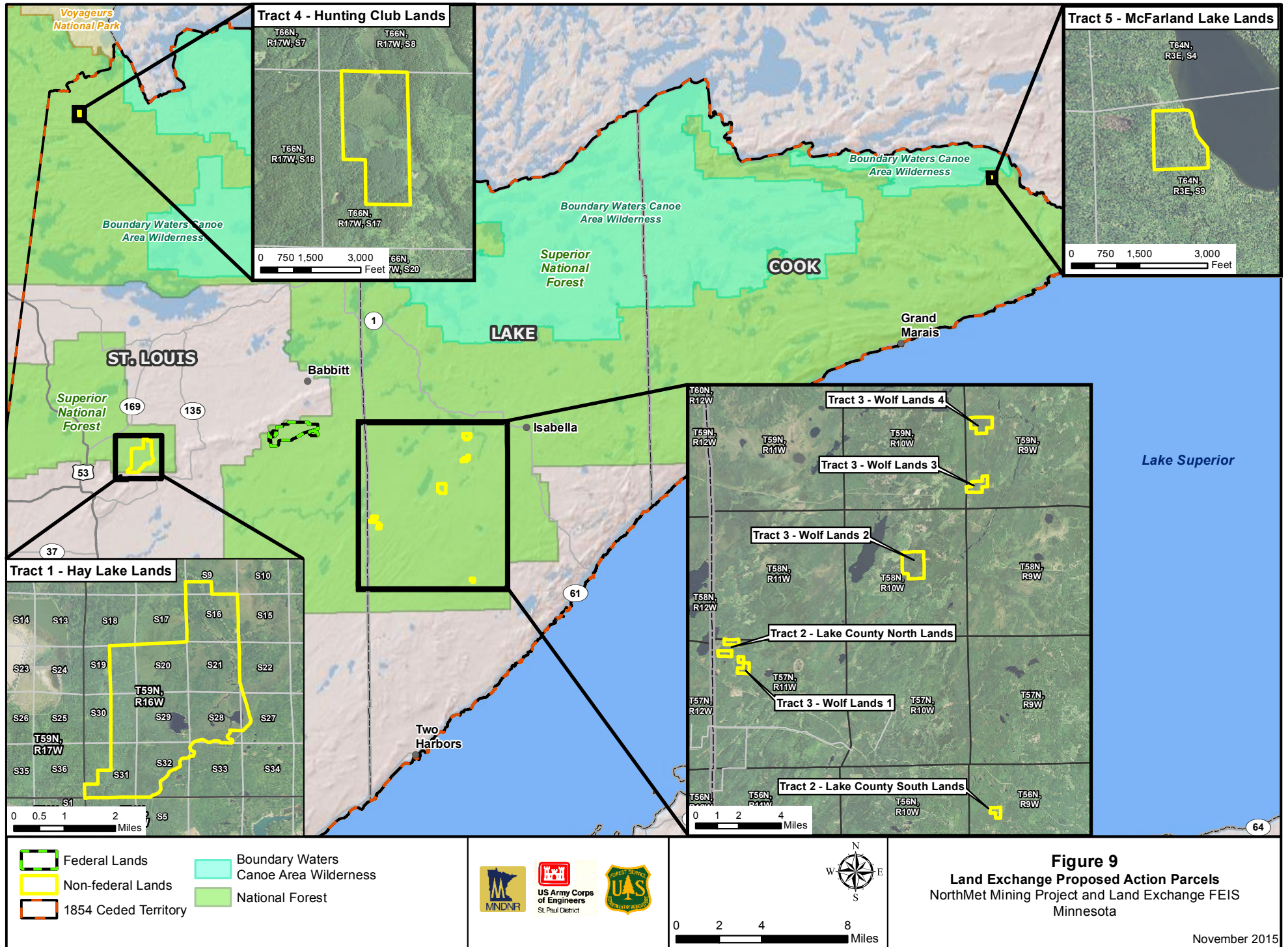
The area includes other privately owned properties to the north and west of the federal lands, which have been surface mined over the years. There are mine pits, waste rock stockpiles, tailings basins, processing facilities, railroad grades, and other general mining facilities throughout the area. A 115-acre, privately owned in-holding within the exterior boundaries of the northwestern portion of the federal lands is not included in the Land Exchange Proposed Action.

Non-federal Lands

The Land Exchange Proposed Action would include up to five tracts (Tract 1 – Hay Lake lands, Tract 2 – Lake County lands, Tract 3 – Wolf lands, Tract 4 – Hunting Club lands, Tract 5 – McFarland Lake lands) of non-federal lands in St. Louis, Lake, and Cook counties that would comprise up to 6,722.5 acres (General Land Office [GLO]); however, the final exchange, if approved, could include fewer than 6,722.5 acres (GLO) of non-federal land, depending on the results of the environmental analysis and real estate appraisals. All of the lands proposed for exchange are located within the 1854 Ceded Territory of northeastern Minnesota (see Figure 1). For more information regarding the 1854 Ceded Territory, please refer to the Predicted Environmental Consequences section below.

PolyMet currently owns a portion of the non-federal lands proposed for exchange; however, all rights, titles, and interests of the remaining non-federal lands proposed for exchange have been assigned to PolyMet. All of the non-federal lands except Tract 4 have severed mineral and surface ownership, which means that the mineral resources would not be acquired with the surface. There are no mining activities proposed on the non-federal lands as part of the Land Exchange Proposed Action. The lands acquired would become part of the Superior National Forest and would be managed under the 2004 Superior National Forest Land and Resource Management Plan (Forest Plan).

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PREDICTED ENVIRONMENTAL CONSEQUENCES OF THE PROPOSED CONNECTED ACTIONS

Although the NorthMet Project Proposed Action would take place in a region that has been used for mining and timber production for over 100 years, it also contains many important recreational, cultural, and natural resources. The FEIS describes in detail those elements of the natural and human environment that would be affected by the NorthMet Project Proposed Action and Land Exchange Proposed Action. The following section briefly describes some of the critical environmental effects predicted as a result of the NorthMet Project Proposed Action and Land Exchange Proposed Action.

NorthMet Project Effects on Water Resources

Surface water and surficial groundwater from the NorthMet Project Mine Site flow to the Partridge River and the Plant Site mostly drains to the Embarrass River with the exception of Second Creek (Partridge River Watershed). Both rivers are tributaries to the St. Louis River, which flows to Lake Superior.

Engineering controls at the Mine Site and Plant Site would capture the majority affected water for treatment. Water leaving the NorthMet Project area would include non-contact stormwater, clean water from the WWTP and WWTF, and a small volume of groundwater escaping the liners and containment systems.

Several groundwater, surface water, and water quality models (MODFLOW, XP-SWMM, and GoldSim, respectively) were used to predict the hydrologic and water quality effects of the NorthMet Project

Proposed Action, as well for a Continuation of Existing Conditions scenario for comparison. The water quality model, which was run at monthly time steps for 200 years for the Mine Site and 500 years for the Plant Site, performs probabilistic simulations, taking into account the uncertainty around many of the model input assumptions. The Co-lead Agencies have selected the 90th percentile probability (P90) as its evaluation threshold in determining whether the model results meet established evaluation criteria. This means that there is at least a 90 percent probability that a constituent would not exceed the evaluation criteria.

With the proposed engineering controls, the water quality model predicts that the NorthMet Project Proposed Action would not cause any significant water quality impacts because: 1) exceedances of the P90 threshold did not occur, 2) the NorthMet Project Proposed Action concentrations were no higher than concentrations predicted for the Continuation of Existing Conditions scenario, 3) the frequency or magnitude of exceedances for NorthMet Project Proposed Action conditions was within an acceptable range, or 4) the effects were not attributable to NorthMet Project Proposed Action discharges.

The water quality model predicts that the NorthMet Project Proposed Action would not result in significant changes to sulfate concentrations in the Partridge River, but would significantly decrease sulfate concentrations in the Embarrass River. Furthermore, the engineering controls would provide a high degree of reliability and flexibility to ensure that the NorthMet

Project Proposed Action would not cause or contribute to an exceedance of evaluation criteria for sulfate in the future.

Nearly all contact or process water at the NorthMet Project area would be treated at the Mine Site WWTF or Plant Site WWTP before release to the environment. At the Mine Site, about 10 gallons per minute of untreated water would be released during closure (all related to groundwater seepage), which represents less than 5 percent of total Mine Site water releases (including treated and untreated water). At the Tailings Basin, about 20 gallons per minute of untreated water would be released during closure (all related to Tailings Basin seepage that bypasses the groundwater containment system), which represents less than 1 percent of total Tailings Basin water releases (including treated and untreated water). The NorthMet Project Proposed Action is also not predicted to result in any significant changes to groundwater and surface water flows when compared to existing conditions.

Mercury is another constituent of concern, primarily because many of the lakes and rivers in the area are currently classified as “impaired waters” by the MPCA due to elevated mercury content in fish tissue. The NorthMet Project Proposed Action is located within the Lake Superior Basin and would be subject to the Great Lakes Initiative (GLI) mercury water quality standard of 1.3 nanograms per liter (ng/L). The NorthMet ore and waste rock contain trace amounts of mercury; however, the modeling and data suggest that the mercury concentration in the West Pit Lake, the only surface water discharge at the Mine Site, would stabilize below the GLI standard at approximately 0.9 ng/L. There would also be mercury in the tailings, where about 95 percent of the mercury in the ore is predicted to be permanently retained in the solids disposed of in the Tailings Basin and Hydrometallurgical Residue Facility. The

mercury concentration in seepage from the Tailings Basin is anticipated to be below the GLI standard. Water from the NorthMet Project Proposed Action is predicted to increase mercury loadings in the Embarrass River Watershed (from 22.3 to 22.5 grams per year) but decrease mercury loadings in the Partridge River (24.2 to 23.0 grams per year). The net effect of these changes would be an overall reduction in mercury loadings to the downstream St. Louis River.

The BWCAW and Voyageurs National Park are located in different watersheds than the NorthMet Project area. Surface water flow and surficial groundwater flow from the NorthMet Project Proposed Action would not directly, indirectly, or cumulatively affect the water in these areas. Potential bedrock groundwater flow from the Mine Site north to the Northshore Mine, if determined possible through monitoring, would be prevented.

NorthMet Project Effects on Biological Resources

Direct and indirect effects to wetlands would result from mining operations. The NorthMet Project Proposed Action would directly affect 913.8 acres of wetlands located within the NorthMet Project area, mostly within the Mine Site, as a result of activities such as filling, excavation, and installation of a containment system within the wetland boundary, and, therefore, these wetlands would be permanently lost. Direct effects would occur on the following wetland types: coniferous bog, shrub swamp, coniferous swamp, shallow marsh, deep marsh, sedge/wet meadow, hardwood swamp, and open bog.

A wetland may be fragmented as the result of direct impacts that split a wetland resource area into multiple parts. These fragmented parts could potentially be isolated from other wetlands and would no

longer have any adjacent upland watershed area, which could result in the loss of functions in the wetland fragments. The fragmented wetlands that were determined to lose their functions (26.9 acres) would be mitigated up front and included in the compensatory mitigation.

The overall wetland mitigation strategy for the NorthMet Project Proposed Action would be to compensate for unavoidable wetland impacts in-place (within the same 8-digit Hydrologic Unit Code), in-kind where possible, and in advance of impacts when feasible in order to replace lost wetland functions. The USACE St. Paul District has not made a final determination of the compensation ratios that would be required for the NorthMet Project Proposed Action. The final decision on compensatory mitigation ratios will be determined at the time of the decision on the DA permit and would be based on current District guidance. PolyMet would ultimately need to satisfy both the federal and state mitigation requirements. The number of mitigation credits to be earned by replacement wetlands will be determined during permitting by the appropriate agencies reviewing the wetland mitigation plan. This will be based on the extent to which the sites meet the target goals established during permitting. These include, among other things, restoration of wetland-appropriate hydrology and the establishment of a target plant community or type.

Compensatory mitigation would be required for the 913.8 acres of wetlands that would be directly affected. Depending on the location, type, and timing of compensatory mitigation, the minimum required amount of replacement wetlands for direct effects could potentially range from 913.8 acres up to 1,827.6 acres (i.e., compensation ratios of 1:1 up to 2:1). In addition, compensatory mitigation for the 26.9 acres of wetland fragmentation would be provided up front.

Due to both on- and off-site limitations and technical feasibility, it is not practicable to replace all affected wetland types with an equivalent area of in-kind wetlands.

Proposed off-site wetland compensation of 1,602.7 acres could provide 1,513.3 wetland mitigation credits. In addition, a total of 197.1 acres of upland buffer areas are proposed to be established with native vegetation around the wetland restoration areas. In accordance with USACE guidelines, credit for the upland buffer areas would be at a 4:1 ratio, resulting in an additional 49.3 credits. The total off-site mitigation could provide 1,562.5 wetland mitigation credits. Actual compensatory ratios determined during permitting may vary from these assumptions. The determination of final mitigation credits required to offset the effects of the NorthMet Project Proposed Action would be determined by the agencies during wetland permitting.

Financial assurances for the direct wetland impact mitigation would be required until success of the mitigation sites is assured. While this wetland mitigation would be expected to be approved and constructed in advance of any authorized wetland impacts, it is unclear whether these sites would be well-established enough for financial assurances to be waived. The USACE would also consider the application of financial assurances for potential indirect wetland effects and monitoring. Both the USACE and MDNR would require consideration of financial assurances during the permitting process.

Wetlands that were not filled or excavated (permanently lost), but having a reduced function, would be considered indirectly affected. Indirect effects on wetlands from the NorthMet Project Proposed Action would result from one or more of the following six factors: 1) wetland

fragmentation; 2) changes in wetland hydrology resulting from changes in watershed area; 3) changes in wetland hydrology due to groundwater drawdown resulting from open pit mine dewatering; 4) changes in wetland hydrology from groundwater drawdown resulting from operation of the Plant Site, including groundwater seepage containment; 5) changes in stream flow near the Mine Site and Plant Site and associated effects on wetlands abutting the streams; and 6) change in wetland water quality related to atmospheric deposition of dust and rail car spillage associated with Mine Site and Plant Site operations.

Wetland mitigation for potential indirect wetland effects would be determined by the agencies during permitting. If the NorthMet Project Proposed Action were to be permitted, mitigation for indirectly affected wetlands would be determined through monitoring. Additional compensation may be required if determined necessary based on monitoring results.

Wetland hydrology and vegetation monitoring would be conducted during the operations phase of the NorthMet Project Proposed Action to document indirect effects on wetlands. Prior to the start of the NorthMet Project Proposed Action, monitoring would be established based on permit conditions. The monitoring would describe the purpose, methods, and criteria to be implemented to document indirect effects on wetlands. A component of the monitoring plan would be based on those wetlands that would have a high likelihood of indirect effects as a result of groundwater drawdown. In the event that the required wetland monitoring identifies additional indirect effects, permit conditions would likely include a plan for adaptive management practices to be implemented, such as expanded monitoring and hydrologic controls. Additionally, compensatory

mitigation would be required if indirect impacts were identified during annual reporting. Permit conditions would likely include an adaptive management plan to account for any additional impacts that may be identified in the annual monitoring and reporting.

For vegetation, the NorthMet Project Proposed Action would directly affect approximately 1,719 acres that are mapped by the MDNR as MBS Sites of High Biodiversity Significance. Within these Sites of High Biodiversity Significance, several native plant communities are mapped that would be affected by the NorthMet Project Proposed Action, including 698.2 acres with a conservation status rank of “imperiled-vulnerable” (conservation status rank S2 or S3) or “vulnerable” (conservation status rank S3), 92.6 acres with a conservation status rank of “apparently secure” (conservation status rank S4), and 178.9 acres with a conservation status rank of “widespread and secure” (conservation status rank S5). Disturbed areas would be reclaimed during operations and at closure. Reclamation objectives would include rapidly establishing a self-sustaining plant community, controlling air emissions, controlling soil erosion, providing wildlife habitat, and minimizing the need for maintenance. Seed mixes and methodologies would be designed to minimize the introduction of invasive species. Reclamation seed mixes would be approved during permitting.

There are no federally listed plant species in the NorthMet Project area. There are 10 state-listed plant species, all at the Mine Site; eight species would be directly affected and two would be indirectly affected by the NorthMet Project Proposed Action.

There are no federally or state-listed threatened or endangered fish or macroinvertebrate species known to occur in

the NorthMet Project area. The NorthMet Project Proposed Action could potentially affect aquatic physical habitat via changes in streamflow, affect riparian and aquatic connectivity via construction activities within the riparian zone, and affect water quality by increasing solute concentrations. As a result of these changes, the NorthMet Project Proposed Action could potentially affect special status species (i.e., federally or state-listed threatened and endangered species, Regional Forester Sensitive Species [RFSS], and MDNR Species of Greatest Conservation Need [SGCN]).

The NorthMet Project Proposed Action would reduce water flows in several tributary streams to the Partridge and Embarrass rivers, but the flows would remain within the range of annual natural variability. Therefore, changes in flow are not anticipated to result in any measurable effects on existing aquatic habitat in any streams downstream of the NorthMet Project area.

Water quality modeling predicts that the NorthMet Project Proposed Action would not cause an exceedance of the Class 2B (aquatic life) water quality standards, with the exception of aluminum and lead not attributable to process water from the NorthMet Project Proposed Action (i.e., attributable to non-contact stormwater runoff). In a few cases where solute concentrations naturally exceed the Class 2B standards in NorthMet Project area waters (i.e., aluminum, iron, and manganese), the NorthMet Project Proposed Action would either reduce or not measurably increase concentrations of these solutes.

Three federally listed wildlife species—the Canada lynx, gray wolf, and northern long-eared bat—may be affected by localized direct decrease and fragmentation of habitat and designated critical habitat. The Canada lynx and gray wolf may also be affected by

the increased, but low, potential for incidental take resulting from vehicular collisions due to increased project-related traffic. The northern long-eared bat would likely be affected through loss of potential summer roost habitat and foraging areas. Restoration of disturbed areas as part of mine closure would potentially create lynx and wolf habitat, although this successional process could take decades. Thirteen additional state-listed species—including the moose, little brown bat, eastern brown bat, northern goshawk, boreal owl, eastern heather vole, wood turtle, yellow rail, Laurentian tiger beetle, taiga alpine butterfly, Freija's grizzled skipper butterfly, Nabokov's blue butterfly, and Quebec emerald dragonfly—may be affected by the NorthMet Project Proposed Action. RFSS, MDNR SGCN, and other wildlife species, including those considered culturally important, may be affected by increased human activity, noise and vibration, rail and vehicle traffic, or decrease of habitat.

While there would be some direct loss of habitat and wildlife corridors, and some increased risk to individual Endangered, Threatened, or Special Concern plant or animal species, the cumulative projects are unlikely to jeopardize their presence in the state. Rulemaking was conducted with the intent to update the list of Endangered, Threatened, and Special Concern species (*Minnesota Rules*, parts 6134.0100–6134.0400), with new listings becoming effective on August 19, 2013. The FEIS considers any new listings, or changes in the previous listings, associated with the updated list.

NorthMet Project Effects on Cultural and Socioeconomic Resources

The NorthMet Project area is located within the territory ceded by the Chippewa of Lake Superior to the United States in 1854. The Chippewa reserve rights to hunt, fish, and gather on lands in the 1854 Ceded Territory. Harvest levels and other activities are governed by either individual tribal entities (in the case of the Fond du Lac Band) or the 1854 General Codes and subsequent Amendments under the 1854 Treaty Authority (in the case of the Grand Portage and Bois Forte bands).

Pursuant to Section 106 of the National Historic Preservation Act, the federal Co-lead Agencies identified several historic properties in consultation with the State Historic Preservation Office (SHPO), Bands, and PolyMet. The entities consulted regarding the eligibility of the Spring Mine Lake Sugarbush (maple sugar camp site); a segment of the *Mesabe Widjiu* (or Laurentian Divide, which is regarded as culturally significant to many Ojibwe Bands); a segment of the Beaver Bay to Lake Vermilion Trail; the Erie Mining Company Concentrator Building; the Erie Mining Company Administration Building; Erie Mining Company Railroad Mine and Plant Track, Main Line Segment, and Dunka Railroad Segment; Erie Mining Company Railroad Corridor Historic District; Duluth, Missabe, and Iron Range Segment; and the Erie Mining Company Landscape Historic District.

Effect determinations have been drafted by the federal Co-lead Agencies for review and comment by the Bands, SHPO, and PolyMet. The federal Co-lead Agencies believe that there would be no adverse effect on the Erie Mining Company Railroad Mine and Plant Track, Main Line Segment, and

Dunka Railroad Segment; Erie Mining Company Railroad Corridor Historic District; Duluth, Missabe, and Iron Range Segment; or Erie Mining Company Administration Building. However, a segment of the *Mesabe Widjiu*, Spring Mine Lake Sugarbush, a segment of the Beaver Bay to Lake Vermilion Trail, the Erie Mining Company Concentrator Building, and the Erie Mining Company Landscape Historic District would be adversely affected by the NorthMet Project Proposed Action. These determinations will be used to facilitate ongoing consultation with the Bands, SHPO, and PolyMet pertaining to the application of adverse effect criteria to these properties. Mitigation measures to resolve adverse effects would be identified after consultation on the final effects determinations and consideration of any measures to avoid or minimize adverse effects.

Natural resources and the lands on which they are gathered are important to the Bands for a number of reasons, including their cultural, spiritual, and/or historic meanings, and will be considered under federal agency tribal trust responsibilities as outlined above and also as cultural resources under NEPA.

The Arrowhead region of northeastern Minnesota is home to communities that are economically dependent on the natural environment for their existence. Given the region's location in an historic mining district, many towns and cities have provided and continue to provide workers and services to the local mines. Other communities closer to the BWCAW and Voyageurs National Park primarily serve the needs of recreational users (see Figure 1).

According to PolyMet, the NorthMet Project Proposed Action would create up to 500 direct jobs during peak construction and 360 direct jobs during operations. These direct jobs would generate additional indirect and

induced employment, estimated to be 332 additional construction-phase jobs and 631 additional operations-phase jobs. Indirect and induced effect employment numbers are calculated by IMPLAN and may include temporary, part-time, full-time, long-term, or short-term jobs. While some skilled workers would be involved only temporarily and would possibly relocate from outside the region, the majority of the NorthMet Project Proposed Action-related jobs are expected to be filled by those currently residing in the Arrowhead region.

Federal, state, and local taxes would total an estimated \$80 million annually. During operations, there would be approximately \$231 million per year in direct value added through wages and rents and \$332 million per year in direct output related to the value of the extracted minerals. As with employment, these direct economic contributions would create indirect and induced contributions, estimated at \$99 million in value added and \$182 million in output.

Other Environmental Consequences of the NorthMet Project

In addition to the effects discussed above, the NorthMet Project Proposed Action would also affect other resources. The NorthMet Project Proposed Action would also contribute air pollutants with risk guideline values for assessing potential human health effects (air toxic pollutants) during construction, mining, and processing activities. These pollutants were all found to be below state and federal risk guidelines. Additionally, the NorthMet Project Proposed Action would not adversely affect visibility in nearby Class I areas, such as the BWCAW and Voyageurs National Park. The NorthMet Project Proposed Action would cause noise, affecting some sensitive

receptors. Nearby residences or other permanent sensitive receptors would not be affected, and some wildlife may avoid the area at times.

Environmental Consequences of the Land Exchange

The non-federal parcels that would be part of the Land Exchange Proposed Action are largely undisturbed tracts that would be managed under the Forest Plan, which would allow for some timber harvesting under varying rotation periods. For the most part, however, the acquired lands would be left undeveloped and would be open for public use and enjoyment.

The federal lands acquired by PolyMet would largely be used for mining, and would eventually be restored in accordance with the NorthMet Project Reclamation Plan. There is no legal public access to the federal lands via land, so any current public use or exercise of usufructuary rights requires the permission of adjacent private landowners.

Cumulative Effects

In accordance with NEPA and MEPA, this FEIS contains an analysis of the cumulative effects of the NorthMet Project Proposed Action and Land Exchange Proposed Action. Cumulative effects are defined by the Council on Environmental Quality (CEQ) NEPA regulations as:

the impact on the environment which results from the incremental impact of the action when added to other past, present, and reasonably foreseeable future actions regardless of what agency (federal or non-federal) or person undertakes such other action. Cumulative impacts can result from individually minor but collectively significant actions taking place over a

period of time. (40 Code of Federal Regulations [CFR] § 1508.7)

The Minnesota Environmental Quality Board's rules at *Minnesota Rules*, part 4410.0200, subparts 11 and 11a, mirror the CEQ's definition of cumulative effects.

To assess cumulative effects, the Co-lead Agencies identified other past, present, and reasonably foreseeable future projects and activities in the region that, when combined with the NorthMet Project Proposed Action and Land Exchange Proposed Action, could incrementally cause cumulative effects. Given the geographic and temporal scale of effects, each component of the NorthMet Project Proposed Action was analyzed.

For example, construction and mining operations would require stripping and excavation of the surface. These activities require heavy equipment and explosives, which would emit air pollutants and noise. The cumulative effects assessment focused on how air emissions travel and may interact with other sources. Air emissions can travel many miles before they are no longer detectable. Hence, the analysis includes the

emissions from other projects and activities well beyond the boundaries of the NorthMet Project area. Noise effects from NorthMet Project Proposed Action activities, on the other hand, would dissipate much closer to their source and would not interact with other activities elsewhere in the area.

In summary:

- The Proposed Connected Actions would cause some additive effects on certain resources, such as loss of vegetation and wetlands in the NorthMet Project area, as well as changes in water quality and use, air quality, and increased economic activity for the life of the mine.
- There would be few cumulative effects from the NorthMet Project Proposed Action after proposed mitigation and adaptive management measures are applied. The affected resources included water quantity and quality, air quality, wetlands, and vegetation.
- No Endangered, Threatened, or Special Concern plant or animal species would be cumulatively affected.

ALTERNATIVES

Consistent with federal and state law, the EIS process identified and analyzed alternatives that could have resulted in improved environmental and socioeconomic benefits and still achieve the NorthMet Project's Purpose and Need. Alternatives offer decision-makers and the public options to the proposal and include a No Action Alternative that considers the effects that would occur if the proposed project was not implemented.

Alternatives were identified and screened in accordance with the requirements of NEPA (40 CFR 1505.1(e)) and/or Minnesota Environmental Quality Board Rules for MEPA (*Minnesota Statutes*, §§116D.04 and 116D.045, and *Minnesota Rules*, parts 4410.0200–4410.7500) to determine whether they met prescribed criteria to warrant further consideration in the FEIS. Screening criteria were developed to account for technical and economic feasibility and consistency with the NorthMet Project's Purpose and Need. The alternatives that met the screening criteria were evaluated in detail as part of the FEIS. A number of other potential alternatives were screened throughout the NEPA/MEPA process and were either incorporated into the NorthMet Project Proposed Action by PolyMet or were eliminated from detailed analysis because they did not meet the screening criteria. Early alternatives incorporated into the NorthMet Proposed Action included enhanced waste management at the Mine Site, where the most reactive waste would now be ultimately backfilled and covered with water in the East Central Pit, and enhanced engineering design to capture and treat affected water from the Mine Site and Tailings Basin.

Alternatives considered but eliminated from further consideration included alternative wet and dry closure options for the Tailings Basin, backfilling the West Pit with Category 1 waste rock, and underground mining.

Two alternatives to the Proposed Connected Actions are analyzed in detail in the FEIS:

- Proposed Connected Actions Alternative B, which would involve the NorthMet Project Proposed Action, but a smaller-scale land exchange component; and
- No Action Alternative, under which neither the NorthMet Project Proposed Action, nor the Land Exchange Proposed Action would occur.

Proposed Connected Actions Alternative B

Proposed Connected Actions Alternative B would involve the NorthMet Project Proposed Action as previously described and a land exchange involving a smaller federal parcel (see Figure 10). Compared to the Land Exchange Proposed Action, Land Exchange Alternative B would convey fewer acres of federal land (4,833.7 [GLO] acres) for fewer acres of non-federal land (4,651.5 [GLO] acres contained within a single tract).

No Action Alternative

Under the No Action Alternative, the NorthMet Project Proposed Action would not be implemented and no land exchange would take place. The NorthMet Project No Action Alternative would not result in 913.8 acres of direct wetland impacts. The federal government would not exchange lands with PolyMet, and the USFS would continue to manage the lands in accordance with the

Forest Plan. Private lands would not be acquired in exchange for the USFS lands at the Mine Site. At the Mine Site, PolyMet would be required under existing exploration approvals to reclaim surface disturbance associated with exploratory and development drilling activities. No further upgrades or new segments would be constructed along the existing power transmission line, railroad, or Dunka Road, which would continue to be used by their private owners. At the former LTVSMC processing plant and Tailings Basin, the land owner, Cliffs Erie, would continue to complete closure and reclamation activities as specified under state permits and plans, and the Cliffs Erie Consent Decree.

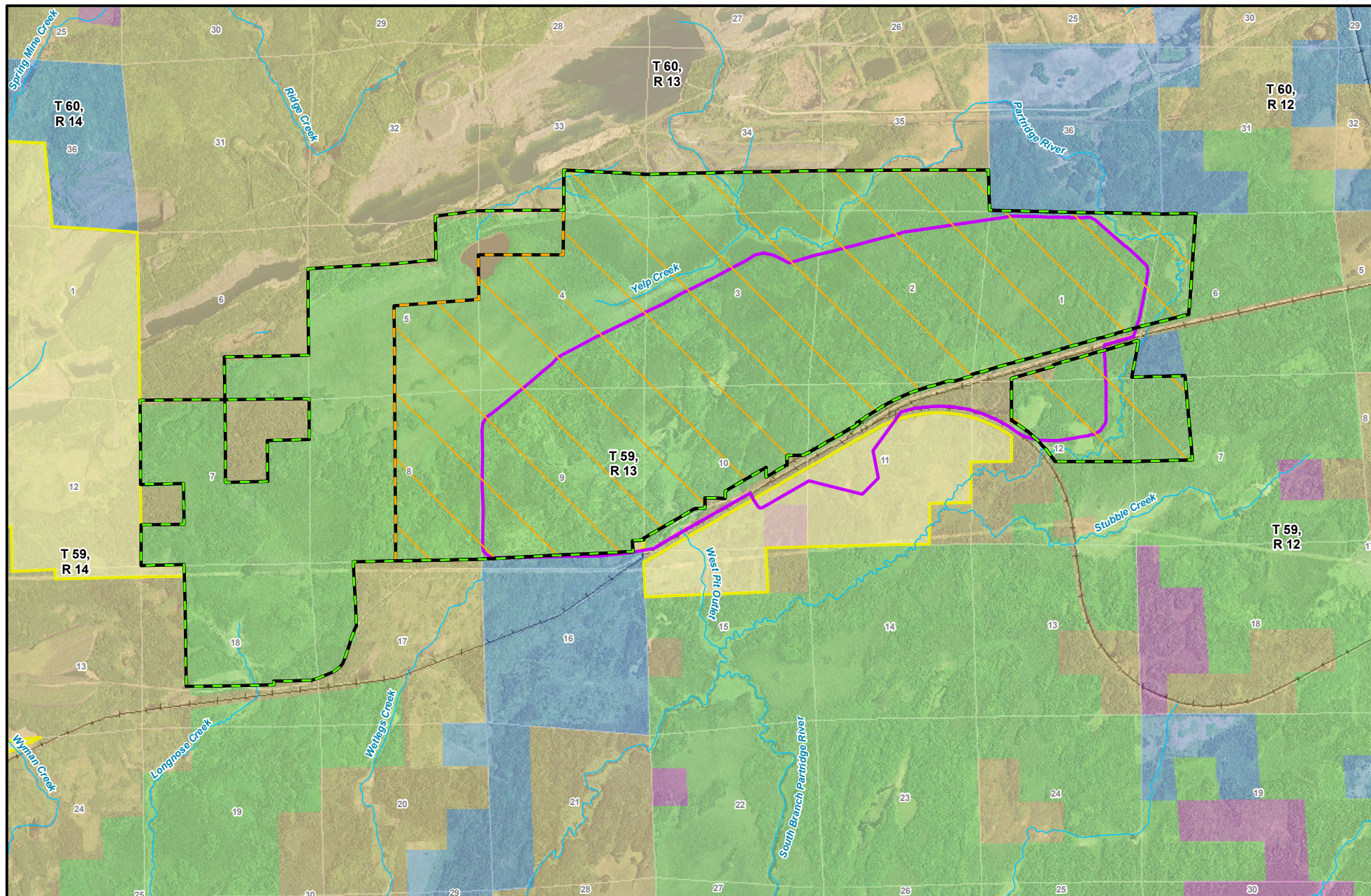


Figure 10
Land Exchange Alternative B
 NorthMet Mining Project and Land Exchange FEIS
 Minnesota

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Comparison of Effects by Alternative

Table 1 provides a comparison of the effects on resources from the Proposed Connected Actions (NorthMet Project Proposed Action and Land Exchange Proposed Action), Proposed Connected Actions Alternative B, and the No Action Alternative. It is intended to be a brief description of the major effects under the alternatives and not an exhaustive list or in-depth analysis. Chapters 5 and 6 of the FEIS provide detailed explanations of the predicted direct, indirect, and cumulative effects under these alternatives.

In comparison to the Proposed Connected Actions, the Proposed Connected Actions Alternative B (NorthMet Project Proposed Action and Land Exchange Alternative B) would have the same effects as the NorthMet Project Proposed Action, but fewer lands would be conveyed through the land exchange. The No Action Alternative would not directly affect the existing environment and management of these lands would continue in accordance with their current permits. Compared to the Proposed Connected Actions and Proposed Connected Actions Alternative B, the No Action Alternative would result in active but different comprehensive management of water from the existing LTVSMC Tailings Basin. There would be no other measurable effects on other resources compared to their existing conditions.

Agency-Preferred Alternative

Consistent with the CEQ regulations, the federal Co-lead Agencies are required to identify an agency-preferred alternative in the FEIS, unless another law prohibits the expression of such a preference. For the USFS, the agency-preferred alternative is the Land Exchange Proposed Action. For the USACE, Appendix B of 33 CFR 325 supersedes the CEQ requirement to identify an agency-preferred alternative. These procedures state that, *“the Corps is neither an opponent nor a proponent of the applicant’s proposal; therefore the applicant’s final proposal will be identified as the ‘applicant’s preferred alternative’ in the Final EIS.”* No similar requirement to identify a preferred alternative exists for the MDNR under state law.

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Table 1 Comparison of Effects by Alternative

Resource	Proposed Connected Actions	Proposed Connected Actions Alternative B	No Action Alternative
Land Use	<ul style="list-style-type: none"> No effects on land use that would require changes in ordinances or comprehensive forest plans Federal lands within the NorthMet Project area would be replaced with acreage of equal value through a land exchange 	<ul style="list-style-type: none"> Mostly similar effects as Proposed Connected Actions, with fewer federal acres exchanged 	<ul style="list-style-type: none"> Existing LTVSMC site would be reclaimed in accordance with the Cliffs Erie reclamation/closure plan
Water Resources	<ul style="list-style-type: none"> Greater than 90 percent of groundwater and 100 percent of surface water at the Tailings Basin would be captured and treated to a concentration at or below applicable water quality evaluation criteria The NorthMet Project Proposed Action would not cause any significant water quality impacts because: 1) exceedances of the P90 threshold did not occur, 2) the NorthMet Project Proposed Action concentrations were no higher than concentrations predicted for the Continuation of Existing Conditions scenario, 3) the frequency or magnitude of exceedances for NorthMet Project Proposed Action conditions was within an acceptable range, or 4) the effects were not attributable to NorthMet Project Proposed Action discharges Mercury loadings to the Embarrass River would increase slightly, decrease slightly to the Partridge River, with an overall net decrease in NorthMet Project Proposed Action loadings to the downstream St. Louis River. Estimated 	<ul style="list-style-type: none"> Same as under Proposed Connected Actions 	<ul style="list-style-type: none"> Seepage water quality from the existing LTVSMC Tailings Basin would be expected to improve over time as a result of the Cliffs Erie Consent Decree, other permit requirements (e.g., Permit to Mine), and natural attenuation of contaminants

Resource	Proposed Connected Actions	Proposed Connected Actions Alternative B	No Action Alternative
	<p>potential increases and decreases are beyond the measurement precision of analytical testing methods. Discharges from the Plant Site WWTP and Mine Site WWTF would be at or below the GLI water quality standard of 1.3 ng/L</p> <ul style="list-style-type: none"> • Sulfate concentrations would remain unchanged in the Partridge River and would be significantly reduced in the Embarrass River • Plant Site WWTP effluent would be used to augment flows to tributary streams and wetlands downgradient from the Tailings Basin to offset groundwater seepage captured in the containment system and the south surface seepage management system 		
Wetlands and Floodplains	<ul style="list-style-type: none"> • 913.8 acres of wetlands in NorthMet Project area would be directly affected • 6,568.8 to 7,694.2 acres of wetlands in NorthMet Project area could be indirectly affected • 940.7 acres of directly affected and fragmented wetlands to be mitigated up front • 1,602.7 acres of compensatory off-site wetlands • 505.5-acre net increase of wetlands to the federal estate (through Land Exchange Proposed Action); therefore, Land Exchange Proposed Action conforms to EO 11990 • 376.2-acre net increase of mapped floodplain but would result in a 1,226.0-acre net decrease of floodplain area to the federal estate (through Land Exchange Proposed Action); however, 	<ul style="list-style-type: none"> • Same direct and indirect effects and compensatory mitigation at NorthMet Project area as under Proposed Connected Actions • 69.9-acre net increase of wetlands to the federal estate (through Land Exchange Alternative B); therefore, Land Exchange Alternative B conforms to EO 11990 • 376.2-acre net increase of mapped floodplain but would result in a 861.7-acre net decrease of floodplains to the federal estate (through Land Exchange Alternative B); however, no decrease in regulatory floodplains, no increase in flood damage potential, and no change in ecological function of floodplain; therefore, Land Exchange Alternative B conforms to EO 11988 	<ul style="list-style-type: none"> • No change in wetland or floodplain acreage

Resource	Proposed Connected Actions	Proposed Connected Actions Alternative B	No Action Alternative
	no decrease in mapped floodplains, no increase in flood damage potential, and no change in ecological function of floodplain. Therefore, Land Exchange Proposed Action conforms to EO 11988		
Vegetation (includes habitat and Special Status Species)	<ul style="list-style-type: none"> • 4,028.5-acre decrease in vegetation in the NorthMet Project area • Special concern plant species: eight directly affected, two indirectly affected in the NorthMet Project area • 579.6-acre net increase of vegetation land cover types to federal estate (through Land Exchange Proposed Action) • Decrease of 10 plant species, increase of three different plant species to the federal estate (through Land Exchange Proposed Action) 	<ul style="list-style-type: none"> • Same decrease of vegetation in NorthMet Project area as under Proposed Connected Actions • Same effects on plant species in the NorthMet Project area as under Proposed Connected Actions • 173.6-acre net increase of vegetation land cover types to the federal estate (through Land Exchange Alternative B) 	<ul style="list-style-type: none"> • No effects on vegetation
Wildlife (includes Special Status Species)	<ul style="list-style-type: none"> • 4,028.5-acre decrease of wildlife habitat in the NorthMet Project area • Localized population decrease and fragmentation of critical habitat of the gray wolf and Canada lynx • Localized population decrease and loss of habitat for northern long-eared bat • Low potential for incidental take resulting from vehicular collisions due to increased NorthMet Project Proposed Action-related traffic • Special status species, including SGCN, RFSS, and other wildlife species (such as those considered tribally or culturally significant) may be affected by human activity, noise and vibration, rail and vehicle traffic, 	<ul style="list-style-type: none"> • Same as under Proposed Connected Actions at the NorthMet Project area • 173.6-acre net increase of vegetation land cover types for wildlife habitat to the federal estate (through Land Exchange Alternative B) 	<ul style="list-style-type: none"> • No effects on wildlife

Resource	Proposed Connected Actions	Proposed Connected Actions Alternative B	No Action Alternative
	<p>and decrease of habitat</p> <ul style="list-style-type: none"> Wildlife corridors at and adjacent to the NorthMet Project area would be affected through the reduction of access to these corridors 579.6-acre net increase of vegetation land cover types for wildlife habitat to the federal estate (through Land Exchange Proposed Action) 		
Aquatic Species	<ul style="list-style-type: none"> No effects from changes in stream flow, which would remain within natural variability No decrease in the Riparian Connectivity Index Would not directly exceed or increase existing exceedances of Class 2B water quality standards, with the exception of aluminum that is not attributable to process water from the NorthMet Project Proposed Action (i.e., is attributable to non-contact stormwater runoff) No effect on federally or state-listed aquatic species 	<ul style="list-style-type: none"> Same as under Proposed Connected Actions 	<ul style="list-style-type: none"> Seepage water quality from the existing LTVSMC Tailings Basin would be expected to improve over time as a result of the Cliffs Erie Consent Decree, other permit requirements (e.g., Permit to Mine), and natural attenuation of contaminants
Air Quality (includes Greenhouse Gases and Global Climate Change)	<ul style="list-style-type: none"> Increased emissions of criteria air pollutants, but below Prevention of Significant Deterioration major source thresholds Amphibole mineral fiber emissions minimized by installing best available particulate emission control equipment and preventing fugitive dust generation The air quality of the BWCAW would not be adversely affected by the NorthMet Project Proposed Action 	<ul style="list-style-type: none"> Same as under Proposed Connected Actions 	<ul style="list-style-type: none"> Continued air (fugitive dust) effects at LTVSMC site until remediation occurs under closure/reclamation plan

Resource	Proposed Connected Actions	Proposed Connected Actions Alternative B	No Action Alternative
Noise and Vibration	<ul style="list-style-type: none"> Added noise emissions and vibration. However, in all cases, the NorthMet Project Proposed Action, during the operations phase, would comply with the applicable state standards Noise, ground vibration, and air blast impact area/zone would be limited to 11,456, 11,334, and 11,469 acres, respectively. The BWCAW, which is 20 miles away, is outside the maximum area of audibility (247,612 acres) 	<ul style="list-style-type: none"> Same as under Proposed Connected Actions 	<ul style="list-style-type: none"> No effects
Cultural Resources and Historic Properties	<ul style="list-style-type: none"> Adverse direct and indirect effects on the <i>Mesabe Widjiu</i> (Laurentian Divide), Spring Mine Lake Sugarbush, Beaver Bay to Lake Vermilion Trail Segment, Erie Mining Company Concentrator Building, and Erie Mining Company Landscape Historic District due to loss of sites and proximity to proposed activities Direct effects, but no adverse effects, on the Erie Mining Company Railroad Mine and Plant Track, Main Line Segment, and Dunka Railroad Segment; Erie Mining Company Railroad Corridor Historic District; DM&IR Segment; and Erie Mining Company Administration Building due to refurbishment and new construction Potential to affect 1854 Treaty resources by potential limitation or elimination of access to public lands within the 1854 Ceded Territory and potential loss of 1854 Treaty resources 	<ul style="list-style-type: none"> Same as under Proposed Connected Actions 	<ul style="list-style-type: none"> No effects
Socioeconomics (includes Environmental	<ul style="list-style-type: none"> Up to 500 new direct jobs (maximum during construction), plus additional indirect and induced jobs 	<ul style="list-style-type: none"> Same as under Proposed Connected Actions 	<ul style="list-style-type: none"> No effects

Resource	Proposed Connected Actions	Proposed Connected Actions Alternative B	No Action Alternative
Justice)	<ul style="list-style-type: none"> Millions of dollars revenue for State of Minnesota and federal taxes Environmental Justice (Native American) populations affected by changes in subsistence uses and potential increased living costs 		
Recreation and Visual Resources	<ul style="list-style-type: none"> Net increase to the federal estate of recreational land on acquired tracts through Land Exchange Proposed Action Visual effects would occur, but would not exceed USFS standards 	<ul style="list-style-type: none"> Fewer federal lands conveyed at NorthMet Project Mine Site under Land Exchange Alternative B Remaining federal lands at Mine Site would not have public access Fewer acres acquired through Land Exchange Alternative B Same visual resources effects as under Proposed Connected Actions 	<ul style="list-style-type: none"> No effects
Wilderness and Special Designation Areas	<ul style="list-style-type: none"> No effects on Wilderness or Special Designation Areas The air quality of the BWCAW would not be adversely affected by the NorthMet Project Proposed Action 	<ul style="list-style-type: none"> Same as under Proposed Connected Actions 	<ul style="list-style-type: none"> No effects
Hazardous Materials	<ul style="list-style-type: none"> Potential effects from spills and use of explosives during operations 	<ul style="list-style-type: none"> Same as under Proposed Connected Actions 	<ul style="list-style-type: none"> No effects
Geotechnical Stability	<ul style="list-style-type: none"> Waste rock stockpiles, Tailings Basin, and Hydrometallurgical Residue Facility would be constructed in accordance with applicable State of Minnesota standards Monitoring and adaptive management would maintain geotechnical stability 	<ul style="list-style-type: none"> Same as under Proposed Connected Actions 	<ul style="list-style-type: none"> Tailings Basin would be subject to closure and reclamation activities in accordance with MDNR requirements

NEXT STEPS

Agency Use of the FEIS in Decision-making

The USACE will use the FEIS as the basis for its ROD whether to issue a DA permit for impacts to waters of the United States, including wetlands, associated with the NorthMet Project Proposed Action. Similarly, the USFS will use the FEIS as the basis for its ROD for the Land Exchange Proposed Action. The MDNR will determine if the FEIS is adequate according to the criteria provided in Minnesota Rules.

The Land Exchange is subject to the pre-decisional objection regulations at 36 CFR 218 effective March 27, 2013. Individuals and entities who provide specific written comment, as defined in § 218.2, during scoping or the comment period will be eligible to participate in the objection process.

Financial Assurance

State law requires that PolyMet provide financial assurance before a Permit to Mine can be granted. Financial assurance instruments covering the estimated cost of reclamation, should the mine be required to close for any reason at any time, must be submitted and approved by the MDNR. There are no applicable federal financial assurance requirements that would be incorporated into the Permit to Mine, but the USACE would consider the application of financial assurances for direct impacts and potential indirect wetland effects and monitoring.

Financial assurance could be required indefinitely and could include self-sustaining instruments. The level of engineering design and planning required to calculate detailed financial assurance amounts is not currently available, but would be evaluated in detail during the permitting process.

Both the USACE and MDNR would require consideration of financial assurances during the permitting process. The MDNR requires financial assurances be reviewed and updated on an annual basis. The USACE requires updates to financial assurances as needed.

Permits and Approvals

PolyMet would be required to obtain the required federal, state, and local permits and approvals summarized in Table 2 below.

Table 2 Key Government Permits or Actions

Agency	Permit/Action	Reason Permit or Action is (or may be) Needed
Federal		
USACE	Department of the Army Permit	For affected waters within the jurisdiction of the USACE under the CWA, 33 CFR 320-332 including Appendix B
	Section 106 NHPA Compliance (Minnesota Historic Preservation Office)	Necessary due to USACE evaluating issuance of a permit to discharge fill material into waters of the United States under the provisions of Section 404 of the Clean Water Act (33 USC 1344), 36 CFR Part 800
U.S. Fish and Wildlife Service	Section 7 Endangered Species Act (ESA) Compliance	Necessary due to the NorthMet Mining Project and Land Exchange being a federal undertaking, 50 CFR 402
USFS	Land Exchange	To resolve the conflict between surface and mineral estates
	Section 106 NHPA Compliance (Minnesota Historic Preservation Office)	Necessary due to the NorthMet Mining Project and Land Exchange being a federal undertaking, 36 CFR Part 800
State		
MDNR	Permit to Mine	Required for all nonferrous metallic mining operations, <i>Minnesota Rules</i> , chapter 6132
	Endangered Species Taking Permit (if required)	If there are state-listed species that may be taken by the NorthMet Project Proposed Action, <i>Minnesota Rules</i> , parts 6212.1800-6212.2300 and 6134
	Water Appropriations Permit for plant make-up water	For withdrawal of water from Colby Lake for plant make-up water; for mine dewatering; for stream augmentation; <i>Minnesota Rules</i> , part 6115
	Dam Safety Permit	For the Tailings Basin, Hydrometallurgical Residue Facility, and potentially the water retention dikes at the Mine Site (e.g., water treatment plant pond dikes), <i>Minnesota Rules</i> , parts 6115.0300-6115.0520
	Permit for Work in Public Waters	For possible modifications and diversions of local streams in constructing the West Pit outfall; <i>Minnesota Rules</i> , part 6115
	Wetland Replacement Plan approval under WCA	For affected wetlands within the scope of the WCA or that constitute “public wetlands”

Agency	Permit/Action	Reason Permit or Action is (or may be) Needed
	Burning Permit (if required)	If vegetative material would need to be burned on site during times with no snow cover
MPCA	Section 401 Water Quality Certification/Waiver	Required in conjunction with the DA Permit (Section 404 Permit)
	National Pollutant Discharge Elimination System and State Disposal System (NPDES/SDS) Permits	For construction and industrial activity that would disturb 1 acre or more of land, and the management, treatment and/or discharge of process wastewater to surface water or groundwater
	Solid Waste Permit	For construction debris
	Air Emissions Permit (Part 70 Permit)	For emissions of regulated air pollutants
	Waste Tire Storage Permit	For storage of waste tires generated from NorthMet Project Proposed Action-related vehicles (if required)
	General Storage Tank Permit	For multiple NorthMet Project Proposed Action aboveground storage tanks
MDH	Radioactive Material Registration	For measuring instruments
	Permit for Non-Community Public Water Supply System and a Wellhead Protection Plan (if proposed)	Existing Plant Site potable water treatment plant to be refurbished
	Permit for Public On-site Sewage Disposal System	For sewage waste generated during construction and operation that would be disposed of on site
Local		
City of Hoyt Lakes	Zoning Permit	To acknowledge NorthMet Project Proposed Action is an allowable use within the zoned district
City of Babbitt	Building Permit	New construction would occur on portions of the NorthMet Project area within the incorporated limits of the City of Babbitt
St. Louis County	Zoning Permit	To acknowledge NorthMet Project Proposed Action is an allowable use within the zoned district

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