Drury, Andrew (DEQ)

From: Drury, Andrew (DEQ)
Sent: Friday, June 01, 2018 10:38 AM
To: 'Thomas Repaal'
Cc: Dungey, Curt (Curt.Dungey@Foth.com); Donohue, Steve (Steve.Donohue@Foth.com); Baran, Kris K (Kris.Baran@Foth.com); Smith, Cindy (DEQ); Carlson, Nicholas (DEQ); Rogers, Michelle (DEQ); Lancaster, Edward (DEQ); Ahammod, Shamim (DEQ); Maki, Joe (DEQ)
Subject: Copperwood Resources Inc. Air Permit Application 180-11A Information Request #1

Mr. Repaal,

This e-mail is in reference to your Permit to Install application, identified as No. 180-11A, for the proposed copper mining and ore processing facility to be located in Gogebic County, Michigan.

The AQD has reviewed most of the criteria pollutant emission estimates and we have the following comments and questions. The following information is required to ensure that the facility criteria pollutant emissions are completely and accurately estimated.

1. Based on the application, it appears that the PM10 and PM2.5 emission rates exceed the Significant Emission Rates (SERs). Therefore, no permit to install exemptions can be used for the facility and all emission sources at the facility have to be in the permit. Please provide information and emission estimates for building heaters, laboratories, etc. that are discussed on pages 12 and 13 of the application.

2. Are there any mine heaters proposed? If so, please provide a description and estimated emissions. Note the emissions from any mine heaters need to be included in the dispersion modeling.

3. Please provide more information on how emissions from ore transfer points will be enclosed, as discussed on pages 6, 9, and 23; Table 3-3; and in the emission calculations in the application.

4. In the facility basis tab of the emission calculation spreadsheet, item 3 Particle Size Distribution for Particulate Matter Emissions, why is the PM2.5 proportion of the total PM (cell F44) two times the PM2.5 % cumulative size (cell B42)?

5. In the underground particulate emission calculations, a settling control efficiency of 95% is applied due to the operations occurring underground. This seems high, especially for PM2.5. Please provide the basis for this assumption and revised emission calculations, if needed.

6. The underground material handling particulate emission estimates assume a 95% control efficiency for emissions sources enclosed by a cover. Please clarify which emission sources have an enclosed cover.

7. Is any waste rock expected to be produced in the mine? The application briefly mentions waste rock on page 4 in Section 3, on page 22 in Section 5.2.1, and in the TDF wind erosion

emission calculations, but there are no emission estimates for waste rock mining. If waste rock will be mined, please provide emission estimates.

8. In the underground blasting emission calculations, the hourly emission rates are determined by dividing the daily emission rates over 20 hours of operation per day. Will blasting be conducted for 20 hours per day? If not, please provide estimates of the peak hourly pollutant emission rates based on the expected hours per day of blasting.

9. In the surface ore transfer calculations, does the "Surplus Ore Feed Transfer (using FE) to Feed Ore Conveyor (No.1) (Return from Ore Stockpile)" in cell A21 represent material going from conveyor 4 back to conveyor 1, returning from the stockpile?

10. In the surface ore transfer calculations, does the "From Ore Stockpile footprint back to Surplus Ore Hopper (loading from FE loader)" in cell A31 represent the FEL loading ore to the hopper to go to the conveyor?

11. In the surface ore transfer calculations, is a 95% control efficiency (for the emission source being indoors or enclosed) appropriate for FEL transfers? Please address each FEL transfer and provide revised emission estimates if necessary.

12. Comparing the ore stockpile material transfer calculations to the surface ore transfer calculations, please explain why AP-42 13.2.4 was used for the ore stockpile calculations while AP-42 11.19-2 was used for the surface ore transfers and provide revised emission estimates if necessary.

13. Does emission point F002 in the surface ore transfer calculations duplicate emission point F004 in the ore stockpile material handling calculations? If not, please explain the difference.

14. What is the basis for the 5% moisture content of the ore used in the ore stockpile material handling calculations (cell R18)?

15. In the ore stockpile calculations, the vehicle travel calculations reference AP-42 13.2.1, but the calculations appear to be based on AP-42 13.2.2, which would be appropriate for unpaved roads. Please clarify which section of AP-42 was used for the calculations.

16. In the ore stockpile vehicle travel calculations, the estimate circuit length (13,860 feet in cells H63, H64, and H65) does not match the circuit length given in footnote 2 (13,124 feet). Please clarify this and provide revised emission estimates, if necessary.

17. In the ore stockpile vehicle travel calculations, it looks like the conversion from feet to miles is not correct. It appears, in cells L63, L64, and L65, that a conversion factor of 8,760 feet per mile was used rather than 5,280 feet per mile. Please address this and provide revised emission estimates, if necessary.

18. In the access truck travel calculations, only the concentrate and water trucks are included. Trucks used to deliver reagents and explosives should be included as well, since, based on expected usage rates, these trucks could represent a significant portion of the total truck traffic. Please evaluate the number of other types of trucks and provide additional emission calculations for them, if warranted.

19. Please provide further discussion regarding the assumption that the particle size ratios for the ore storage pile will be the same as for the tailings in the TDF, since the tailings have a much higher silt content (92.42%) than the ore (2%).

20. In the natural gas power plant calculations, are the manufacturer emission factors based on kW output for the engines or the input? The calculations apply the emission factors to the output. If the emission factors are based on the kW input, please provide revised emission estimates.

21. For the natural gas power plant, the AP-42 emission factors appear to be applied to the Btu output from the engines. However, the AP-42 emission factors are based on the heat input to the engines. Looking at the heat rate in kJ/kWh and the electrical efficiency on page 15 of the engine manufacturer data in Appendix A-1, the heat input for each engine appears to be about 41 MM Btu/hr, rather than 19 MM Btu/hr. Please re-evaluate the engine emission calculations and provide revised calculations if necessary.

22. For the natural gas generator engines, does the manufacturer have formaldehyde emission data?

23. In the natural gas power plant calculations, the following toxic air contaminants appear to be HAPs but are not marked that way: xylene, 1,1 dichloroethane, 1,2 dichloropropane, chloroethane, toluene, and vinyl chloride. The emissions of these compounds are low and will not make the facility a major HAP source, but the application should accurately reflect the HAP emissions.

24. In the natural gas power plant calculations, should row 60 be benzo(e)pyrene with an emission factor of 4.15E-7 rather than benzo(a) pyrene with an emission factor of 4.50E-7?

25. Does Copperwood know if ammonia or urea will be used in the SCR systems on the engines?

26. Will the natural gas power plant have any continuous emission monitors? Will there be emission monitors to ensure the control equipment is working correctly?

27. For the emergency generator engines, are the manufacturer's g/hp-hr emission factors based the power output or the power input? Please review the calculations and provide revised emission estimates if necessary.

28. For the emergency generator engines, should the horsepower given on the manufacturer's specification sheet, corresponding to the chosen emission factor, be used to estimate the emissions, rather than the horsepower calculated from the kW rating of the unit (732 hp vs. 670 hp for the 500 kW engines and 1482 hp vs. 1341 hp for the 1000 kW engine)? Please provide revised emission estimates if necessary.

29. In the reagent emission calculations, the consumption of "flocculant (To be determined)" is given as 1.1 ton/year, which seems quite low. Please investigate the estimated consumption of this material and proved a revised value, if necessary. Note the amount of this material used could affect the vehicle traffic emission calculations, depending on how many deliveries of this material would be required.

30. Based on the reagent calculations use of the AP-42 11.12-2 "Cement supplement unloading to elevated storage silo (pneumatic) (controlled E.F.)" emission factor, it appears there will be a

lime storage silo. Please confirm if there will be a silo and, if so, what type of control it will have, such as a bin vent filter.

31. For the dry reagent handling calculations, except as noted below, the PM10 and PM2.5 emission factors are the same and the PM2.5 emissions are assumed to be 35% of the PM10 emissions in column I. What is the basis for this assumption? It does not seem to match the information on the facility basis sheet.

32. For the lime silo filling calculation in row 42, the PM2.5 emission factor is assumed to be 30% of the PM10 factor in column E. However, in column I (the PM2.5 calculation), the PM2.5 emissions are assumed to be 35% of the PM10. Please clarify what percentage (30% or 35%) of the PM10 is PM2.5 and provide the basis for the percentage.

33. The reagent emission summary lists two materials (the flocculant and anti-scalant) as "To be determined". Have these materials been selected yet? If so, please provide SDS or other information for them.

34. For the NDM emission calculation, please verify the density used in cell I67. The value in the cell (67.1) does not match the calculated density in row 65 (7.1 lb/gallon).

35. The liquid reagent emission calculations assume there are 31.5 gallons in a barrel. Please verify this, as we typically see applicants use 42 gallons per barrel, especially in relation to AP-42 Section 7.1 and petroleum products.

36. We have not evaluated the GHG calculations in detail yet. However, it looks like the natural gas power plant calculations are based on the energy output of the engines (19 MM Btu/hr) rather than the energy input of the engines, which may be around 41 MM Btu/hr, as mentioned in number 21 above. Please review these calculations and verify that the GHG emissions are estimated based on the expected fuel usage.

37. The dispersion modeling for the natural gas power plant engines is based on the emissions from four engines divided over the five stacks. This approach may be acceptable for pollutants with annual averaging times, but is not appropriate for pollutants with shorter averaging times. For the shorter averaging time pollutants, the emissions should be modeled from the four stacks that result in the highest modeled impacts in order to evaluate the worst case operating scenario.

Please provide the information requested above as soon as possible. We would appreciate a response by June 22, 2018.

As we continue our review of your application, and based on your responses to these questions, additional information may be needed and we may have additional questions.

Note, any changes to the emission estimates will require the dispersion modeling to be updated to reflect the changes. We are not asking you to revise any modeling at this point, if revised modeling will be needed, as further review of your application and/or review of your responses to these questions may result in additional changes to the emission estimates which would have to be incorporated into the dispersion modeling.

We will continue our review of your application and provide any additional questions as soon as we can.

Please contact me if you have any questions.

Thank you,

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