

Permit Number
2016-1380

Dam Safety Permit

Expiration Date: 10/31/2045

Pursuant to Minnesota Statutes, Chapter 103G, and on the basis of statements and information contained in the permit application, letters, maps, and plans submitted by the applicant and other supporting data, all of which are made part hereof by reference, **PERMISSION IS HEREBY GRANTED** to the applicant to perform actions as authorized below.

Project Name: Poly Met Mining, Inc.	County: St. Louis	Watershed: St. Louis River	Resource: Dug Pit/Holding Pond; Unknown: Cell 1E
Purpose of Permit: Dam Safety - Construction		Authorized Action: To operate and maintain the existing LTV Steel Mining Company (LTVSMC) tailings basin and to construct, operate, and maintain a new Flotation Tailings Basin on that existing LTVSMC tailings basin, as shown on "Permit Application Support Drawings, Flotation Tailings Basin" by Barr Engineering and signed by Tom Radue, P.E. on May 12, 2017 and as described in the permit application and support references. The maximum authorized height of the dam is elevation 1732 feet (NAVD88). Specific written authorization (impoundment approvals) will be required for first filling and for each stage/lift of the dam.	
Permittee: POLY MET MINING, INC. CONTACT: KEARNEY, CHRISTIE, (218) 471-2163 6500 CO RD 666 PO BOX 475 HOYT LAKES, MN 55750 (218) 471-2150		Authorized Agent: N/A	
Property Description (land owned or leased or where work will be conducted): UTM zone 15N, 566533m east, 5273864m north, NWNW of Section 10, T59N, R14W Class 1 (High Hazard) Dam			
Issued Date: 11/01/2018	Effective Date: 11/01/2018	Expiration Date: 10/31/2045	
Authorized Issuer: Tom Landwehr /s/ Tom Landwehr	Title: DNR Commissioner	Email Address: tom.landwehr@state.mn.us	Phone Number: 651-259-5022

This permit is granted **subject to** the following **CONDITIONS**:

APPLICABLE FEDERAL, STATE, OR LOCAL REGULATIONS: The permittee is not released from any rules, regulations, requirements, or standards of any applicable federal, state, or local agencies; including, but not limited to, the U.S. Army Corps of Engineers, Board of Water and Soil Resources, MN Pollution Control Agency, watershed districts, water management organizations, county, city and township zoning.

NOT ASSIGNABLE: This permit is not assignable by the permittee except with the written consent of the Commissioner of Natural Resources.

CONDITIONS (Continued from previous page)

NO CHANGES: The permittee shall make no changes, without written permission or amendment previously obtained from the Commissioner of Natural Resources, in the dimensions, capacity or location of any items of work authorized hereunder.

SITE ACCESS: The permittee shall grant access to the site at all reasonable times during and after construction to authorized representatives of the Commissioner of Natural Resources for inspection of the work authorized hereunder.

TERMINATION: This permit may be terminated by the Commissioner of Natural Resources at any time deemed necessary for the conservation of water resources of the state, or in the interest of public health and welfare, or for violation of any of the conditions or applicable laws, unless otherwise provided in the permit.

COMPLETION DATE: Construction work authorized under this permit shall be completed on or before the date specified above. The permittee may request an extension of the time to complete the project by submitting a written request, stating the reason thereof, to the Commissioner of Natural Resources.

WRITTEN CONSENT: In all cases where the permittee by performing the work authorized by this permit shall involve the taking, using, or damaging of any property rights or interests of any other person or persons, or of any publicly owned lands or improvements thereon or interests therein, the permittee, before proceeding, shall obtain the written consent of all persons, agencies, or authorities concerned, and shall acquire all property, rights, and interests needed for the work.

PERMISSIVE ONLY / NO LIABILITY: This permit is permissive only. No liability shall be imposed by the State of Minnesota or any of its officers, agents or employees, officially or personally, on account of the granting hereof or on account of any damage to any person or property resulting from any act or omission of the permittee or any of its agents, employees, or contractors. This permit shall not be construed as estopping or limiting any legal claims or right of action of any person other than the state against the permittee, its agents, employees, or contractors, for any damage or injury resulting from any such act or omission, or as estopping or limiting any legal claim or right of action of the state against the permittee, its agents, employees, or contractors for violation of or failure to comply with the permit or applicable conditions.

EXTENSION OF PUBLIC WATERS: Any extension of the surface of public waters from work authorized by this permit shall become public waters and left open and unobstructed for use by the public.

WETLAND CONSERVATION ACT: Where the work authorized by this permit involves the draining or filling of wetlands not subject to DNR regulations, the permittee shall not initiate any work under this permit until the permittee has obtained official approval from the responsible local government unit as required by the Minnesota Wetland Conservation Act.

CONTRACTOR RESPONSIBILITY: The permittee shall ensure the contractor has received and thoroughly understands all conditions of this permit. Contractors must obtain a signed statement from the property owner stating that permits required for work have been obtained or that a permit is not required, and mail a copy of the statement to the regional DNR Enforcement office where the proposed work is located. The Landowner Statement and Contractor Responsibility Form can be found at: <http://www.bwsr.state.mn.us/wetlands/wca/index.html#general>.

INVASIVE SPECIES - EQUIPMENT DECONTAMINATION: All equipment intended for use at a project site must be free of prohibited invasive species and aquatic plants prior to being transported into or within the state and placed into state waters. All equipment used in designated infested waters, shall be inspected by the Permittee or their authorized agent and adequately decontaminated prior to being transported from the worksite. The DNR is available to train inspectors and/or assist in these inspections. For more information refer to the "Best Practices for Preventing the Spread of Aquatic Invasive Species" at http://files.dnr.state.mn.us/publications/ewr/invasives/ais/best_practices_for_prevention_ais.pdf. Contact your regional Invasive Species Specialist for assistance at www.mndnr.gov/invasives/contacts.html. A list of designated infested waters is available at www.mndnr.gov/invasives/ais/infested.html. A list of prohibited invasive species is available at www.mndnr.gov/invasives/laws.html#prohibited.

12. LIMITATIONS: (a) Any violation of the terms and provisions of this permit shall constitute a violation of Minnesota Statute, Chapter 103G. (b) This permit is permissive only. No liability shall be imposed upon or incurred by the State of Minnesota or any of its employees, on account of the granting hereof or on account of any damage to any person or property resulting from any act or omission of the Permittee relating to any matter hereunder. This permit shall not be construed as estopping or limiting any legal claims or right of actions by any person other than the state against the Permittee, for any damage or injury resulting from any such act or omission, or as estopping or limiting any legal claim or right of action of the state against the Permittee, for violation of or failure to comply with the provisions of the permit or applicable provisions of law. The Permittee shall obtain the written consent of all persons, agencies, or authorities

CONDITIONS (Continued from previous page)

concerned, and shall acquire all property, rights, and interests necessary, before proceeding with any activity authorized by this permit involving the taking, using, or damaging of any property, rights or interests of any other person or persons, or of any publicly owned lands or improvements thereon or interests therein. (c) This permit shall not release the Permittee from any other permit requirements or liability or obligation imposed by Minnesota Statutes, Federal Law, or local ordinances relating thereto and shall remain in force subject to all conditions and limitations now or hereafter imposed by law. (d) Unless explicitly specified, this permit does not authorize any alterations of the beds or banks of any public (protected) waters or wetlands. A separate permit must be obtained from the Department of Natural Resources prior to any such alteration. (e) Unless explicitly specified herein, this permit does not authorize the appropriation of the state's water resources for either consumptive use or dewatering. Separate permit(s) must be obtained from the Department of Natural Resources prior to the appropriation of Minnesota waters that may be necessary for the construction, operation and maintenance of the project pursuant to this permit.

13. ADDITIONAL SITE ACCESS: The Commissioner may inspect any work authorized by this Permit. The Permittee shall supply such information concerning the design, construction, operation, and maintenance of the work authorized hereunder as the Commissioner may require.

14. ADDITIONAL WRITTEN CONSENT: Any permissions or extension of time made and granted by the DNR shall be made in writing.

15. CONSTRUCTION DEWATERING - GENERAL: All construction dewatering in excess of 10,000 gallons per day or one million gallons per year must be authorized by a separate water appropriation permit. All worksite discharge water must be treated for sediment reduction prior to return to any surface water. Water from designated infested waters shall not be diverted to other waters, transported on a public road, or transported or appropriated off property riparian to the infested waters without a DNR invasive species permit. All equipment in contact with infested waters must be decontaminated before leaving the site.

16. EXCAVATED MATERIALS - RUNOFF: Excavated materials must be deposited or stored in an upland area. The Permittee shall prepare a spoil disposal plan for all spoils created by work authorized under this permit. Departure from any previously approved spoil disposal plans may be allowed only through permit amendment. Additionally the Permittee shall obtain and comply with the terms of any stormwater runoff permit that may be required by either federal or state law including any applicable National Pollutant Discharge Elimination System (NPDES) permit.

17. EROSION AND SEDIMENT CONTROL: Erosion control measures shall be adequately designed for the site characteristics. They may include staked hay bales, diversion channels, sediment ponds, or sediment fences. They shall be installed in accordance with the latest version of "The Minnesota Stormwater Manual" by the Minnesota Pollution Control Agency (MPCA), prior to commencement of construction and maintained throughout the project. All exposed soil shall be stabilized as soon as possible. Topsoil should be used to re dress disturbed soil areas and indigenous plant species should be used to revegetate disturbed areas whenever possible. Additionally, the Permittee shall obtain and comply with the terms of any stormwater runoff permit that may be required by either federal or state law, including any applicable NPDES permit.

18. FUTURE ORDERS: The DNR reserves the right to review and revise this permit and the conditions attached hereto as additional hydrologic data becomes available. The DNR also reserves the right to issue any order it may deem necessary to protect the public interest, including but not limited to the public health, safety, and welfare. Should the dam be abandoned at a future date for any reason or fall into a state of disrepair, the Permittee shall be solely responsible for all debris removal and site restoration work and any associated damage to public or private property, including to the waters of the state.

19. TRANSFER OF OWNERSHIP OF EXISTING DAM STRUCTURES: This permit and the issuance thereof does not affect any existing state Dam Safety Permit for any existing dam located on the project site. A separable DNR permit action is required to transfer ownership of and decommission any existing dam located at the project site. The existing owner/permit holder remains responsible for any existing dam structure until ownership is legally transferred and the transfer of the existing permit has been authorized by the DNR.

20. FUTURE TRANSFER OF OWNERSHIP: Neither this permit, nor the ownership of the dam, may be transferred except with the written consent of the Commissioner as evidenced by the issuance of a dam safety permit to a new owner. A transfer of land ownership does not automatically transfer either the permit or dam ownership. As a prerequisite to the transfer of the dam permit, the existing owner/Permittee must inform any buyer of land underlying the dam of the dam's existence. This notice must be in writing and a copy must be sent to the DNR. The DNR will not approve a transfer of this permit unless the new dam owner has demonstrated to the Commissioner's satisfaction that it can meet the financial

CONDITIONS (Continued from previous page)

assurance requirements set forth in Permit Condition #25.

21. DELETED FROM PUBLIC COMMENT DRAFT: NA

22. EMERGENCY REPAIRS: All repair work on the project authorized by this permit may only be undertaken with the prior written approval of the DNR. Where, however, conditions arise that require immediate action to protect the public health, safety and welfare, repairs may be started immediately, provided that the Permittee notifies the Commissioner and the State Duty Officer of the need to make emergency repairs immediately upon discovery of the need for an emergency repair. As soon as practicable thereafter, the Permittee shall apply for a permit amendment for the necessary emergency repairs.

23. DELETED FROM PUBLIC COMMENT DRAFT: NA

24. DELETED FROM PUBLIC COMMENT DRAFT: NA

25. FINANCIAL ASSURANCE: Concurrent with Permit issuance, the Permittee must have an approved Permit to Mine for the NorthMet Project, including Financial Assurance provisions sufficient to meet ongoing dam and basin operations, maintenance, monitoring, and repair work until such time that the Commissioner releases Poly Met Mining, Inc. or its agent from the Dam Safety Permit. The Permittee shall also obtain and maintain environmental liability insurance sufficient to cover unexpected events that may impact the safety of the dam, such as a dam failure.

26. OTHER PERMITS: Construction shall not commence until the Permittee has obtained all required federal, state, and local permits, authorizations, and permissions necessary to undertake the work authorized in this permit.

27. INTERIOR DIKE STABILITY: Water levels within Cell 1E of the tailings basin shall be maintained below elevation 1656.0 feet Above Mean Sea Level (AMSL) and a distance of at least 200 feet from the interior dike crest until water levels in Cell 1E and 2E are at similar levels or until written DNR approval for a deviation from this condition is obtained.

28. WATER MANAGEMENT PLAN: Prior to the start of dam operations, the Permittee shall submit to and obtain from the DNR Dam Safety Engineer written approval of a Water Management Plan describing how water in the tailings basin will be managed. Dam operations may not commence until such approval is obtained. This Water Management Plan must include, at a minimum, discussion of water needs for plant and basin operations, and first filling of the tailings basin.

29. MATERIAL TESTING: Prior to dam construction, the Permittee shall conduct additional strength and permeability testing of existing fine tailings and bulk tailings in the tailings basin to confirm that the material properties used in the various seepage and stability models in the Flotation Tailings Basin (FTB) Geotechnical Data Package are still applicable. The results of the testing and any seepage and stability model updates shall be submitted to the DNR Dam Safety Engineer for review. Construction may not commence until DNR has issued written approval of the testing and model updates.

29A. EXISTING STRUCTURES: Prior to dam construction, Permittee shall investigate and locate all existing pipelines and structures within the tailings basin and properly abandon them to ensure dam stability is maintained. Prior to dam construction, Permittee shall obtain written approval from the DNR Dam Safety Engineer of the results of the abandonment. Construction may not commence until such written approval is obtained.

29B. OPERATIONS EMERGENCY SPILLWAY: Prior to dam construction, Permittee shall obtain written approval from the DNR Dam Safety Engineer of the operations emergency spillway design, including but not limited to: 1) shear analysis of the 15% slope, 2) filter and drain design, 3) settlement analysis, and 4) how runoff from adjacent land will be accounted for. Construction may not commence until such written approval is obtained.

30. NORTH BUTTRESS DESIGN: : Prior to dam construction, Permittee shall obtain written approval from the DNR Dam Safety Engineer of the buttress design of the dam on the north side of Cell 2E, including but not limited to: 1) subsurface exploration plan for the buttress foundation, 2) factor of safety for progressive localized failure such as from a failure of the buttress toe, 3) factor of safety regarding liquefaction for interim lifts, 4) extent of peat removal, 5) filter compatibility analysis, and 6) final design for underdrain and need for toe drain. Construction may not commence until such written approval is obtained.

31. BENTONITE TESTING: Prior to dam construction, Permittee shall obtain written approval from the DNR Dam Safety Engineer of the results of the pilot/field testing of the bentonite amended side slopes and the corresponding Quality Assurance/Quality Control program. Construction may not commence until such written approval is obtained.

32. CONTINGENCY ACTION PLAN: Prior to dam construction, the Permittee shall obtain written approval from the DNR

CONDITIONS (Continued from previous page)

Dam Safety Engineer of a Contingency Action Plan (CAP). Construction may not commence until such approval is obtained. The CAP shall contain all applicable elements of the Federal Guidelines for Emergency Action Planning for Dams (FEMA Publication No. P-64). Dam breach inundation maps shall be prepared using a 2-dimensional dam breach analysis. Breaches at several locations around the tailings basin and at various stages of dam construction shall be modeled, as agreed upon by the DNR. The breach models shall extend downstream to a point where water level increases due to a breach are less than one foot. If there is no feasible or practical means to provide for adequate evacuation warning in sufficient time, the Permittee shall notify potentially affected property owners of that fact. The CAP shall also contain those items listed in comments #1, 3, 4, 5, 7 of the April 27, 2017 memo from EOR to Jason Boyle, namely: 1) Identification of adverse conditions/events that could lead to localized/global dike instability. 2) An instrumentation and monitoring plan that includes those items presented below. 3) A contingency plan that includes those items presented below. The Observational Method (Peck, R.B., Geotechnique, No. 2, 1969) is based on assessing potential geotechnical failure modes that may result during/post construction as well as conditions and events that could instigate instability. An example condition could be a previously undiscovered layer of soft soil beneath the dike alignment. An example event may be a large rainfall that causes increased seepage and slope toe erosion. After this assessment is complete and critical failure modes and conditions/events are identified and analyzed, contingency plans shall be developed for each critical failure mode. The analysis shall be performed prior to construction. With the analysis results in mind, a monitoring system (geotechnical instrumentation, site reviews, etc.) shall be developed and implemented during construction to monitor dike performance. The monitoring system would be used to confirm assumptions made during original design or to change operations/design if field observations and adverse measurements are recorded. To adequately use this method for dike construction, the geotechnical instrumentation and monitoring plan shall be developed based on the results of the dike stability analysis that considers conditions/events that could result in localized or complete dike instability. Contingency plans should be developed for each critical condition. The instrumentation and monitoring plan shall include 1) a list of geotechnical instruments that will be installed, where they will be installed and what they will be measuring, 2) how often the instrumentation readings be taken, 3) who will review the instrumentation readings, 4) what the typical values will be and what the thresholds will be that indicate "adverse conditions" that will require a change in operation or design. The contingency plan shall include a list of potential adverse conditions that may occur and what would be observed if that condition occurred. The plan shall include different operational/design options to address the adverse conditions. The additional subsurface exploration and instrumentation & monitoring plan shall be developed based on the results of the analysis performed as part of the Observational Method. The plan shall include what instrument type is required, its location, depth and expected range of values that will be obtained during basin construction.

33. OPERATION AND MAINTENANCE PLAN: At least 180 days before the start of construction, Permittee shall submit to the DNR a written Operation and Maintenance Plan for review and approval by the DNR Dam Safety Engineer. Construction may not commence until the DNR has issued written approval of the Operation and Maintenance Plan. The Operation and Maintenance Plan shall have content sufficient to instruct the basin engineer on how the tailings basin is to be operated, maintained, inspected, and monitored; and shall include at a minimum a tailings spigotting plan (details on pumps and pipelines, when spigot will be moved, emergency shutdown procedures); a water management plan (describing how the water levels will be maintained, actions during both flood and drought conditions, movement of water between basins); a geotechnical instrumentation and monitoring plan (including all instrumentation, underdrain functionality, seepage, freeboard and beach length); and the various triggers and warnings that indicate if any of the above parameters are out of expected ranges. Any changes to the Operation and Maintenance Plan require prior written permission from DNR Dam Safety.

34. OPERATION AND MAINTENANCE RESPONSIBILITY: The Permittee shall operate the dam authorized by this permit in accordance with all dam safety standards. The Permittee shall maintain the dimensions and elevations of the dam as described herein and in accordance with the Operation and Maintenance Plan. A permit amendment is required for any construction or repair that would change the hydraulic capacity or structural character of the dam that is not authorized in this Permit or impoundment approval, such as conduit replacement or embankment excavation. Routine dam maintenance, such as mowing or debris removal, does not require prior DNR approval.

35. ANNUAL CONSTRUCTION AND MONITORING REPORT: : The Permittee shall submit an annual report to the DNR Dam Safety Engineer that describes the following: 1) proposed dam construction for the upcoming year, including projected dam, water, and tailings elevations; 2) any changes or variations in tailings basin design, construction, or operations from previously approved plans; 3) a summary of the past year's construction activities and quality control tests; 4) a summary of the past year's operation, maintenance, inspection, and monitoring activities (including the seepage collection system); 5) a discussion of any construction, operation, maintenance, inspection, or monitoring activities that were unscheduled, or out of the ordinary, or deviated from the approved plan; 6) photographs of the tailings basin; 7) graphical presentations of all tailings basin instrumentation data, including but not limited to data from pond level

CONDITIONS (Continued from previous page)

monitors, piezometers, inclinometers, extensimeters, and settlement plates; and 8) a brief discussion of any monitoring results that appear to be irregular or out of tolerance. Tabular instrumentation data shall be submitted with the report in an electronic format and submitted on a CD, DVD, or flash drive. The Annual Report shall be due on or before January 31 of each year.

36. OBSERVATIONAL METHOD: The Observational Method is being used in the design and construction of the tailings basin. The Observational Method entails data gathering, interpretation of data, design review, and potential adjustments to the design to ensure that the predicted behavior is comparable to the measured behavior. The Observational Method allows the Permittee the necessary flexibility to modify the design as new information is obtained during the multi-year construction of the tailings basin dam. The Permittee shall make no changes in the design, construction, operation or maintenance of the facilities authorized by this permit without the prior written consent of the DNR Dam Safety Engineer. Said consent may, at the sole discretion of the DNR, be evidenced by a written amendment to this permit. This restriction includes but is not limited to any alteration of the dimensions, capacity or location of any items of work authorized by this Permit. At sole discretion of the DNR, this provision may be waived for minor items. The Permittee shall include in the annual report a summary of any design changes made and the reason for those changes.

37. MANAGEMENT PLAN AND GEOTECHNICAL DATA PACKAGE UPDATES: Documents reviewed during the permit application phase are expected to evolve as a result of final design refinement, construction, and future tailings basin operations. The Permittee shall submit updated documents to the DNR Dam Safety Engineer for written approval as those documents become available. Permittee shall develop and maintain a worksheet to record, track, and show approval date of all changes made to the design, construction, and operations. This tracking worksheet shall be a part of the flotation tailings management plan. Future versions of the geotechnical data package and flotation tailings management plan shall include the changes noted in the worksheet.

38. SAFETY INSPECTIONS: The Permittee shall arrange for an annual dam safety inspection and a dam safety inspection report to be prepared by a qualified dam safety engineer registered in Minnesota. The annual dam safety inspection report shall be sent to the DNR Dam Safety Engineer on or before January 31 of each year.

39. IDLING AND EARLY CLOSURE PLAN: Prior to first filling of the tailings basin, the Permittee shall obtain written approval from the DNR Dam Safety Engineer of an Early Closure Plan describing the actions to be taken during periods of short term shutdown or temporary plant idling. First filling may not commence until such approval is obtained. The Early Closure Plan shall detail the needed activities to maintain the tailings basin in a safe manner, including a water balance diagram, water level monitoring, dam safety inspections, and such other items as determined by the DNR or the Permittee to be necessary. The Early Closure Plan shall also describe the necessary actions to be taken if the tailings basin were to go into an unplanned long term closure. An updated Early Closure Plan shall be submitted to the DNR Dam Safety Engineer annually on or before January 31 of each year.

40. FIRST FILLING AND IMPOUNDMENT APPROVALS: Written approval to impound pumped water or tailings (with the exception of seepage return water) must be obtained from the DNR Dam Safety Engineer prior to first filling of the tailings basin. Pumping of water from the mine site into the tailings basin would need an impoundment approval. No impoundment of water or tailings is allowed by this permit other than the natural flow of precipitation or snowmelt from the surrounding areas currently tributary to the tailings basin, and seepage water collected as part of an MPCA permit, until written approval is obtained from the DNR Dam Safety Engineer. An impoundment approval will also be required for each stage/lift of the dam. At least 120 days prior to the anticipated start of a stage/lift of construction, the Permittee shall submit detailed plans and specifications to the DNR. Prior to the start of construction of a stage/lift, the Permittee shall obtain written approval from the DNR Dam Safety Engineer of the design. Written approval will be in the form of an impoundment approval for that stage/lift. Construction of that stage/lift may not commence until such written approval is obtained.

41. ADDITIONAL MATERIAL TESTING: Once tailings are produced at the processing plant, these tailings, as well as the tailings used for construction of the dam, must be tested for material properties to confirm the properties used in the various seepage and stability models in the FTB Geotechnical Data Package. The models shall be updated within 4 months of initial tailings deposition into the tailings basin with any new material properties obtained from the testing and recomputed to confirm expected performance of the dam. Once completed, these results shall be reported to DNR Dam Safety for review and approval. The time period may be adjusted by mutual agreement between the Permittee and DNR Dam Safety.

42. CONSTRUCTION PROGRESS REPORTS: The Permittee shall submit monthly reports to the DNR Dam Safety Engineer on construction observation and quality control to ensure conformity with approved designs, plans, and specifications, including but not limited to those items set forth in Minnesota Rules part 6115.0410, subpart 9.

CONDITIONS (Continued from previous page)

43. INTERIM CONSTRUCTION REPORTS: Within 90 days following the completion of each stage/lift of construction, the Permittee shall provide the DNR Dam Safety Engineer an Interim Construction Report, together with a statement by the designer or professional engineer in charge of the project that attests that the dam stage/lift has been completed in accordance with the approved designs, plans and specifications and any approved revisions thereof. The Interim Construction Reports shall address the items set forth in Minnesota Rules part 6115.0410, subparts 9 through 11. The Interim Construction Reports shall also include record drawings, materials sampling and testing as performed, photographs of the stages of construction, and any other items that may be of permanent value on the adequacy and permanency of the dam. The Interim Construction Reports shall be signed or co signed by a qualified engineer.

44. FINAL CONSTRUCTION REPORT: Within 90 days following the completion of final construction, the Permittee shall provide the DNR Dam Safety Engineer a Final Construction Report, together with a statement by the designer or professional engineer in charge of the project that attests that the dam has been completed in accordance with the approved designs, plans and specifications and any approved revisions thereof. The Final Construction Report shall address the items set forth in Minnesota Rules part 6115.0410, subparts 9 through 11. The Final Construction Report shall also include record drawings, materials sampling and testing as performed, photographs of the stages of construction, and any other items that may be of permanent value on the adequacy and permanency of the dam. The Final Construction Report shall be signed or co signed by a qualified engineer.

45. FUTURE CLOSURE CONSIDERATIONS: Within 5 years of permit issuance, and every 5 years thereafter, the Permittee shall provide a report to the DNR Dam Safety Engineer detailing future closure options, such as a dry cap or other technologies that may improve closure conditions and may lead to a shorter post closure monitoring and maintenance period. Ongoing future closure plans shall be developed in consultation with the DNR Dam Safety Engineer and any future closure plan must receive all applicable State and Federal approvals.

46. FINAL CLOSURE PLAN: At least 2 years prior to the planned end of dam operations, the Permittee shall submit a Closure Plan to the DNR Dam Safety Engineer for review and approval. The Closure Plan shall include plans for both the end of operations and for the final, ultimate closure of the tailings basin when it will be no longer needed. The Closure Plan shall include a discussion of all necessary monitoring and maintenance expected for the tailings basin after the end of dam operations. This Closure Plan shall also include documentation of all activities related to the deactivation of the tailings basin including removal of pipelines, revegetation, restoration and such other items as the Permittee and the DNR deem necessary. To the extent possible, runoff from the closed tailings basin shall be directed to flow to the original watershed(s).

47. PERPETUAL MAINTENANCE: The Permittee shall perpetually maintain the tailings basin and all of its components to ensure the integrity of all structures. Prior to the ultimate termination of the Permittee's operation of the dam, the Commissioner may impose such requirements as may be necessary to ensure that the Permittee will remain financially responsible for carrying out the activities required for perpetual maintenance, and that adequate funding for perpetual maintenance continues to exist.

48. BEACH AND FREEBOARD REQUIREMENTS: The Permittee shall maintain a beach length of at least 625 feet (horizontal) and a normal water level upstream of the dam that is at least 9 feet below the lowest point of the top of the dam. The normal water level in Cell 1E shall be maintained as required in Permit Condition #27 – Interior Dike Stability. In addition, there shall be enough available flood storage capacity to store the inflow design flood event with at least 3 feet of freeboard remaining to the top of dam and without any flow leaving the basin. When abnormal conditions exist such that beach and freeboard requirements are less than the permitted values, the Permittee shall inform the DNR Dam Safety Engineer and corrective actions must be undertaken to restore these parameters as quickly as feasible.

49. RATE OF INCREASE IN HEIGHT: The increase in dam height shall be limited to no more than 15 feet per year.

50. EXCAVATED MATERIALS – RUNOFF - REVISION: As an exception to Permit Condition #16, temporary disposal of excavated materials in non-upland areas may be allowed. Prior deposition in a non-upland area, the Permittee shall obtain written approval from the DNR Dam Safety Engineer of the spoil disposal plan.

51. FUTURE ORDERS - REVISION: In addition to the requirement of Permit Condition #18, the DNR also reserves the right to review and revise this permit and the conditions attached hereto as any new data and information become available, including but not limited to material strength data, monitoring data, geotechnical data, and geologic data.

DAM OPERATIONS: The approximately 20-year phase of mining and production, as defined in the glossary of terms in the Permit to Mine application, as well as the time prior to mining operations when water in the tailings basin is being managed for future mining operations.

CONDITIONS (Continued from previous page)

TAILINGS BASIN: Tailings basin refers to any of the existing and proposed tailings impoundments as described in the permit application.

FIRST FILLING: First filling refers to either the pumping of water into the basin for project needs or the disposal of tailings into the tailings basin. First filling does not include the pumping of tailings basin seepage water back into the basin.

CONTINGENCY ACTION PLAN: Plan detailing initial response to potential emergency conditions.

OPERATION AND MAINTENANCE PLAN: Plan detailing how the tailings basin will be operated, maintained, monitored, and inspected during all phases of the project.

TAILINGS SPIGOTTING PLAN: Plan detailing how the tailings will be brought to and distributed in the tailings basin.

WATER MANAGEMENT PLAN: Plan detailing how water and tailings will be managed at the tailings basin during all phases of the project

IDLING AND EARLY CLOSURE PLAN: : Plan detailing actions to be taken during temporary idling, short-term closure, and unplanned early long-term closure.

FINAL CLOSURE PLAN: Plan detailing actions to be taken after the end of plant operations and after the tailings basin is no longer needed.

DAM CONSTRUCTION: The act of changing, removing, or adding to the artificial barrier, along with appurtenant works, which does or may impound water and/or waste materials containing water.

FREEBOARD: The difference in elevation between the water level due to the design inflow flood event and the lowest point of the top of the dam. Freeboard is a factor of safety above a predicted flood level to compensate for unknown factors that could contribute to flood heights that are greater than the height calculated.

cc: Kim Boland, Area Hydrologist
Anna Hess, EWR District Manager
Anthony Bermel, Conservation Officers, Babbitt
Cathy Klegstad, Babbitt
David Demmer, BWSR Wetland Specialists, St. Louis
Gaea Crozier, DNR Regional Nongame Specialists, Northeast
Margi Coyle, DNR Regional Environmental Assessment Ecologist, Region 2
Tom Rusch, DNR Wildlife, Tower
Edie Evarts, DNR Fisheries, Tower Area
Mark Lindhorst, County, St. Louis
Catherine Voce, Corps of Engineers, St. Louis (North)
Andrew Chambers, Corps of Engineers, St. Louis (North)
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