DEQ
Montana Department
of Environmental Quality

Air, Energy, & Mining Division

Certified Mail

June 8, 2017

Tintina Montana, Inc.
Attn: John Shanahan
Black Butte Copper Project
PO Box 431
White Sulphur Springs, MT 59645

RE: Third Deficiency Review, Pending Operating Permit 00188

Dear Mr. Shanahan:

The Department of Environmental Quality (DEQ) has reviewed the response to comments received on May 9, 2017. DEQ appreciates the effort made by Tintina to thoroughly review the comments and provide updated information and clarifications. The response to comments has provided a more accurate indication of what is being proposed, as well as potential impacts and mitigations for those impacts. Please address the following comments contained in the attachment.

Summary of Major Concerns:
It would appear that the analytical model presented for the raises would only be valid if hydraulic plugs were to be installed near where each drift intersects a raise. On a map of underground workings proposed to be left open (not backfilled with paste tailings) at closure, please identify the locations of the raises, as well as conceptual locations proposed for hydraulic plugs.

To evaluate the full scope of affects in the Environmental Impact Statement DEQ will prepare, DEQ will need information contained in the application materials of several other permits, for which Tintina will need to apply. Tintina will need to apply for an Air Quality permit, a Public Water Supply permit, and a surface water discharge, or MPDES, permit. (The need for an Underground Injection Control permit (EPA) may not be needed if a MPDES permit is approved.) We will also need general information related to the wetlands permit (Army Corps of Engineers) and general information related to progress made in working with the DNRC on water rights issues.

If you have any questions, please call.

Sincerely,

Herb Rolfes
Operating Permit Section Supervisor
Hard Rock Mining Bureau
Department of Environmental Quality
P.O. Box 200901
Helena, MT 59620-0901
(406)444-3841 or email at hrolfes@mt.gov

Attachment: Electronic copy of deficiency comments
Cc: Alan Kirk, Geomin

File: Pending 001885.350

OP\OP_Applications\Black Butte Copper Project 00188 \Deficiency Reviews\Third Deficiency Review\Cover Letter

Third Deficiency Review, Pending Operating Permit 00188

The Department of Environmental Quality (DEQ) has reviewed the response to the second deficiency letter received on May 9, 2017. The notations after each deficiency comment refer to the Metal Mine Reclamation Act or rules and in a few cases to MEPA (75-1-201, MCA). Errors, needed clarifications, or simply incorrect statements, have been noted that should be corrected, although there is no corresponding rule to cite.

Please address the following comments:

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Deficiency Review Comments:
p. 65, section 2.2.6.3, and Appendix B-2 and Response 2DEQ-339: Dye tracer tests in the Eastern UIG area are ongoing and as yet are inconclusive (i.e., no dye has yet been detected at any monitoring point). How long is monitoring for dye detection intended to continue, and if the tests remain inconclusive, what further testing, if any, does Tintina propose in order to characterize flow paths from the UIG sites? 82.4.335(k), MCA

p. 112, section 2.7.1: It is noted that the baseline data and monitoring plan in consultation with the FW&P is to be submitted in the near future. DEQ will review that plan upon submittal and any deficiencies would be noted in the subsequent deficiency letter. ARM 17.24.116(3)(a)

p. 216, section 3.6.1.4, second paragraph, second sentence, and Response 2DEQ-155: The response states that waste rock moved to the temporary WRS pad, and later from there to the CTF, is coarse rock. DEQ agrees that coarse waste rock would be transferred from underground to the WRS pad; however, this material would be crushed before being placed in the CTF. Depending on the crushing location, the material may be reduced to fine particle size before

being transported on the CTF road, potentially making spill clean-up more difficult. Please discuss.

p. 260, section 3.6.8.10, ninth and tenth paragraphs, and Response 2DEQ-236: The response states that it is not necessary to extend the foundation drain system beneath the CTF sump. Therefore, groundwater that collects beneath the lined sump, which is the lowest point in the CTF footprint excavation, would rise to the level at which it can flow out through the foundation drain. If groundwater inflow is encountered during the excavation of this sump, how will this water be extracted in order to install the sump liner system? A similar question can be posed with regard to the PWP sump, although the PWP excavation is not projected to intercept the groundwater table. 82.4.335(k) and (l), MCA

p. 362, section 4.1.7.2; Figure 4-15, and Response to Comment 2DEQ-77: The analytical model for ventilation raises depicts a vertical shaft only. The ventilation raises would be connected at depth to drifts which, if extensive, would alter the hydrologic effects of the raises. It would appear that the analytical model presented for the raises would only be valid if hydraulic plugs were to be installed near where each drift intersects a raise. On a map of underground workings proposed to be left open (not backfilled with paste tailings) at closure, please identify the locations of the raises, as well as conceptual locations proposed for hydraulic plugs. 82.4.335(m), MCA

p. 370 and 557, section 3.6.10, and Response 2DEQ-121, response 2DEQ-121: The response describes two excess reclamation material stockpiles. The "southern" one would store excess material from the CTF and/or the PWP excavation footprints, as well as minor amounts from UIG trench excavations, diversion ditches, and ventilation raise shaft excavations. DEQ notes that the ventilation raises would penetrate the upper sulfide zone. Please clarify what material, if any, from the ventilation raises, would be placed in the reclamation material stockpile, and what procedures would be followed to ensure that no sulfide material or other unsuitable waste is placed into reclamation material stockpiles. ARM 17.24.116(3)(i)

p. 374, section 4.2.3.3, second paragraph, first sentence, and Response 2DEQ 168: The application originally indicated that, immediately prior to cessation of milling, the cement content of paste tailings reporting to the CTF would be increased to 4%, resulting in a "several foot thick" layer of more resistant tailings at the surface. DEQ requested that Tintina state the minimum acceptable thickness of 4% cemented tailings. The text was revised to state that this layer would be "thick enough to support trucks and dozers." This does not clarify what volume of tailings is to be placed in the CTF with 4% cement. How would Tintina know when to increase the cement content in the tailings as final closure approaches in order to achieve the required thickness of 4% cemented tailings? ARM 17.24.116(3)(g)

p. 418, section 7.3.3.5, first paragraph, second sentence: Prior to initiating underground mine closure, Tintina plans to install two monitoring wells into the underground workings. Please clarify whether these wells would be installed before or after the initiation of mine flooding. Also, please commit to reviewing the distribution of unbackfilled workings at the time of closure and to siting these wells in locations where hydraulic head that develops in these tunnels after water level recovery will not result in mine water rising to surface via the well. 82.4.335(5)(m) and 82.4.226(10), MCA

p. 419-422, section 7.3.3.5, paragraphs 4 through 13: The fourth paragraph states that Tintina plans to install five "hydraulic barriers or walls" in the underground workings at closure, as shown on Figure 7.4. The text goes on to describe the locations of four of these. The location of the fifth one is not clear, unless this refers to the lower plug in the southernmost ventilation raise. Figure 7.4 indicates the locations of six barriers, including two within a ventilation raise. Elsewhere (thirteenth paragraph) the text indicates that each ventilation raise will receive "hydraulic plugs or walls set in two places: one above the upper sulfide zone, and another set of plugs installed near the ground surface." Therefore the total number of proposed "plugs or walls" appears to be 12, including 5 to 8 which may serve has hydraulic barriers, and 4 near-surface plugs intended to support backfill of the upper portions of vent raises. Please clarify the total number of these structures that is proposed and location of each. 82.4.336(10), MCA

p. 419-422, section 7.3.3.5, paragraphs 4 through 13, and Appendix M-3: Please discuss the timing of the installation of "hydraulic barriers or walls" compared with the proposed rinsing of the mine workings during closure. DEQ understands that the Lower VVF plug, the Upper VVF plug, and the Below USZ plug would be installed prior to the commencement of rinsing of the underground workings. If any plugs are to be installed in mine workings within the USZ (for example, if plug(s) are determined necessary to control head distribution within lengthy sections of access ramps, as suggested in Appendix M-3, pages 5-6 (Model Limitations), it would appear that any such plugs would need to be installed after rinsing in order that rinsing effectively occurs throughout all voids within the USZ. Please clarify. 82.4.336(10), MCA

p. 422, section 7.3.3.5, thirteenth paragraph, ninth sentence, and Response 2DEQ-199: The text indicates that the southernmost ventilation raise "may be relocated based on future geotechnical drilling." When would this drilling be anticipated to occur, and has an alternate location been selected? What geotechnical conditions are preferred for siting the raise, and what would trigger a decision to relocate? ARM 17.24.116(3)(d)

p. 544, 2DEQ-101: The reply states that the proposed CTF foundation drain diversion has the potential to indirectly impact the Brush Creek wetlands downgradient of the CTF. This should be considered as a direct impact if 24,000+/-3000 gallons of groundwater in a 24 hr cycle is

collected through the CTF foundation drain system and sent for treatment. Please address. 82.4.336(10), MCA

The reply further states, 'If the upper reaches of the Brush Creek wetlands are impacted from the CTF foundation drainage being re-routed to collection systems, then water from the NCWP would make up the waters lost from the CTF foundation drain through an infiltration gallery located at the toe of the CTF Foundation Drain Collection Pond. As the foundation drain waters should not be impacted, nor would those waters be used in the mill circuit, please consider routing the CTF foundation drainage system directly to the infiltration gallery. Referencing the MOP, p. 398, section 6.3.6, Wetlands Monitoring, first paragraph, fifth sentence, please submit the referred to transects. ARM 17.24.115(1)(b)

Referring to Figure 6.2, p.392 of the MOP, sites BB WM 3 & 4, are shown as two wetland monitoring sites located toward the head of the Brush Creek wetlands area. As there were no other references found for these sites, it is assumed these have not been installed. Please install the monitoring sites and start collecting static water levels in BB WM-3 & BB WM-4 as soon as possible. 82.4.335(5)(k), MCA

p. 560, 2DEQ-127, last bullet: Please see the comment on p. 544 2DEQ-101 above.

p. 572, 2DEQ143(3): The reply states that when brine is disposed in the Tailings Paste Plant thickener, the ratio of brine to tailings would be small and that the salt load in the cemented tailings would have negligible impacts on both tailings processing and the backfill strength/stability. To the extent possible, please quantify or be more specific on salt impacts in the cemented tailings and backfill strength/stability. ARM 17.24.115(1)(i)

p. 577, 2DEQ-151: The reply states that, 'The RO effluent will be buffered and be very similar to rain water; therefore any leaching from the UIGs should be similar to existing leachate as precipitation infiltrates through the unsaturated zone.' While it is noted a MPDES permit would be applied for, given the volume of RO treated water when compared to rain precipitation, would these large amounts of buffered water alter the ground chemistry? 82.4.336(10), MCA

p.583, 2DEQ-157: Please see comment p. 544 2DEQ-101 above.

p. 655, Response 2DEQ-248: DEQ requested "Please commit to post or mark all disturbance boundaries." Tintina responded that proposed surface disturbances have not been "marked" on the design drawings..." This is a misunderstanding of DEQ's request, which was intended to recommend that proposed disturbance boundaries be physically marked in the field prior to construction in order to prevent inadvertent disturbance of lands that do not need to be disturbed for project implementation. Please address. ARM 17.24.116(3)(u)

p. 734, section 9.0, response to 2DEQ-350: Clarifying DEQ's initial comment about water quality at closure in Appendix N: The cited section was just one instance in the document where the carbonaceous Ynl shale is proposed to act as a potential oxygen sink, thus limiting sulfide oxidation. However the data provided in the response are related to measured carbonate content, which is already oxidized, and would not serve the same function. Are there any organic carbon data available to support this assumption? 82.4.335(5)(k), MCA

p. 734, section 9.0, response to 2DEQ-351: "Two additional samples from PW-10 show similar water quality compared to the initial results from this well. Where there are deviations, the trace constituents were greater in the initial sampling than the subsequent quarterly monitoring samples." DEQ notes that there are many similarities between the PW-10 samples (now N=3), but some constituents were measured at equal or greater concentrations in the 2016 samples (As, Ni, Sr, Zn). The lower HSUs are estimated to produce >20% of the flow during year 6, but the groundwater input data for those HSUs are based on the one Ynl B-UA sample from 2015 (Appendix N, Table 4-1 and sub-Appendix E). The concentrations of Al, Mo, Sb, and Zn measured in PW-7 (2014 and 2015) appear to be higher than those from PW-10, which were often below detection. Would inclusion of more recent background concentrations from PW-10 (or potentially PW-7) significantly change the model results or calculations for non-degradation criteria? 82.4.335(5)(k), MCA

Appendices:

Appendix B-2, p. 2-5, section 2.4, paragraph 1, last sentence: Tracer monitoring is ongoing, but considering the conductivity values reported for the upper aquifer zone (7.5-10 feet/day), it seems unlikely that the dyes would be detected at the closest surface water sites (1,000-2,500 feet away) in the future, if they have not yet been detected. Have other tracer tests been considered to investigate the potential connection between the UIGs and nearby surface water (i.e. other infiltration points or other chemical tracers)? 82.4.335(5)(k), MCA

Appendix B-2, p. 3-7, section 3.5, paragraph 2, general comment: It seems likely that the eosine and fluorescein tracers traveled past the monitoring wells, prior to mixing with deeper groundwater at the depths of the screened intervals. However, it seems that the rhodamine injected in the screened intervals in MW-14 and MW-15 (56-66 and 70-80 feet bgs) is also unlikely to appear at any of the surface monitoring sites, if conductivity decreases with depth. Are there any groundwater monitoring points or piezometers in the estimated flowpaths, or further to the north (e.g. near core shack), that could be utilized to confirm that the tracers have not been entirely lost to degradation or adsorption? 82.4.335(5)(k), MCA

Appendix B-2, p. 4-1, section 4.0, paragraph 2, last sentence: "The lack of tracer at any of the sites suggests that water infiltrated in the vicinity of the eastern UIG is not in immediate and direct connection to adjacent surface water." This is one possible interpretation for the absence of tracers at any of the monitoring sites. Besides the mounding noted in MW-14 and MW-15

(dissipated within 1 month) there is little indication that the infiltrated water or tracers migrated a significant distance from the infiltration points. Another explanation for the absence of tracers in surface water could be the adsorption of the dyes to mineral surfaces, such as the iron oxides that are abundant in the area. Some laboratory investigations indicate that while fluorescein adsorption may be slow compared to other dyes, a 30% removal was observed over the scale of a few hours ("Adsorption of Alizarin, Eriochrome Blue Black R, and Fluorescein Using Different Iron Oxides as Adsorbents," Pirillo et al, 2007). Could other conservative chemical species be used for tracers to investigate the potential connection to surface water, aiding in the development of the UIGs and the associated MPDES permit? 82.4.335(5)(k), MCA

Editorial Comments:

p. 441, section 7.3.5.3, first paragraph, first sentence: The reference to Table 7-2 appears to be a remnant from the previous application revision. Table 7-2 now displays the cumulative rates of sulfate release from HCTs and does not address tree planting or anticipated mortality rates. Should Table 7-5 be referenced here instead?

p.583, 2DEQ-156: Please remove, '.... inspections by the Montana Department DEQ Waste Management and Remediation Division. Please re-write to state, 'inspections by agencies with regulatory authority.'

p. 593, section 9.0, response to 2DEQ-167: It is noted that the typo concerning water quality contributions and flow from the LCZ was corrected in the Application, but not in Appendix N, p. 52, Section 8, UG bullet point, second sentence. Please confirm that the LCZ has the highest contribution of metals and acidity and not the UCZ.

Other Concerns:

Response 2DEQ-34: Tintina has responded to this and other questions concerning the UIG system by committing to apply for coverage of all proposed mine water discharges under an MPDES permit rather than permitting these discharges via the Metal Mine Reclamation Act. Tintina proposes to submit the MPDES permit application shortly after DEQ determines that the MOP application is complete and compliant. Tintina notes that this will "allow for the two permits to be evaluated in the project EIS." While this is true, Tintina will still need to respond to these deficiency questions and provide us the information. This can be done by responding to the questions directly.