

Twin Metals Minnesota EIS Scoping

RGU Comments on Proposer's Initial Data Submittal

Under Minnesota Rules part 4410.1400, the Responsible Governmental Unit (RGU) is to determine whether the proposer's data or information submittal is complete, and if not, the RGU is to return the submittal to the proposer for completion of the missing data.

DNR has determined the initial submittal to be incomplete. Below are DNR's comments as RGU for the Twin Metals Minnesota Project to guide the completion of the missing data.

Content thru Section 2.0

Number	Comment
Comment 1	Preface; pg 2. Revision Record Table. Column 5. Please clarify what is meant by "Project Configuration Version?" No action requested.
Comment 2	Cover Letter. RGU notes the public review Scoping EAW will not have a cover letter of this type. Information presented may or may not be reflected in future documentation. No action requested.
Comment 3	Cover letter; 2nd paragraph. Last sentence. The statement "If permitted this would be the first underground mining operation" is incorrect. Add "non-ferrous" and it would be correct. Action requested: Text correction.
Comment 4	Cover letter, 2nd paragraph. Last sentence. This article (https://www.minnpost.com/mnopedia/2016/04/very-brief-history-mining-cuyuna-iron-range/) states that the Armor #2 Mine near Crosby was the last operating underground mine to close (also in 1967). There may be other statements in conflict if one searched more sites. Action requested: For accuracy confirm and revise as necessary.
Comment 5	Cover letter, 5th paragraph. Text includes statement regarding 11 operating mines. Action requested: Provide citation and clarify if they were operating at the same time or otherwise.

Number	Comment
Comment 6	Cover letter, 5th paragraph. RGU notes the project is within the BWCAW watershed, and thus the statement about outside the Wilderness could be confusing. Action requested: Revise by noting outside the BWCAW but within the watershed to improve accuracy.
Comment 7	Cover letter, pg. 2. Top of page; last sentence. The formation is the Duluth Complex, not the Duluth Mineral Complex. Appears to only use in document. Action requested: Text correction.
Comment 8	Cover letter, pg. 2, bullet list. Bullet list; numbers 1 & 5. Statements regarding specific percentages of reduction in footprint or impacts cannot be verified without the previous mine plans. Absent this and other information, such assertions are speculative. RGU reserves judgment as to relevance for disclosure in future documentation. No action requested.
Comment 9	Cover letter, pg. 2, bullet list. Bullet list; number 2. Kinetic testing is required to state tailings would not produce ARD (or AMD). DNR will need to review this data and evaluate if the assertion is supported. No action requested. DNR will be making a specific request for the data.
Comment 10	Cover letter, pg. 2, bullet list. Bullet list; number 8. Regarding assertion that "no waste rock stored on the surface." The assertion is correct however the RGU notes the project proposes to handle rock with sulfide mineralization during construction and classify this as ore, which would be temporarily stockpiled on the surface at the temporary rock storage facility. No action requested.
Comment 11	xiii. Glossary; acid rock drainage. Definition asserts ARD always contains both metals and sulfate. Action requested: Confirm proposed definition or remove statement.
Comment 12	xiv. Glossary; closure. Closure is defined in Minn. Rules part 6132.0100, subp. 6. Action requested: Add reference to Minnesota Rules in the text.
Comment 13	xv. Glossary; construction stormwater. Because instances may be present where constituent loading occurs to construction water that requires additional management, the definition should be modified to reflect this potential situation. Action requested: Modify text to read: "Construction stormwater: direct precipitation or stormwater that has contacted surfaces disturbed by construction that could have increased constituent loading."

Number	Comment
Comment 14	xv. Glossary; contact water. Note on water management classifications and definitions. It will be necessary to consider implications of definitions of the various types of water in terms of regulatory definitions. This can be a source of confusion. RGU- and regulatory-approved definitions for the EIS and any subsequent permitting will need to not only make sense for describing the project but must also align with language and definitions in permits. Will require future consultation. No action requested.
Comment 15	xv. Glossary; contamination. More precisely "contamination" implies the presence of physical, chemical, biological, or radiological elements at concentrations above regulatory standards. Action requested: Revise as necessary.
Comment 16	xv. Glossary; corehole. Action requested: Provide definition of corehole. See Line 3143.
Comment 17	xvi. Glossary; dam. The text provided is not the "state" definition of a dam. Action requested: See Minn. Rules part 6115.0320, subp. 5, for the definition of a dam under the rules. Modify text to accommodate this definition.
Comment 18	xvi. Glossary; dry stack facility. The proposed definition for use describing the project states: "...a dry stack facility does not require a dam or berm." For this definition to apply as listed, the facility would have no berm (i.e., that creates slope to contain the tailings). Action requested: Confirm no berm is proposed at the dry stack facility.
Comment 19	xvi. Glossary; dry stack facility. For the purposes of the EIS, the definition should better describe the actual proposed facility in more detail, not expressly focusing on its function or how it is constructed. Action requested: Modify text.
Comment 20	xvi. Glossary; development rock. Text identifies the definition of development rock as "sulfide barren." No rock is devoid of sulfur. The mine materials characterization plan is intended to address the appropriate cut-off of rock reactivity that could be used for construction. Action requested: Modify definitions accordingly and use consistently throughout the document.
Comment 21	xviii. Glossary; gravity concentration circuit. Text reads: "...used to recover dense minerals and produce gravity concentrate." Greater consistency with the definition of the flotation circuit would include a reference to the target metals. Such text might read: "...used to recover targeted metals, including platinum, palladium, and gold to produce gravity concentrate. Requested action: Review recommended text for accuracy, revise if necessary, and adopt.

Number	Comment
Comment 22	xix. Glossary; mine supply water. Add definition for mine supply water to glossary. Action requested: Add the definition.
Comment 23	xxi. Glossary; ore. The proposed definition for ore lists production of three concentrates. To be consistent with the definitions of the flotation circuit and gravity circuit respectively, consider adding phrase: "...through the concentrator to recover targeted metals into three concentrates, two from flotation and one from gravity. Ore is found..." Action requested: Review recommended text for accuracy, revise if necessary, and adopt.
Comment 24	xxi. Glossary; overflow ore stockpile and pre-operational ore stockpile. From comment at text at Lines 605-605. Action requested: Modify text to make distinction clearer. May need to refine definitions in the glossary.
Comment 25	xxii. Glossary; proposed action and proposed project. Outside each respective definition, the term "proposed action" is used three times in the document while "proposed project" is used once. The use of these terms in the text have a specific context in NEPA and MEPA respectively, with the term "Project" referring to the Twin Metals Minnesota Project subject to the EIS. Action requested: For the definitions for "proposed action" and "proposed project" respectively, add the NEPA and/or MEPA qualifying language to better distinguish between the two.
Comment 26	xxii. Glossary; reclamation. The reclamation definition seems to combine too much (or possibly combined two definitions). Reclamation definition goes beyond what is outlined in Minn. Rules part 6130, subp. 29, but references Minn. Rules parts 6132.2000 to 6131.3200. Action requested: Revise in line with rules and then ensure consistent use throughout document.
Comment 27	xxii. Glossary; reclamation stockpile. From comment at Lines 826-828. Add definition for mine reclamation stockpile to glossary. Action requested: Add term to glossary.
Comment 28	xxiv. Glossary; temporary rock storage facility. RGU notes that although the proposed definition is correct, it could be written to be more specific and understandable. Proposed text: "temporary rock storage facility: Physical infrastructure on which the pre-operational ore stockpile, and the overflow ore stockpile in operations, would be located. It is a lined facility at the plant site that would convey precipitation to the central contact water pond." Action requested: Review recommended text for accuracy, revise if necessary, and adopt.
Comment 29	xxv. Glossary; waste rock. From text at Lines 253-255. Would the sulfur content of waste rock be 5% > 0% and less than the ore grade cut-off? Action requested: Please confirm and state more directly. Apply any clarifications to the glossary definition.

Number	Comment
Comment 30	xxv. Glossary; wetlands. Wetland delineation definition does not include enough specificity. Add that it also differentiates between types of wetlands. Action requested: Revise as needed.
Comment 31	xxv. Glossary; Wetland Conservation Act. Definition should note WCA has been amended since 2000. Action requested: Update definition.
Comment 32	Lines 9-11. RGU note. The term "preliminary" is applied to a number of designs and locations. This is appropriate at this stage however the public review Scoping EAW will evaluate the Project proposed by TMM. Because the MEPA review per se results in no final governmental actions, it is possible for project features to change over the course of the EIS. Therefore, information presented at this time may or may not be reflected in future documentation. No action requested.
Comment 33	Lines 13-14. RGU note. This document is not really intended to "provide information needed for the environmental review and permitting process." This characterization appears inconsistent with language on document purpose on lines 16-19 and 32-35. A more accurate statement might read: "The purpose of this document is to provide necessary information for the environmental review of the Project." Action requested: Review recommended text for accuracy, revise if necessary, and adopt.
Comment 34	Lines 64-66. Clarification. This text indicates information will come from different sources, some of which is publicly available and some which is newly developed by Twin Metals Minnesota. For example, presumably the analysis involves ore processing information that is not generally public. A clearer statement might read: "This SEAW data submittal uses information from a number of sources, some of which is publicly available with other information, for example, being data acquired by TMM that is summarized to supplement the assessment. Beyond what's presented in the data submittal, additional work and data collection is ongoing and reflected in the sections on future scope." Action requested: Review recommended text for accuracy, revise if necessary, and adopt.

Section 3.0 Background

Number	Comment
Comment 35	Line 152. RGU note. Project locations with section, township, and range information will be verified by agency staff. No action requested.
Comment 36	Lines 210-211. Clarification. The sentence identifies that three products would be created, a "copper concentrate, nickel concentrate, and gravity concentrate." Because the metallic character of the copper and nickel concentrates are captured in their name, a consistent approach would do the same for the gravity concentrate. Action requested: Suggested text might read: "...produce three products, copper concentrate, nickel concentrate, and a gravity concentrate targeting platinum, palladium, and gold." Alternative language might also be: "...platinum group metal gravity concentrate." Action requested: Review recommended text for accuracy, revise if necessary, and adopt.
Comment 37	Lines 221-222. Clarification. If understood correctly it appears gravity concentrate is where all metals except copper and nickel would collect during processing. If correct, the gravity concentrate definition on page xviii could be improved by stating that. Action requested: If accurate, consider potential application in the glossary definition.
Comment 38	Line 224. Clarification. Comment also refers to Table 3-2. Question: Is the Q3 Yr-3 projected start of construction independent of when all permits and approvals would have been secured? In other words, is it possible for the construction phase to commence in Q1, Q2, or Q4 of Yr-3? Action requested: Confirm and clarify, with any further RGU recommendations predicated on the response.
Comment 39	Line 231. Clarification. Use "progressive" instead of "concurrent" to match the language used in Minn. Rules Chapter 6132. Action requested: Text substitution.
Comment 40	Lines 238-241. Clarification. The intent of post-closure maintenance and monitoring is not clear. Would it be the plan that a complete release would be the goal at the end pursuant to Minn. Rules part 6132.4800, subp. 3? Action requested: Modify text to match project intent with this provision in Minnesota Rules.
Comment 41	Line 242. Clarification. The document makes no reference to lower grade or "lean" ore. Action requested: Confirm that there is no plan to have lean ore. If the answer is "yes, there would be lean ore," then propose supplemental text to describe the situation.
Comment 42	Line 248. Clarification. The text identifies the definition of development rock as "sulfide barren." No rock is devoid of sulfur. The mine materials characterization plan is intended to address the appropriate cut-off of rock reactivity that could be used for construction. Action requested: Modify definitions accordingly and use consistently throughout the document. See also glossary definition.

Number	Comment
Comment 43	Lines 253-255. Question: Would the sulfur content of waste rock be S% > 0% and less than the ore grade cut-off? Action requested: Please confirm and state more directly. Apply any clarifications to the glossary definition.
Comment 44	Lines 253-255. Clarification. The definitions of the types of rock should be aligned with the definition of waste rock in Minn. Rules part 6132.0100, subp. 34. For example, development rock would be a sub-category of waste rock. Action requested: Review the cited rule and modify, as needed, the Project definitions to match the rule. This will introduce clarity into both the EIS and permitting.
Comment 45	Line 264. Clarification. The text indicates the "cut-off point" would be determined as mined rock would be monitored and tested during construction of the mine declines and ventilation raises. Best mining practice would suggest the "cut-off point" be determined ahead of time. Testing at the time of construction would then be used to determine which rock exceeds sulfide mineralization criteria and that which does not (e.g., development vs waste rock vs ore). No action requested but anticipate further discussion as it may be beneficial in development of later information submittals.
Comment 46	Line 264. Clarification. The description would benefit from some additional detail on "monitoring and testing" proposed to assess the cut-off point. Action requested: Provide additional detail on proposed monitoring and testing. Anticipate further discussion as it may be beneficial in development of later information submittals.
Comment 47	Line 268. Clarification. Ore mined during construction would be placed on a temporary stockpile. How long is temporary? Action requested: Provide some temporal definition to the term "temporary" in the document text.
Comment 48	Line 268. Clarification. The text identifies a number of project features in place during operations but does not mention the temporary surface crushing facility. This is identified in Figure 3-9 as well as in later text. The document should identify how this would work at the appropriate place? Are there impact avoidance features in the proposed design (e.g., containment of materials and dust; covered facility, or other features)? Action requested: Address the item and modify text as appropriate.
Comment 49	Lines 269-271. Clarification. The text is unclear as to where the collected contact water reports until the commissioning of the plant? Action requested: Provide clarification on the point and revise the text as needed.

Number	Comment
Comment 50	Line 273. Usage. This text represents one of several instances where consistency across rock terms is needed. All rock is either ore or waste rock, with waste rock then being further classified as, for example, development or construction rock. Action requested: Please clarify the text consistent with rock definitions in Minn. Rules part 6132.0100, subp. 34.
Comment 51	Line 273. Clarification. During construction, a rock containing sulfides would not be classified as waste rock because it has a lower grade of sulfides than low-grade ore. Is it not still a sulfide bearing waste rock? Action requested: Respond to query and modify text as warranted.
Comment 52	Lines 273-275. Clarification. The fate of rock placed on the temporary storage facility is unclear. Does this mean that all of the rock placed on the temporary pile would be processed once operations begins? Action requested: Confirm that the cut-off grade changes between construction and operations. Modify text as needed to address the fate of rock placed on the temporary pile.
Comment 53	Lines 274-275. Question. Is it correct that during construction, rock is either barren or has sulfide mineralization, and if so, then would be ore (thus not dependent on cut-off grade, but on whether there is sulfide mineralization)? Action requested: Provide clarification and modify text so this is clear.
Comment 54	Line 276. Clarification. Will there be both pre-operational ore and actual ore onsite at the same time, and if yes, how would this rock be managed? Has storage capacity been estimated and addressed in the design? Action requested: Address the item and modify text as warranted.
Comment 55	Lines 278-279. Question: Is there sufficient capacity underground during construction as drifts are excavated and before stopes are created? Action requested: Address the item and modify text as appropriate.
Comment 56	Lines 277-278. Clarification. Lines 250-251 state that there may be development or "construction" rock generated during operations. Does this align with this text? Action requested: Confirm and clarify text as warranted.
Comment 57	Line 281. RGU note. It would simplify and add clarity to simply state: "At no time would waste rock be brought to the surface," if it is assumed the current definition of waste rock remains. Action requested: Consider text revision once rock definitions are settled.

Number	Comment
Comment 58	Line 281. Clarification. The text states no waste rock will be transported to the surface. When tunneling into the basal unit and encountering low grade ore (waste rock), where would it be placed if it cannot be transported to the surface? Action requested: Amend text as appropriate to address comment.
Comment 59	Lines 281-284. Clarification. As noted previously, by definition in Minnesota Rules, this rock is waste. Action requested: Please clarify the text consistent with rock definitions in Minn. Rules part 6132.0100, subp. 34.
Comment 60	Lines 281-284. Clarification. Rock that would be transported to the surface during construction would be considered waste rock during the operational phase. Action requested: Consider eliminating the statement "that no waste rock will be transported to the surface during construction and operational phases."
Comment 61	Line 285-288. Clarification. The section appropriately has a focus on ARD potentials. Are there other non-targeted metals (such as arsenic or similar) or other compounds in tailings? Action requested: Address the item and modify text as appropriate.
Comment 62	Lines 285-288. Information need. Further information is needed to confirm that potential ARD from waste rock stockpiles and tailings is avoided. Pre-construction, ore would be on the surface for a period of before it is processed and could produce ARD. There is also no detail on what could become low grade pre-operational ore, which cannot be processed, and may need to be disposed of. For tailings, additional information is needed to demonstrate 0.2% S tailings would not produce AMD. Action requested: Consider eliminating the statement that the potential for ARD has been avoided recognizing this will be an issue receiving detailed treatment in the EIS. Another approach is to identify "preliminary analysis suggests that...; see Sections 5.1.3 and 5.3" or similar.
Comment 63	Line 288. Clarification. The text reads: "...the Project would not have permanent waste rock stockpiles on the surface..." If there is no temporary waste rock storage, then the phrase "permanent waste rock" is not needed. Action requested: Please clarify and revise the text to be consistent with other changes to rock classification and management terminology.
Comment 64	Line 292. Clarification. The text reads: "...the Project would recover most sulfides from the ore, producing tailings with sulfur less than 0.2% S." Whether the tailings have less than 0.2% S or produce no AMD is yet to be determined. Also to be determined is the potential for release of trace metals in neutral drainage. Action requested: Consider eliminating the statement that the potential for ARD has been avoided recognizing this will be an issue receiving detailed coverage in the EIS. Another approach is to state "preliminary analysis suggests that...; see Sections 5.1.3 and 5.3" or similar.

Number	Comment
Comment 65	Line 292. RGU note. Assertions from Lines 285 to 295, much of which is based on Section 5.1.3, will likely receive detailed analysis during the EIS. Information in this section will eventually be cross-referenced to its proposed treatment in the SEAW and draft scoping decision. No action requested.
Comment 66	Line 294. Clarification. The word "concentration" is missing from this line of text: "...demonstrated that sulfur content at this to be non-acid generating (testwork results..." Action requested: Modify text to address the item by substituting "content" with "concentration."
Comment 67	Line 296. Information need. A detailed project water flow diagram will be crucial. The design flow will need to define the design storms for all of the various water holding and collection systems. For holding ponds, long duration storms will govern; but for collection systems/ditches/diversions, short-duration high-intensity storms are likely to govern the design. Various storm types will need to be evaluated. Action requested: Ensure the applicable Future Scope section(s) address the item as appropriate. Future discussion item.
Comment 68	Line 302-305. Clarification. To be more clear and distinguish water routing from the underground mine, it makes sense to identify the source(s) of water leaving the mine (principally mine water inflow) being routed to the plant site. The rest of the cycle involving the plant site and tailings management site would be described followed by the Birch Lake reservoir reference. Action requested: Modify text as recommended. In general, there will need to be a text description of the content of Figure 3-3 prepared.
Comment 69	Lines 302-305. RGU note. DNR will request an analysis to determine whether treatment of circulated water is needed to prevent the build-up of chemical constituents in the water, which could affect use in the processing circuit. No action requested. This will be assessed as a future information need to be identified in the proposed EIS scope.
Comment 70	Line 311. Project definition. The text states that stormwater and surface water "would be diverted." Would any of this diverted water be used in the process? Action requested: Modify text with sentence added at the end answering the question whether "yes" or "no" about use in the process.

Number	Comment
Comment 71	Line 314. Definition. The definitions include construction stormwater, contact water and noncontact water, but does not include industrial stormwater. Industrial stormwater (ISW) would include stormwater that contacts any industrial activity, which differentiates it from the defined "contact water" but also would be different from the defined "noncontact" water that only seems to refer to upstream water that is diverted to prevent run-on. Conversely, it is possible that "contact water" is intended to encompass all industrial stormwater on the site? It is also noted that SDS-Industrial Stormwater Permit is listed in Item 8. Action requested: Consider the item and modify text as appropriate.
Comment 72	Line 314. Regulatory guidance. Activities at the site would transition from generating construction stormwater to generating industrial stormwater. At some times these construction and industrial stormwater activities will overlap. There will need to be a plan for the transition between these two activities, which are defined and regulated differently. Action requested: Modify text to address the item. Future discussion item.
Comment 73	Line 329. Clarification. The text identifies the priority sources for process water. Requesting clarification about whether runoff from mining areas would be a source of process water? Action requested: If the answer is "yes," then modify text accordingly.
Comment 74	Line 350-352. Clarification. The text reads: Water from mine inflow...and water that could not be used immediately...would be stored in ponds..." It seems like process water would not be needed until the concentrator is operative, which is estimated to be at least 2 years after mine construction and dewatering starts. How will all this water be held for that time, including winter snow melt? In the ponds "across the site?" Action requested: Address the item and modify text as appropriate.
Comment 75	Line 361. Clarification. The text indicates that the instantaneous rate of pumping would be 800 gpm. Provide an explanation on how this was determined. Action requested: Provide how this was calculated. Modify text as appropriate.
Comment 76	Line 359. Information need. Greater detail needs to be provided on the proposed appropriation Birch Lake, especially on timing and related range of volumes. Any seasonality in withdrawals needs to be understood. Action requested: Modify text to better describe proposed appropriations from Birch Lake.
Comment 77	Line 363. Clarification. The text provide a comparison to a garden hose output to provide context for understanding 800 gpm. DNR considers the typical flow rate from ½" – ¾" garden hoses ranges from 10-15 gpm. Action requested: Modify text to match this rate or provide a different example for comparison.

Number	Comment
Comment 78	Line 362. Clarification. It is possible that during periods of drought or low flow, surface water appropriations may be suspended. Other surface ponds would also likely be deficient during this time. Do plans call for the filling of secondary ponds from Birch Lake during drier conditions so that there is stored water is surface appropriations are suspended? Action requested: Provide response and modify text as appropriate.
Comment 79	Lines 414-416. Inquiry. The text indicates that rock from drilling of the ventilations raise(s) would be handled as development rock. Question: Is it already known that the ventilation raises would not pass through any sulfide mineralized rock? If not, is it possible there could be waste rock/rock to be processed as ore brought to the surface at that time? In other words, it seems unlikely that all decline-construction-rock would be classified as developmental rock; some may be low-grade ore. Action requested: Clarify and modify text with answer.
Comment 80	Lines 459-471. RGU note. DNR will need to understand the basis for the proposed 40:60 stope-to-pillar ratio with the project. No action requested. Future discussion item."
Comment 81	Line 488. Clarification. Greater detail should be provided on the ventilation raise sites, including surface infrastructure, heating requirements, propane storage, etc. Table 3-2 identifies 15 acres of total coverype conversion to accommodate the sites and roads. Action required: Supplement text with the requested detail. For example, a description of the features provided on Figure 3-4.
Comment 82	Lines 498-500. Clarification. Minn Rules 6132.3200, subp. 2(4)c requires that all other equipment, facilities, and structures shall be removed and foundations razed and covered with a minimum of two feet of surface overburden. Action requested: Revise text to include the overburden requirement (including throughout document for similar occurrences).
Comment 83	Line 501. Clarification. Regarding non-hazardous demolition debris, it is reasonable to presume that all demolition debris would be appropriately disposed. Detail should be provided on how waste would be characterized and sorted for proper disposal (e.g., sorting any hazardous from non-hazardous). Action requested: Modify text to include the sorting methodology.
Comment 84	Lines 503-508. Additional information. The text indicates that it is expected some equipment could be left underground at closure. How will the determination be made that equipment does or does not have the potential to impact groundwater quality? Action requested: Provide additional detail and modify text accordingly. DNR takes the opportunity to note that all equipment should be planned for removal.

Number	Comment
Comment 85	Line 508. Clarification. A criteria for proposing to leave equipment underground includes "could not be economically removed and recovered." This needs further clarity/discussion. Action requested: Please modify text to incorporate the requested information.
Comment 86	Lines 513-514. Clarification. Wouldn't workings that had been backfilled also passively fill with groundwater? Please clarify. Action requested: Modify text as warranted.
Comment 87	Lines 513-514. Clarification. It appears that not all areas of the underground workings would be either backfilled with waste rock or with tailings. The text should expressly identify any areas would not be backfilled and proposed treatment in closure. Action requested: Modify text as appropriate.
Comment 88	Line 514. Clarification. DNR's preliminary understanding was there is no groundwater at mine level. Why would groundwater levels rise to pre-mine levels at closure? Action requested: Provide response.
Comment 89	Lines 516-521. Clarification. Regarding closure of the portal and upper segment of the declines, Minn Rules part 6132.3200, subp. 2 (1) requires that "Access to underground mines shall be properly sealed as approved by the commissioner and county mine inspector." Action requested: Revise text to indicate this is the proposed method, subject to approval by the DNR commissioner and the county mine inspector.
Comment 90	Lines 522-523. Clarification. Presume that the backfilled areas of the portals would also be monitored for potential subsidence. Action requested: Revise text as needed.
Comment 91	Line 526. Clarification. Based on this description, it would be useful and improve clarity for figure 3-1 to include a box labeled "tailings management site" surrounding the tailings dewatering, engineered tailings backfill, and the dry stack facility. Action requested: A comment is provided at Figure 3-1.
Comment 92	Line 548. Clarification. The nomenclature of the term "temporary" as in stockpiles is potentially confusing. Generally a stockpile present throughout the life of the project should not have a "temporary" classification. Is the adjective "temporary" necessary in the name of the project feature? Action requested: Consider dropping "temporary" from the name. If there some kind of non-temporal value believed necessary, choose a different term. Modify text as appropriate.
Comment 93	Line 555. Clarification. Additional detail needed on above ground rock crushing conducted during the construction period and early operations. Action requested: Modify text with additional detail.

Number	Comment
Comment 94	Lines 552-553. Clarification. Text reads that use of development rock, including crushing, would be evaluated through "testing to prove its geochemical suitability." Instead of using the term "testing" more precise to state: "...after adequate characterization to prove its geochemical suitability." Action requested: Revise text.
Comment 95	Line 562. Future action. As proposed the temporary rock storage facility would be lined and store pre-operational ore, and early operation ore, without any type of "enclosure" structure. The feasibility of such a measure or some other containment will likely undergo future consideration. No action requested. Future discussion item.
Comment 96	Lines 564-567. Future action. The text identifies the rock storage facility is lined with water management features. What would be done with water collected at the temporary rock storage facility during the construction phase? Would treatment be available during construction, or would water that comes in contact with potentially AMD producing rock need to be stored until treatment is available? Action requested: Modify text to address the questions. Future discussion item.
Comment 97	Line 570. Future action. As proposed the Project places the temporary crushing facility on the surface. The feasibility of having the pre-operational and early operational rock be crushed underground will likely undergo future consideration. No action requested. Future discussion item.
Comment 98	Line 572. DNR notes the importance of understanding the two-year period of surface rock crushing, especially in terms of layout, design, and staging, in order to assess the treatment of potential impacts in the EIS. No specific action requested, however next data submittal should provide particular focus for this part of the project.
Comment 99	Line 576. Clarification. Would "new" ore that is not from construction be added to overflow ore stock pile while the construction ore is still being managed? Action requested: Provide response and modify text as appropriate.
Comment 100	Lines 585-586. Clarification. Commissioning of the plant would involve some amount of processing ore. Consider when Year-1 ends and Year 1 begins. Action requested: Modify text if needed to accommodate the point. If no change needed, please explain.
Comment 101	Line 601. Clarification. The listing should also include "contracted mobile equipment for services." Action requested: Modify text.

Number	Comment
Comment 102	<p>Lines 604-605. Nomenclature. Review of the document in general seems to reveal that names of stockpiles and storage facilities change between phases of the mine (e.g., overflow ore vs temporary rock storage). To introduce some consistency across project phases, as an example could the temporary rock storage facility be named the ore storage facility? Another example would be the coarse ore storage facility, which is separate and distinct (outside the footprint of the temporary rock storage)? Action requested: Consider the possibility of a more uniform naming system for the project features; implement any that are immediately feasible. Future discussion item.</p>
Comment 103	<p>Lines 604-605. Question. Why is pre-operational ore stockpile separate from overflow ore stockpile? Different because one is crushed? Clarify. Action requested: Modify text to make distinction clearer. May need to refine definitions in the glossary.</p>
Comment 104	<p>Line 611. Clarification. How is ore moved from overflow ore stockpile to coarse ore stockpile? Action requested: Address item by modifying text to read: "...would be supplemented via ??? with ore from the pre-operational stockpile..."</p>
Comment 105	<p>Line 614. Clarification. The text indicates the coarse ore stockpile would have a concrete floor. Is this the same for the reclaim area (with conveyor)? Also for both, identify measures in the design to protect groundwater. Action requested: Address item and modify text as appropriate.</p>
Comment 106	<p>Line 629. Nomenclature. Section starts by reading: "Throughout the life of the project, two stockpiles would be managed on the temporary rock storage facility." Another example of potentially confusing nomenclature around the use of the term "temporary." Action requested: Consider dropping "temporary" from the name. If there some kind of non-temporal value believed necessary, choose a different term. Modify text as appropriate.</p>
Comment 107	<p>Line 636. Question. Pre-operational Ore stockpile - this stockpile would be present for the 30 months of construction as well as during the first two years of operation. Does/will the hydrologic model account for volumes that could accumulate during this extended period? Action requested: Answer the question and modify text as appropriate.</p>
Comment 108	<p>Line 640. Guidance. More detailed information is needed for the two years of operations for the above-ground temporary rock crushing facility to identify potential impacts. Design and detailed location, how ore would be moved from the stockpile to the crusher, and then to the coarse ore stockpile needs to be easily understood. Action requested: Modify text to provide additional clarity. May need to consider a specific figure or figures to demonstrate what would be occurring. Future discussion item.</p>

Number	Comment
Comment 109	Lines 636 – 644. Clarification. Regarding materials handled at the pre-operational ore stockpile, would any low-grade ore that cannot be processed be transported to the surface during construction? If yes, what is the plan for how the rock would be handled separately from pre-operational ore that would be processed? If no, why? Action requested: Supplement the existing text to clarify the treatment of "low-grade ore." If this is an issue of rock classification, make it clear how this is addressed.
Comment 110	Lines 636 – 644. Clarification. The text should be expanded to provide more information on pre-operational ore handling and processing, and address whether pre-operational ore would need to be segregated by ore quality. Action requested: Modify text.
Comment 111	Lines 636 – 644. Clarification. The text should elaborate on oxidation or other potential issues that could affect the processing of the pre-operational ore, and whether it could prevent some of the ore from being processed. Action requested: Modify text.
Comment 112	Line 650. Clarification. How would crushed overflow ore be moved to the stockpile from the crusher and then back to the coarse ore stockpile? Understanding this part of the project allows insights on assessment of potential impacts from dust and dust control, spillage, and water management. Action requested: Modify text to address the item as appropriate.
Comment 113	Lines 636 – 658. Question. Why is the pre-operational ore stockpile / overflow ore stockpile not covered like the coarse ore stock pile? Action requested: Provide rationale for not covering this project feature.
Comment 114	Line 696. Clarification. Please confirm the gravity concentrate only recovers platinum, palladium, and gold as target metals. Cobalt and silver are recovered from the two flotation circuits, along with copper and nickel. Action requested: Confirmation.
Comment 115	Lines 718-732. Clarification. The text indicates reagents would be used in the copper flotation circuit. What type of reagents added? Action requested: Include complete listing.
Comment 116	Line 790. Clarification. This section on reclamation of the plant site does not address decommissioning the various contact water ponds, any contaminated soils, and water management in terms of where the latter would be routed. Also no mention of vegetation type. Because the site is near the water, the impact on run-off water quality and quantity that reaches the lake is dependent on what is re-planted and how permeable the site is. For example, conversion from forested to grassland vegetation can influence surface water run-off quality and quantity. Action requested: Modify text to provide detail as currently envisioned. If necessary, identify as a future information need in appropriate Future Scope section(s).

Number	Comment
Comment 117	Lines 797-798. Clarification. DNR notes Minn. Rules part 6132.3200, subp. 2(4)c, requires that all other equipment, facilities, and structures shall be removed and foundations razed and covered with a minimum of two feet of surface overburden. Action requested: Revise text to include the overburden requirement.
Comment 118	Lines 804-808. Advisory. Project-related changes in surface hydrology and wetlands at the plant site will need to be fully understood. Whether the closure condition results in return to the pre-project hydrology, or some derivative thereof, is necessary to estimate any permanent impacts on aquatic habitat such as Keeley Creek and wetlands. This will be a factor in determining the EIS's treatment of these issues in scoping. Future discussion item.
Comment 119	Line 815. Clarification. What type of cover would be restored? Because this part of the site is within shoreland management area, the type of vegetative cover is important for water quality and can be a factor in degree of change to runoff quality and quantity, and impacts to aquatic habitat. Action requested: Address the item and modify the text as determined appropriate.
Comment 120	Lines 821-823. Clarification. The tailings dewatering plant seems to be a series of buildings as in figure 3-13. Consider labeling the figure to coincide with the text or alter definitions. Action requested: Comment submitted on Figure 3-13.
Comment 121	Lines 826-828. Glossary. The reclamation material stockpile should be defined in the glossary. Action requested: Add to glossary.
Comment 122	Line 843. Future action. RGU notes there are specific methodologies for the siting of dry stack facilities. During consideration of potential locational alternatives, it will be necessary to describe how the site location was determined, including the methodology and parameters used in that siting. No action requested. Future discussion item.
Comment 123	Line 845. Clarification. First sentence. Remove the word "start." Action requested: Edit.
Comment 124	Line 848. Operations. Trucking tailings is not recommended during periods of precipitation. Action requested: Incorporate text that addresses the item.
Comment 125	Line 849. Clarification. The K value spec for the compacted tails should be provided. Sentence would read: "...placement on the drystack facility where it would be dozed into place and compacted with mobile equipment to a projected K value specification of X." Action requested: Make edit with K value included.

Number	Comment
Comment 126	Line 853. Figure 3-13. Clarification. Neither the document nor the figure appear to identify where contact water ditch and groundwater cut-off wall would be. It will be necessary to depict these features so that the resulting flow patterns can be assessed for potential impacts. Action requested: Address the item and modify the text and figure(s) as determined appropriate.
Comment 127	Lines 857-858. Clarification. The text reads: "...for as long as possible to delay impacts." It is unclear what "impacts" are being delayed. If for example that site clearing would be limited to each stage of footprint development, then the impacts related to covertype conversion would too occur in stages over the operational life of the project. Action requested: Provide clarity in the text as to what specific impacts are being delayed.
Comment 128	Lines 863-865. Clarification. The text indicates the likelihood of areas with exposed bedrock. Is blasting of the bedrock expected to occur at the DSF? Action requested: Describe need or reason blasting won't occur. Modify text to address the issue "yes" or "no."
Comment 129	Line 864. Question. Is 6 inches of sand adequate for a liner foundation over bedrock, especially if bedrock is sharp or jagged? Action requested: Provide response and modify text as warranted.
Comment 130	Line 872. Clarification/information need. There are no design or construction details of the ponds, for example volume. They seem to be bermed, which leads to the question of whether these would constitute some type of failure risk to downslope public waters? Most of these ponds are just uphill from public waters so the design is important. Action requested: Address the item and modify text as determined appropriate. Ensure the Future Scope section(s) identify the design specifications of these ponds and relevant engineered features are captured.
Comment 131	Line 874. Correction. Figure 3-17 does not appear to be the correct figure. Consider Figure 3-13. Action requested: Revise as needed.
Comment 132	Line 880. Clarification. Fig. 3-13 does not identify all components of water management infrastructure such as the contact water ditch. It also shows a culvert from the dry stack facility to an area that does not have a contact water pond. On Fig 3-31, this culvert is shown between the label for "E-house Switchyard..." and the label for "Emergency Pond." Action requested: Because this text specifically summarizes the content on Figure 3-13 (the correct reference), modify text and or figure to address the item. Action requested: A comment is provided at Comment 3-13.

Number	Comment
Comment 133	Line 886. Clarification. Is characterizing the tailings filter cake as being "dry" a common terminology for a product exhibiting a 13% to 16% moisture content? Action requested: Provide response and modify text as warranted.
Comment 134	Line 886. Information request. What is the moisture content of these tailings when saturated? Action requested: Provide response.
Comment 135	Line 886. Information request. What is the moisture content of these tailings when saturated? Action requested: Provide response.
Comment 136	Line 886. Operations. DNR notes these are optimal moisture contents. Dry Stack operations commonly do not achieve this level during the first year or two of operation and depart from this level during system upsets such as precipitation, snow, or high humidity. Action requested: Modify text to address the item.
Comment 137	Lines 888-891. Clarification. The text indicates a feature of the binder would be to "minimize movement of water" through the engineered backfill. Question: Is the hydraulic conductivity of the engineered tailings backfill known? Action requested: If yes, the text could be modified to read: "...increase structural integrity, minimize movement of water (estimated K = X), and enhance..."; also a sentence could be added on how it compares to the natural, undisturbed K values of the unmined surrounding material. If no, this is likely a future information need and point of discussion.
Comment 138	Line 905. Clarification. The design and construction of emergency pond is not clear. This is the only time it is mentioned except on Fig. 3-13. Action requested: Provide text to address the item.
Comment 139	Line 917. Clarification. Are conveyors covered? Action requested: Provide response. Modify text if warranted.
Comment 140	Lines 919 – 921. Clarification. The text indicates the load out building is being designed with a capacity to house 1.5 days of tailings production. A sentence should be provided that explains the basis for this capacity, especially in the event that tailings cannot be placed. In addition, if there are circumstances where it may be too small to house all tailings, the text should explain where the tailings would be stored before they are placed on the dry stack. Action requested: Address the issue and modify text as appropriate.

Number	Comment
Comment 141	Line 920. Clarification. The text indicates the load out building is being designed with a capacity to house 1.5 days of tailings production. 1.5 days of storage provides a small margin considering that dry stack tailings cannot be deposited in severe cold, during snow melt, and at other times of liquid precipitation, which can last for days. In addition, would the heated tailings draw moisture from the air while in storage? Action requested: Address the issue and modify text as appropriate.
Comment 142	Line 927. Clarification: Confirming the correct term for the backfilled tailings is "thickened tailings" and not "paste tailings." Thickened tailings are less dense than paste tailings. Action requested: Address the issue and modify text as appropriate.
Comment 143	Line 937. Closure. DNR notes that given the final design height of the dry stack facility, it would likely be a source of ongoing dust generation, even after closure. Even with a good topsoil, it would be difficult to maintain a good vegetative cover, especially during droughts. Action requested: Address the issue and modify text as appropriate.
Comment 144	Line 938. Clarification. Based on local elevation data (see also Figure 10-1), the statement "...similar to hills in the area..." is not particularly accurate. Action requested: Consider eliminating the sentence or provide a rationale to warrant retaining it. There is no apparent rationale from the lake view projected in Figure 10-1.
Comment 145	Line 943. Clarification. The K value spec for the compacted tails should be provided. Action requested: Make edit with K value included.
Comment 146	Line 943. Clarification. Overall slope is 4:1, what is actual side slope? Or is the side slope 4:1, and the overall slope with berms is less steep than 4:1? Action requested: Modify text to address the item.
Comment 147	Line 943. Operations. The slopes would be steeper than 4H:1V between benches. Rainwater erosion could be a problem. Maintenance could also be a challenge. Existing facilities are known for instances of sediment flows and pond filling during periods of intense rain. Action requested: Address the issue and modify text as appropriate.
Comment 148	Line 945. RGU note. More text to clarify, and provide more map detail, will be needed on development (e.g., phases) of the dry stack facility; also on benches and vertical intervals. No action requested. This will be assessed as a future information need in the proposed EIS scope.

Number	Comment
Comment 149	Lines 949-958. Clarification. Provide more information on how cold conditions affect tailings placement and how tailings would be handled during these periods. How was 5 degrees F chosen as the temp below which tailings can't be placed on the dry stack facility? More detail should be provided regarding dry stacking operations below freezing. Action requested: Consider breaking the treatment of dry stack facility operation into "above-freezing" and "below-freezing" sections to address these issues; if there's an appreciable break in management prescriptions at a higher temperature (than freezing), provide a rationale and use that.
Comment 150	Lines 949-958. Clarification. Provide more information on how wet conditions affect tailings placement and how tailings would be handled during these periods. More detail should be provided regarding dry stacking operations during wet conditions. Action requested: Consider breaking the treatment of dry stack facility operation into "wet" and "dry" sections to address these issues; if there's an appreciable break in management prescriptions at a particular rainfall rate, probability, or similar, provide the rationale and use that.
Comment 151	Line 955. Clarification. "Practicable" as applied in this instance should be better defined. Action requested: Address issue and modify text as appropriate.
Comment 152	Line 956. Clarification. If understood correctly it would not be possible to sequester thickened tailings underground during the first several years of operations. How would the large volume of filter pressed tailings be addressed for those early months that cannot be placed at the DSF due to cold and rainy conditions on the surface? Action requested: Address the item and modify text as appropriate.
Comment 153	Lines 969-977. Clarification. Details of the stages of construction are lacking. This is important when assessing potential water management impacts. Action requested: Provide additional detail as warranted.
Comment 154	Lines 978-979. DNR note. More detail on the two-dimensional stability analyses that were performed, and figures showing all 2D cross sections that were modeled, will be a future information needs. Stability analyses will likely be required to consider how higher than average annual precipitation and extreme precipitation events could affect stability. No action requested. Future information and discussion item.
Comment 155	Lines 978-990. Clarification. The text should include a sentence identifying the rationale as to why buttressing is not required as an additional added factor of safety to ensure the stability of the dry stack facility. Action requested: Add sentence to address item.

Number	Comment
Comment 156	Lines 978-990. DNR note. More detail on the geotechnical and hydrological properties of the tailings, including the unsaturated hydraulic properties for the tailings, will be a future information need. No action requested. Future information and discussion item.
Comment 157	Lines 978-990. Question. Is there the potential for tailings coming out of the filter plant to not always meet the target moisture content needed for maximum compaction? If so, the text should identify how these tailings would be handled. Action requested: Modify text to address the issue. May need to consider designing separate storage into the dry stack facility for these tailings if needed.
Comment 158	Line 985. Clarification. As noted previously, provide the estimated K value specification in noting the "well-compacted tailings." Action requested: Add value to text.
Comment 159	Line 985. Clarification. It is unclear what is intended by use of the term "structural zone." Action requested: Explain what this represents with the facility and modify text to clarify. Comment provided at Figure 3-19.
Comment 160	Line 1000. Clarification. As noted previously, provide the estimated K value specification in noting the "well-compacted tailings." Action requested: Add value to text.
Comment 161	Line 1006. Clarification. What is the likelihood of having contaminated materials on the tailings plant site? How would these be handled during restoration to prevent environmental impacts? Action requested: Address the item and modify text as determined warranted.
Comment 162	Line 1016. Clarification. It will be necessary to understand the projected lifetime of the proposed liner. This will inform the potential for impacts (e.g., water quality) in closure, potential monitoring and/or remediation measures, and play into financial assurance. Action requested: Modify text to provide any clarification as currently understood. Future discussion item.
Comment 163	Lines 1001-1018. Clarification. There needs to be an explanation of vegetation management plans on the dry stack. How is timely vegetation to be established with proposed progression (i.e., taconite stockpiles are reclaimed from the bottom up as mining progresses)? It is uncertain whether the establishment of vegetation is proposed in a way that allows a progression of reclamation and minimization of erosion. Action requested: Add text as requested.

Number	Comment
Comment 164	Line 1019. Clarification. The non-contact water diversion area described as a series of diversion dikes and ditches to divert water may cause direct and indirect wetland impacts. Wetlands in and around these areas need to be delineated and evaluated for potential impacts. Action requested: Comment provided in the wetlands section.
Comment 165	Line 1025. Clarification. Provide a reference of an existing figure for access road location and USFS road. Consider whether Figure 2-1 is appropriate. Action requested: Provide a citation or possibly a new figure.
Comment 166	Lines 1029-1031. DNR note. Sizing culverts to handle more than a 100-year, 24-hour storm event should be considered (as they may not be adequate). No action requested. Future discussion item.
Comment 167	Line 1049. Clarification. Change "ordinary high water mark" to "ordinary high water level elevation." Action requested: Text edit.
Comment 168	Line 1049. Clarification. The text states the water intake pump house would be located 100 feet from the OHWL on Birch Lake. Is that outside of the shoreland setback also? Action requested: Based on answer, modify text to read: "...ordinary high water mark of Birch Lake reservoir, which is within/outside? the shoreland setback."
Comment 169	Line 1049. Question. What is the OHWL elevation of Birch Lake? Action requested: Based on answer, please include within sentence. Sentence could read: "...ordinary high water level elevation of XX for Birch Lake reservoir, which is..."
Comment 170	Line 1049. Question. At what elevation above the 100-year flood elevation would the pump house infrastructure be constructed? MDH Well Rules Chapter 4725 state: "...to prevent the entry of flood water by: A. extending casing at least 5 feet above the regional flood level." Action requested: Respond to question and modify text to address.
Comment 171	Line 1050. Clarification. The text indicates a water intake pipeline would be installed underground and then proceed under the lake. Will this part of the project actually involve any physical activity below the Ordinary High Water Level? Action requested: Modify text to address the item, either yes or no.
Comment 172	Lines 1053-1055. Permit need. The proposed activity is subject to a DNR permit. Action requested: End the paragraph with a new sentence that reads: "A DNR Public Waters Work Permit will be required for the water intake structure proposed to be placed on the bed of Birch Lake reservoir."

Number	Comment
Comment 173	Line 1065. RGU note. Rather than speculate on conditions that may or may not be present at closure, more direct to just describe the two scenarios being proposed on the fate of the remaining equipment and infrastructure. This approach allows for a more direct assessment for future EIS scoping. Action requested: Edit sentence to read: "...removed and transported to an approved landfill for disposal or abandoned in place, either of which would be subject to required site closure provisions." Note that it will more than likely be required to remove the infrastructure from the lake.
Comment 174	Line 1085. RGU note. Characterizing the power supply as "sufficient" is not relevant to the project description. Simply noting power would be sourced from a regional power provider is fine. Action requested: Modify sentence to read: "...a regional power provider would supply the Project with power."
Comment 175	Line 1098. Clarification. DNR notes the reclamation and closure should plan for complete removal of the power infrastructure. Action requested: Revise text accordingly.
Comment 176	Line 1100. Guidance. Both DNR and MPCA will need a detailed water balance to assess TMM's claim that there would be no discharge of process/contact water. The water balance will need to cover different potential operating options (full operation, partial shutdown, temporary idle, and similar) and cover the full range of reasonably possible climatic conditions (for example). Action requested: Ensure the appropriate Future Scope sections of the document identify this as an information need. Future discussion item.
Comment 177	Line 1105. Regulatory Guidance. Four types of water for purposes of management are defined. Consider revising the definitions to be more consistent with rule and permit definitions. For instance, process water and contact water as defined would be considered wastewater and would require an NPDES/SDS permit to discharge (which the text indicates would not be required as there would be no discharge). Similarly, non-contact water would be considered stormwater associated with industrial activity, which would require a different NPDES/SDS permit to authorize discharge. Action requested: Consider the guidance in reviewing potential definitions of water being managed with the project. Apply revised definitions in next data submittal as appropriate. Future discussion item.
Comment 178	Lines 1106-1127. Guidance. Both DNR and MPCA will need a better definition/understanding of the proposed categorizing process of wastewater vs contact water, as it relates to both regulatory definitions and practical considerations. This will be necessary for the state to be able to fully assess potential environmental effects as well as what water quality permits may or may not be required for the proposed project. Action requested: Modify text if possible to address the item. Future discussion item.

Number	Comment
Comment 179	Lines 1106-1127. Question. Would any of the water described as "contact water" be proposed to be regulated under a general Industrial Stormwater permit? Action requested: Answer the question and modify text as appropriate.
Comment 180	Line 1113. Definition of contact water. It will be necessary to consider implications of definitions of the various types of water in terms of regulatory definitions. This can be a source of confusion. RGU- and regulatory-approved definitions for the EIS will need to not only make sense for describing the project but must also align with language and definitions in permits. It is possible contact water would be defined to also include water that comes in contact with development rock, or temporary waste rock, or pre-operational ore, or overflow ore. No action requested. Will require future consultation.
Comment 181	Line 1126. Definition. Because instances may be present where constituent loading occurs to construction water that requires additional management, the definition should be modified to reflect this potential situation. Action requested: Modify text to read: "Construction stormwater: direct precipitation or stormwater that has contacted surfaces disturbed by construction that could have increased constituent loading." Comment also provided in glossary.
Comment 182	Lines 1134-1137. Information need. MPCA and DNR will need a detailed chemical balance to assess whether all process water (and contact water?) would be managed in a closed loop with no discharge as offered in the text. The chemical balance will need to cover a range of potential operating scenarios, climatic conditions, and rock reactivity. For example, it is possible that constituents could build up to the point where it might interfere in the concentration process or adversely affect equipment. Action requested: Ensure the appropriate Future Scope section(s) addresses the item. Modify text as appropriate. Future discussion item.
Comment 183	Lines 1147-1148. Question. Would contact water need to be treated before it can be added to the process water? If so, the text should describe what type of treatment might be needed, and any bi-products (and their disposal) that might be generated during the treatment process. Action requested: Modify text to address the item.
Comment 184	Line 1158. Glossary. There needs to be a definition of mine supply water in glossary, which may include information from lines 1205-1207. Action requested: Create definition and add to glossary.
Comment 185	Line 1158. Clarification. The document is unclear as to the mine supply water source? In addition and as relevant, some explanation would be useful on the need to bring "mine inflow" back to surface rather than using it for "mine supply water." Action requested: Provide clarifying text and modify accordingly.

Number	Comment
Comment 186	Line 1159. Guidance. The naming convention for DNR Public water 69-3P in the EIS will be Birch Lake. First usage in all EIS-related documents will be as follows: Birch Lake reservoir (Birch Lake); subsequent usage as follows: Birch Lake. Action requested: Global revision requested throughout in text, tables, and figures.
Comment 187	Line 1159. Future information need. More figures are needed on the overall water management program. Action requested: Coordinate with DNR on how to address this request.
Comment 188	Lines 1179-1186. Clarification. The text lists a series of bullets for process water losses. Question: Could process water be lost via seepage through water collection ditches that are not lined with liners? Action requested: If the answer is "yes," revise and/or add to the bullet list accordingly.
Comment 189	Line 1205. Clarification. The document is unclear as to the mine supply water source? In addition and as relevant, some explanation would be useful on the need to bring "mine inflow" back to surface rather than using it for "mine supply water." Action requested: Provide clarifying text and modify accordingly.
Comment 190	Lines 1205-1207. Guidance. Mine supply water would be pumped underground from the process water pond and used for dust suppression and equipment requirements like drill water. Excess mine supply water would be recaptured through a series of sumps. This results in pumping of wastewater into the mine. This will be an issue of interest for permitting under the Class V injection well program. Action requested: Ensure the Future Scope of the appropriate section(s) addresses the item. Modify text as appropriate to address the item. Ensure Table 3-8 addresses the item.
Comment 191	Line 1212. Project description. The text states that the water from these pumps and sumps would be de-oiled and clarified. The section would benefit from a basic statement identifying the process for de-oiling, where it takes place, what equipment/process and to what degree, and what is the fate of the de-oiling byproduct? Action requested: Provide additional text to address item. If this is a complex procedure, providing high-level treatment is appropriate at this stage. A more expansive explanation can be provided in the detailed Project Description necessary for the EIS.
Comment 192	Lines 1225-1230. Question. The sediment pond accepts process wastewater, where the process wastewater pond is double-lined. Why is the sediment pond not similarly double-lined? Action requested: Address the question and modify text as appropriate.

Number	Comment
Comment 193	Lines 1228-1230. Guidance. It is noted that the proposed design will be subject to agencies' review and approval. No action requested.
Comment 194	Line 1229. Clarification. What is the K Value spec for the low-permeability compacted liner? Action requested: Modify text to include K value specification. Text could read: "...thick, low-permeability, compacted soil liner (K = XX) and would be sized..."
Comment 195	Line 1230. Clarification. The text should provide detail on how it would be done, frequency, and under what criteria would sediment pond be cleaned out and how would the removed sediment be managed? Action requested: Modify text to address the item.
Comment 196	Line 1231. Clarification. Are the ponds dugout into natural material, or are there constructed embankments? Action requested: Provide response and amend text as appropriate.
Comment 197	Line 1231. General Pond Comment (all lined ponds). Would synthetic pond liners include cover material? MPCA pond guidance recommends HDPE liners at least 100 mil for uncovered applications. Additionally, for exposed liner a dual - white on black - liner is recommended. Action requested: Conduct global document edit to address each instance of this item.
Comment 198	Line 1236. Design note. A rationale/modeling will need to be provided for the volume of the process pond (18.5 MG). No action requested. Future discussion item and information need.
Comment 199	Lines 1236-1241. Clarification. Regarding characterization of PMP, should be more specific than "probable maximum precipitation" when describing how the process water pond would be sized. Action requested: Modify text to address item.
Comment 200	Lines 1236-1241. Design recommendation. Should consider greater than 100 yr-24 hr storm event for sizing pond. Should have the ability to pump water out of the pond to another area in the event the maximum free board is reached. No action requested. Future discussion item.
Comment 201	Line 1239. Clarification. The process water pond would be designed with the appropriate freeboard to contain the probable maximum precipitation from direct precipitation for the process water pond "footprint." What is/would be the recurrence interval/event size for sizing? Action requested: Provide the answer and modify text to address the item.

Number	Comment
Comment 202	Line 1240. Need for footnote. The parameters used in calculating the PMP should be listed? Action requested: Add footnote to address the item.
Comment 203	Lines 1241-1245. Guidance. It is noted that the proposed design will be subject to agencies' review and approval. No action requested.
Comment 204	Line 1244. Clarification. The text reads: "...or engineer approved alternate geomembrane." MPCA notes that generally 40-mil HDPE is the minimum synthetic liner. Action requested: Consider this point and modify text as appropriate.
Comment 205	Line 1250. Question. Is the tailings dewatering plant the same as the "Filter Plant" (Fig. 3-13)? Action requested: Respond to the query.
Comment 206	Line 1262. DNR note. The potential for the draining of entrained water from the tails would be classified as draindown. Where would that water report to? Action requested: Modify text to address item.
Comment 207	Line 1263. Information need. The need for additional study is cited. All such future study needs should be captured in the Future Scope section regarding potential for draining of entrained process water. This should include the proposed mixing of process water and precipitation at the DSF. Action requested: Ensure that Future Scope section(s) identify the item as an information need, including as part of the project's water and chemical balances.
Comment 208	Section starting at 1267. Clarification. The text provides discussion of contact vs. non-contact areas, as well as a non-contact water diversion area. The layout of these areas all influence changes in surface hydrology and surface permeability. Additional detail will be necessary to inform the scoping process in offering the potential significance of impacts for the EIS. Providing supporting material, such as a map/figure identifying these areas, or a table giving area measurements, could be warranted. Action requested: Consider how to beef up the text, plus what additional supporting materials would be useful, to assist in better understanding the project and its potential impacts.

Number	Comment
Comment 209	<p>Lines 1280-1281 1236-1241 1403-1404 1405-1407 1468-1471 1471-1473 1656-1659. Guidance. In the project description, it is noted that contact water ponds (plant site contact pond and tailing site management contact pond [lines 1280-1281, 1403-1404] and diversion dikes (tailing management site [lines 1468-1471]) are to be designed for the historical 100-year 24-hour storm event. Based on the project description, the noncontact water ditches in the tailing management are to be sized for the historical 10-year 24 hour storm event, while the process waste pond is to be sized to contain 'probable maximum precipitation' (lines 1471-1473, 1236-1241). The dry stack contact water pond is to be sized for the 100-year historical snow pack [lines 1405-1407]. In the analysis, the sensitivity of these ponds and dykes to overflow under future climatic normals, e.g., frequency and intensity of forecasted future extreme precipitation events, should be evaluated. Action requested: Ensure Future Scope of appropriate section(s) identify this item as an information need. See comments at Lines 4202-4204, 4207-4212.</p>
Comment 210	<p>Lines 1280-1281. Design recommendation. Consider sizing plant site contact water ponds to handle more than a 100-year, 24-hour storm event (to provide greater certainty). Part of the thinking is to address changing climate and winter melt, especially to avoid circumstances that could result in adverse impacts to adjacent public waters. Also, the proposed sizing criteria may not be adequate to accomplish a "no discharge" project goal. Additional rationale and long-term water balance will be required. Action requested: Ensure Future Scope of appropriate section(s) address the item. Modify text as appropriate. Future discussion item.</p>
Comment 211	<p>Lines 1281-1285. Guidance. It is noted that the proposed design will be subject to agencies' review and approval. No action requested.</p>
Comment 212	<p>Line 1284. Design note. The text refers to a secondary soil liner with conductivity 1×10^{-6} cm/s. Wastewater soil liners typically require conductivity to be an order of magnitude lower, or at 1×10^{-7} cm/s. Action requested: Consider the item and modify text as appropriate.</p>
Comment 213	<p>Line 1288. Clarification. Please confirm that the contact water area does not include the concentrator or ore stock pile area? Action requested: Provide the confirmation and modify text to address the item. This needs to be clear as noted in comment for Line 1267.</p>
Comment 214	<p>Lines 1289-1291. Design note. Water must be able to be pumped down within a reasonable timeframe to ensure sufficient space for extreme/multiple storm events. Action requested: Consider the design recommendation and modify text as appropriate. Future discussion item.</p>

Number	Comment
Comment 215	Lines 1292-1293. Design note. Why does the design opt for LLDPE rather than HDPE for this structure? Action requested: Answer the question and modify text as appropriate.
Comment 216	Lines 1293; 1355; Figure 3-14. Clarification. Liner is 80 ml in text (line 1293), 60 ml in text (line 1355) and in figure. Action requested: Rectify the differences in the text and figure.
Comment 217	Lines 1293-1295. Design note. Great care will need to be taken when compacting material over a synthetic liner to ensure its integrity. Is any additional protection anticipated, such as geotextile? Action requested: Answer the question and modify text as appropriate.
Comment 218	Lines 1295-1297. Design recommendation. The proposed 10-year storm event capacity may not be sufficient. Another consideration would be where would the water go if a larger event? In addition, the text does not identify the duration (intensity) of the event; shorter, higher intensity events are generally more important for collection systems. Also, the proposed sizing criteria may not be adequate to accomplish the "no discharge" project goal. No action requested. Future discussion item.
Comment 219	Line 1302. Clarification. The text identifies that plant site roads would be divided into two categories based on water management...into contact (water) and non-contact (water) roads. Describe in more detail how this would be managed. For example, Figure 3-10 indicates a tire wash would be located at the Plant Site; is this the only tire wash? Another detail may be describing what project features are serviced by one or both categories. Action requested: Provide greater explanation on contact and non-contact roads.
Comment 220	Line 1308. Clarification. The text identifies that there would be three snow storage areas at the plant site. Describe in more detail how plant site snow-related runoff, both within and outside the designated snow storage areas, including where it would report to. Action requested: Provide greater explanation on snow-related runoff management.
Comment 221	Lines 1308-1311. Clarification. Add to the text how would snowmelt from the snow storage areas be collected? Action requested: Provide this detail to the discussion.
Comment 222	Lines 1309-1311. Clarification. Add to the text an explanation on why snow storage areas were designed to handle a snow water equivalent of 7.3 to 11.9 inches. Action requested: Supplement text with this detail.
Comment 223	Line 1310. Background information request. How many inches of snowfall per year have been accounted for in the three storage areas? Confirm storage is adequate within the projected snow water equivalent. Action requested: Provide a rationale for storage capacity against predicted annual snowfall.

Number	Comment
Comment 224	Line 1314. Clarification. According to the text describing the Tailings Management Site at Lines 826-828, this facility would stock suitable growth mediums stripped in preparation of the DSF footprint. Question: Would runoff from any of these materials be classified as contact water? Action requested: Edit text to address the answer to the question.
Comment 225	Lines 1314-1316. Future activity. More information on items 2 and 3 is needed before designating these as noncontact water. Runoff onto the liner may have contacted tailings and the areas of partial cover would need to be confirmed as noncontact water. Note that erosion of dry stack TSF is an ongoing concern within the industry. Action requested: Modify text if can address the item. Future discussion item.
Comment 226	Lines 1318-1320. Project description. The text indicates contact water would be used for dust control. Question: Would contact water need to be treated before it can be used for dust control at the tailings management facility? If so, elaborate on what type of treatment might be needed, and any by-products that might be generated during the treatment process. Action requested: Modify text to address the issue.
Comment 227	Line 1332. Clarification. Where is this contact water ditch? Where is the gravel blanket drain? How is contact water from the surrounding road diverted? Figure 3-13 lacks water management details. Action requested: Assessment of potential impacts would be aided by additional detailed maps of the three stages of tailings pile construction, where contact and non-contact water areas are clearly defined, ditching and berming is identified (as it may change with each stage?), and surface water flow patterns are clearer. Modify text as appropriate and create supporting figures.
Comment 228	Lines 1344-1346. Clarification. The sentence includes two separate statements separated by a comma. Question: Are those two separate reasons for underdrains, which would have an "and" after the comma? Or, does limiting phreatic head prevent the uplift of the liner prior to tailings placement? Action requested: Provide clarification and edit text if warranted.
Comment 229	Line 1350. Information requirement. Potential magnitude of seepage needs to be addressed to inform environmental review. Action requested: Ensure Future Scope addresses the item in the appropriate location (s) in the document.
Comment 230	Lines 1351-1354. Information need. The agencies agree that additional work is needed to address the potential magnitude and quality of seepage, as well as how it may affect the water and chemical balances. This all feeds into verification of "no discharge" goal for the project. Action requested: Ensure that Section 6.3 addresses the item. Future discussion item.

Number	Comment
Comment 231	Lines 1355-1360. Guidance. It is noted that the proposed design will be subject to agencies' review and approval. No action requested.
Comment 232	Line 1358. Clarification. The text as offered is unclear on how the compacted tailings would be applied. Rephrase to ensure clarity that compacted tailings protecting the liner would be on top not below as foundation. Action requested: Revise text to clarify.
Comment 233	Line 1365. Clarification. DNR notes the location(s) of the gravel blanket drain is not clear on fig. 3-13. Action requested: Provide the feature on future versions of this and/or other figures as appropriate.
Comment 234	Lines 1362-1368. Clarification. It appears that finger drains, blanket drain, and water ditch are described out of sequence of construction. Action requested: If this is correct, edit text to appropriately sequence these parts of the project.
Comment 235	Lines 1368-1369. Concurrence. DNR and MPCA concur the magnitude of drain down quantities is needed to assess potential impacts to water quality. Action requested: Ensure Section 6.3 identifies this as an information need. Future discussion item.
Comment 236	Lines 1378-1384. Clarification. The text identifies contact water ditches are a component of the DSF. Question: What is the largest size storm event that the contact water ditch is designed to convey? Action requested: Amend text to include the storm event size.
Comment 237	Lines 1378-1384. Design recommendation. Consideration should be given to designing the contact water ditch with a capacity larger than a 100-yr, 24 hr storm. More detail will be necessary on the proposed design. Action requested: Modify text as appropriate to address the item. Future discussion item.
Comment 238	Lines 1380-1382. Clarification. Why was a low permeability soil and not some sort of liner chosen to line the contact water ditch? Is some seepage expected through the contact water ditch if a low permeability soil is used? The proposed compaction for the slopes and base are of interest. Action requested: Answer the questions and modify text as appropriate.
Comment 239	Lines 1385-1393. Clarification. The text would benefit from more detail being provided on the design of groundwater cutoff wall/trench. Action requested: Modify text to address the item.

Number	Comment
Comment 240	Line 1394. Clarification. Would water from the haul road, which would likely have tailings spills, be able to run off outside of the tailings facility because the wall is under it? This could adversely affect the water quality of surface run-off. Action requested: Address the item and modify text as determined appropriate. Ensure Future Scope of appropriate sections address the issue.
Comment 241	Line 1396. Clarification. What is "restrict" in terms of flow of contact water? Action requested: Address the item and modify text as determined appropriate.
Comment 242	Line 1399. Design consideration. Maintaining positive pressure to the exterior of the grout curtain (part of the seepage cutoff trench), so that water pressure confines contact and drawdown water in the TSF, should be considered. Action requested: Address as appropriate for current document. Future discussion item.
Comment 243	Lines 1400-1409. Future information. Modeling should be provided to support the volumes of collection ponds. Action requested: Ensure the Future Scope of the appropriate section(s) addresses the item.
Comment 244	Line 1402. Information need. As noted earlier, the temporary construction of contact ponds during the stages of the tailings facility is an area where more information is needed. Action requested: Provide additional detail in next data submittal.
Comment 245	Lines 1403-1405. Design recommendation. Consider sizing tailings management site contact water ponds to handle more than a 100-year, 24-hour storm event (may not be sufficient). Also, the proposed design criteria may not be adequate to accomplish the project's "no discharge" goal. No action requested. Future discussion item.
Comment 246	Lines 1405-1407. Background information request. What snow melt rate was used when determining snowpack size the contact water ponds should be able to handle? Was a rapid melt scenario considered? How does a 100-year snowpack compare to a 100-year, 24-hour storm event and why was it chosen? Action requested: Provide background information.
Comment 247	Line 1407. Background information request. What is the water equivalent in the 100-year snowpack? Action requested: Provide background information.
Comment 248	Lines 1413-1419. Clarification. Cite existing figures as they align with the stages. Action requested: Amend text with figure citations.

Number	Comment
Comment 249	Lines 1413-1419. Recommendation. Consistent with text there would be benefit with development of new figures with the various stages (i.e., stages for figure 3-13 or 3-14). This would include location of interim ponds, for example. Action requested: Comment submitted in figures.
Comment 250	Line 1423. Clarification request. Is two feet of cover soil above the geomembrane enough to protect from long term degradation? Action requested: Provide text identifying the purpose of the two feet of cover soil.
Comment 251	Lines 1423-1424. Clarification. Understanding the project would benefit from a more-detailed description of "hydraulic barrier." Action requested: Modify text to address the item.
Comment 252	Line 1430. Clarification. The text provides discussion of contact vs. non-contact areas, as well as a non-contact water diversion area. The layout of these areas all influence changes in surface hydrology and surface permeability. Additional detail will be necessary to inform the scoping process in offering the potential significance of impacts for the EIS. Providing supporting material, such as a map/figure identifying these areas, or a table giving area measurements, could be warranted. Action requested: Consider how to beef up the text, plus what additional supporting materials would be useful, to assist in better understanding the project and its potential impacts.
Comment 253	Line 1432. Permit need. The diversions dikes and ponds may need dam safety permits. No action requested.
Comment 254	Lines 1452 and 1462. Clarification. In concert with text at Lines 1452 and 1462, the non-contact ditches are not clear on Figure 3-13 (e.g., thickness correct?). Recommend add legend or label as needed. Action requested: Comment provided in the figures section.
Comment 255	Line 1453. Future analytical need. Modeling/analysis needed for diversion dikes flow/control. Action requested: Ensure appropriate future scope section identifies this analytical need.
Comment 256	Line 1458. Guidance. In typical usage a dike is a means to prevent flooding of an area. Similarly, in typical usage if water is being held back or stored, the structure is a "dam. Action requested: If the structure is a dike, then modify language to read: "These dikes would not result in ponding of non-contact water from adjacent surface flows." If this is not an accurate statement, then modify language in entire paragraph replacing the term "dike(s)" with "dam(s)" where the structures do result in ponding or similar action.

Number	Comment
Comment 257	Lines 1464-1467. Clarification request. Cite appropriate figure or develop figure with greater detail to illustrate water management. For example, does this refer to the non-contact "pond" adjacent to contact water pond 5 on figure 3-13? Action requested: Add citation and possibly provide visual that better illustrates water management.
Comment 258	Lines 1468-1473. Design recommendation. Consider sizing diversion dikes to handle more than a 100-year, 24-hour storm event (may not be sufficient). No action requested. Future discussion item.
Comment 259	Lines 1470-1471. Clarification request. Why are non-contact water ditches designed to convey the peak flow from only a 10-year, 24-hour storm event with no erosion? Action requested: Provide clarification.
Comment 260	Line 1471. Clarification. Unclear whether the "overflow weirs" are the same as the diversion dikes? This is the only use of the term overflow weir. Action requested: Modify text to clear up usage of the term.
Comment 261	Lines 1477-1499. Regulatory guidance. Several water management activities appear to be classified as industrial stormwater. All areas that generate and may discharge industrial wastewater need permit coverage, and any discharges of industrial wastewater would require sampling. Note that industrial wastewater cannot be categorized together with upstream diversion water. For example, things like office buildings and parking lots would not be considered industrial wastewater, but maintenance areas, fuel storage, fueling areas, material handling, refuse sites, waste storage, plant yards, and buildings where industrial activities occur are considered industrial wastewater areas. The site drainage areas (with surface flow direction arrows) and the activities within those drainage areas need to be better defined and illustrated to determine areas where industrial wastewater is generated. Some areas that are now identified as non-contact water may need to be regulated as industrial wastewater. Action requested: Consider the regulatory guidance against how water is proposed to be classified at this time versus a more appropriate regulatory construct. Modify text as appropriate. Future discussion item.
Comment 262	Line 1479. Clarification. The text indicates management flexibility needed to address extreme storm events. Explanation would be valuable in distinguishing extreme storm events versus typical precipitation years. Two approaches appear viable. One is to add term "extreme storm event" to glossary and define in a way that contrasts with typical precipitation years. Second is to provide text at this location, either a new sentence in the paragraph or a footnote (where footnote avoided with termed defined in glossary). Action requested: Consider how to clarify text regarding extreme storm events.

Number	Comment
Comment 263	Lines 1486-1490. Guidance. Additional information will be needed to conclusively determine how runoff from each of these features would be managed from a regulatory perspective (i.e., process/contact water vs industrial stormwater, etc.). No action requested. Future discussion item.
Comment 264	Line 1489. Clarification. Based on the layout and discussion it seems like the area around the concentrator should be a contact water area. There would be concentrate stockpiled in the building, moved by heavy equipment, and loaded into containers. It seems likely the run-off around the building would pick up concentrate or its leachate with spillage and trucks exiting the building. With a public water near, any changes in run-off quality have the potential to be important. Action requested: Address the item and modify text as determined appropriate. Ensure that the issue is identified in the Future Scope of the appropriate section(s) in the document.
Comment 265	Line 1490. Clarification. It is unclear what constitutes the "slopes of the working pad" provided in the text. Action requested: Modify text to clarify.
Comment 266	Lines 1493-1496. Clarification request. The management of water from the non-contact area would seem to require some way to divert water at various points, potentially quickly in the case of 24 hour storms. Is that the intent? Is this applicable to the contact water area too? Action requested: If yes for either, add text to capture this aspect of water management.
Comment 267	Line 1507. Clarification. It is necessary to know what constitutes a "portion of the tailings dewatering plant" to assess potential impacts. The layout of this area influences changes in surface hydrology and surface permeability. Additional detail will be necessary to inform the scoping process in offering the potential significance of impacts for the EIS. Providing supporting material, such as a map/figure identifying these areas, or a table giving area measurements, could be warranted. Action requested: Consider how to beef up the text, plus what additional supporting materials would be useful, to assist in better understanding the project and its potential impacts.
Comment 268	Line 1518. General comment. Treating the undeveloped areas of the TSF as noncontact water requires consideration. Fugitive dust and precipitation runoff may impact undeveloped areas. Action requested: Future discussion item.
Comment 269	Line 1525. Clarification. The text ends the sentence at Lines 1525-1256 as "The footprint of dry stack facility stage 2..." Should this read stage 3? As written, it says the water from the tailings at stage 2 would be considered non-contact water. Action requested: Review comment and modify text as appropriate.

Number	Comment
Comment 270	Lines 1529-1530. Question. How would the eastern edge of stage 1 of the dry stack facility be separated from the stage 2 area during stage 2 construction and up to the point of tailings being deposited in stage 2? Action requested: Provide response. If part of the answer improves the understanding of the existing text, then modify text accordingly.
Comment 271	Line 1530. Question. How would the eastern edge of stage 1 of the dry stack facility be separated from the stage 2 area during stage 2 construction and up to the point of tailings being deposited in stage 2? Action requested: Provide response. If part of the answer improves the understanding of the existing text, then modify text accordingly.
Comment 272	Line 1530. Clarification request. Explain in detail how portions of the exposed dry stack facility liner would be managed as non-contact water. Action requested: Provide the detail and modify text as requested, which may be substantial enough such that the section warrants reorganization into two sections (?).
Comment 273	Line 1534. Clarification. How would the water from the non-contact areas be managed? Action requested: Address item and modify text accordingly.
Comment 274	Line 1535. Design Consideration. Given the relative small area here compared to the actual tailings deposition area, it seems like it wouldn't be saving much by diverting some of the water of the dewatering plant area as non-contact during large storm events. Under the current design, if there are diversion ditches, isn't there the possibility they would be intercepted by contact water at times (thus becoming "contact surfaces/structures themselves)? Recognizing the practical challenge of separating and changing flow directions, and given the proximity of the filter plant to Birch Lake (within 1000 feet), information requirements are high to assess the potential for impacts to water and natural resources. Action requested: Future discussion item.
Comment 275	Lines 1536-1542. Clarification. Provide greater detail regarding how the tailings dewatering plant manages contact and non-contact water. This detail not only improves the text but is necessary to determine how runoff from these features would be managed from a regulatory perspective (i.e., process/contact water versus industrial stormwater). Action requested: Modify text to address the item. Future discussion item.
Comment 276	Lines 1544-1549. Clarification. More detailed information on the design of the cover system is needed. This information would be used, in part, to help determine whether MPCA Solid Waste or SDS permits or other agency approvals are required. Action requested: Modify text to address the item.

Number	Comment
Comment 277	Lines 1555-1559. Clarification. What size storm event would the temporary non-contact water ditches be designed to convey and would they be lined? Action requested: Modify text to reflect the response to the question.
Comment 278	Line 1562. Clarification. Having two different drainage systems is hard to follow and understand in this text. Action requested: Assessment of potential impacts would be aided by additional detailed maps of the three stages of tailings pile construction, where contact and non-contact water areas are clearly defined, ditching and berming is identified (as it may change with each stage?), and surface water flow patterns are clearer. Modify text as appropriate and create supporting figures. See RGU Comment 227.
Comment 279	Line 1562. General comment. Text states: "...and would drain to the surrounding environment..." This level of detail does not allow for extrapolation of potential environmental effects. Timing of draining also requires understanding. Action requested: Supplement text as current design allows. Ensure Future Scope identifies this information need at the appropriate section(s). Future discussion item.
Comment 280	Line 1565. RGU note. Preliminary review of the information suggests contributing watershed impacts to Keeley Creek, in terms of a new surface hydrology in operations and closure, will receive detailed analysis in the EIS. A focus area would be to evaluate the degree to which "downstream surface water receptors" may or may not receive run-off in the same amounts, and at the same rates, as the pre-project or No Action Alternative. Action requested: Ensure Section 6.3 identifies this item as a future information and analytical need for the EIS.
Comment 281	Line 1565-1568. Information need. As proposed the tailings area would be converted from forest to grassland. It should be noted this type of covertype conversion can change the quantity, quality, and rates of run-off. Action requested: Ensure Section 6.3 identifies this item as a future information and analytical need for the EIS.
Comment 282	Line 1571. Future information need. How the contact water ditches and ponds are reclaimed is important to understand to assess potential for impacts in the closure condition. For example, how would they be drawn down and where would any remaining water, and any possible contaminants, be managed? Action requested: Ensure that reclamation plans for these facilities, including water management, be identified as an information need in the Future Scope of the appropriate section(s). Modify text as appropriate to address the item.
Comment 283	Line 1585. General note. DNR will seek further information regarding construction stormwater management, including ponds, collection, treatment, and conveyance in order to support the EIS impact analysis. No action requested. Future discussion item.

Number	Comment
Comment 284	<p>Lines 1603-1604. Clarification. This sentence seems contrary to the claim that all contact water would remain on the project site. Either specify what is meant by "discharged" in the context of no contact water leaving the site, or explain otherwise. As has already been noted, the management of contact water during construction, operations, and closure is of high interest. Statements that discharges would be "in compliance with permits" does not negate the need to fully detail what may be planned. Parameters of interest around any such discharge include: source/where; volumes; predicted water quality; timing; and destination. Action requested: Provide qualifying text to the paragraph on this discharge. Ensure that Future Scope in the appropriate section(s) addresses the item.</p>
Comment 285	<p>Line 1618. RGU note. Preliminary review of the information suggests contributing watershed impacts to wetlands, in terms of a new surface hydrology in operations and closure, will receive detailed analysis in the EIS. A focus area would be to evaluate the degree to which wetlands may or may not receive run-off in the same amounts, and at the same rates, as the pre-project or No Action Alternative. Action requested: Ensure Section 6.3 identifies this item as a future information and analytical need for the EIS.</p>
Comment 286	<p>Lines 1619-1620. Information need. Detail will be necessary on drain down and seepage water quality and quantity after closure. Action requested: Ensure that Future Scope in the appropriate section(s) addresses the item.</p>
Comment 287	<p>Lines 1619-1620. Information need. The possibility that vegetation changes due to normal successional processes, such as trees growing, could alter permeability is an information need for assessing potential impacts in closure. Action requested: Ensure that Future Scope in the appropriate section(s) identifies this as a future information need.</p>
Comment 288	<p>Lines 1625-1626. Clarification. The text states: "...it would be routed to non-contact water ditches." Action requested: Would non-contact water ditches remain in closure? If yes, ensure consistent treatment of this proposed closure condition and modify text as appropriate.</p>
Comment 289	<p>Lines 1619-1626. Clarification. The text indicates if planned water quality management efforts are no longer available, timing of this would be important. If treatment is indeed needed, then it would be necessary to know ahead of time, and at a minimum, include in cost estimates. In addition, appropriate water quality permitting would be required. Action requested: Provide explanation on possible treatment options and monitoring necessary to know if contingency actions should be triggered. Cost estimates will be a subject of future discussions.</p>

Number	Comment
Comment 290	Lines 1619-1626. DNR note. Drain down seepage would be considered "contact water" even if it meets applicable water quality standards. No action requested. Future discussion needed in determining whether this would be classified as some type of discharge.
Comment 291	Line 1622. RGU note: Expect future discussion on potentially available treatment technologies. No action requested. Future discussion required to determine treatment in the EIS.
Comment 292	Line 1627. RGU note: The SEAW will not include this section. However, it is likely that some of the information presented is appropriate to include in the document itself. No action requested.
Comment 293	Line 1630. DNR notes an important consideration in the project design stems from the location of the deposit. No action requested.
Comment 294	Lines 1634-1635. Guidance. If a discharge of process water or contact water is a possibility, even on an infrequent or contingency basis, appropriate water quality permitting (potentially a NPDES/SDS permit) would need to be addressed. Action requested: Ensure Table 8-1 appropriately captures the possibility of permitting for this project feature. Modify text as appropriate. Future discussion item.
Comment 295	Lines 1638-1639. DNR notes stating "eliminating a potential source of ARD" remains to be validated by a fully-reviewed kinetic testing program. No action requested.
Comment 296	Line 1645. RGU note. Inconsistent to state "no permanent infrastructure" would remain and then list permanent infrastructure that would remain. A possible revision might read: "After Project closure the only permanent infrastructure that would remain would be the dry stack facility and some non-contact water management features." Action requested: Modify text to remove contradiction.
Comment 297	Lines 1650-1686. Guidance. The project features listed in this section of text will have to undergo agency review and approval for each item's proposed design and performance of the various engineering controls. This will likely require additional information and discussion that could result in changes in the design to be able to be approved. No action requested. Future discussion item.
Comment 298	Line 1727-1729. Design consideration. Likely that consideration will be given to the proposed height of the dry stack relative to potential visibility and dust impacts. Action requested: Future discussion item.

Number	Comment
Comment 299	Lines 1756-1757. RGU note. The relationship of the current proposed action to any future activity remains to be determined. No action requested.
Comment 300	Line 1775. Permit need. DNR notes a dam safety permit may be needed (not yet determined). Action requested: See comment provided in tables section.

Section 4.0 Land Use

Number	Comment
Comment 301	Line 1780. RGU note. Section 4.1.1 describes land use in the vicinity at a variety of scales (e.g., regional; ~ 10 miles; 25 miles). It may be beneficial to break land use into a broad regional category along with a well-defined Project area section (~ 10 miles). Action requested: Consider reorganizing section to provide a consistent geographic scale in describing land uses and features relevant to the project context.
Comment 302	Line 1780. Existing recreation. Section 4.1.1 should note the Transmission Corridor would cross an existing Grant-In-Aid (GIA) snowmobile trail in the approximate location of NWNE sec 29, T61N, R11W. This trail is managed by the Ely Igloos snowmobile Club. Action requested: Modify the text to address the item. Text should be added indicating the project's compatibility with this recreation resource, including during construction, operations, reclamation, and closure. Identify measures incorporated into the proposed project to mitigate any potential incompatibility.
Comment 303	Line 1780. Existing recreation. Section 4.1.1 should identify that several recreational facilities are accessed by, or located on, the Spruce Road. The Spruce Road is within the project boundary. Facilities on the Spruce road include the South Kawishiwi River Water Access, Prospector Loop ATV Trail, Tomahawk Snowmobile Trail, and the Little Gabbro lake Water Access. The project should avoid ingress or egress impacts to Spruce Road. Action requested: Modify the text to address the item. Text should be added indicating the project's compatibility with access to the named recreational features. Identify measures incorporated into the proposed project to mitigate any potential incompatibility.
Comment 304	Line 1708. Existing recreation. Section 4.1.1 should identify the US Forest Service operates the South Kawishiwi Campground, which is located at the intersection of Hwy 1 and the Kawishiwi River. The facilities include a campground, swimming beach, pavilion, and DNR administered public water access. The project should avoid ingress or egress impacts to these recreational facilities. Other possible impacts include light and noise effects. Action requested: Modify text to address the item. Text should be added indicating the project's compatibility with access to the named recreational features. Identify measures incorporated into the proposed project to mitigate any potential incompatibility. See Sections 10 and 12.
Comment 305	Line 1802. Addition. These categories are appropriate land uses to add to the list provided: Water oriented commercial businesses (e.g., resorts; houseboat rental; fish guiding; other); Lake shoreland residences. Action requested: Modify text.
Comment 306	Line 1804. Clarification request. Review of Figure 4-4 appears to indicate both resorts and parks occur within 10 miles of the Project, which is analogous to the distance to Babbitt and Ely. Action requested: If accurate, then modify bullet text to read: "Recreation (resorts, parks).

Number	Comment
Comment 307	Lines 1805-1822. Clarification. This area is primarily forested and the main uses currently are for timber production and recreation. Recreation is a high use of the area, including on Birch Lake and connected waters. It is noted that mining and industrial uses of the area have not occurred, although there is a history of mineral exploration. Past mineral exploration has left little footprint on the land. Action requested: Modify text as appropriate to make characterization of land use better reflect the existing project area.
Comment 308	Line 1806. Text clarification. The text reads the Project area has a history of both mineral "exploration" and "development." Depending on the defined boundary of "Project area," uncertain that "development" applies. Clearly however that "exploration" activity applies. Action requested: Modify text by dropping "development" unless rationale for inclusion is supported.
Comment 309	Line 1815. RGU note. The introduction could be read to imply the Project area exhibits commercial and industrial uses, which is not accurate. Action requested: Modify text to drop introductory qualifier for sentence to read: "The region is a destination for recreation."
Comment 310	Line 1817. Clarification. DNR notes the Project area seems closer than 5 miles to BWCAW. Figure 1-1 shows the BWCAW 2 miles from the northeast corner of the Project Area. Figure 4-1 shows the BWCAW 3 miles from the northeast corner of the Project Area. Action requested: If this is correct, it may be more accurate to state as a range (e.g., 2 to 5 miles) across the various project features.
Comment 311	Lines 1833-1837. Information need. Assessing potential impacts to recreation resources requires a full description of the recreation management classifications of state and federal ownerships, including permitted uses and targeted experiences. As appropriate it may be relevant to identify SNF recreation classifications for the greater area around the project as a function of the extent of project impacts. There are areas of Semi-primitive Motorized Recreation both to the northeast and south of the project. The parts of the Project area within the SNR are classified as General Forest, which too specifies recreation settings and permissible activities. More broadly, the non-motorized recreation use that is present typically occurs on lakes, trails, portages, and low standard roads. This management type is along all the shore of Birch Lake and the South Kawishiwi and there are two back country campsites immediately adjacent to the project site; these should be acknowledged. There are also two USFS campgrounds; the South Kawishiwi Campground is immediately adjacent to the Project area according to Figure 12-1, while the Birch Lake Campground is located to the west-southwest of the DSF across Birch Lake. Action requested: Modify text to better account for recreation classifications and features in the project vicinity. Ensure that the Future Scope of the appropriate section(s) address the item as determined appropriate.

Number	Comment
Comment 312	<p>Lines 1857-1858. RGU note. EQB guidance states for RGUs to consider conservation lands as the following: "Conservation lands. Typical land uses that fall in this category include Wildlife Management Areas (WMA), Waterfowl production areas, Scientific and Natural Areas (SNA), wildlife refuges, conservation easements, and potentially other federal, state, and local programs designed to conserve natural resources;" EAW Guidelines (2013). Figure 4-3 identifies both a "Research Natural Area" and "Unique Biologic Area" under the Superior National Forest Plan Management Areas. Action requested: Modify text to align with EQB guidance.</p>
Comment 313	<p>Line 1859. RGU note. EQB's EAW Guidelines (2010) cautions RGUs that "the EAW should not include information that serves only to justify or promote the project but is otherwise irrelevant to the purpose of an EAW." The Scoping EAW will follow this guidance for Item 9 - Land Use. No action requested.</p>
Comment 314	<p>Line 1883. Clarification. There are residences on the west shore of Birch Lake that are very close (appears to be less than a mile) from the project and within Residential Recreational zoning classification. For the Inset Map on Figure 4-4, confirm that each "blue square" represents a private residences to ensure all private (residential) properties are identified. Action requested: Modify text to address residential properties on the west shore of Birch Lake across from the project. Comment provided in the figures section.</p>
Comment 315	<p>Line 1888. Clarification. Although detail provided on the land use plan, little text is devoted on any relevant ordinances. No mention here that much of the project is within the Shoreland management zone (within 1,000 ft. of a lake and 300 ft. of a stream), though it is partially shown on Fig. 4-3. Action requested: Consider comment and modify text as determined appropriate.</p>
Comment 316	<p>Line 1907. Clarification. Does the Lake County Plan end in 2013? The reference document listed at Lines 6842-6843 was effective June 2017. Action requested: Confirm duration compared with project activities; modify text if warranted.</p>
Comment 317	<p>Line 1908. Clarification. Other potentially relevant land use plan goals, which will have to be assessed for project compatibility, include: General Goal 1: C5) Work with federal and state officials to retain resident hunting, trapping, and fishing rights on publicly owned lands and waters, and C6) Work with applicable entities to maintain public access to all public land and waters in Lake County. Under general Goal 2: Recreational/ Cultural, there is Goal D) Encourage preservation of historic sites, E) Work with State and Federal agencies to ensure residents' continued rights to hunt, fish, and trap and manage forest land within the County, and H) Support the multiple-use of public lands and recognize the importance of all recreational activities. Action requested: Amend the text as appropriate to address the item.</p>

Number	Comment
Comment 318	Line 1909. Clarification. The "Land Use Goal: Support growth that is orderly and planned" is actually a part of a larger goal with multiple categorized goals. General Goal 2: Assure a balance between development and quality of life considerations. Land Use Goal: Support growth that is orderly and planned. Action requested: Modify text to address the item.
Comment 319	Line 2049. Clarification. The management areas of the proposed project are identified in the SNF Plan are "Semi-primitive Non-motorized Recreation" and "General Forest" (https://www.fs.usda.gov/Internet/FSE_DOCUMENTS/fsm91_050602.pdf). This section should provide more information on the intent of the management areas as the basis of assessing the treatment of this topic in EIS scoping. Action requested: Modify text to address the item as determined appropriate.
Comment 320	Line 2049. Clarification. The SNF Resource Management Plan relies on monitoring and evaluation to improve ongoing management and inform planning decisions. The 2017 Superior National Forest Monitoring and Evaluation Report allows the USFS to determine how well the desired conditions, goals, objectives and outcomes of the Forest Plan have been met. Potential applicability of the findings of this report should be considered. Action requested: Modify text to address the item as determined appropriate.
Comment 321	Line 2072. Clarification. DNR notes that planning for the cited plan is underway, while the previous applicable subsection plan is out of date. Action requested: Modify sentence to read: "...drafted with an anticipated completion <u>in the near future</u> . The state forest management units..."
Comment 322	Line 2077-2085. Clarification. The text identifies that Figure 4-3 identifies the Shoreland Zoning areas around a number of water features. The text would benefit from discussion of the "additional shoreland zoning requirements" to which the project may subject. Action requested: Add some detail to the text.
Comment 323	Line 2079. Clarification. Activities on DNR administered state lands may require compliance with all applicable municipal, county and state laws, ordinances and regulations, and obtaining and paying for all leases, licenses, easements and permits as may be required by its use. Action requested: Modify text by breaking out state-administered lands from the joint sentence with federal lands. In new sentence use same language regarding state lands plus clarifying text.

Number	Comment
Comment 324	Line 2085. Clarification. At the appropriate location provide a bulleted listing of all project elements that occur within shoreland districts that is consistent with Figure 4-3. According to the figure, the Plant Site, DSF, and Transmission Corridor encroach within designated shoreland districts. Action requested: Review figure and ensure text and figure are consistent. RGU recognizes there may be a data layering issue that will be rectified in future submittals.
Comment 325	Line 2133. Clarification. Shoreland zoning involves more than buildings meeting setback requirements. This section on shoreland zoning provisions should include text identifying the specific controls on shoreland alterations (Sec. 7.08), shoreland excavations (7.09), and road location (Sec 7-10) that are likely relevant to the proposed project. For example, greater detail will be necessary to assess the proposed amount of excavation and vegetation removal for impacts. Action requested: Modify text to address the item.
Comment 326	Line 2134. Information request. What are the zoning requirements for Keeley Creek? Action requested: Modify text with zoning requirements for Keeley Creek.
Comment 327	Line 2137. Addition. Need to list public waters Keeley Creek and Unnamed tributary to Bob Bay (Birch Lake) also. Action requested: Modify text to address item.
Comment 328	Lines 2138-2139. Clarification. Sec 7.05 Standards For Commercial, Industrial, Public, and Semipublic Uses states setback for non-water oriented commercial structures is greater than 100 ft. (or requires vegetative screening). Action requested: Modify text to address the item.
Comment 329	Line 2143. RGU note. DNR will further develop the relevant information for this section. No action requested.
Comment 330	Lines 2144-2149. Clarification. Minn. Rules Chapter 6120 are the minimum standards developed by the state and the standards adopted by LGUs, who administer the rules. The state is the administrator only on state-owned land. Action requested: Clarify text to match DNR authority.
Comment 331	Line 2153. Clarification. If the Project type in St Louis County is classified as electrical lines and substation, and because the Project crosses RES-5 and FAM-1 zoning, then the substation component may require a performance standard permit. Such an approval would not be required for the electrical lines part of the project. Action requested: Confirm if indeed this is the project type for St. Louis County, and if yes, confirm whether such a permit is required. Modify text as appropriate. Add this approval to Table 8-1 if needed.

Number	Comment
Comment 332	Line 2293. Coordination. DNR will engage the Fond du Lac Band of Lake Superior Chippewa, and any other Tribes with usufructuary rights, on any tribal use of resources in the Project area and 1854 Ceded Territory. No action requested.
Comment 333	Line 2316. Text clarification. The SEAW item addresses compatibility with all the respective plans. Assigning the term "impact" to any project incompatibility with the respective land use plans is awkward. Action requested: Either drop the first two sentences found in Lines 2315-2317 and start the section to read: "The Project would be compatible...;" or propose different language.
Comment 334	Line 2317. RGU note. DNR will assess the Project compatibility with planned land uses identified by Lake County, St. Louis County, the City of Babbitt, and the USFS. No action requested.
Comment 335	Line 2318. Guidance. The RGU will assess the Project proposed resource extraction purpose for compatibility with planned land uses identified by Lake County, St. Louis County, the City of Babbitt, and the USFS. The Scoping EAW will identify any incompatibilities and propose the treatment of the issue in the EIS. No action requested.
Comment 336	Line 2320. Guidance. The RGU will assess the Project for compatibility with the Lake County Comprehensive Plan and Land Use Ordinance. The Scoping EAW will identify any incompatibilities and propose the treatment of the issue in the EIS. No action requested.
Comment 337	<p>Line 2321. Clarification. Because some of the land would be removed from public use, this may be in conflict with goals of the comprehensive plan, in particular the Recreational/Cultural Goals of the Lake County Land Use ordinance. These elements in the comprehensive plan may be relevant to the project:</p> <p>Recreational/Cultural Goal - Support the establishment and maintenance of recreational facilities and systems:</p> <p>C) Encourage cultural partnerships.</p> <p>D) Encourage preservation of historic sites.</p> <p>E) Work with State and Federal agencies to ensure residents' continued rights to hunt, fish, and trap and manage forest land within the County.</p> <p>H) Support the multiple-use of public lands and recognize the importance of all recreational activities.</p> <p>No action requested. The RGU will assess compatibility of project with the county's land use ordinance.</p>

Number	Comment
Comment 338	Line 2326. Clarification. There is a need to see if there are potential conflicts with the project proposed within a priority watershed: Kawishiwi. Action requested: Assess the item and modify text as determined appropriate.
Comment 339	Line 2328. Clarification. The text states "...This plan identifies six high priority watersheds, none of which are included in the project area." The Lake County local water management plan identifies the Kawishiwi watershed as one of the six priority watersheds. Action requested: Confirm the project is not in the Kawishiwi River watershed. Figure 6-2 appears to place parts of the DSF, plants site, vents, and parts of the transmission corridor within the South Kawishiwi subwatershed. Modify text if necessary to reflect location in the Kawishiwi River watershed, and if yes, provide text addressing project compatibility with the plan.
Comment 340	Line 2355. RGU note. The potential significance and subsequent treatment in the EIS remains to be determined regarding the project's potential compatibility with planned land use as identified in available SNF Land and Resource Management Plan. Potential areas requiring consideration include non-motorized recreation and forestry. No action requested.
Comment 341	Lines 2385-2387. RGU note. The potential significance and subsequent treatment in the EIS remains to be determined regarding the project's potential compatibility with planned land use as identified in available comprehensive plans and other applicable plans for land use, water, or resources management by a local, regional, state, or federal agency. No action requested.
Comment 342	Line 2384. RGU note. The potential significance and subsequent treatment in the EIS remains to be determined regarding the topic of land use. No action requested.
Comment 343	Line 2390. Text clarification. The SEAW item addresses compatibility with all the respective plans. Assigning the term "impact" to any project incompatibility with the respective land use plans is awkward. Action requested: Either drop the first two sentences found in Lines 2389-2317 and start the section to read: "The Project would be compatible...;" or propose different language.
Comment 344	Line 2391. Information request. It is stated that: "The Project would likely require conditional use permitting in Lake County and St. Louis County and would be compatible with the underlying zoning." Project aspects that may lead to the need for conditional zoning should be identified. This text should also note any need for a performance standard permit for the electrical substation. Action requested: Modify text to specify what likely requires conditional use permitting, and possible need for performance standard permit.

Number	Comment
Comment 345	Line 2395. RGU note. The treatment in the EIS remains to be determined regarding the project's potential compatibility with planned land use as identified in the zoning and management codes for Lake County. No action requested.
Comment 346	Line 2398. Information need. Confirm that the ventilation access road is compatible with the zoning as proposed. Action requested: Modify text to include this project feature and compatibility with zoning.
Comment 347	Line 2399. Clarification. Shoreland zoning involves more than buildings meeting setback requirements. For example the road to the water intake building may not meet setback. Greater detail will be necessary to assess the proposed amount of excavation and vegetation removal for impacts. Action requested: Modify text to address the item.
Comment 348	Line 2399-2402. Clarification. It appears that portions of the Transmission Corridor cross shoreland setbacks. If this is true, these locations within the shoreland setbacks should be identified. Action requested: Modify text to address issue.
Comment 349	Line 2405. Clarification. It appears that portions of the tailings management site fall within the shoreland setbacks. If this is true, these locations within the shoreland setbacks should be identified. Action requested: Modify text to address issue.
Comment 350	Line 2407. RGU note. The treatment in the EIS remains to be determined regarding the project's potential compatibility with planned land use as identified in the zoning and management codes for Lake County. No action requested.
Comment 351	Lines 2407-2408. Clarification. Project needs to be consistent with LGU standards as the LGU may have stricter standards than the state. Identify where project is not compatible with LGU requirements for lands under state jurisdiction. Action requested: Modify text to address issue.
Comment 352	Line 2417. Future action. DNR notes the amount of tree clearing for this project should be compatible with the intent (or actual ordinance) of Shoreland Zoning. In general, structures are not placed within the Shoreland Impact Zone. No action requested. Future discussion item.
Comment 353	Line 2425. Number guidance. Action requested: Lead the value ".03%" with a zero to read: "0.03%." Assign this rule globally in the document.

Number	Comment
Comment 354	Line 2429. RGU note. The potential significance and subsequent treatment in the EIS remains to be determined regarding the topic of zoning impacts. No action requested.
Comment 355	Line 2431. RGU note. DNR will identify any Project incompatibilities with applicable plans, zoning, or other land use measures before identifying treatment of the issue in the EIS. No action requested.

Section 5.0 Geology, Soils, Topography

Number	Comment
Comment 356	Line 2441. Text correction. The Duluth Complex is not referred to as a "geologic group." It is part of the Midcontinent Rift Intrusive Suite. In contrast, the North Shore Volcanic Group is a "geologic group." Action requested: Revise text accordingly.
Comment 357	Line 2442. Clarification. Use of the term magmatic rocks is unusual and potentially confusing. The Duluth Complex is almost exclusively comprised of igneous rocks. Classic terminology distinguishes two types of igneous rocks: plutonic and volcanic; or intrusive and extrusive. Action requested: Revise text accordingly.
Comment 358	Line 2460. Text correction. The Duluth Complex is not composed of magmas. Action requested: Revise text accordingly.
Comment 359	Lines 2465-2469. Clarification. Is the SKI also bordered by the Bath Tub Intrusion? Action requested: Revise accordingly.
Comment 360	Lines 2467-2468. Text wording. Probably best to use a consistent "direction to feature" sequence through the entire sentence. The sentence is otherwise unclear. Bullets may be easier to accomplish. Action requested: Reword for clarity.
Comment 361	Line 2485. Additional information. Discuss the potential for incorporation of Duluth Complex rock in glacial material (i.e., scouring of ice sheets including Duluth Complex outcrop during deposition). Action requested: Address the issue and incorporate into text as warranted.
Comment 362	Line 2574. Text edit. Action requested: Heading should be changed to "Unconsolidated Material Thickness."
Comment 363	Line 2582. Clarification. The use of Acid Rock Drainage (ARD) here is out of context. Typically ARD is reserved for natural occurrences where acid is released from weathering rocks. The term Acid Mine Drainage (AMD) is more appropriate here because the topic is anthropogenic influences that may impart the release of acid. See Rimstidt and Vaughan (2003) <i>Pyrite oxidation: A state-of-the-art assessment of the reaction mechanism, in Geochimica et Cosmochimica Acta</i> vol. 67 no. 5 pp. 873-880, <i>Section 1. Introduction and references within that section</i> . Action requested: Consider point and revise text accordingly. If relying on the proposed literature, add to reference material.

Number	Comment
Comment 364	Line 2583. Clarification. ARD is not the correct term. Because the required EIS is related to a mining action, therefore the characterization work being performed would be to evaluate the potential for AMD, where AMD is not the result of natural oxidation. Most commonly AMD is from the excavation of earth materials taken from a geochemical stable environment and placed in a highly reactive environment. Action requested: Modify text. <u>Apply global fix to document UNLESS there is a circumstance where usage of the term ARD is appropriate as DNR is defining it.</u>
Comment 365	Line 2584. Clarification. The text references "stages" in a series of chemical reactions that is somewhat unclear. The series of chemical reactions that constitute sulfide oxidation are acid generating. Action requested: Clarify text to better state what is expected.
Comment 366	Line 2585-2587. Text correction. The reaction rate of sulfide oxidation does not depend on mineral content or climate. Action requested: Edit text.
Comment 367	Line 2586. Clarification. Action requested: Delete the word "environmental."
Comment 368	Lines 2589-2600. Clarification. Paragraph needs to be rephrased to discuss chemical weathering or chemical weathering trends rather than weathering patterns. Action requested: Elaborate and revise text.
Comment 369	Line 2601. Clarification. Sulfur content is an indirect measure of the controlling factor for ARD. The actual controlling factor is the proportion of exposed sulfide mineral surfaces relative to acid neutralizing mineral surface area. This concept needs to be incorporated into the text. Action requested: Add perspective to discussion.
Comment 370	Lines 2603-2609. Clarification. This assertion of higher total sulfur content rocks being capable of maintaining a circumneutral leachate only occurs for a very specific sulfur content and bulk mineralogy. Action requested: Provide more clarity and revise to make this an accurate statement.
Comment 371	Lines 2603-2609. Information need. Relying on a so-called lag time to acid generation to implement controls to avoid development of AMD requires additional investigations and analysis beyond what has been conducted to date. A complete plan will be needed prior to extraction of this type of rock. Action requested: Ensure Section 5.3 identifies this as an information need. Future discussion item.

Number	Comment
Comment 372	Line 2603-2609. Clarification. The assertion that higher [should state "lower"] total sulfur content rocks being capable of maintaining a circumneutral leachate only occurs for a very specific sulfur content and bulk mineralogy. Action requested: Provide more clarity and revise to make this an accurate statement.
Comment 373	Lines 2603-2609. Information need. Additional supporting evidence that the specific sulfur content and bulk mineralogy of the material would result in maintaining a circumneutral leachate is needed. Action requested: Further analysis will be needed of these rocks to determine if this is applicable to this project. Ensure Section 5.3 identifies this as an information need. Future discussion item.
Comment 374	Line 2610. Clarification. The text offers an oversimplified description of the control on metal leaching. Acid drainage would either not occur or the waste would be managed to avoid, thus the control on metal leaching is more about pH and substrates for sorption. Action requested: Modify text.
Comment 375	Line 3612. Clarification. Because the material characterization program is not finished, using the term "developed" gives the impression of an approved set of activities even though it is later acknowledged to be "ongoing." Action requested: Revise text to read: "TMM is developing a Project-specific material characterization program..."
Comment 376	Line 2615-2617. Clarification. DNR notes the tailing characterization work is only partly started; there is also no approved tailing kinetic testwork that could inform the ARD and ML of TMM pilot tailings. The current status of activity should be better reflected. Action requested: Modify first bullet to read: "Preliminary characterization of sulfide mineralization..."
Comment 377	Line 2618-2619. Clarification. DNR notes DNR-LAM has not reviewed or been provided any documentation regarding utilization of characterization data to inform material management. The current status of the activity should be better reflected. Action requested: Modify second bullet to read: "Future utilization of characterization data..."
Comment 378	Line 2620-2621. Clarification. DNR notes DNR-LAM has not reviewed or been provided any documentation regarding incorporating characterization program data for understanding impacts to water quality. The current status of activity should be better reflected. Action requested: Modify third bullet to read: "Develop a plan for inclusion of data obtained ..."

Number	Comment
Comment 379	Line 2622. Clarification. It is unclear what constitutes "ARD analysis?" Is this supposed to be Acid Base Accounting for determining the acid generation potential? See also line 2634. Action requested: Modify text to provide a more precise description of what the "ARD analysis" being referenced is.
Comment 380	Lines 2623-2625. Clarification. No definite chemical classification has been made as to what constitutes "development rock," which would be a management-based classification sub-category of waste rock. Therefore, discussion regarding the ARD potential of development rock is premature as it has not been defined. Action requested: Modify text to acknowledge uncertainty in any prediction of ARD potential for development rock until it is defined.
Comment 381	Lines 2623-2625. Clarification. At this time the statement is unsupported and thus is false as offered. The existing rock characterization data is not well suited to make determinations of ARD potential. This is because the static tests performed are designed for carbonate bearing rocks that are importantly beyond the very modest amounts found in the Duluth Complex. Furthermore, the existing characterization indicates that about half of the ore is acid generating. Action requested: Eliminate the sentence or revise the text to provide a more accurate assessment based on the known limitations of the existing work to date.
Comment 382	Lines 2623-2627. Clarification. Note that this is only based on static testing, not kinetic. Action requested: Modify text to specify that only static testing has occurred, not kinetic. Should occur early in the paragraph.
Comment 383	Lines 2630-2633. Clarification. Regarding the "planned future testing" program noted in the text, what is necessary to inform the EIS and permitting is subject to DNR approval. Starting the sentence as "Planned future testing" gives the impression of a fully-vetted and approved methodology that has not happened. It is also noted this has not been indicated in the current waste characterization program. Action requested: Eliminate the word "planned" and rather modify the text to treat this as a future information need. Ensure this is identified in Section 5.3.
Comment 384	Lines 2642-2643. Clarification. The tailing kinetic data discussed was conducted outside of the waste characterization program that is being developed with the DNR. Based on the current understanding that the test duration was 20 weeks, this data will not be applicable to the long term evaluation required for tailings reactivity. Although the DNR has not received or reviewed the data, the DNR does not expect to rely on this information in assessing ARD potential of tailings. Action requested: Further discussion item.
Comment 385	Line 2648. Reference request. Please provide Wood, 2019 reference on subsidence and crown pillar stability. Action requested: Provide this report to DNR upon receipt of these comments.

Number	Comment
Comment 386	Line 2668. Clarification. It is not clear how a comparison of modeled subsidence to heave of unconsolidated material is relevant. Action requested: Modify text to provide some additional context in what's offered. Is this to allow the reader a relative comparison from another more well-known phenomenon?
Comment 387	Lines 2754-2756. RGU note. DNR will need to review available information regarding subsidence and crown pillar stability, and soils and topography, before identifying the treatment of the issue in the EIS. No action requested.
Comment 388	Line 2766. Information need. The work plan needs to include waste rock characterization. Action requested: Add the term "waste rock characterization" to the work plan list.
Comment 389	Lines 2771-2772. Clarification. The last bullets notes a "field testing" component. Is this referencing a field testing program that has already begun, or is this a future data collection effort? Action requested: Modify text to clarify the field testing reference. Future discussion item.
Comment 390	Lines 2773-2774. Future action. If the current focus is to conduct more static testing, those plans have not been provided to the DNR. Action requested: Future discussion item.

Section 6.0 Water Resources

Number	Comment
Comment 391	Line 2780. Note. In general, this section lacks information on Keeley Creek that will be necessary to assess whether potentially significant issues require evaluation in the EIS. This will be considered over the development of the Scoping EAW and proposed EIS scope. Action requested: Consider where information regarding potential project impacts are lacking and ensure Section 6.3 identifies how the information will be provided for the EIS.
Comment 392	2785 Guidance. Clear identification of impaired and high value surface waters (wetlands, streams, lakes) and analysis considering potential impacts would be beneficial. No action requested. Future discussion item.

Number	Comment
Comment 393	Line 2816. Clarification. The bulleted list of Project-specific watersheds should include the Stony Creek watershed and be depicted in Fig. 6-4. Action requested: Modify the text and figure to address the item or provide a rationale why this should not be the case.
Comment 394	Line 2826. Guidance. The naming convention for DNR Public Water 69-3P in the EIS will be Birch Lake. First usage in all EIS-related documents will be as follows: Birch Lake reservoir (Birch Lake); subsequent usage as follows: Birch Lake. Action requested: Global revision requested throughout in text, tables, and figures.
Comment 395	Line 2832. Reference. The Water Management Plan needs to be referenced in the document for the Winton Hydroelectric Station. Action requested: Modify text to include the reference. Add reference to Section 17.
Comment 396	Lines 2866-2871. Available data. The copper nickel study from the 1970s has a large amount of stream flow and water quality data that should be included, as appropriate, in future evaluations. Action requested: Assess utility of this dataset in relevant analyses. Consider noting in Section 6.3 any requirements for this data.
Comment 397	Line 2878. Data availability. Is there data available for Keeley Creek? Action requested: Answer the question and modify the text as appropriate. Ensure Section 6.3 identifies this item as a potential information need for the EIS.
Comment 398	Line 2893. Data availability. Surface water monitoring data, related to the Dunka Pit, is available through 2020 on the MPCA Wastewater Data Browser (beyond year 2013). Action requested: Update with new data; modify text as determined appropriate; add reference to Section 17.
Comment 399	Line 2896-2900. Data requirement. A complete record of water quality data (i.e., individual sample results) will need to be made available (in addition to the summaries and averages, etc. provided here). No action requested. Future discussion item.
Comment 400	Lines 2909, 2922. Terminology. The term "relatively impermeable bedrock" (used here and elsewhere in the document) should be used cautiously. The degree of GW interaction between the surficial materials and bedrock (including bedrock transition/weathering zones) will need to be thoroughly investigated before conclusions can be drawn. No action expected. Expect a great deal of scrutiny on this topic. Future discussion item.
Comment 401	Lines 2923-2929. Information need. Detailed hydrographs and complete stream flow data will need to be made available to assess the current conditions and to design any subsequent data collection efforts. No action requested. Future discussion item.

Number	Comment
Comment 402	Line 2929. Clarification. Keeley Creek is mentioned here but not listed as stated in Table 6-5. Action requested: Comment provided in tables section.
Comment 403	Lines 2930-2948. Future discussion. Initial efforts at characterizing base flow using PART will need to be further discussed and evaluated. No action requested. Future discussion item.
Comment 404	Line 2934. Clarification. The text should provide the time of year that the samples were taken because seasonal variability in flow can interact with project impacts resulting in differential impacts to aquatic habitat that should be considered in the analysis. Action requested: Modify text to address the item.
Comment 405	Lines 2938-2941. Clarification. Provide more detail on how it was determined that groundwater routed through unconsolidated deposits provides a significant portion of baseflow to area streams and rivers. Action requested: Modify text.
Comment 406	Line 2938. Data need. Local impacts on groundwater to Keeley Creek streamflow, not just to Birch Lake Reservoir, is a data need. Action requested: Ensure Section 6.3 addresses the item as a future data need. Modify text as current information allows to address the item.
Comment 407	Line 2949. Data requirement. Need to collect and include continuous stream flow data at these sites. Action requested: Ensure Section 6.3 identifies this as a future data need. Modify text as determined appropriate.
Comment 408	Line 2958. Data need. Baseline Keeley Creek stream morphology is a data need. Action requested: Ensure that Section 6.3 addresses the item as a future data need. Modify text as current information allows to address the item.
Comment 409	Line 2994. Data source. Minnesota Power has extensive records on flows and water levels. This data should be accessed along with any information provided by the DNR LakeFinder dataset. Action requested: Procure relevant data from Minnesota Power as appropriate. Modify text as current information allows to address the item.
Comment 410	Line 2995. Reference. The text should reference the Winton Hydroelectric Station management plan. Action requested: Modify text to make the reference.
Comment 411	Line 3042. Clarification. There are three Impaired Waters within 1 mile. Filson Creek is impaired for aquatic life-fish bioassessment. Both Keeley Creek and Filson Creek are listed with aluminum as the pollutant. EPA classification status of these waters is 4D. This information should be in this section. Action requested: Modify text to address the item.

Number	Comment
Comment 412	Lines 3042-3044. Clarification. Additional information on the two impairments should be included, including status/results of any further assessment, stressor ID, or TMDL work, and similar. Action requested: Amend text to address the item.
Comment 413	Line 3045. Data need. A complete record of available WQ data will need to be made available for scoping and the EIS. No action requested. Future discussion item.
Comment 414	Line 3046. Clarification. It is unclear why the data summarized in Table 6-7 limited to only 2017 and 2018? MPCA understands potentially relevant water quality has occurred over a much longer period of time. If correct, no reason is given for the exclusion of earlier data. Action requested: Amend the text to address the item or explain the unavailability or lack of applicability of other data.
Comment 415	Line 3059. Clarification. The actual concentrations of aluminum should be noted here for Keeley Creek and Filson Creek. Action requested: Modify text to address the item.
Comment 416	Lines 3059-3065. Clarification. Please provide the respective concentrations at each location, rather than the average. Action requested: Modify text to address the item.
Comment 417	Lines 3117-3129. Clarification. Text and Figure 6-8 only describe shallow and deep bedrock however Figure 6-11 depicts monitoring wells in very deep bedrock. Understanding of text would be improved if very deep bedrock was better described in text and a figure. Action requested: Modify text with additional explanation.
Comment 418	Line 3131. Available data. PWI data needs to be looked at as a source of available data. Action requested: Access the PWI data and modify text accordingly.
Comment 419	Line 3135. Clarification. Provide description and evaluation of the historical data. Action requested: Modify text to address the item.
Comment 420	Line 3143. Definition. Provide a definition for corehole. Action requested: Modify text. Add to glossary.
Comment 421	Lines 3148-3152. Note. The 74 coreholes for which hydrogeophysical testing have been completed are all located over the underground mining area; none are at the plant site or tailings site. Action requested: Modify text to address the item.

Number	Comment
Comment 422	Line 3171. Future data need. May need to add additional groundwater monitoring wells at the project boundary or outside of project area depending upon location of groundwater compliance points. Action requested: Ensure Section 6.3 identifies this item as a potential information need. Future discussion item.
Comment 423	Line 3172. Data need. Well logs for the monitor wells and piezometers installed will need to be made available. No action requested. Future discussion item.
Comment 424	Lines 3177-3209. Clarification. Very deep bedrock wells should be described in this section. Action requested: Modify text to address the item.
Comment 425	Line 3200. Clarification. Is there a B3 monitoring well category? If so, include, otherwise revise accordingly. Action requested: Answer the question and modify text to address the item.
Comment 426	Line 3212. Note. Monitor wells are mostly all located at the underground mining area. Few, if any, are at the plant or tailings sites. Action requested: Modify text to address the item.
Comment 427	Line 3219. Clarification. Were the surrounding wells measured also during each test? If so, please include this information. Action requested: Answer the question and modify text to address the item.
Comment 428	Line 3227. Data need. The details of the "standard aquifer test analysis" will need to be made available. No action requested. Future discussion item.
Comment 429	Line 3230. Clarification. DNR understands the 2019 data collection from well testing is complete. If yes, update text accordingly. Action requested: Modify text to address the item.
Comment 430	Lines 3246-3253. Clarification. What are the "select constituents" and how were they selected? Action requested: Modify text to address the item.
Comment 431	Lines 3246-3253. Future discussion. It is advisable that the selection of locations, parameters, frequency, and similar be done in consultation with the state. No action requested. Future discussion item.
Comment 432	Lines 3260-3262. Future discussion. It is advisable that these future monitoring activities for the plant and tailings be done in collaboration with the state. No action requested. Future discussion item.

Number	Comment
Comment 433	Line 3306. Clarification. Is there site-specific information on site ET rates? Action requested: If yes, modify text to address the item. If no, could potentially be a future information need to be identified in Future Scope.
Comment 434	Line 3308. Clarification. Is there site-specific information on site recharge rates? Action requested: If yes, modify text to address the item. If no, could potentially be a future information need to be identified in Future Scope.
Comment 435	Lines 3359-3360. Clarification. Providing data or analysis will be of use given interest in fracture flow. Please provide further detail. Action requested: Modify text to address the item.
Comment 436	Line 3360. Clarification. Below 300 feet the flow zone frequency is less. What is the flow zone frequency value below 300 feet? Further discussion needed regarding this analysis. Action requested: Modify text to address the item.
Comment 437	Line 3395, Figure 6-12. Plot review. Data used to create this plot will need to be reviewed in detail. For example, are the few data points 2018-2019 representative to entire site? No action requested. Future discussion item.
Comment 438	Line 3419. Clarification. General note for section that lacking in analysis of flow to Keeley Creek. Absent this data, impact assessment not possible. Action requested: Ensure Section 6.3 identifies this item as a data need. Modify text as current information allows to address the item.
Comment 439	Lines 3420-3432. Clarification. Available data looks to be focused only on the underground mine area. Will need additional data/evaluation for plant and tailings sites (including potential effects on Keeley Creek). Action requested: Modify text to ensure correct geography indicated. Plant and tailings site should be considered a future data need; ensure Section 6.3 identifies this as a future information need.
Comment 440	Lines 3428-3430. Question. Why was it determined that 1419.5 ft was the hydraulic head? How does this elevation compare to long-term average lake and river elevations? Action requested: Action requested: Provide a rationale for the hydraulic head value. Modify text to address the item as determined appropriate.
Comment 441	Line 3453. Correction. Is "rand" supposed to be "range"? Action requested: Modify text with correction.

Number	Comment
Comment 442	Lines 3460-3467. Future review. There will be a need to more fully evaluate and document potential groundwater-surface water interactions. Action requested: Ensure Section 6.3 identifies this item.
Comment 443	Line 3487. Clarification. Is there information about aluminum levels that could be added here? This would provide relevant context considering the known MPCA impairments. Action requested: Modify text to address the item.
Comment 444	Lines 3518-3524. Data need. MPCA will need to see the complete record of individual sample results. It is correct that 2019 data (and likely beyond) will need to be gathered and incorporated into the analysis. Action requested: Ensure Section 6.3 addresses the item. Future discussion topic.
Comment 445	Lines 3545-3546. Clarification. The phrase "more dilute than" is not meaningful. Clarity could include: for all parameters? how much? implications? or similar. Action requested: Modify text to address the item; provide specificity to make less vague.
Comment 446	Lines 3551-3566. Clarification. Some of the values listed here are above secondary groundwater/drinking water standards. To the extent that this may be claimed as "natural background," additional data and documentation will be needed. Action requested: Ensure Section 6.3 identifies this item as an information need. Future discussion item.
Comment 447	Line 3595. Clarification. It should be noted that this statement pretty much refers to the one well. This is not the foundation for it to be offered as a definitive statement on overall conditions. Action requested: Amend the text to better characterize available data or provide a rationale for the assertion.
Comment 448	Line 3595. Clarification. MPCA notes that some of the chloride and TDS values from B1 wells indicate that saline (to some extent) water is being encountered. Also important, the presence of "saline waters" could impact the chemical balance for the project. Action requested: Ensure that Section 6.3 addresses this issue. Future discussion item.
Comment 449	Line 3605. General note. The Scoping EAW will require a summary discussion of the frequency, duration, location, depth, and parameters of existing wetland monitoring, and include how it is proposed in the future. The EIS will require robust baseline wetland hydrology, water quality, and vegetation data to serve as a comprehensive baseline with which to compare future data for possible direct and indirect effects on the quantity and quality of the water resources. Action requested: Ensure Section 6.3.3 identifies these as a future information need. Future discussion item.

Number	Comment
Comment 450	Line 3605. General note. MPCA indicates the antidegradation portion of Section 401 requires an inventory of the existing uses and level of water quality necessary to protect existing uses (Minn. Rules part 7050.0250), and mitigation thereof. Existing uses are the highest existing on or after November 28, 1975. These are not necessarily current uses or quality. No action requested. Future discussion item.
Comment 451	Line 3605. Regulatory guidance. MPCA indicates preservation credits might not be considered adequate mitigation for wetland losses. No action requested. Future discussion item.
Comment 452	Line 3666. Clarification. In the Eggers and Reed 2015 publication, Wetland Plants and Plant Communities of Minnesota and Wisconsin, Wooded Swamps are referred to as Hardwood Swamps and Coniferous Swamps. Action requested: Verify that terminology/nomenclature is being used consistently in the text across references.
Comment 453	Line 3699. Clarification. In the Eggers and Reed 2015 publication, Wetland Plants and Plant Communities of Minnesota and Wisconsin, Shrub Swamps are referred to as Shrub Carr and Alder Thicket. Action requested: Verify that terminology/nomenclature is being used consistently in the text across references.
Comment 454	Line 3706. Future data need. Wetlands need to be documented in an area that is larger than the defined project area to be able to determine the potential for indirect wetland impacts. Increase area for delineation accordingly. Action requested: Ensure Section 6.3 identifies the item as a future information need. Modify text to address the item as determined appropriate. Future discussion item.
Comment 455	Lines 3783-3785. Question. Can an equally definitive statement be made for "contact water?" Action requested: Answer question and modify text as determined appropriate to address the item.
Comment 456	Lines 3781-3786. Clarification. What is the source of domestic water and how would it be stored prior to off-site disposal? Issue of better understanding the proposed water management. Action requested: Answer question and modify text to address the item as determined appropriate.

Number	Comment
Comment 457	Lines 3783-3788. Clarification. Water balance information needed regarding how does the cycle of reusing process water end at closure? For example, what if water would have to be released if the system was seasonally high (e.g., due to precipitation and/or snowmelt)? The section also does not address decommissioning contact water ponds (dewatering and restoration), with the potential for site contamination not being addressed. Potential impacts are possible to Keeley Creek and Birch Lake, in the form of changes in quality and quantity of surface water runoff. Action requested: Answer question and modify text to address the item as determined appropriate. Ensure Section 6.3 addresses the item as a future information need.
Comment 458	Line 3786. Clarification. From where does the domestic water come? Presume it should be accounted for in project losses? Action requested: Answer question and modify text to address the item as determined appropriate.
Comment 459	Line 3794. Clarification. What constant rate value was used for this calculation? Action requested: Answer question and modify text to address the item as determined appropriate.
Comment 460	Lines 3796-3798. Clarification. Please better describe what appropriation volume/pump rate was used to determine the impact on Birch Lake's water level. Discuss if anticipated Birch Lake pumping rates would change with mine life and what volume of water would initially need to be pumped out of Birch Lake to fill the process water reservoir, etc. Were potential changes in water appropriation needs taken into account when determining impacts on water levels? Action requested: Modify text to address the item.
Comment 461	Line 3804. Text addition. Add "for the project" after "... water withdrawn..." Action requested: Modify text.
Comment 462	Line 3807. Impact assessment. Information on the timing and rate of water withdrawal is necessary to project the potential for impacts. Action requested: Ensure Section 6.3 identifies this item as a data need. Modify text as appropriate to reflect current information.
Comment 463	Line 3807. Question. Is there a potential for the appropriation to affect ice safety? This could be a form of recreation impact? Action requested: Answer the question and consider where any issue of ice safety should be presented.
Comment 464	Line 3807. Question. Is the proposed withdrawal compatible with the rule curve for Minnesota Power? Action requested: Answer the question. Modify text as appropriate.

Number	Comment
Comment 465	Line 3809. Clarification. "Seasonal" was not described in the paragraph above. How was that accounted for in order to include in this statement? Add detail as needed. Action requested: Modify text.
Comment 466	Lines 3812-3816. Clarification. Need to quantify how much watershed would be removed from affected stream(s) by construction of plant site and calculate the reduction of volume of water flowing to affected streams. Also, define or qualify "temporary impact" because a temporary but long-term impact may require mitigation. Action requested: Modify text to address the item.
Comment 467	Line 3814. Clarification. Is an impact "temporary" if it is for the life of the project? In normal usage, many construction effects are characterized as "temporary." The temporal dimension of operational effects is typically characterized in terms of permanence or reversibility. Action requested: Consider more targeted use of the term "temporary;" modify text accordingly.
Comment 468	Line 3815. Note. Project-related changes to topography and surface run-off patterns would be permanent not temporary. To the degree that some measure of function can be restored in reclamation, this remains to be seen. Action requested: Modify text to address the item.
Comment 469	Line 3816. Clarification. Potential effects also include reduced Keeley Creek watershed resulting in permanent lower flow in the creek, and consequent changes in aquatic habitat (due to changes in stream geomorphology). Also the impacts would not just be under low flow conditions. Action requested: Modify text to address the item.
Comment 470	Line 3818. Clarification. Paragraph describes additional losses to Birch Lake. Were these included in the <5% in section 6.2.1? Should be a total expected addition to annual variation if going to state <5% above. Action requested: Modify text to address the item.
Comment 471	Line 3818. Clarification. Were Birch Lake water level impacts looked at based on reductions in flow to the Birch Lake from the plant site and the tailings storage facility? If so, please include. If not, it needs to be included. Action requested: Modify text as appropriate to address the item.
Comment 472	Lines 3820-3823. Clarification. Need greater detail to use term "negligible effect." Action requested: DNR will need to verify potential change to verify characterization as "negligible effect." Future discussion item.

Number	Comment
Comment 473	Line 3822. Clarification. Containment and rerouting of surface water may have an impact on the quantity of water and needs further consideration. It may also have impacts on the quality of water if there is reduced infiltration of run-off. Action requested: Ensure Section 6.3 identifies this as a future information need. Modify text as current information allows to address the issue.
Comment 474	Line 3823. Clarification. The last sentence ends with "...not future considered." This is an awkward phrasing (that also occurs elsewhere). If the intent of this phrasing is the issue is not being proposed for further evaluation, then probably better stated by ending the sentence without the phrase with new sentence that might read: "...Containment and rerouting of stormwater are expected to have a negligible effect on surface water quality. No future scope proposed on the issue" or similar. Action requested: Consider intent of usage and modify text accordingly. Do a global document search on the term and revise consistent with this revision.
Comment 475	Line 3829-3833. Information need. It will need to be determined how much of the watershed would be removed by the construction of the dry stack facility and other features at the tailings management site, and also determine the impact on surface waters. Action requested: Ensure Section 6.3 identifies this item as a future information need. Modify text to add any detail known on the item at present. Future discussion item.
Comment 476	Line 3835. Information need. Containment and rerouting of surface water would change local watersheds both during the project and upon reclamation. Local watershed maps of before, during, and after project would be useful in assessment. No action requested. Future discussion item.
Comment 477	Line 3835. RGU note. The potential significance of the changes in local hydrology have not yet been determined. Information on changes to the Keeley Creek watershed, and the new non-contact water ditch watershed, is necessary to assess type, extent, and reversibility of impacts on aquatic habitat. No action requested. Additional work necessary in development of the treatment of the item in the Scoping EAW and draft scoping decision.
Comment 478	Lines 3835-3836. Clarification. Need greater detail to use term "negligible effect." Action requested: DNR will need to verify potential change to verify characterization as "negligible effect." Future discussion item.
Comment 479	Line 3839. Clarification. Is an impact "temporary" if it is for the life of the project? In normal usage, many construction effects are characterized as "temporary." The temporal dimension of operational effects is typically characterized in terms of permanence or reversibility. Action requested: Consider more targeted use of the term "temporary;" modify text accordingly.

Number	Comment
Comment 480	Line 3842. Clarification. Potential effects also include reduced Keeley Creek watershed resulting in permanent lower flow in the creek, and consequent changes in aquatic habitat (due to changes in stream geomorphology). Also the impacts would not just be under low flow conditions. Action requested: Modify text to address the item.
Comment 481	Line 3847. Clarification. DNR has understood the term "textured" could be applied to describe the surface of the dry stack facility during progressive reclamation and closure. If this is correct, include discussion of the meaning and purpose of "texturing." Action requested: Modify text to address the item.
Comment 482	Line 3851. Clarification. The text states: "...precipitation would be diverted back to the natural system..." Where would water be diverted to? Locations should be specified in text. Action requested: Modify text to address the item.
Comment 483	Line 3851. Clarification. The language "natural surface water system" is too vague to assess impacts. Where this water goes is important and is insufficiently described. Action requested: Modify text to address the item.
Comment 484	Line 3852. Question. Why would it be that the cap "may" cause some additional loss via evapotranspiration? Presume that it would cause loss. Action requested: Answer question and amend text to address the item.
Comment 485	Lines 3854-3856. Clarification. Permanent impacts to stream routing and drainage patterns caused by the tailings basin need to be quantified and the statement, "The total volume of surface water contribution would remain largely unchanged," needs to be better explained. What watershed/water body is this based on? Action requested: Answer the question and modify text as appropriate to address the item.
Comment 486	Lines 3854-3856. Clarification. Need to provide more detail on routing characteristics for non-contact water at TSF during different stages in TSF life cycle. Action requested: Modify text to respond to the item.
Comment 487	Line 3862. RGU note. Without data on watershed changes and analysis of impacts to stream flow, the assumption that impacts to surface water flow and stream channel effects would be minor cannot be supported at this time. No action requested. DNR will evaluate available information during the development of the Scoping EAW to determine the treatment in the EIS. Ensure that Section 6.3 adequately identifies this as a future information need.

Number	Comment
Comment 488	Line 3864. General comment for section. In the case in this section, more clarity and separation in the text between construction, operation, progressive reclamation, reclamation, and closure would make it easier to follow. Revise for a pattern to the discussion on these topics in the various sections. Action requested: Attempt to better separate the text by the stages of project activity.
Comment 489	Lines 3868-3869. Clarification. Where would water be diverted to? Please provide locations. Based on topography, flow would likely be altered with potential consequences to Keeley Creek. Action requested: Answer the question, and modify text to provide locations any current information on potential impacts to Keeley Creek. Ensure Section 6.3 addresses the item as an information need.
Comment 490	Line 3885. Clarification. Add to the listing loss of wetland function and loss of aquatic habitat. Action requested: Modify text.
Comment 491	Lines 3890-3891. Clarification. Need to quantify impacts to stream routing characteristics. Action requested: Modify text to provide the requested detail.
Comment 492	Line 3891. Clarification. The assertion is incorrect because routing characteristics would be permanently modified. Even the EAW states this in line 3933. Action requested: Modify text to address the item.
Comment 493	Lines 3890-3892. Clarification. Need to quantify changes to volume of surface water entering waterways. Action requested: Modify text to provide the requested detail.
Comment 494	Lines 3890-3892. Clarification. Is an impact "temporary" if it is for the life of the project? In normal usage, many construction effects are characterized as "temporary." The temporal dimension of operational effects is typically characterized in terms of permanence or reversibility. Action requested: Consider more targeted use of the term "temporary;" modify text accordingly.
Comment 495	Line 3893. Clarification. The assertion is incorrect because this is a likely permanent indirect effect. Action requested: Modify text to address the item.
Comment 496	Line 3894. RGU note. The information presented is not sufficient to conclude no changes to water quality. Also the changes to quantity and surface routing are not addressed. No action requested. DNR will assess the available information during development of the Scoping EAW to identify treatment of the item in the EIS.

Number	Comment
Comment 497	Lines 3898-3908. Closure conditions. What is the plan with the features in this section at closure? Action requested: Modify text to provide requested detail.
Comment 498	Lines 3910-3912. Note. DNR and MPCA agree that available information is insufficient to fully assess potential impacts and that future work is needed. Action requested: Ensure Section 6.3 addresses this item.
Comment 499	Lines 3910-3913. Future scope. Please provide how impacts to surface water will be assessed/modeled. Action requested: Ensure Section 6.3 identifies future work done to assess/model potential impacts to surface water resources.
Comment 500	Line 3911. Future scope. What is the plan to obtain this information? Include plans as future work. Action requested: Ensure Section 6.3 identifies future work done to assess/model potential impacts to surface water resources.
Comment 501	Line 3914. Clarification. Timing of withdrawals and related water levels changes in Birch Lake needs to be better defined. Also ice safety concerns. Action requested: Modify text to address the item.
Comment 502	Line 3918-3920. Clarification. Define "temporary" impacts to Birch Lake; impacts may be temporary but long-term and require mitigation during operation. Action requested: Modify text to use a more targeted use of the term "temporary" as it may apply to impacts to Birch Lake.
Comment 503	Line 3920. Clarification. In terms of the proposed location and site design for the DSF, DNR would expect there to be permanent re-routing of water with the permanent dry stack facility. Action requested: Modify text to address the item.
Comment 504	Line 3921. Note. Information developed to date is insufficient to conclude that impacts to stream flow would be minimal. No action requested. DNR will determine potential treatment of the item in the EIS over the course of developing the Scoping EAW.
Comment 505	Line 3924. Clarification. Need to add Birch Lake water levels. Action requested: Modify text to address the item.
Comment 506	Line 3925. Clarification. The text use of the phrase "the precipitation loss period" is not meaningful. This potential impact should be referred to as changes in surface run-off and routing, which is a permanent effect. Action requested: Modify text to address the item.

Number	Comment
Comment 507	Line 3931. Clarification. The assertion that the combined effects would be "minimal" is not supported at this time. This is premature because the combined effects of loss and rerouting were not sufficiently evaluated to this point. In assessing the treatment in the EIS, both the temporary and permanent decreases in watershed size for Keeley Creek must be assessed. Action requested: Ensure Section 6.3 addresses this item as a future information need. Modify text as current information allow.
Comment 508	Lines 3941-3951. Clarification. This does not address changes in quantity of run-off. Also the loss of infiltration due to changes in topography and wetland changes is not evaluated. Shoreland management zoning is based on keeping vegetated surfaces, minimizing impervious surface, and reducing rate of run-off to reduce nutrient load to public waters. This was not considered in the discussion of potential changes to water quality. Action requested: Modify text to address the item.
Comment 509	Line 3966. Language check. Should "cone of depressurization" be "cone of depression"? Action requested: Confirm the usage and modify text as needed.
Comment 510	Line 3967. Language check. Should "cone of depressurization" be "cone of depression"? Action requested: Confirm the usage and modify text as needed.
Comment 511	Lines 3971-3974. Note. Additional analysis will be necessary to verify the statement. Action requested: Ensure Section 6.3 addresses the item. Future discussion item.
Comment 512	Line 3972. Language check. Should "cone of depressurization" be "cone of depression"? Action requested: Confirm the usage and modify text as needed.
Comment 513	Lines 3982-3983. Information need. Modeling will be required to assess effects on groundwater system. Action requested: Ensure Section 6.3 addresses the item as a future modeling need. Future discussion item.
Comment 514	Lines 3994-3995. Clarification. The groundwater would also be expected to contact waste rock backfill. Action requested: Modify text to address the item.
Comment 515	Lines 3994-4004. Clarification. The text identifies the potential for groundwater quality impacts. This paragraph needs additional content on groundwater quality, movement, and what is/is not expected. Such information is needed to characterize the treatment of the issue in the EIS. Action requested: Modify the text to address the item. Ensure Section 6.3 addresses any future information need.

Number	Comment
Comment 516	Lines 3998-4001. Note. Additional analysis will be necessary to verify the statement. Action requested: Ensure Section 6.3 addresses the item. Future discussion item.
Comment 517	Line 4001. Question. The text identifies "exposed surfaces" as being a reason why changes to GW quality would not be expected. Aren't these "exposed surfaces" in part ore grade material in remaining in pillars or walls of stopes that one could infer might adversely affect water quality? Action requested: Answer question and modify text as determined appropriate.
Comment 518	Lines 4007-4008. Clarification. Presume that depth to bedrock data would be collected to confirm assumptions in this section. Action requested: Provide response on collection of depth to bedrock data. Modify text to address the item. Ensure Section 6.3 identifies this as a future information need.
Comment 519	Lines 4009-4026. Future discussion. DNR notes further discussions needed on stream flow characteristics. No action requested. Future discussion item.
Comment 520	Line 4017. RGU note. Absent any quantitative assessment, the potential for impacts, significance, and subsequent treatment in the EIS remains to be determined regarding the topic of groundwater recharge associated with the Plant Site contact water management. Action requested: Ensure the Section 6.3.2 addresses the item. Future discussion item.
Comment 521	Lines 4017-4019. Clarification. The analysis will also need to quantify impacts due to changes in groundwater recharge. Action requested: Modify text to address the item.
Comment 522	Lines 4020-4022. Clarification. Define "temporary" impacts to groundwater recharge; impacts may be temporary but long-term and require mitigation during operation. Action requested: Modify text to use a more targeted use of the term "temporary" as it may apply to impacts to groundwater recharge.
Comment 523	Lines 4024-4026. Guidance. DNR will evaluate the projected impacts and provide a temporal characterization of impact. Foundation for minor, temporary effect not established. Additional analytical content necessary to support "minor, temporary effect." No action requested. Future discussion item.
Comment 524	Lines 4029-4049. Future discussion. Further discussions needed on stream flow characteristics. No action requested. Future discussion item.

Number	Comment
Comment 525	Lines 4035-4037. Clarification. The SEAW will need to quantify impacts to the QUM and shallow bedrock, and the amount of change in groundwater recharge. Action requested: Provide additional detail to address the item.
Comment 526	Line 4044. Clarification. The text should address potential impacts to Keeley Creek. Action requested: Modify text to address the item.
Comment 527	Lines 4044-4046. Information need. The effects to resources which interact with groundwater need to be quantified, especially permanent impacts. Action requested: Modify text to provide the requested detail.
Comment 528	Line 4047. Clarification. Data appears insufficient to conclude that 25 years of changed groundwater recharge would not impact streams and wetlands. Action requested: Modify text to address the item. Ensure Section 6.3 identifies the item as an information need.
Comment 529	Line 4052. Information need. What is the plan to obtain this information? Action requested: Ensure Section 6.3 includes information to address the item.
Comment 530	Line 4055. Language check. Should "cone of depressurization" be "cone of depression?" Action requested: Confirm the usage and modify text as needed.
Comment 531	Line 4055. Language check. Use "cone of depression." Action requested: Confirm the usage and modify text as needed.
Comment 532	Line 4071. Question. The text identifies "exposed surfaces" as being a reason why changes to groundwater quality would not be expected. Aren't these "exposed surfaces" in part ore grade material in remaining in pillars or walls of stopes that one could infer might adversely affect water quality? Action requested: Answer question and modify text as determined appropriate.
Comment 533	Line 4075. RGU note. It is premature to determine whether impacts to groundwater resources are not significant. More data and analysis is necessary. Action requested: Ensure Section 6.3 identifies this item as a future information need. DNR will use the information developed over the Scoping EAW to propose the treatment of the item in the EIS.
Comment 534	Line 4083. Regulatory Guidance. Mitigation measures could include adaptive management and BMP options to prevent direct and indirect impacts to wetlands, streams, and lakes. No action requested. Future discussion item.

Number	Comment
Comment 535	Line 4084. Clarification. Based on the text at Line 1019, the non-contact water diversion area, which is described as a series of diversion dikes and ditches to divert water, may cause direct and indirect wetland impacts. Wetlands in and around these areas need to be delineated and evaluated for potential impacts. Action requested: Ensure existing information and/or Section 6.3.3 identifies this as an information need.
Comment 536	Line 4096. Clarification. Understanding that a wetland delineation has not yet been conducted, indicating total direct wetland impacts of 155.9 acres provides a level of certainty not yet documented. Please phrase as an estimate based on NWI. Action requested: Modify text to address the item.
Comment 537	Line 4098. Clarification. Impacts would be to local watersheds and percentage of loss should be related to the small watersheds for the local streams (Keeley Creek and Nokomis Creek). This is the scale at which impacts for comparison would be expected. Action requested: Modify text to address the item.
Comment 538	Line 4100. Inappropriate comparison. Stating that wetland "impacts are minimal relative to the proportion..." is misleading. Providing proportional comparison of impacted wetlands to the greater Rainy River Headwaters is irrelevant since wetlands are protected by state and federal laws and the overall intent is no net loss. At best this may be an element of project cumulative effects. Action requested: Retain first two sentences. Eliminate third sentence.
Comment 539	Line 4105. Impacts. Wetland impacts. The potential for the project, especially the dike systems, to fragment and impact wetland hydrology remains to be determined. Any changes to surface water direction and flow due to the project could impact wetlands. Action requested: Ensure Section 6.3.3 addresses the item. Future discussion item.
Comment 540	Lines 4111-4112. Future discussion. How potential dust-related emissions could affect wetland resources requires consultation. No action requested. Future discussion item.
Comment 541	Line 4118. Clarification. If crushing underground is a project element that would reduce dust emissions, then may be appropriate to add to the list. Action requested: Modify text to address the item as warranted.
Comment 542	Line 4119. Regulatory guidance. Type for type is important in water resources mitigation. The predominant wetland type listed is bog, which can be difficult to create or restore. Replacing bog with bog is a regulatory goal. If wetland/restoration is considered, note that preservation credits might not be considered adequate mitigation. No action requested. Future discussion item.

Number	Comment
Comment 543	Line 4126. Permit need. The 401 certification process will likely need to include an antidegradation assessment. Action requested: Modify text to address the item.
Comment 544	Line 4128. Available data. DNR notes the current wetland delineation is insufficient to assess potential impacts. Action requested: Ensure Section 6.3 identifies this item as a future information need.
Comment 545	Lines 4131-4132. Clarification. Potential mitigation needs to be identified for consideration in Scoping the EIS. Action requested: Ensure Section 6.3 includes information to address the item.
Comment 546	Lines 4143-4146. Clarification. This list should include a separate bullet referencing the potential for change to wetland water quality. Action requested: Add a wetland water quality bullet.
Comment 547	Lines 4153-4154. Guidance. The plan for the collection of addition surface water monitoring data should be developed in coordination with the state to ensure that the sampling includes all necessary elements. No action requested. Future discussion item.
Comment 548	Line 4169. Clarification. Surface water <u>quantity</u> should be included in the listing here. Action requested: Modify text to address the item.
Comment 549	Line 4182. Clarification. The bulleted item should read: "...surface water flows and stream morphology of Keeley and Nokomis Creeks?" Action requested: Modify text to address the item.
Comment 550	Line 4184. Clarification. The bulleted item should read: "...impacts to water quality in area streams, specifically Keeley and Nokomis Creeks, or Birch Lake, or the non-contact water ditch?" Action requested: Modify text to address the item.
Comment 551	Lines 4194-4271. Guidance. This conceptual approach seems to be, in general, a reasonable one to work from. Given the complexity, the details should be developed in coordination with agencies' involvement and inputs. For example, an appropriate source and range of values inputted into the various models. No action requested. Future discussion item.
Comment 552	Line 4199. Clarification. Please explain "grab samples" in the context of the flow regime of the creek. Action requested: Modify text to address the item.

Number	Comment
Comment 553	Line 4202. Clarification. All users of water, and Birch Lake level manipulation, should also be included in the modeling. Action requested: Modify text to add this to the description for the Water Balance Model.
Comment 554	Line 4202. Advisory. Would recommend creating future climate data set that incorporates climate change projections from International Panel on Climate Change (IPCC) or other sources to account for potential changes to precipitation and other climate variables due to climate change. Action requested: Future discussion item.
Comment 555	Line 4202. Information need. This analysis needs to include how contact water would be kept onsite at start-up, and also how it would be disposed of at project end. Action requested: Ensure the Future Scope includes these elements.

Number	Comment
Comment 556	<p>Lines 4202-4204, 4207-4212. Guidance. The text reads: "Phase 2 – Water Balance Model. The combined hydrologic regime...of conditions at the site, both current and projected into the future." With a few scattered exceptions, the background science on climate is fairly well unanimous in concluding that earth climate is changing and will continue to change, at a global, continental and regional/local level, in response to climatic forcing of greenhouse gas accumulations in the atmosphere. With almost no dissent, the science supports a continued climatic warming, persisting for hundreds to thousands of years, with cascading effects on most other climatological descriptors or parameters, and at all scales. Given the now central place of this understanding in the present body of scientific knowledge, the project consultant should base its modeling of the surface and ground water impacts of the project on an assumed continuation of human-forcing of climate. Regional and local output from advanced global and regionally down-scaled climate models is readily available for a range of forcing scenarios and terminal forecast years or decades. The output from the CMIP5 models developed to support the 2013 IPCC scientific assessment and the 2017 US National Climate Assessment is available. The output from the CMIP6 models should become available during the development period of this EIS. The project consultant should base its modeling of meteorologically- or climatically-dependent environmental impacts on the most recent, readily available model output. Should the project consultant conclude that the state of art of future climate modeling remains inadequate to the EIS modeling requirements, e.g., for whatever reason cannot be used to support an analysis of impacts, in accordance Minnesota Environmental Quality Board rules on information unavailability, the project consultant should clearly demonstrate, on the basis of 'credible science, why and how this is the case. In developing its assessment of meteorologically- or climatically-dependent environmental impacts of the project, the project consultant should use the 6.5 Representative Concentration Pathway (RCP), as the most likely global emissions trajectory. In developing its assessment, the project consultant should use model output for at least two future dates: one for the out-years (out-decade) of the project's 25-year operational period and one for the monitoring period post-mine closure, somewhat distant in the future, to capture the effects of very long-term climatic change. The model output usually terminates in 2100. Forecast local climatological parameters of special interest include: surface temperature and evaporation, precipitation, soil moisture, surface run-off, timing and amounts of snow melt, and change in intensity and frequency of extreme precipitation events. These should be developed on at least a seasonal level to account for changes in the monthly distribution of things like annual precipitation or available soil water. Action requested: Ensure that Future Scope of the appropriate section(s) incorporate this guidance.</p>

Number	Comment
Comment 557	<p>Lines 4202-4203, 4207-4212, continued. Guidance. The assumption of a changing, nonstationary climate should be used to evaluate impacts to surface water and groundwater quality and quantity, both of which may be sensitive to future changes in regional climate. The discussion in the Scoping EAW submittal of available data sources for surface water and ground water quantity and quality is exclusively limited to historical data, typically dating from the period 2007-2013/2014 (lines 2855-2903 [data, surface water], lines 3045-3103 [data, surface water quality], lines 3130-3278 [data, groundwater water], lines 3517-3595 [data, ground water quality]). Regarding facility design, based on the project description, contact water ponds (plant site contact pond and tailing site management contact pond [lines 1280-1281, 1403-1404) and diversion dykes (tailing management site [lines 1469-1471]) are to be designed for the historical 100-year 24-hour storm event. Likewise, the noncontact water ditches in the tailing management are to be sized for the historical 10-year 24 hour storm event, while the process waste pond are to be sized to contain 'probable maximum precipitation' (lines 1471-1473, 1236-1241). The dry stack contact water pond is to be sized for the 100-year historical snow pack [lines 1405-1407]. In the analysis, the sensitivity of these ponds and dykes to overflow under future climatic normals, e.g., frequency and intensity of forecasted future extreme precipitation events, should be evaluated. Action requested: Ensure the Future Scope in the appropriate section(s) identifies this item as an information need.</p>
Comment 558	<p>Lines 4202-4203, 4207-4212, continued. Guidance. For consistency, to the degree that this is practical, the assumption of persistent human-forced climatic change as background condition for the project should extend to all other environmental modeling, including the modeling of impacts to terrestrial and air resources. Fundamental processes like ozone formation or mercury methylation are temperature-sensitive, hence depend on what is assumed about future climate. Action requested: Ensure Future Scope of appropriate section(s) identifies this item as an information need.</p>
Comment 559	<p>Lines 4202, 4207-4212, continued. Guidance. In addition to its assessment of meteorologically- or climatically-dependent environmental impacts of the project, the project consultant also should evaluate alternatives to the proposed facility design against the assumptions of a changing climate. No action requested. Future discussion item.</p>
Comment 560	<p>Line 4207. Clarification. What data set is the climate generation model using? Action requested: Modify text to address item.</p>
Comment 561	<p>Line 4207. Clarification. Are there surface water models and groundwater models that are being used, which feed into the GoldSim model? Action requested: Modify text to address item.</p>

Number	Comment
Comment 562	Lines 4212-4215. Clarification. Will WGEN also be used to generate air temperature and solar radiation inputs in addition to precipitation? Action requested: Modify text to address item.
Comment 563	Lines 4212-4215. Clarification. Where will the climate inputs needed for WGEN be sourced from? Action requested: Modify text to address item.
Comment 564	Line 4236. Note. The phrase "...the project will not discharge any process water and is designed not to require a discharge of contact water..." is used several times in the document and seems of curious wording. Why the distinction in wording between process water and contact water? Action requested: Modify text to address the item.
Comment 565	Line 4236. Note. The concept of "no discharge" needs to be fully articulated and understood because it has direct bearing on what water quality permits may or may not be required, among other issues. No action requested. Future discussion item.
Comment 566	Line 4239. Clarification. The assertion it is "unlikely" that the project would result in water quality effects is not supported at this time. Action requested: It is appropriate for Section 6.3 to address this item as a future information need.
Comment 567	Line 4242. Question. Also how would contact water ponds be handled at closure in terms of potential for soil contamination, spillage, or other considerations? Action requested: Answer the question and modify the text as current information allows.
Comment 568	Line 4251. Note. This "geochemical conceptual model" is an absolutely critical component of the state review of the project and forms a foundation for any water quality review conducted by the MPCA. MPCA and DNR will need to fully understand and approve how this model is developed in order to be able to proceed with assessments on the need for or requirements of MPCA permits. Provide more details as to the geochemical conceptual model. Action requested: Modify text to address item.
Comment 569	Lines 4252-4253. Information need. While screening level calculations are good, a more thorough (sophisticated) dynamic systems model will need to be conducted (potentially including additional baseline data). Action requested: Modify text to address the item. Future discussion item.
Comment 570	Line 4272. Guidance. For water resources, expect supporting information to be supplied as GIS layers, raw data, interpretations, and discussions with appropriate QAQC at the appropriate time. No action requested.

Number	Comment
Comment 571	Lines 4272-4276. Guidance. This conceptual approach seems to be, in general, a reasonable one to work from. Given the complexity the details should be developed in coordination with agencies' involvement and inputs. For example, an appropriate source and range of values inputted into the various models. No action requested. Future discussion item, including the 401 certification process will likely need to include an antidegradation assessment.
Comment 572	Line 4287. Clarification. "Stream and lake" are specifically called out. Does this list include wetlands? Action requested: Answer the question and modify text as determined appropriate.
Comment 573	Line 4288. Clarification. Surface water flow and small scale stream watersheds should be characterized here too. Action requested: Modify text to add these to the list of bulleted items.
Comment 574	Lines 4345-4349. Clarification. The list should include bullet stating that one of the "questions to be answered" is to provide sufficient information to be able to complete a groundwater non-degradation analysis, which may be required for MPCA permitting. Action requested: Amend text to address the item.
Comment 575	Lines 4353-4367. Clarification. The list should add bullet asking what alternatives or mitigations are available to reduce potential impacts to groundwater quality. This would be information needed for a groundwater non-degradation analysis, if one is needed, as described in RGU Comment 566.
Comment 576	Lines 4369-4424. Guidance. This conceptual approach seems to be, in general, a reasonable one to work from. Given the complexity, the details should be developed in coordination with agencies' involvement and inputs. No action requested. Future discussion item.
Comment 577	Lines 4375-4377. Clarification. Presume monthly groundwater levels and "to be determined" water quality samples will be taken. Adjust parenthetic statements and rephrase for clarity. Action requested: Modify text to address the item.
Comment 578	Lines 4375-4389. Clarification. This list should specifically include a statement that additional monitoring wells will be needed in and around the plant and tailings sites, where existing data is absent or limited. Action requested: Modify text to address the item.
Comment 579	Lines 4382-4383. Figures. Please provide a figure that shows where additional monitoring wells will be installed. Action requested: Ensure Future Scope includes development of a new figure and provide in next data submittal.

Number	Comment
Comment 580	Lines 4382-4283. Information need. DNR will be requesting all well logs and collected data for each well (existing and new monitoring wells). No action requested. Future discussion item.
Comment 581	Line 4388. Clarification. This bullet should include testing for submerged waste rock. Action requested: Modify text to address the item.
Comment 582	Line 4392. Clarification. Surface water will have a no-action alternative (see lines 4314-4315). Groundwater section does not describe a no-action alternative. Action requested: Modify text to address the item or provide explanation for not pursuing a no-action alternative model run.
Comment 583	Lines 4422-4424. Clarification. Are these reports different from the ones in 4426-4429? Action requested: Provide explanation and modify text if supported.
Comment 584	Line 4430. Clarification. Proposed/monitoring for direct and indirect impacts to wetland and stream hydrology from ditching, and other watershed alterations, are unclear in the supporting text, including but not limited to potential flow (or lack thereof) of water from one water body to another. Action requested: Consider the point and modify text as determined appropriate.
Comment 585	Line 4430. Guidance. Anticipate supplying information on wetland and stream avoidance, minimization, replacement, indirect effects (draw down, diversions, chemistry, flora and fauna, etc.), quality, and monitoring for the EIS analysis. No action requested. Future discussion item.
Comment 586	Line 4432. Future discussion. A larger area than the project area will need to be defined for wetland delineations in order to determine if indirect wetland impacts would occur. Likely an increased area requiring planning for delineation. No action requested. Future discussion item.
Comment 587	Line 4438. Clarification. Presume the delineation work would also inform the 401 Certification process. Action requested: Modify text to address the item.
Comment 588	Lines 4445-4447. Clarification. Include avoid and mitigate in addition to "reduce." Action requested: Modify text to address the item.

Number	Comment
Comment 589	Line 4470. Correction. The Regional Supplement to the Corps of Engineers Wetland Delineation Manual: Northcentral and Northeast Region (Version 2.0) was published in January 2012, not 2011, as indicated in the text. Action requested: Make text correction.
Comment 590	Lines 4484-4485. Clarification. Further detail is needed regarding how wetlands may be grouped for functional assessment. Action requested: Modify text to address the item.
Comment 591	Line 4488. Guidance. Consider Floristic Quality Index monitoring for comprehensive wetland quality. Action requested: Consider the recommendation and modify bulleted list as warranted.
Comment 592	Line 4513. Addition. Presume need to add "how" before "...the relevant areal extent..." or clarify meaning. Action requested: Add the term "how" to the text or identify alternative language or edit.

Section 7.0 Contaminants, Hazardous Materials, Waste

Number	Comment
Comment 593	Line 4577. Clarification: Would demolition waste also be generated? If so, include in this list. If not, explain why not. Action requested: Modify text accordingly.
Comment 594	Line 4594. Clarification. Are any detectors involving radioactive elements or mercury needed for the project? If so, include in discussion; could require consultation with MDH. Action requested: Modify text accordingly.
Comment 595	Line 4667. Clarification. The methods of waste disposal discussed are primarily methods of containment, and compliance with RCRA requirements. Please add additional details/estimates on quantities and types of hazardous materials that are expected to be on site over the proposed 25 year mine life. Action requested: Provide requested detail.

Section 8.0 Terrestrial and Aquatic Resources

Number	Comment
Comment 596	<p>Lines 4743-4744. Guidance. The use of the Rare Species Guide (RSG) needs to be better explained with a supporting rationale. It is correct the RSG provides good quality information, but it by no means can be used as a stand-alone source for species information, especially when it relates to a species' habitat requirements. Action requested: Modify text to qualify limits of RSG, especially in terms of habitat requirements. Be prepared to utilize other information sources for species receiving attention over the course of the EIS.</p>
Comment 597	<p>Lines 4887-4888. Guidance. The text indicates that approximately 650 acres associated with the Transmission Corridor have not been mapped within the DNR Native Plant Database. A plan should be provided to address this data deficiency. Action requested: Identify how similar-level information will be provided for these acres. One option is for this area to be surveyed and mapped as per DNR recommendations.</p>
Comment 598	<p>Lines 4895-4902. Clarification. Use of the term "disturbed" needs to be better defined. This wording implies that disturbed is "bad." However, based on Table 8-5, much of these disturbed forests may be upwards of 50-60 years of age. Ecologically and in terms of habitat, in many of these cases they are aspen stands and could be quite large (DBH), thus offering quality habitat for forest interior species such as goshawks. For example, a more accurate description might be "mature early-successional forest undergoing transition from primary-to-secondary successional status" or similar. Action requested: Refine the definition of "disturbed" to tighten the meaning in an ecologically-sound manner.</p>
Comment 599	<p>Line 4995. Information source. Data on fishing and angler catch is also available from the 2017 DNR Birch Lake Open Water Creel Survey Report. Action requested: Use the data as appropriate in characterizing the fishery resource of Birch Lake.</p>
Comment 600	<p>Line 5005. Clarification. The text should note this species' greater destruction of submerged vegetation than native species, which negatively impacts fish habitat, particularly for sunfish. Action requested: Modify text.</p>
Comment 601	<p>Line 5012. Clarification. The <i>Notropis</i> species found should be listed by individual species. Action requested: Modify text to address the item.</p>

Number	Comment
Comment 602	Line 5016. Clarification. Information on MPCA's listing of Keeley Creek as impaired should be here. Type of impairment, pollutant, and recommended action. Action requested: Modify text.
Comment 603	Line 5020. Reporting consistency. Fish species are listed for Keeley Creek and Unnamed Creek, but not for Stony River or Denley Creek. List the species in each case for consistency and information (could include in table form). Action requested: Provide sentence listing the eight fish species.
Comment 604	Line 5020. Clarification. The 8 species found should be listed out the same way it was done for Keeley Creek. Action requested: Modify text to address the item.
Comment 605	Line 5030. Clarification. The 11 species found in Denley Creek should be listed out the same way it was done for Keeley Creek. Action requested: Modify text to address the item.
Comment 606	Line 5031. Clarification. More detailed information regarding the invertebrates found should be included. Action requested: Modify text to address the item.
Comment 607	Line 5078. Clarification. Wild rice was not surveyed by DNR Fisheries after 1997, which means this resource was not mentioned in subsequent reports. Action requested: Add sentence to end of paragraph that reads: DNR Fisheries discontinued wild rice surveys after 1997.
Comment 608	Line 5080. Clarification. Potential for wild rice in Unnamed Creek, Stony River, and Denley Creek not mentioned. Make reference for those waters in addition to Birch Lake and Keeley Creek. Action requested: Identify the status of wild rice in listed waters.
Comment 609	Line 5080. Information source. Keeley Creek data is available from the DNR Finland Area Fisheries Office. Action requested: Contact this office to arrange for inspection.

Number	Comment
Comment 610	Lines 5082-5083. Clarification. Additional detail regarding wild rice investigation will be needed (i.e., "some documents did not contain.." leads to the question of what was contained). Action requested: Modify text to provide more detail on the results of the document review of the DNR Tower Fisheries Office. If not done consider a technical support memorandum summarizing the results.
Comment 611	Line 5100. Clarification: DNR notes that there are few areas where wild rice is extensive on Birch Lake due to the reservoir's morphology, thus the areas where wild rice is present are ecologically valuable. Rice is found mainly in less than ten shallow bays on the lake. Three areas are adjacent or nearly adjacent to the Project: north and south of the water pipeline and pumphouse, and the bay which the non-contact water ditch is to discharge to. Action requested: Modify text to address the item.
Comment 612	Line 5106. Clarification. The text should list the aquatic plants found in Birch Lake Reservoir. Action requested: Modify text to address the item.
Comment 613	Line 5124. Clarification. Text identifies habitat would be re-established on the tailings management site. Although disturbance-accustomed species may find some habitat value for the reclaimed areas, for the purposes of environmental review an active tailings facility should not be considered habitat as intended in SEAW Item 13. Action requested: Remove the reference to the tailings management facility for the sentence to read: "During the Project operation phase habitat would not be re-established on these sites."
Comment 614	Line 5141. Clarification. The text asserts habitat effects "would be temporary." Although the intent of site reclamation into closure is to restore natural and other resource values, by definition the post-project habitat would not likely be the same as the pre-project condition, which is one way of viewing temporary. Removal of the term is a more factual statement. Action requested: Revise sentence to read: "Habitat impacts due to the Project would be of limited duration and at closure the habitats would be reclaimed to restore affected habitats" or similar.
Comment 615	Lines 5142-5145. Clarification. This sentence not relevant here. Remove as it is duplicative and not particularly accurate as not all areas of the project would be returned to like vegetation or habitat. Requested action: Remove sentence.

Number	Comment
Comment 616	Lines 5185-5190. Future discussion. DNR concurs that additional consideration will be necessary to assess potential impacts to rare natural communities; the topic will need further evaluation. Action requested: Future discussion item.
Comment 617	Lines 5185-5190. DNR notes this text lays the foundation for the Future Scope on the issue detailed in Section 8.3.1.
Comment 618	Line 5209. Clarification. Stating that the project has a "temporary" nature is misleading. Project operations are expected for 25 years, and even with reclamation and closure, effects would last on the landscape long after mining operations cease. Action requested: Modify text to address the item.
Comment 619	Lines 5210-5012. Clarification. The text offers a somewhat circular argument because the project area itself has land with restricted use and is proposed for development (with this action). Stating that surrounding lands are "use restricted" is less relevant because those lands could be proposed for development as well. Action requested: Remove last sentence from the paragraph. Expect DNR to provide technical input later in the SEAW process in characterizing the potential habitat fragmentation effects of the Project.
Comment 20	Lines 5217-5220. Clarification. Absent specific detail on the reclamation plan, it is premature to claim potential negative effects to the landscape would be reversed. An example of the type of detail necessary to support the assertion would be what specific tree species plantings would be proposed, or other mitigation plans. No action requested. DNR will assess the potential treatment of the item in the EIS during development of the Scoping EAW.
Comment 621	Lines 5228-5230. Clarification. The "magnitudes greater" characterization in the text should be described. How much different were these footprints? Action requested: Modify text to address the item.
Comment 622	Lines 5231-5238. Clarification. Natural impediments to what wildlife species? DNR notes that larger mammals, moose, wolves, bears, and similar would all utilize these bodies of water to travel. Rare bird species in the area would not be impeded by these water bodies. Action requested: Either better define what is meant by "wildlife corridor" as it is being used or modify the text to address the item.

Number	Comment
Comment 623	Lines 5231-5233. Clarification. DNR notes wildlife corridors are not limited to terrestrial wildlife only. At a minimum the text should be modified to account for bird species, specifically waterfowl, and potential access to the several river/stream systems within the project area. Action requested: Modify text.
Comment 624	Lines 5268-5271. Clarification. In this and in other places (e.g., line 5314), the implication is that the entire site would be reclaimed to a natural area, but the tailings facility is a permanent feature and thus would have permanent impacts. Phrasing of duration of impacts should take this into account. Action requested: Modify text.
Comment 625	Lines 5356-5360. Note. The RGU notes it is premature to determine potential significance of this issue. No action requested. DNR will use information developed over the course of the Scoping EAW to propose how the issue will be addressed in the EIS.
Comment 626	Line 5370. Analytical gap. This section identifies infrequent noises such as back up alarms could result in displacement. Section 12.2 does not specifically address back up alarms. Action requested: Comment provided in Section 12.
Comment 627	Lines 5387-5396. Clarification. What data sources were used for the habitat associations of the sensitive wildlife species? Only the rare species guide? Action requested: Answer the question and modify the text to address the item.
Comment 628	Line 5420. General comment. This section should address changes to baseflow, streamflow or water levels that may impact aquatic resources. Action requested: Address in Version 2.
Comment 629	Line 5428. Clarification. Any impacts due to the access road being in the shore impact area should be identified. Action requested: Modify text to address the item.
Comment 630	Lines 5434-5435. Clarification. Presume that transmission corridor access road that follows the transmission lines would require culverts/bridges. Action requested: Whether correct or not, revise text to address the issue.

Number	Comment
Comment 631	Line 5438. Clarification. The section limits consideration to potential construction effects only. Changes to the watershed of Keeley Creek would be expected to affect flow, both during the project and after reclamation. Impacts to aquatic habitat may result from any flow-related or other changes in channel geomorphology, and water quantity and quality. It is noted that flow changes alone can alter habitat suitability for aquatic species. Other considerations include changes in vegetation type, amount of impermeable surface present, and ditches created by the project, all of which may affect surface water quality and quantity. Nutrient and sediment run-off often is permanently increased due to land alteration and vegetation changes, which can result in decreased water clarity due to algal blooms (in some instances). Action requested: Modify text to address the item as determined appropriate.
Comment 632	Line 5441. Clarification. Impacts to aquatic habitat and biota are intrinsically connected. For example, reduced flows to a stream could cause the stream to become more shallow and wide. This would mean a loss of habitat for some fish species while possibly benefitting others, but resulting in an overall adverse impact on biota. Action requested: Modify text to address the item.
Comment 633	Line 5441. Additional impact. The possibility of potential impingement of small and larval fish by the water intake should be addressed. Action requested: Add text to address the item.
Comment 634	Line 5458. Additional impact. If the non-contact water ditch would discharge water into a wild rice bay, then any potential impacts should be assessed. Action requested: Add text to address the item.
Comment 635	Line 5470. Note. DNR concurs that analysis of potential project impacts to surface water quantity and quality has applicability to aquatic resources and biota. No action requested.
Comment 636	Lines 5474-5476. RGU note. The potential significance and subsequent treatment in the EIS remains to be determined regarding the topic of aquatic resources. No action requested.
Comment 637	Lines 5486-5487. Clarification. Describe the intent of collecting evidence of natural or human disturbances (also lines 5544-5547). Action requested: Modify text to address the item.

Number	Comment
Comment 638	Line 5512. Future discussion. DNR concurs that additional consideration will be necessary to assess potential impacts to rare natural communities; the topic will need further evaluation. Action requested: Future discussion item.
Comment 639	Line 5523. Confirmation. Please identify if the intent is to develop a more detailed work plan for these efforts? Action requested: Provide response. As part of work plan development DNR will identify if it would be preferred for the agency reviewers for the sequential aspects were delivered upon completion (rather than as one report at the end). Future discussion item.
Comment 640	Line 5569-5571. Information need. DNR will need more detail regarding these surveys (timing, number of locations, methodology) to ensure a robust and useful data set. Action requested: Modify text as information is now known to address the item. Future discussion item.
Comment 641	Line 5572-5575. Data note. Although this is a source of information, typically this is not a rigorous survey but instead the documentation of incidental observations. No major conclusions on game bird populations can be made from this type of data. Action requested: Ensure that any use of this information is appropriately qualified in future data submissions.
Comment 642	Lines 5576-5579. Clarification. For this bullet, what will the survey methodology be here? Observer based? Acoustic detectors? Action requested: Answer the question and modify text as appropriate.
Comment 643	Line 5584. Clarification. Why are bats lumped in with reptiles and amphibians? Absent a specific reason, bats should be listed with the mammals. It is noted one possible reason is that bat-related work would occur coincident over the same three, week-long survey periods with the herps. Action requested: Modify text to address the item.
Comment 644	Lines 5585-5586. Clarification. The text should identify when will these three weeklong periods occur? Action requested: Modify the text to address the item.

Number	Comment
Comment 645	Lines 5587-5588. Clarification. When will these surveys occur? What conclusions will be made from the acoustic data? If a species is present acoustically within the project area, then will it be assumed this means that breeding (maternity colonies) is occurring within the project area? If not, how will breeding presence be determined (by mist netting/telemetry)? Who will be reviewing the calls files collected by the acoustic detectors? Action requested: Modify text to address the item.
Comment 646	Lines 5589-5590. Clarification. More details are needed in the survey methodology here. How will visual meander surveys be done? What time of the year and by who? Where and when will trapping occur? Action requested: Modify text to address the item.
Comment 647	Lines 5591-5592. Clarification. Will this be done using acoustic detectors or by trained staff? Action requested: Answer the question and modify the text to address the item.
Comment 648	Lines 5596-5599. Data collection. The statistical validity of using only 10 camera traps to survey 1156 acres is questionable? This will likely result in the project area being insufficiently surveyed for any statistically valid results. What time of year will surveys be done? Timing will have to be different to target certain species (i.e., Canada lynx vs. black bears). More detail is necessary to support the proposed methodology. Action requested: Modify text to address the item. Future discussion item.
Comment 649	Lines 5600-5601. Clarification. More details are needed to describe the small mammal surveys. When will surveys occur, what trap types/sizes will be used, what habitats will be targeted, etc.? How does the methodology account for the fact that often rare small mammals are notoriously difficult to catch using live traps? Action requested: Modify text to address the item.
Comment 650	Lines 5568-5603. Question. What conclusions will be made from these surveys? It is important to note that lack of presence during surveys does not equal the ability to conclude a specific species does not occur within the project boundary. Action requested: Provide an answer to the question, which will be considered in the proposed EIS scope over development of the Scoping EAW. Future discussion item.

Number	Comment
Comment 651	Lines 5605-5610. Clarification. Compare deliverable report described on lines 5605-5610 with that listed on lines 4504-4521. Are these separate reports or the same? Action requested: Provide clarification and modify text to provide clear distinction across the two items.

Section 9.0 Historic and Cultural Resources

Number	Comment
Comment 652	Line 5718. Addition. The summary also addresses Section 9.2.1 regarding archaeological sites (not in title or text of this section). Action requested: Incorporate as necessary findings of Section 9.2.1 into summary.
Comment 653	Lines 5724-5727. Consistency. The section is not completely internally consistent. Lines 5706-5708, for example, state that there is a known site within the project area (and noted it would be avoided by construction) that conflicts with statement here. Action requested: Correct this inconsistency and check the entire section for other potential errors.

Section 10.0 Visual

Number	Comment
Comment 654	Line 5820. Existing recreation. The text identifies "campgrounds" as one of many features as part of the Birch Lake viewshed. The South Kawishiwi Campground located at the intersection of Hwy 1 and the Kawishiwi River should be considered as a potentially affected resource due to project-related visual effects. Action requested: Modify text to address the item or provide a rationale why visual impacts are not expected.
Comment 655	Line 5831. Clarification. To be more precise consider modifying the title to read: "Landscape Visual Simulation." Action requested: Modify title.
Comment 656	Line 5884. Clarification. To be more precise consider modifying the title to read: "Direct Line of Site Viewshed Analysis." Action requested: Modify title.
Comment 657	Line 5832. Affected resource. The potential for the South Kawishiwi Campground to be affected from infrastructure visibility, light visibility at night, and visibility of plumes should be assessed. Action requested: Modify text to address the item.
Comment 658	Line 5931. Clarification. The first paragraph calls the impact being addressed light "pollution." To be more precise consider modifying the title to read: "Light Pollution." Action requested: Modify text.
Comment 659	Line 5949. Bullet 4. Add "permanent" prior to "stockpile." Action requested: Modify text.
Comment 660	Line 5982. Clarification. Would there be no light at the tailings facility or other access features at the end of project? Action requested: Modify text to match the answer.
Comment 661	Line 5987-5989. Clarification. Was the view shed analysis conducted on the reclaimed tailings facility compared to the operational facility? If not, is it known that the viewshed is partially restored? Action requested: Future discussion item. In addition, modify text to read: "...reverse impacts associated with construction <u>and operation</u> of the dry stack facility;..."
Comment 662	Line 5987. Clarification. The text identifies "grading and revegetation" as the principle measures to partially reverse visual impacts. Describe the closure of the dry stack in greater detail to better support the assertion. Action requested: Modify text.
Comment 663	Line 6005-6007. Future scope. Section 11.3 does not address plumes as noted in the text. Action requested: Modify text if potential plume visibility is not proposed for future study and provide the rationale for not doing so.

Section 11.0 Air

Number	Comment
Comment 664	General to section. Information request. Section 11.1 should identify all Federal and State rules that may be applicable to the proposed project. Action requested: Review the existing text to ensure all applicable regulations have been identified. Modify text for any omissions.
Comment 665	Line 6022. Guidance. Follow the MPCA Air Dispersion Modeling Practices Manual guidelines for developing PM10 background concentrations based on ambient monitoring data. Action requested: Modify text to reflect item.
Comment 666	Line 6025-6027. Future Action. The treatment of the two monitoring sites to represent "background" will require confirmation. DNR understands these sites were established as part of the required monitoring program for existing mining and processing operations. It will have to be determined whether impacts from this operation can be appropriately considered as background. No action requested. Future discussion item in consultation with MPCA.
Comment 667	Line 6065. Guidance. All assumed control efficiencies will need to be reviewed in order for emission totals to be verified before conclusions can be drawn. Action requested: Modify text to address item.
Comment 668	Line 6068. Guidance and information need. All emission sources will need to be considered. Additionally, a process flow diagram detailing emissions sources should be provided for the next data submittal. Action requested: Modify text to address item. Provide a figure for next data submittal.
Comment 669	Lines 6069-6071. Clarification. The text correctly assumes that additional stationary sources identified as the project design is refined would need to be included as part of evaluation for potential significant effects. A possible way to better capture this might to simply read: "Table 11-2 would be updated to reflect any additional sources included in the Project design and used..." Action requested: Modify text.
Comment 670	Line 6074. DNR notes the Project defines drilling and blasting as emission sources. Emission sources must be qualified and quantified with drilling and blasting plan details. Action requested: Future discussion item.
Comment 671	Line 6074. Guidance. Air dispersion modeling should consider the impact of particulate emissions generated from blasting during the development of the declines during the construction phase. Action requested: Modify text to reflect item.
Comment 672	Lines 6078-6082. Applicability review. The applicability of ventilation shafts as point sources for air quality emissions should be considered. Action requested: Future discussion item.

Number	Comment
Comment 673	Lines 6099-6111. Clarification. Is it correct that above-ground crushing would be for 5 years during both construction and early operations? Action requested: If correct, modify text to add temporal dimension and account for both activities.
Comment 674	Lines 6109-6111. Clarification. What happens to the <0.5' blasted rock? Action requested: Clarify and revise accordingly.
Comment 675	Lines 6125-6128 and Table 11-3. Guidance. "In addition to gaseous criteria pollutants such as NO ₂ , SO ₂ and CO, greenhouse gas (GHG) emissions are anticipated from mine heaters and underground blasting activities. Table 11-3 provides an estimate for preliminary GHGs for the project." For the project carbon footprint, all GHG emissions should be estimated from the following sources: Scope 1, direct emissions - stationary combustion sources, mobile combustion sources, stationary or area industrial process sources, permanent land-clearing [aboveground biomass carbon], and GHG emissions from stockpiled stored peats and soils; Scope 2, indirect emissions - emissions associated with purchased electricity. In estimating CO ₂ emissions from permanent land-clearing, emissions should be estimated for CO ₂ losses from removed and marketed or combusted woody biomass and lost sequestration potential from cleared acres. Mobile combustion sources would include all mobile above and below ground mining equipment plus aboveground trucks, front end-loaders, dozers and the like. In developing the project footprint, this should use projected actual hours of operation, rather than potential maximum hours of operation. Action requested: Modify text as appropriate in the GHG section. Modify text as appropriate in section 11.3.2. Future discussion item.
Comment 676	Lines 6132-6134 and Table 11-3. Guidance. "Preliminary GHG emission calculations show carbon dioxide equivalent emissions would be 58,072 tons per year (tpy), which is well below the threshold for a major source of air emissions of 100,000 tpy in Minnesota." For PSD determination (Prevention of Significant Deterioration), a more limited carbon footprint should be developed than discussed above in comment 664. This should be similar to what is found in Table 11-3, but also include emissions associated with the above-ground biomass removed from the site during land-clearing, should that biomass be marketed as fuelwood. Under USEPA guidance, biogenic emitted to the atmosphere as a result of permanent forest clearance should be included in GHG emission totals in the determination of which facilities need or need not undergo a BACT (best available control technology) analysis. Emission totals used for PSD determinations normally do not include GHG emissions from mobile sources or biogenic area sources not related to permanent forest-clearing. They also do not include indirect GHG emissions associated with the generation of purchased electricity, and are calculated on a maximum potential-to-emit basis. The emission threshold for GHGs for a facility that otherwise must undergo a criteria pollutant-related BACT analysis is 75,000 short CO ₂ -equivalent tons. Action requested: Modify text as appropriate in the GHG section. Modify text as appropriate in section 11.3.2. Future discussion item.

Number	Comment
Comment 677	<p>Lines 6138-6144. Guidance. "The impact of GHG emissions would be further reviewed with respect to direct and indirect impacts from a regional and global perspective. Total GHG emissions from the project would be compared against GHG emissions emitted globally, nationally, and within Minnesota. GHG emissions from the Project could then be assessed against the overall contribution from each of these sectors as total emissions and as a percentage." In addition to these baseline metrics (used for comparative purposes), the assessment should compare the estimated average annual emissions of the facility (full facility carbon footprint, both direct and indirect sources, projected facility capacity factor) to the net incremental state-level GHG reduction found in the Minnesota Next Generation Energy Act for the proposed facility's initial year of operation. The Minnesota Next Generation Energy requires a GHG emission reduction from 148 to 122 million CO2-equivalent tons between 2015 and 2025 (or at an annual rate of -2.62 million CO2-equivalent tons) and from 122 to 35 million CO2-equivalent tons between 2025 and 2050 (annual rate of -3.49 CO2-equivalent short tons). This is based on the most recent Minnesota Pollution Control Agency estimate of 2005 state-level baseline emissions. If the facility begins operation between 2020 and 2025, estimated total facility emissions should be compared to an incremental state-level reduction in the initial years of the facility's operation of -2.62 million CO2-equivalent tons, and, if it begins operation between 2025 and 2050, to an incremental state-level reduction in the initial years of the facility's operation of -3.49 million CO2-equivalent tons. Action requested: Modify text as appropriate in the GHG section. Modify text as appropriate in section 11.3.2. Future discussion item.</p>

Number	Comment
Comment 678	<p>Lines 6124-6147. Guidance. In addition to the pieces of analysis outlined in lines 6124-6147 with respect to GHGs, the assessment should estimate the incremental impact of the proposed facility on the natural and built environment through its incremental contribution to global climatic change. In the past, it has been a common practice to conclude that the estimation of the incremental impacts of any single facility were not (or are not) amenable to estimation or analysis. With the development this last roughly 10 years of social cost of carbon estimates, this is no longer true. Social cost of carbon relates emission of the next or marginal ton of GHGs to their damages via formal modeling of GHG atmospheric retention, the response to climate of the next ton of GHG accumulation in the atmosphere for each forecast year modeled, roughly the present out to 2100, and damages from the accumulation of GHGs in the atmosphere. The modeling relies on relationships found in the scientific literature relating climate change to impacts to: agricultural production, forestry, human health, sea level and coastal settlement, labor productivity, tourism, amenities, natural species and habitat and other resources or activities. Damages in this construct are monetized damages, discounted using various discount rates. In 2016, the Minnesota Public Utilities Commission (MPUC) formally adopted a damage cost value for incremental GHG emissions from power generation using as a base estimates of the social cost of carbon from national analyses. Adjusted by GWP, the MPUC damage cost value can be used to estimate the stream of future damages from the emission of any greenhouse gas. These damage cost estimates (CO2 externality values) should be used in evaluating the incremental average annual and lifetime environmental impacts or damages resulting from the proposed project. The damage-cost estimate that presently is in use (calendar year 2020) by the MPUC in its proceedings is \$9.05 to \$42.46 per ton of emitted CO2, with a mid-point of \$25.76 per ton. Under MPUC order, this will rise to \$11.16 to \$51.47 per ton of emitted CO2 by 2030 (2015 dollars). As in the case of climate forecasts, it is permissible to opt out of the use of these values with a clear demonstration, based on the criteria given in Environmental Quality Board rules for nonavailability of information, that the MPUC-generated values do not adequately represent the stream of likely marginal damages from the next ton of emissions or that the modeling on which the those values were generated was flawed or too uncertain for use. Action requested: Modify text as appropriate in the GHG section. Modify text as appropriate in section 11.3.2. Future discussion item.</p>
Comment 679	<p>Lines 6148-6317. Guidance. For consistency, to the degree that this is practical, the assumption of persistent human-forced climatic change as background condition for the project should extend to all other environmental modeling, including the modeling of impacts to terrestrial and air resources. Fundamental processes like ozone formation or mercury methylation are temperature-sensitive, hence depend on what is assumed about future climate. Action requested: Modify text as appropriate in the GHG section. Modify text as appropriate in section 11.3.2. Future discussion item.</p>
Comment 680	<p>Line 6162. Guidance. Air dispersion modeling should consider the impact of particulate emissions generated from underground blasting activities that may exhaust from the ventilation raises. Action requested: Modify text to address item.</p>

Number	Comment
Comment 681	Line 6165. Note. All emission factors used for blasting assumptions will need to be verified before conclusions can be drawn. No action requested.
Comment 682	Line 6225. Guidance. The Federal Regional Haze rule 40 CFR §51.308, establishes a goal of attaining natural visibility conditions by the year 2064. Generally, States submit State Implementation Plans (SIP) to show progress toward attaining this goal every 10 years, although the originally scheduled 2018 SIP revision submittal deadline was extended to 2021. The next scheduled full SIP revision is due 2028, and every 10 years thereafter. In developing its long-term strategy for each 10-year SIP, the State must consider the anticipated net effect on visibility due to projected changes in point, area, and mobile emissions over the period. The State must include sources or groups of sources selected for consideration to evaluate the feasibility for controls. In developing the current SIP submittal (due 2021) for regional haze, Minnesota selected an emissions/distance threshold for sources to evaluate emissions controls. Using the criteria-if the proposed project existed today-Minnesota would require the proposed facility to evaluate the feasibility of emissions controls. The regional haze program requirements specify four factors to evaluate the feasibility of emissions controls: Cost of compliance, time necessary for compliance, the energy and non-air quality environmental impacts of compliance, and the remaining useful life of any potentially affected anthropogenic source of visibility impairment. Project proposers should address these four factors to evaluate potential controls as part of the project scope in an attempt to avoid the prospect of potential retrofits soon after. Project proposers should consult with the MPCA air quality team on carrying out this course of action. Action requested: Add to Sections 11.2.3 and 11.3.4 as warranted. Future discussion item.
Comment 683	Line 6251. Clarification. This section needs additional content on vehicle emissions and "other aboveground mobile equipment," including identification of the categories of impacts possible from these sources. Action requested: Add the specified content. Ensure that Section 11.3 addresses any future information needs.
Comment 684	Lines 6242-6246. Clarification. Should a potential increase in personal vehicle traffic in the area and busing of employees, and increased traffic in general, be included as project emission sources? May require consultation with MPCA. Action requested: Modify text as the issue is understood. Possible discussion item with MPCA.
Comment 685	Line 6247. Guidance. The potential to emit from all tailpipe source above and below ground needs additional supporting information prior to conclusions can be drawn for project impacts as well as modeled emission rates. Action requested: Ensure Section 11.3.1 identifies data needs as listed. Future discussion item.

Number	Comment
Comment 686	Line 6263. Question: Will there be odor and dust monitoring/modeling/data collection, etc.? The text does not identify any future actions. RGU will need to review available information regarding the potential for dust and odor effects before identifying the treatment of the issue in the EIS. Action requested: Future discussion item.
Comment 687	<p>Line 6264. Guidance. For the proposed project and each project alternative, provide a cumulative Air Emission Risk Analysis (AERA) as described on MPCA's website for each phase of the project. Action requested: Ensure Section 11.3 addresses likely AERA needs. Future discussion item.</p> <p>The analyses shall include but are not limited to:</p> <ul style="list-style-type: none"> • Mobile sources • Piles on site • Tanks & refueling on site • Blasting activities • Pollutants in the MPCA Risk Assessment Screening Spreadsheet (RASS) • Per- and poly-fluoroalkyl substances (PFAS) • Mineral fibers • Documentation of modeling and exposure assumptions
Comment 688	Lines 6308-6310. Clarification. Some amount of fugitive emissions would continue into the closure period while reclamation was being completed. Action requested: Modify text to address the item.
Comment 689	Line 6314. Clarification. Engineering controls and fugitive dust management practices need to occur during construction and closure and not only during operations. Action requested: Modify text to address item.
Comment 690	Line 6319. Future scope. The section does not address the potential visibility impacts of plumes originating from the two exhaust ventilation raises as identified in Section 10.3. Action requested: Modify text to address the item or provide a rationale for why no assessment is deemed necessary.
Comment 691	Lines 6338-6339. RGU note. The EIS may also review potential alternative methods to reduce the impacts. No action requested.
Comment 692	Line 6340. Guidance. Consider land ownership and control when evaluating ambient air and receptor placement. The concept of ownership/control should be relative to the Permittee only. Any areas considered non ambient will need effective measures to preclude public access at the boundary of these areas. Action requested: Modify text to address item.

Number	Comment
Comment 693	Lines 6340-6353. Guidance. Modeling should follow guidance in the MPCA Air Dispersion Modeling Practices Manual guidelines related to Class I and Class II modeling. No action requested. Future work plans should reflect the cited guidance.
Comment 694	Line 6345. Guidance. The project should address baseline ambient visibility conditions in the Class I areas: Boundary Waters Canoe Area Wilderness and Voyageurs National Park. Baseline ambient visibility conditions are determined from Interagency Monitoring of Protected Visual Environments (IMPROVE) network monitoring stations BOWA1 and VOYA2 located within Class I area boundaries. The MPCA calculates the baseline ambient visibility conditions from these monitors, which are based on the most recent 5-years of speciated particulate matter less than or equal to five microns in size. Project proposers should consult with the MPCA air quality team on obtaining and incorporating the data. Action requested: Modify text to incorporate this guidance into section. Future discussion item.
Comment 695	Line 6354. General comment for section. Because a substantive presentation of neither potential air toxics nor cross-media impacts was included in the preliminary scoping document, no conclusions were made concerning the exclusion of any components of these analyses. Action requested: Future discussion item.
Comment 696	<p>Line 6354. For the proposed project and each project alternative, provide a cross-media analysis for each phase of the project. Action requested: Ensure section 11.3.5 adequately addresses these points. Future discussion item.</p> <p>The analyses shall include but are not limited to:</p> <ul style="list-style-type: none"> • Pollutants in these groups: metals, metalloids, dioxins, furans, PAHs, PFAS • Estimates of pollutant concentrations in relevant media due to deposition and gas-exchange • Mercury deposition • Pollutant bioaccumulation in fish and exposure via fish consumption • Exposure via soil • Exposure via garden and agricultural produce and food products, such as poultry, eggs, beef, and dairy • Exposure via drinking water • Documentation of modeling and exposure assumptions
Comment 697	Section 11.2.6, Line 6279. Guidance. The proposed project may need to consider monitoring for non-asbestiform mineral fibers. Action requested: Future discussion item.

Section 12.0 Noise

Number	Comment
Comment 698	General for section. Guidance. MPCA notes abbreviated monitoring and modeling results were provided within Section 12. There is a placeholder Appendix for noise in the document, so the assumption is that the relevant studies will be provided, but it would be beneficial to have early review of those studies for more thorough examination before any conclusions are reached. Action requested: Future discussion item.
Comment 699	Lines 6370-6372. Clarification. No explanation is provided regarding why the USFS was monitoring noise in this area; was it project related? If so, is there a reason that monitoring locations were so spread out? Perhaps these were the areas measured for noise in the federal mineral withdrawal EIS process? Action requested: Engage MPCA on why these particular locations were measured in the first place, for example, are these all sensitive receptors? Modify text as determined appropriate.
Comment 700	Lines 6380-6388. Clarification. Provide some explanation as to the inapplicability of the other 8 sites (out of 11) in defining ambient noise conditions at the Project area. Action requested: Supplement text.
Comment 701	Lines 6389-6399. Clarification. The averaging time for the values provided in Table 12-1 is unclear - do the columns represent averaged/aggregated hourly averages over the course of the monitoring seasons? In order to best (and most accurately) assess ambient noise conditions in comparison to the state noise standards, the form of the provided statistics need to match the forms in Minn. Rules part 7030.0040; L_{eq} is not directly relatable to the hourly L_{10} and L_{50} standards. Further, the statistics need to reflect single hours of monitoring that are not averaged over a given season. Action requested: Address the item and modify text as appropriate.

Number	Comment
Comment 702	<p>Lines 6400-6404; Fig 12. Clarification. Several "Nearby Sensitive Receptors" were identified in figure 12-2, but it is unclear how exactly those receptors figured into the noise modeling efforts outlined in section 12.2.1. Each of the identified receptors fall under the NAC 1 (strictest) category. There may be a concern about noise at these receptors, particularly for those identified along the western shore of Birch Lake (receptors R01 through R12), as well as the campsites identified on the eastern edge of Birch Lake (R54 and R55). MPCA would like to see the outcome of modeling on these receptors, particularly knowing how sound can carry over water (see comment 5, below). This may be less of an issue as the dry tailings area is filled and machinery moves further east and away from the lake.</p> <p>Additionally, the boundary of the project, as indicated on aerial maps, is drawn up to the southern shoreline of the South Kawishiwi River (the extent of the underground portion of the proposed mine). Currently, there are several residential receptors along that boundary, and it is unclear if there will be any sort of buyout of those properties or agreements about potential noise (or other) impacts.</p> <p>Lastly, there would be important noise concerns for individuals using the campgrounds indicated at R54 and R55, particularly during 24 hour operating scenarios. The availability of these spaces for use is under the authority of the USFS, but their proximity to both the plant and tailings areas would likely lead MPCA to recommend closing those camping locations, or at least providing signage to users that those sites (which seem to be water-access sites) may experience high levels of noise during the day and night. Action requested: Address the item and modify text as determined appropriate.</p>
Comment 703	<p>Line 6403. Clarification. The "camping to the north, west, and southwest," and the "resort" should be identified. Action requested: Modify text to address the item.</p>
Comment 704	<p>Line 6425. Analytical gap. At Line 5370 references this section for EPMs. Section 12.2 does not specifically address back up alarms. Action requested: Add text to address back up alarms. Cross-reference to RGU Comment 626.</p>
Comment 705	<p>Line 6448. Clarification. Aboveground crushing needs to be addressed for noise. Action requested: Add to list of bulleted items or provide explanation why not applicable.</p>

Number	Comment
Comment 706	<p>Lines 6469-6474; 6475-6482. Also See above comment at Lines 6404-6400 for context. Clarification. Based on the information provided in lines 6469-6474 and section 12.2.2 (lines 6475-6482), it seems as though the modeling exercise only covered noise from mine operations, and excluded data collected regarding ambient (baseline or background) noise levels or modeled background noise. The MPCA interprets the noise standards in Minn. Rules Chapter 7030 as total standards, which would include noise from mine operations in addition to background/ambient noise. This interpretation is particularly relevant during summer months, when there are more people in the area recreating on the lake or surrounding the nearby residences. (USFS monitoring indicated higher noise levels during the summer months, presumably due to increased seasonal use of natural resources in the area.) MPCA would like to see modeling results that include background or ambient expected noise, expressed as hourly L₁₀ and L₅₀ values, for all sensitive receptors during all seasons. Action requested: Future discussion item. Recognizing the need to consult, modify text as appropriate to address the item.</p>
Comment 707	<p>Line 6475. Clarification. Section 12.2.2 should indicate whether project-related changes in noise levels would be perceptible from the current condition at the three sites? Action requested: Modify text to address the item.</p>

Section 13.0 Transportation

Number	Comment
Comment 708	<p>Lines 6544-6545. Clarification. Confirm that intent of sentence that there would be no growth expected without the project. Action requested: Confirm intent. RGU notes this will be a consideration in definition of conditions around no-build alternative.</p>
Comment 709	<p>Line 6623. Note. RGU will need to review available traffic-related information before identifying treatment of the issue in the EIS, including potential future scope. No action requested.</p>

Section 14.0 Cumulative Effects

Number	Comment
Comment 710	<p>Guidance. Minn. Rules part 4410.0200, subp. 11, defines cumulative impact to mean "the impact on the environment that results from incremental effects of the project in addition to other past, present, and reasonably foreseeable future projects regardless of what person undertakes the other projects. Cumulative impacts can result from individually minor but collectively significant projects taking place over a period of time." Working from that definition, it is necessary to evaluate the impacts of projected climate change on natural sources, the built environment and human health in the vicinity of the projected facility. This should be an evaluation of impacts of ongoing and impending climatic changes resulting from the historical accumulation of GHGs in the atmosphere from all global sources, as well as from the projected and the projected accumulation of GHGs in the atmosphere, again from all projected sources. The project consultant should discuss discrete impacts from climatic changes that are addressed in the scientific literature. Because this discussion relates to the impacts of total global accumulations of GHGs in the atmosphere, rather than projected incremental accumulations resulting from proposed project, this analysis is/would be distinct from the analysis discussed above in comments at Lines 6124-6147.</p>
Comment 711	<p>Line 6711. RGU note. Consideration will be given to existing dimension stone mining operations in defining potential existing and future projects whose impacts may intersect with the Project. No action requested. Future discussion item.</p>
Comment 712	<p>Line 6729. Clarification. "Area" is not defined. Define the radius used in this context and revise for consistency. Note that "area" used to name human disturbances appears to be wide, whereas "area" used to analyze project impacts is often smaller. Action requested: Provide qualifying text in summary to match treatment of geographic scale in the earlier sections.</p>

Section 15.0 Other Environmental Effects

Number	Comment
Comment 713	Line 6750. Correction. Table of contents includes two additional topics (recreation and wilderness). Action requested: Provide text on these topics or correct Table of Contents.
Comment 714	Line 6750. DNR note. The EIS scope will likely include the topics of reclamation cost estimates and financial assurance. Action requested: Add placeholders for these topics to the section.
Comment 715	Lines 6751-6755. Future data. What further studies are planned to document vibration affects? Are there theoretical estimates on the peak particle velocity and how it varies with depth? Action requested: Modify text to address. If a future information need, propose a future scope.
Comment 716	Line 6774. Future information. It is expected that a detailed drilling and blasting plan will provide the needed details to analyze vibration from underground blasting. Ensure that this information is planned to be provided. Action requested: Clarify and revise accordingly.

Tables

Number	Comment
Comment 717	Table 3-1. DNR notes that project locations with section, township, and range information will be verified by agency staff. No action requested.
Comment 718	Table 3-3. Definition. Clarify "cassette" as listed as a count. Action requested: At a minimum provide a definition of cassette. More broadly, consider a generic description of all items listed. Some are obvious with others less so.
Comment 719	Table 3-3. Clarification. Under abbreviations, are tons metric or not. Include in abbreviation list with detail. Alternatively, spell out as in table 3-5 and in other places. See also tpd and tpy. Action requested: Modify text.
Comment 720	Table 3-3. Clarification. The fleet count as represented in the table is 67. What is the "extra" vehicle? Action requested: Determine if there is an inconsistency and modify accordingly.
Comment 721	Table 3-6. Table headings. What is the difference between industrial and commercial? Action requested: May make sense to provide a definition to go with the headings (down at the bottom of the table with abbreviations).
Comment 722	Table 3-6. Clarification. For the Commercial Building Area column, Row 1. "Inclusive of all buildings below" intends all or only those listed in plant site section? Action requested: If yes, to be more clear consider the Concentrator Building row as a sub-heading with a colon and no other text across the columns. Provide a footnote that indicating all buildings are attached.
Comment 723	Table 3-6. Question. Do building heights include any and all stacks? Action requested: Add notes accordingly.
Comment 724	Table 3-7. Clarification. All area of the TMS would be grassland? Wouldn't there need to be some infrastructure (access road, ditching), even in a fully-reclaimed state in closure? Action requested: Modify text as appropriate with the response. For example, note that impervious surface is accounted for in the "before" condition.
Comment 725	Table 3-7. Question. If the plant site can be converted to wooded/forest, then why not the transmission corridor? Action requested: Please revise with this consideration in mind.

Number	Comment
Comment 726	Table 3-7. Clarification. Subtracting the Project "after" from the Project area after results in a balance of 40.5 acres of impervious surface in the "after" condition. Footnote 2 states the values are based on "planned post-closure usage and reclamation types, outlined in the Project Reclamation Plan. Action requested: Provide some type of clarification in Footnote 2 tied to the closure discussions in Section 3. It appears this results from 43.6 acres of access road remaining after the project.
Comment 727	Table 3-8. Guidance. A dam safety permit may be required. There are many structure that could meet the definition of a dam. Action requested: Add the potential need for a DNR dam safety permit to the table. Identify status as "if needed."
Comment 728	Table 3-8. Request height and storage volume of all such structures, including water ponds, contact water ditch embankment, etc.
Comment 729	Table 3-8. Question. Why is the COE 404 Permit status listed as "to be applied for, if needed?" Has a jurisdictional determination been requested? Action requested: Provide clarification.
Comment 730	Table 3-8. Note. Any lease for use of state lands includes various provisions related to timber management, including requirements for timber damages. These are a provision of any lease that may be issued for the project. No action necessary.
Comment 731	Table 3-8. Clarification. Include Public Water Permits for new culverts or replacement culverts. Action requested: Modify text to read: Permit to Work in Public Waters (water intake and outfall; new culverts and replacement culverts).
Comment 732	Table 3-8. Clarification. Additional MPCA permits that should be added to this table include: "Individual NPDES/SDS or SDS permit" and "Solid Waste permit." It is likely that even without a point source discharge that at least an SDS permit will be needed for the project (ponds, treatment systems, etc. And, given the uniqueness of the DSF component to the project, MPCA will need to assess on a case-specific basis the potential need for a Solid Waste permit. The consideration of the need for these two permits will be coordinated to reduce duplicity of permits. Action requested: Modify the table to address the item.
Comment 733	Table 6-1. Clarification. Is "unknown" watershed the same as Unnamed Creek in text? Action requested: Modify text to clarify.
Comment 734	Table 6-1. Addition. Requested action: Add column with the total watershed size.
Comment 735	Table 6-4. Clarification. Define "government controlled stations." Action requested: Add text or table endnote with a listing of governmental units control the stations listed.

Number	Comment
Comment 736	Table 6-5. Clarification. At Line 2929, Keeley Creek is mentioned here but not listed as stated in Table 6-5. Action requested: Modify Table 6-5 to address the item.
Comment 737	Table 6-6. Question. How was the Mean Daily Baseflow derived on this table? Action requested: Add footnote to identify the method used for this.
Comment 738	Table 6-6. Clarification. The table should list number of samples at each site. Action requested: Modify the table to address the item.
Comment 739	Table 6-7. Note. Ensure that mercury is included in future analysis and modeling as appropriate. Action requested: Future discussion item.
Comment 740	Table 6-7. Clarification. Waterbody names should be included with Site IDs in the table. Action requested: Modify text to address the item.
Comment 741	Table 8-7. Clarification. Why are moose not included in this table? Action requested: Include moose or provide a rationale for not including moose in the table.
Comment 742	Table 8-7. Heading. The table relies on the DNR Rare Species Guide, specifically the section on habitat, as a source of information. A footnote should be provided stating that the habitats described by the rare species guide are those commonly used by a species, and by no means do they encompass all habitats utilized. Action requested: Add footnote to address the item.
Comment 743	Table 8-7. Footnote. The statement that the project is not expected to have an impact on northern bog lemmings is overreaching. The RSG states that large tracts of peatlands should be protected, but it states that they are found elsewhere including conifer forests, black spruce swamps, shrub swamps, or similar. This statement below the table should be removed and the column "potentially present in areas of potential ground disturbance" should be changed to an "X." Action requested: Modify text to address the item or provide explanation as to why not appropriate.
Comment 744	Table 8-7. Clarification. The habitat descriptor for Blanding's turtles is very lacking. The RSG includes 11 habitat links, where this is by no means all encompassing. Action requested: Modify text to address the item.

Number	Comment
Comment 745	Table 8-8. Clarification. The column "potentially present in areas of potential ground disturbance" for Blanding's turtle should be marked with an X. Action requested: Modify table to address the item. Ensure any potential project impacts are adequately identified in other section(s) as appropriate.
Comment 746	Tables 11-1 thru 11-5. Advisory. Generally, conclusions indicated in Tables 11-1 through 11-5 can't be drawn until information used to complete tables has been reviewed. No action requested. Future discussion item.
Comment 747	Table 11-2. Additional information. Preliminary project emission sources should clearly define drilling and blasting emissions for construction of raises and declines. Same table should also define those constructed features as emission sources once constructed. Action requested: Address issue.

Figures

Number	Comment
Comment 748	Figure 1-1. Addition. The figure should include concentrate hauling to Duluth along the primary path. This can be added on the scale as offered. No need for an insert, just showing corridor leaving the site. Action requested: Edit figure.
Comment 749	Figure 1-1. Addition. Identify the source data for the "Mesabi Range Mining Features" layer. Can be done in Notes. Action requested: Edit figure.
Comment 750	Figure 2-1. Discussion. Need to consider environmental setting boundary from Minn. Rules Chapter 6132. No action requested. Future discussion item.
Comment 751	Figure 3-1. Clarification. Based on the text at Line 526, it would be useful and improve clarity for figure 3-1 to include a box labeled "tailings management site" surrounding the tailings dewatering, engineered tailings backfill, and the dry stack facility. Action requested: Modify figure to improve clarity.
Comment 752	Figure 3-1. Future figure development. Consider more diagrams/figures like these to assist with understanding, providing a more detailed focus on any given step. Action requested: Provide additional figures in next information submittal.
Comment 753	Figure 3-3. Addition. Include stormwater and non-contact water on this diagram or another. Action requested: Edit figure or add new figure.
Comment 754	Figure 3-3. Recommendation. Spell out DSF for ease of understanding. Action requested: Provide full term.
Comment 755	Figure 3-3. Future figure development. A more in-depth water movement figure is needed. Action requested: Consult with DNR on what should be included in the next level of figure detail for the process water flow dynamic.
Comment 756	Figure 3-4. Clarification. Route from Site 2 to Site 3 is not indicated as a route for the project. Note that text states that forest road 1900 only used during construction. Would there not need to be access during operations? Action requested: Respond to the query. Modify figure as appropriate.
Comment 757	Figure 3-9. Question. Does the plant site layout extend out into the stream channel? No action requested unless explanation is available. Future discussion item.

Number	Comment
Comment 758	Figure 3-13. Consultation. Further understanding is needed on the undisturbed footprints of the non-contact and contact water ponds (natural?). No action requested. Future discussion item.
Comment 759	Figure 3-13. Clarification. On the east side, how are contact and non-contact waters kept separate? Appears to be a berm/dike. Would these meet the criteria of a dam? Action requested: Clarify and revise accordingly.
Comment 760	Figure 3-13. Addition. What are the dark blue thick lines? Action requested: Define and add to legend.
Comment 761	Figure 3-13. Question. What is the shape of magenta (non-contact diversion area) on the east side (near pond 5)? Action requested: Respond to question.
Comment 762	Figure 3-13. Clarification. Based on the text at Lines 821-823, the tailings dewatering plant seems to be a series of buildings as in Figure 3-13. Consider labeling the figure to coincide with the text or alter definitions. Action requested: Modify the figure to provide the requested clarity.
Comment 763	Figure 3-13. Clarification. Fig. 3-13 does not identify all components of water management infrastructure such as the contact water ditch (as provided at Lines 880, 1099). It also shows a culvert from the dry stack facility to an area that does not have a contact water pond. On Fig 3-31, this culvert is shown between the label for "E-house Switchyard..." and the label for "Emergency Pond." Action requested: Because this text specifically summarizes the content on Figure 3-13 (the correct reference), modify figure to address the item. Action requested: Modify figure to provide clarity.
Comment 764	Figure 3-13. Clarification. In concert with text at Lines 1452 and 1462, the non-contact ditches are not clear on Figure 3-13 (e.g., thickness correct?). Recommend add legend or label as needed. Action requested: Modify figure to provide clarity.
Comment 765	Figure 3-14. Clarification. Please elaborate on why stages 1-3 do not appear to incorporate benching construction? All other stockpiles are built in layers bottom to top. Is this not how construction is proposed for the dry stack? Action requested: Respond to question.
Comment 766	Figure 3-14. Clarification. Please explain why the vegetation of the dry stack is not established until stage 2 (approximately year 16 of production)? Action requested: Respond to question.

Number	Comment
Comment 767	Figure 3-13, Figure 3-14. Recommendation. Consistent with text at 1413-1419, there would be benefit with development of new figures with the various stages (i.e., stages for figure 3-13 or 3-14). This would include location of interim ponds, for example. Action requested: Consider how this may be accomplished and apply if possible in next data submittal.
Comment 768	Figure 3-19; Lines 933-1000. Question. What is the proposed compact clean fill to be placed on the dry stack and where is it sourced? The text implies this is to be coarse tails. Peat is mentioned as an additive. Further detail is needed (e.g., ratio of peat and tails planned, determined by known parameters/research). Action requested: Add explanatory text to Notes.
Comment 769	Figure 3-19. Clarification. At Line 85 it is unclear what is intended by use of the term "structural zone." Action requested: Explain what this represents with the facility and modify text to clarify. Consider how might be depicted (if relevant) on Figure 3-19.
Comment 770	Figure 3-20. Clarification. Detail 3 in 411 is referred to in diagram and does not seem to be in document. Clarify what would be included on that inset. Action requested: Respond to comment.
Comment 771	Figure 4-2. Addition. Label inset map with 1854 Treaty for clarity. Action requested: Modify inset.
Comment 772	Figure 4-3. Additional informaton. Please supply surface and mineral ownership maps. Also indicate if "control" has been obtained or is pending. Action requested: Coordinate with DNR on supplying this information.
Comment 773	Figure 4-3. Clarification. It appears the pale gray grid represents sections under the Legal Land Survey. Why is the grid discontinuous? Action requested: Respond and modify figure as warranted.
Comment 774	Figure 4-3. Clarification. The difference between figures 4-3 and 4-4 is unclear? Private vs what type of land? Is Figure 4-3 more appropriately a land use figure than zoning? Action requested: Address and modify figure as warranted.
Comment 775	Figure 4-3. Recommendation. The project boundary should be moved out of the shoreland management area wherever possible. Structures and access roads should be kept out of the shoreland management area. Action requested: Revise as necessary. May be a future discussion item.

Number	Comment
Comment 776	Figure 4-4. Clarification. Consistent with the text at Line 1883, there are residences on the west shore of Birch Lake that are very close (appears to be less than a mile) from the project and within Residential Recreational zoning classification. Action requested: Provide inset into Figure 4-4 that should include the tailings site and private lands across the lake (west shore) from the project.
Comment 777	Figure 5-10. Query. The unconsolidated material depth seems to present a fair amount of detail for the wells depicted. Is there other data? How was the depth to bedrock determined? Action requested: Provide additional detail to figure and notes, as warranted.
Comment 778	Figure 5-8. Recommendation. Separate the transmission corridor from the main mine area in order to enlarge the scale and improve readability of the information on the map. Several other maps, such as 5-9, 6-19, and 6-20 would benefit from this as well. Action requested: Implement in the next data submittal.
Comment 779	Figure 6-3. Question. What are the purple areas? Include in legend. Action requested: Modify figure.
Comment 780	Figure 6-4. Clarification. Watershed names differ from figures 6-1 and 6-2. Confirm and revise if needed. Action requested: Confirm and modify as needed.
Comment 781	Figure 6-6. Data Need. Streamflow should be monitoring on Keeley Creek in order to better determine watershed impacts from the tailings basin. Action requested: Ensure addressed in Section 5.3.
Comment 782	Figure 6-8. Addition. Provide a definition for corehole. Action requested: Add definition to the notes.
Comment 783	Figure 6-8. Question. Why is the B4 label in the BMZ? Action requested: Verify and revise if needed.
Comment 784	Figure 6-13. Clarification. This figure needs more explanation. Action requested: Provide notes to explain what the figure is showing.
Comment 785	Figures 6-14, 6-15 and 6-16. Future data need. Additional wells should be installed to confirm potentiometric surface within the project boundary. No action requested. Future discussion item.

Number	Comment
Comment 786	Figure 6-19. Scale. This map needs to be zoomed in to show more details. At its current scale, smaller-sized wetlands/types are not clear. This affects understanding potential project impacts to wetland plant and animal species. Action requested: Consider a higher resolution figure for the next data submittal.
Comment 787	Figure 8-5. Clarification. What are the orange shaded areas on the map? Does this mean the polygon represents the habitat appropriate to the NHIS feature? Action requested: Provide response and include in legend as appropriate.
Comment 788	Figure 8-5. Presentation. The locations of the NHIS species occurrences should be presented more clearly if possible. This way they can be more easily compared to the landcover types in the figures above 8-5. Also, species occurrences in the areas surrounding the project site should be included as well. Vertebrate animals are not stationary, and home ranges could very likely include areas both within and outside the proposed project area. Action requested: Modify figure to address the item.
Comment 789	Figure 8-7. Addition. Indicate on map area over which survey was conducted. Presume it would depict areas that were surveyed but no rice found (or lower density than 1). Action requested: Modify figure.
Comment 790	Figure 10-10. Question. Should the viewshed location in figure 10-1 (across river from dry stack) also be included on this figure? Action requested: Consider the question and modify as appropriate.
Comment 791	Figure 12-1. Clarification. River Point Resort is on the northern shore (near "s" in South Kawishiwi River; see also figure 2-2 R13, R14, and R15). Confirm location of "River Point" noise measurement location. Action requested: Verify.
Comment 792	Figure 12-2. Addition. Include all mine features on this map. Action requested: Modify figure.
Comment 793	Figure 13-1. Requirement. Public Waters Work Permits will be required for any new or modifications of existing public waters crossings along the new Tomahawk Road. Include on figure and ensure discussed in text. Action requested: Modify figure.
Comment 794	Figure 13-1. Confirmation. Does this figure represents roads for all time periods, including construction, operations, and closure. Action requested: Provide confirmation.

Number	Comment
Comment 795	NEW. A map showing prevailing wind speeds and directions, and peak wind speeds and direction, would be informative for reviewers. Action requested: Add a new figure.