

Response to Public Comments  
Application for Mining Permit, Kennecott Eagle Minerals Company  
Proposed Humboldt Mill Project  
Michigan Department of Environmental Quality

Following is a summary of public comments received by the Michigan Department of Environmental Quality (MDEQ) on the application by Kennecott Eagle Minerals Company (Kennecott) for a Mining Permit for the proposed Humboldt Mill Application. The application was submitted and received by the MDEQ on December 26, 2008. The public comments include verbal and written comments received during the public meeting on the permit application held on February 18, 2009, and all written comments received until 28 days following the meeting.

The MDEQ response follows each comment. In many cases, the response notes that the MDEQ has requested the applicant to provide additional information. In those cases, the MDEQ will thoroughly evaluate the additional information before making a proposed decision, to determine whether the proposed operation would meet the standards and criteria under the applicable statute or rules.

1. **Comment:** The MDEQ should grant a permit for the Humboldt Mill, provided the application meets environmental protection requirements, because the mill will provide jobs and contribute to economic growth in the region. (This is a generalization of comments from multiple participants.)  
**Response:** The MDEQ recognizes the importance of jobs and the economy; however, the decision to grant or deny a permit will be based on whether the application conforms to the applicable environmental standards and criteria under the Natural Resources and Environmental Protection Act (NREPA).
2. **Comment:** The MDEQ should deny a permit for the Humboldt Mill based on general concern for unspecified damage to the environment, natural resources, or esthetic values. (This is a generalization of comments from multiple participants.)  
**Response:** The MDEQ acknowledges the concern over general environmental impacts from mining operations; the environmental standards and criteria under the NREPA are designed to address those concerns, and the decision to grant or deny a permit will be based on whether the application conforms to those standards and criteria.
3. **Comment:** The Humboldt Mine pit has filled with water and is now considered “waters of the state” and must be regulated as such. Water quality standards must be met in the lake, including the mercury standard of 1.3 ng/l. This site does not qualify for variances, and the anti-degradation rule applies.  
**Response:** The MDEQ made a determination that the Humboldt Pit is not waters of the State as defined by Part 31 of the NREPA; however, the MDEQ determined the pit is an inland lake as defined by Part 301 of the NREPA.

4. **Comment:** Although Kennecott claims that submerging the tailings in water will stop oxidation, there is still concern that the tailings, some very high in sulfide, will result in the formation of sulfuric acid.  
**Response:** The MDEQ requested the applicant to provide additional information regarding water chemistry.
5. **Comment:** Excessive acidity in waterways can disrupt aquatic life, eliminating many species of sensitive fish. This is especially a concern as the mill is very close to the Black and Escanaba Rivers.  
**Response:** The MDEQ requested the applicant to provide additional information regarding water chemistry.
6. **Comment:** Kennecott proposed that the tailings will remain in the pit, but the pit has not been proven to be a “closed containment system.”  
**Response:** The MDEQ requested the applicant to provide additional information regarding several aspects of the hydrogeology around the HTDF.
7. **Comment:** The company has made a broad assumption that there will be no turn-over in the tailings pit-lake, this information is based on very minimal data that has not been collected over all four seasons in Michigan.  
**Response:** The MDEQ requested the applicant to provide additional information regarding water chemistry and limnology.
8. **Comment:** The company has proposed an “earthen berm” to contain its tailings in the pit. However, the berm may be inadequate to handle storm water. If so, the tailings or any toxins in the pit could flow into wetlands below the site.  
**Response:** As part of its Part 632 application, the applicant is proposing to construct a bentonite or a cement- bentonite “cut-off” wall on the north end of the pit. However, the MDEQ requested the applicant to provide a detailed design that shows how the wall will be constructed including plans for monitoring the effectiveness and integrity of the cut-off wall in terms of hydraulic containment.
9. **Comment:** There are only two groundwater compliance wells placed north of the pit-lake, but given the complexity of the groundwater flows this is not adequate.  
**Response:** The MDEQ requested the applicant to provide additional information regarding several aspects of the hydrogeology around the pit.
10. **Comment:** While sulfuric acid does not pose a direct risk to public health, it can introduce various heavy metals (aluminum, arsenic, cadmium, copper, lead, nickel, and zinc) into nearby streams and rivers. This, in turn, can cause problems in downstream areas, exposing humans to heavy metal through the contamination of local wells and waterways or consumption of fish. Prior milling at the old Humboldt facility contaminated wells along the Wolf Lake Road.  
**Response:** The MDEQ requested the applicant to provide additional information regarding water chemistry. As to contaminated wells along the Wolf Lake Road, the MDEQ is unaware of any contamination to any private drinking water wells as a result of operations at the Humboldt facility.

11. **Comment:** According to documents obtained through an open records request, mercury discharges may be a serious issue at the mill site. Due to current mercury contamination already at the old mill site from previous crushing and milling, it would be unlikely that Kennecott could meet mercury standards in Michigan. As mercury is a serious issue for the Great Lakes, our freshwater, and human health, the Department should not give Kennecott a variance to Michigan's mercury standards.

**Response:** We are not aware of serious mercury issues at the current Humboldt Mill processing site. Kennecott's National Pollutant Discharge Elimination System (NPDES) permit application for the proposed wastewater discharge to the wetland indicates a total mercury effluent concentration of 0.3 ng/l, which is well below the Michigan water quality standard of 1.3 ng/l. Kennecott's proposed wastewater discharge does not need a variance nor is it eligible for a variance to Michigan's mercury water quality standard.

12. **Comment:** The operations carried out in the milling process could produce atmospheric emissions of heavy metals, suspended particulates (including sulfates), and tailings that could result in acid mine drainage or human health problems.

**Response:** The commenter is correct in that if the proposed facility is built and operated it will emit particulate matter, metals, and sulfates into the air. The MDEQ however will only approve both the OGS Part 632 permit and the air use permit if these proposed emissions are found to be below allowable levels.

The MDEQ and the Air Quality Division (AQD) is determined to protect the health and welfare of all citizens of the State of Michigan by ensuring they have safe air to breathe. To accomplish this, the AQD utilizes the state and federal air quality rules and regulations that are in place to protect public health and the environment. The federal Clean Air Act includes the national ambient air quality standards (NAAQS) to protect public health. These standards define the maximum concentration of certain air emissions in the breathing zone that would protect the health of the most sensitive individuals, including those with heart, respiratory, neurological, and asthma problems. In addition chemicals, including metals that do not have an established NAAQS, must meet the applicable AQD-established, health-based screening levels. Screening levels are developed to protect from cancer and non-cancer effects based on toxicological research.

As a part of the air permit application package, the applicant has provided dispersion modeling which shows compliance with all applicable NAAQS and AQD-established, health-based screening levels. MDEQ has yet to complete its review of the applicant's submittal. The permit will, however, only be approved if the applicant's submittal is found to be correct and all applicable NAAQS and AQD-established, health-based screening levels will be met.

13. **Comment:** There are no contingency plans for dike failure, water escape from the tailings pit-lake.

**Response:** The MDEQ requested the applicant to provide a detailed design that shows how the cut-off wall will be constructed including plans for monitoring the effectiveness and integrity of the cut-off wall in terms of hydraulic containment.

14. **Comment:** Kennecott has avoided cumulative analysis.  
**Response:** The review team has not completed the application review; however, cumulative impacts will be evaluated thoroughly before making a proposed decision.
15. **Comment:** If there are state laws that protect out inland lakes from possible pollution, why would we approve of Kennecott's proposal?  
**Response:** The applicant will be required to meet standards set in Part 632, Nonferrous Metallic Mineral Mining, and Part 31, Water Resources Protection, of the NREPA for water quality which are protective of human health and the environment.
16. **Comment:** Kennecott should be responsible for all clean-up costs, not the taxpayers.  
**Response:** If a permit is issued, the applicant must maintain financial assurance to cover any necessary reclamation and remediation from the effective date of the permit through the end of post-closure monitoring. In the event of a violation of any NREPA permit, the MDEQ may utilize the financial assurance instrument to mitigate if necessary. In addition, the MDEQ may increase the amount of financial assurance at any time if necessary.
17. **Comment:** Could you, or the local MDNR, please take advantage of the ice cover on the lake and take half a dozen temperature profiles in the various depths to find out if in winter a thermocline is still there, or if there has been some mixing of deep and shallow waters?  
**Response:** The applicant has the burden of providing all necessary data and information for the MDEQ to make a decision on the application. The MDEQ requested the applicant to provide additional information regarding limnology and water chemistry.
18. **Comment:** It has generally been accepted that the pit represents a closed system, like a leak proof container. After all there are no significant feeders and only a small overflow, and an impervious slurry curtain is to be built to stop seepage through sands and gravel at the north end of the pit, but I'm having trouble reconciling the net precipitation to the speed at which the pit, 350 feet deep, filled up, and/or is replaced (16 years). I am thinking that there must have been significant input and from sand, gravel, and rock.  
**Response:** As part of its Part 632 application, the applicant included calculated in-flows from sand and gravel deposits on the north and south end's of the HTDF as well as net precipitation. The calculated time to fill using these inflows corresponds closely to the observed fill time.
19. **Comment:** My concern is that if water did come in significant quantities it may find its way out too, when the head is reversed.  
**Response:** The MDEQ requested the applicant to provide technical information and rationale as to whether or not water migration out the south end of the HTDF into the unconsolidated aquifer is possible. In addition, the MDEQ requested the applicant to provide a detailed design that shows how the cut-off wall will be constructed including plans for monitoring the effectiveness and integrity of the cut-off wall in terms of hydraulic containment.
20. **Comment:** I am intrigued by the possibility that although the boggy terrain to the south of the pit drains to the south and east, it is a blanket of glacial till which may conceal bedrock

topography draining to the north, thus recharging the pit. If so, a full pit, with polluted water displaced upward by added tailings, might push that water into the groundwater.

**Response:** The MDEQ requested the applicant to provide technical information and rationale as to whether or not water migration out the south end of the HTDF into the unconsolidated aquifer is possible.

21. **Comment:** I would suggest that the tailings area be sealed by bentonite or similar method to keep acid mine drainage from seeping thru wetlands.

**Response:** As part of its Part 632 application, the applicant is proposing to construct a bentonite or a cement-bentonite “cut-off” wall on the north end of the pit. However, the MDEQ requested the applicant to provide a detailed design that shows how the wall will be constructed including plans for monitoring the effectiveness and integrity of the cut-off wall in terms of hydraulic containment.

22. **Comment:** Detailed soil maps for the upland need to be part of the report to see how they relate to any stock pile areas and shallow soils.

**Response:** As part of its Part 632 application, the applicant included a soils investigation in Section 3.2 in Volume II and Appendix B-1 in Volume IIA. The review team has not completed the application review; however, impacts to soils will be evaluated thoroughly before making a proposed decision.

23. **Comment:** The evaporation calculations are not for the 67 acre HTDF but for the total basin which is 224 acres. The HTDF water balance calculations assume 162 gallons per minute (gpm) or 9,720 gallons of evaporation an hour or 233,280 gallons of water evaporation per day. This is ludicrous. The water balance needs to be validated in total.

**Response:** As part of its Part 632 application, the applicant provided data that was obtained from historical “class A” evaporation values for Marquette County. The applicant applied a .77 multiplier to the measured monthly “class A” evaporation values and then applied those values to the entire watershed. Given the relatively small size of the HTDF watershed, this is an acceptable method.

24. **Comment:** Five foot allowance for overflow is allowed from the surface of the tailings basin at 1537.88 ft to the top of the wall as 1543 ft. The 24 hour, 100 year storm allows a 1.2 foot increase in depth. If the HTDF influent/water treatment facility fails during this storm event then water from the basin will overflow into the wetlands below.

**Response:** As part of its Part 632 application, the applicant calculated the water level in the HTDF would rise approximately 1.2 feet in the event of a 24 hour, 100 year storm event. Part 632 requires the applicant to design water storage facilities to ensure that 24-hour, 100-year precipitation events do not cause releases of water that are not in compliance. This requirement is considered conservative and protective of the environment. If during this time the wastewater treatment plant (WWTP) is shut down, there is still approximately 3.9 feet of storage capacity. However, the MDEQ requested the applicant to provide a detailed design that shows how the cut off wall will be constructed including plans for monitoring the effectiveness and integrity of the cut off wall in terms of hydraulic containment. In addition, the MDEQ requested the applicant to provide additional information regarding the capacity of the WWTP.

25. **Comment:** The water treatment plant can handle 570 gpm. If storm event puts 1.2 foot into the basin what is the calculated amount of water that the influent system would have to handle to keep the basin under control? The water released is expected to be 511 gpm. What percentage of the time will the level of the basin be over its current elevation of 1538?

**Response:** The percentage of time water levels in the HTDF will be above the current elevation will be controlled by precipitation. Since precipitation is estimated using historical data, Part 632 requires the applicant to design water storage facilities to ensure that 24-hour, 100-year precipitation events do not cause releases of water that are not in compliance. This requirement is considered conservative and protective of the environment. In addition, the MDEQ requested the applicant to provide additional information regarding the capacity of the WWTP.

26. **Comment:** The max capability of the WWTP to handle 570 gpm needs to be evaluated for size and ability to keep up with the actual HTDF water balance.

**Response:** The MDEQ requested the applicant to provide additional information regarding the capacity of the WWTP.

27. **Comment:** In general all the contingency plans are lacking in detail and are assuming 100% operations going as planned. These contingency plans require a higher level of detail based on the risk assessments of the operation.

**Response:** The review team has not completed the application review; however, contingency plans will be evaluated thoroughly before making a proposed decision.

28. **Comment:** Discharge into wetlands EE is of a surface discharge and not groundwater discharge. Impacts to EE have not been quantified as to the difference of groundwater impact to the wetlands at 246 gpm versus a direct discharge pipe to the surface of the wetlands at 501 gpm.

**Response:** As part of its Part 632 application, the applicant is proposing to construct a bentonite or a cement-bentonite "cut-off" wall on the north end of the pit. They assert the cut-off wall will effectively prevent significant quantities of water flow through the unconsolidated material and jointed bedrock on the north end of the HTDF. However, the MDEQ requested the applicant to provide detailed design that shows how the wall will be constructed including plans for monitoring the effectiveness and integrity of the cut-off wall in terms of hydraulic containment. In addition, the MDEQ requested the company to provide what impacts to wetlands will result by installing the cut-off wall and increase surface flows from the WWTP discharge.

29. **Comment:** Dust from the unload zone to the rail load zone via conveyors and large loading machines look to be uncontrolled.

**Response:** As part of its Part 632 application, the applicant has included dust pick-ups in the concentrate load-out building to collect dust generated by material handling. In addition, as part of its Air Quality permit application, the applicant included plans to install air pollution control equipment.

30. **Comment:** Trucks leaving the site should be washed always.

**Response:** If the MDEQ issues a Part 632 permit for the Humboldt Mill, Kennecott will be required to wash all trucks before leaving the mining area.

31. **Comment:** There should be a NPDES permit for any discharge of water from this operation to the surface and regular routine testing of water in the culverts much more rigorous than a quarterly check of waters in the sediment pond.

**Response:** The applicant will be required to meet standards set in Part 632, Nonferrous Metallic Mineral Mining, and Part 31, Water Resources Protection, of the NREPA for water quality which are protective of human health and the environment. The DEQ requested the applicant to provide additional information with regards to the proposed sampling program and NPDES storm water permit requirements.

32. **Comment:** There is no contingency plan for any spillage or accident along the rail rout.

**Response:** The rail system outside the mining area is part of the transportation network; therefore, its construction and operation are outside the purview of Part 632 of NREPA.

33. **Comment:** The assumption that an earthen wall built down to bedrock is going to stop water exiting the HTDF as groundwater, especially given the known geology of the site, is an assumption that is not valid.

**Response:** As part of its Part 632 application, the applicant is proposing to construct a bentonite or a cement-bentonite “cut-off” wall on the north end of the pit. However, the MDEQ requested the applicant to provide a detailed design that shows how the wall will be constructed including plans for monitoring the effectiveness and integrity of the cut-off wall in terms of hydraulic containment. The MDEQ is also reviewing the potential for water outflow from the pit through the bedrock and may require the applicant to provide additional information as may be needed to evaluate this issue.

34. **Comment:** The WWTP should be dynamically monitored for all constituents on an on-going basis as it leaves the WWTP.

**Response:** A NPDES permit is required to be obtained for the proposed discharge from the WWTP. NPDES permits are issued with effluent limits which are set to protect water quality standards. The NPDES permit also requires appropriate effluent constituent monitoring to determine compliance with a permittee's NPDES permit.

35. **Comment:** The MDEQ needs to think about a perpetual care of this site that will keep the WWTP in operation long after the milling operation is finished.

**Response:** Part 632 prohibits reliance on perpetual care as a reclamation measure; however, Part 632 requires that financial assurance remain in effect until water treatment is no longer necessary.

36. **Comment:** The cost being assessed in the financial assurance package do not account for robust contingency plans or associated costs.

**Response:** The review team has not completed the application review; however, financial assurance will be evaluated thoroughly before making a proposed decision.

37. **Comment:** The financial assurance calculations used do not reflect the current market issues of debt rating lowering of Rio Tinto.

**Response:** As part of its Part 632 application, the applicant indicates they will provide the MDEQ with an irrevocable letter of credit. An irrevocable letter of credit is a document issued by a bank that essentially acts as an irrevocable guarantee of payment to a beneficiary (i.e. the State of Michigan). This means that if the applicant does not perform its obligations, the bank is required to furnish the funds necessary for the state to complete reclamation.

38. **Comment:** The financial assurance package should definitely be revisited if and when the Eagle project is given the green light.

**Response:** The applicant is required to meet the financial assurance requirements under Part 632 independently for its proposed operation (i.e., the Humboldt Mill Project) regardless of the status of any separate but associated mining operation.

39. **Comment:** There are no contingency plans for fuel spills

**Response:** Fuel storage facilities will be required to have secondary containment around all above ground storage tanks. In addition, the applicant will be required to submit a Spill Prevention Control and Countermeasures Plan (SPCC) to the MDEQ prior to use of all fuel tanks.

40. **Comment:** There are no contingency plans for severe thunderstorms or tornadoes

**Response:** As part of its Part 632 application, the applicant provided a contingency plan for natural risks in Volume I, Section 7.1.8.

41. **Comment:** There are no railcar designs regarding the containment of ore as it is shipped across the Upper Peninsula into Canada.

**Response:** The rail system outside the mining area is part of the transportation network; therefore, its construction and operation are outside the purview of Part 632 of the NREPA. However, the applicant has indicated that rail cars will be enclosed.

42. **Comment:** The property is considered a mine scarred or brownfield site by the Federal and State definition. It should have to be cleaned up to 2009 Federal and State environmental standards before a permit should even be considered.

**Response:** Owners and operators of a facility as described in Part 201 of the NREPA have 'Due Care' obligations. The classification of a property as a facility does not prohibit particular re-uses provided Due Care obligations are met. This is a fundamental underpinning of brownfield redevelopment. Additionally, Part 632 of NREPA does not preclude permit application or issuance due to a property being a facility as described in Part 201.

43. **Comment:** The tailings from the Ropes Gold Mine should have to be removed from the HTDF and thus kept out of future potential leakage and seepage.

**Response:** There are no provisions in Part 632 of the NREPA to require the applicant to remove tailings deposited by a former operator nor was the previous owner required to remove the tailings.

44. **Comment:** There has never been a sub aqueous tailings disposal where a second tailings load was placed on supposedly dormant sulfide tailings.

**Response:** The review team has not completed the application review; however, co-mingling of tailings will be evaluated thoroughly before making a proposed decision.

45. **Comment:** The mining permit is not being presented in the arena prescribed by law. Part 632 the newly passed hard rock mining law reads in part, "Mining area" means an area of land... on which material from that mining is stored or deposited, the lands on which beneficiation or treatment plants and storage facilities are located." This instructs that the activities planned at the Humboldt Mill, the storage of material from the Eagle Project and the construction of a treatment plant needs to be added as an amendment to Kennecott's original permit for the Eagle Project.

**Response:** Part 632 Administrative rules are clear regarding the requirement for a separate Part 632 permit for beneficiation activities:

Rule 201. (2), "Beneficiation activities shall require a separate permit under 1 or both of the following conditions:

(a) The site of the proposed beneficiation activities is not within or adjacent to the site of other associated mining activities, either existing or proposed, that are subject to a mining permit.

(b) The operator of the proposed beneficiation activities is not the same person as the operator of other associated mining activities, either existing or proposed, that are subject to a mining permit."

Kennecott's proposed beneficiation activities are not within or adjacent to the site of other associated mining activities. Therefore, Rule 201(2)(a) applies to the Humboldt Mill project, and a separate mining permit is required.

46. **Comment:** The reliance upon the sediments remaining on the bottom sets a precedent that allows the bottom of a lake to remain polluted if the top of the lake remains clean. This will allow Kennecott to claim in the future that any pollution that appears is the result of past activities, not its own.

**Response:** The MDEQ will not issue a permit allowing use of the pit lake unless there is adequate assurance that pollution will not occur. However, should an accident or unforeseen event lead to pollution, all parties that contributed to the pollution would be jointly and individually liable.

47. **Comment:** The permit application's financial assurance for any future environmental remediation of \$4,649,750 is woefully inadequate considering the realistic costs of any clean up needed.

**Response:** The MDEQ requested the applicant to provide additional information regarding financial assurance and for several other aspects of the application that may affect the amount.

48. **Comment:** Kennecott needs to provide funding for at least one full-time MDEQ site monitoring position (training, wages, and benefits). This (these) position needs to be rotated to a new person every year to ensure the integrity of the position from possible undue influence. This will alleviate the financial strain on the MDEQ (and hence the

taxpayers), while ensuring strict adherence to any limitation and expectations set forth in the permit.

**Response:** If the mill is permitted, the company is required by Statute (Part 632 of the NREPA, Sec. 63215, (1)) to pay a surveillance fee to be used by the MDEQ for staff to conduct regular inspections and monitoring of the mill facilities. The fee would be calculated to provide funds in proportion to the amount appropriated by the legislature for the nonferrous mining program costs.

49. **Comment:** The MDEQ should not be wasting taxpayer money to review the Humboldt Mill application until the Eagle Mine permits are issued.

**Response:** The applicant is entitled under law to a review and permit decision on an application for a separate mining permit.

50. **Comment:** Are the mining permit applications proposed safeguards sufficient to insure total isolation of those contaminants indefinitely?

**Response:** The MDEQ requested the applicant to provide additional information regarding several aspects of the hydrogeology around the HTDF.

51. **Comment:** The application ignores the dissolved oxygen brought in by a bedrock aquifer, which is surface water infiltrating the bedrock that is known to be high in dissolved oxygen, which feeds the acid rock drainage.

**Response:** The MDEQ requested the applicant to provide additional information regarding water chemistry.

52. **Comment:** Regulators and decision makers should reject this mining permit application if not supplemented with adequate bedrock characterization.

**Response:** The MDEQ requested the applicant to provide additional information regarding several aspects of the hydrogeology around the HTDF.

53. **Comment:** I'm concerned about the creation of dust that will affect Iron County.

**Response:** The MDEQ and the Air Quality Division (AQD) is determined to protect the health and welfare of all citizens of the State of Michigan by ensuring they have safe air to breathe. To accomplish this, the AQD utilizes the state and federal air quality rules and regulations that are in place to protect public health and the environment. The federal Clean Air Act includes the national ambient air quality standards (NAAQS) to protect public health. These standards define the maximum concentration of certain air emissions in the breathing zone that would protect the health of the most sensitive individuals, including those with heart, respiratory, neurological, and asthma problems. In addition, chemicals, including metals that do not have an established NAAQS, must meet the applicable AQD-established, health-based screening levels. Screening levels are developed to protect from cancer and non-cancer effects based on toxicological research.

As a part of the air permit application package, the applicant has provided dispersion modeling which shows compliance with all applicable NAAQS and AQD-established, health-based screening levels. MDEQ has yet to complete its review of the applicant's submittal. The permit will, however, only be approved if the applicant's submittal is found

to be correct and all applicable NAAQS and AQD-established, health-based screening levels will be met.

54. **Comment:** The application is huge. There is just too much there. It is obvious obfuscation.

**Response:** Due to the complex and technical nature of this type of operation, the application is written for technical readers and should be expected to be quite lengthy. Furthermore, no one person has all the necessary expertise to evaluate all aspects of the application; therefore, the MDEQ established a multi-discipline mining team to review the application.

55. **Comment:** The Humboldt has been the site of historic pollution. That pollution has not been fully revealed, remediated or addressed by this application.

**Response:** The applicant is required to identify and describe the conditions or features as they currently exist within the mining area and affected area. In addition, the applicant is required to identify any known occurrences of groundwater that is contaminated so that a property is a facility as defined by Part 201 of the act. There are no provisions in Part 632 of the NREPA for requiring the applicant to remediate existing contamination. However, by assuming ownership of the property the applicant may be required to address some cleanup aspects of the site under its "due care" responsibilities.

56. **Comment:** The application includes only limited hydrogeologic information collected in the vicinity of the lake. There is not enough information to assess impacts to surrounding ground and surface waters, especially given the complexities at the site.

**Response:** The MDEQ requested the applicant to provide additional information regarding several aspects of the hydrogeology around the pit.

57. **Comment:** This application contains no information regarding the quality of water discharging into the wetlands, so it is currently impossible to predict impacts to surface waters (wetlands and multiple discharges to the Escanaba River and Black River).

**Response:** Kennecott's NPDES permit application provides considerable information regarding the quality of its proposed wastewater discharge to the wetland. Additional information concerning the chemical character of the treated wastewater and storm water has been requested from Kennecott by the MDEQ, Water Bureau technical staff. A draft NPDES permit will not be developed until Kennecott has provided sufficient information to adequately characterize the quality of any wastewaters they propose to discharge to any waters of the state.

58. **Comment:** Although Kennecott has not applied for a wetland permit, it is likely that one is necessary. Discharge to the wetlands would be applied to land surface rather than entering the wetlands through seeps as it currently does. The application does not include analyses of how this change in groundwater and surface water interface would impact the wetlands. Kennecott's assertion is that there would be no change to the wetlands due to its discharge, but the assertion is not substantiated.

**Response:** Section 30305(1) of Part 303 Wetland Protection states in part, that if an activity requires a discharge permit under part 31 (as an example an NPDES permit) then

it does not require a permit under Part 303. Any potential impacts to the wetland as a result of the discharge will be evaluated as part of the review for the discharge permit.

59. **Comment:** The question of whether mine waste discharged into surface waters that would trigger permits under the Clean Water Act are “fill” or “pollutant discharges” is currently under consideration by the United State Supreme Court, with a decision expected this spring. By submitting its Inland Lakes and Streams Act permit application for depositing tailings into the lake, Kennecott is submitting an application for “filling” instead of discharging pollutants, as the proposed activities would do. If the USSC affirms the Ninth Circuit decision that the tailings can be “pollutant discharges” then Kennecott must seek an application under the Clean Water Act for the tailings disposal in the lake. Kennecott’s model only considers water quality of the effluent and ignores water quality in the whole lake. MDEQ has determined that the lake is a “water of the state,” therefore, it cannot be used as a holding pond for toxic waste and only the effluent considered. Kennecott must obtain a NPDES permit for the discharge of the slurry and process chemical effluent under Michigan Law.

**Response:** The Humboldt Pit was not considered waters of the state under Part 31, but is a lake under Part 301. Therefore, a Part 301 permit is required. Because Michigan has assumed authority for Section 404 of the Clean Water Act, if a Part 301 permit is issued, it also covers authority for the discharge of fill under Section 404.

60. **Comment:** Under a scenario where the HTDF fully mixes, Kennecott admits that nickel, copper, and mercury will exceed discharge limits in almost all years of mill operation and for at least seven years after mill production ceases. The application states that “nickel, copper, and mercury concentrations at the HTDF outlet exceeded the PEL” but claims that these compounds would be removed by the proposed WWTP. Vol. I, App. D, p. 51. Given this potential, the EIA must provide an analysis of surface water impacts in a full mixing scenario during operations and for the minimum of 7 years that the lake would not meet WQS; it does not. Currently, Kennecott’s application shows that water quality standards will be exceeded in the lake. MPA, Vol. I Fig 4-1. See Fig. 9, App. D, Vol. I, MPA for dissolved Ni, Cu, Calcium, and Fe in HTDF.

**Response:** The MDEQ made a determination that the Humboldt Pit is not waters of the State as defined by Part 31 of the NREPA; however, the MDEQ determined the pit is an inland lake as defined by Part 301 of the NREPA. In addition, the applicant must meet water quality standards established in the NPDES permit for surface water discharge.

61. **Comment:** The HTDF Hydrologic and Geochemical Mass Balance Model Report only consider “an even influent flow into the WWTP.” Of course, flow to the WWTP will not always be “even.” WWTP maintenance, unplanned events and weather all will necessitate “uneven” flows not considered by Kennecott’s modeling.

**Response:** The Humboldt Tailings Disposal Facility Basin (basin) will receive tailings, precipitation, groundwater, and process water during operations. The basin will provide storage and therefore, equalization, prior to the WWTP and the WWTP will receive pumped wastewater from the basin. This will result in the ability to control influent flow to the WWTP (i.e. provide for an even influent flow into the WWTP). Preliminary estimates have determined that the basin will provide up to approximately 600 days of contingency storage (and 2,900,000 cubic feet of additional storage, if necessary, which may be

provided by raising the north perimeter berm elevation by one foot), which would provide time for response to WWTP maintenance, weather, or other unplanned events. Future DEQ review of requested additional information will confirm this.

62. **Comment:** According to historical records, two discharge structures were constructed to regulate outflow from the HTDF. Kennecott indicates that now there is only one, because a “geologist” could not locate the other. A hydrologist or geohydrologist should conduct this survey. If an unknown discharge structure is still in place, discharges of highly contaminated water could occur, further risking water quality in surface and ground water. **Response:** As part of its Part 632 application, the applicant is proposing to construct a bentonite or a cement-bentonite “cut-off” wall on the north end of the pit. This would eliminate any existing discharge structures. However, the MDEQ requested the applicant to provide a detailed design that shows how the wall will be constructed including plans for monitoring the effectiveness and integrity of the cut-off wall in terms of hydraulic containment.
63. **Comment:** Groundwater inflow to the HTDF has been estimated, not measured. Inflow is a measurable parameter and real data should be used. MPA, Vol. I, App. D, p. 3. **Response:** The ground water flow into the HTDF was calculated using actual aquifer characteristics gathered with widely accepted hydrogeologic procedures. The gathered aquifer facts were then used to determine the volume of water flowing through the entire unconsolidated aquifer cross-section at the south end of the HTDF. We refer the commentor to the 1984 Humboldt Pit Hydrologic Report found in Volume IIB, Appendix B-1 to discover the methodologies used to measure and estimate total flow into the HTDF from the south. Construction of large scale ground water intercepts to measure flow through a large cross-sectional area is not a usual or prudent practice. MDEQ believes the work done by the applicant and predecessor operators of the Humboldt facility adequately define the ground water flow into the HTDF from the unconsolidated aquifer located south of the HTDF.
64. **Comment:** “Turnover” of water in the lake was not considered in the EIA, even though MDEQ itself has identified that as an issue. The company is relying on chemical and thermal stratification of the water and apparently plans to treat only the uppermost portion of the lake, relying on stratification completely and forever. This sets a precedent of allowing deep water bodies to be polluted at the bottom, if water at the top is purportedly clean. This negligent approach to water quality flies in the face of the letter and spirit of Part 632, the Clean Water Act and other applicable laws.

Stratification and turnover of lakes, including deep pit lakes, has been and is currently under study at various existing and proposed sites. For example, the Draft EIS for the proposed PolyMet mine in Minnesota includes a detailed turnover analysis. Attachment 1. In the PolyMet study, pit lakes of similar depth to that of this lake, turned over. Kennecott’s turnover predication relies on data gathered on one day in May 2007 and one day in July 2007. The prediction of and reliance upon permanent stratification, based on two data points is unfounded and does not lead to the conclusions cited by Kennecott. Numerous studies of pit lake limnology and turnover are available:

Castendyk Devin N.; Webster-Brown Jenny G. Sensitivity analyses in pit lake predication: Relationship between turnover and input water density Martha Mine, New Zealand; Chemical Geology: Vol. 244, pp. 42-55 (2007).

Thomann, R.V. and J.A. Mueller. Water Quality Dynamics of Pit Lakes, Principles of Surface Water Quality Modeling and Control; Harper Collins, New York, NY (1987).

Much of the literature indicates that pit lakes as deep as the Humboldt pit lake experience whole or partial mixing. Despite the complexity of the issue, Kennecott's application does not provide critical information relevant to a serious assessment, nor a serious assessment of the probability of turnover, full or partial mixing. App. D to Vol. I, MPA, concludes on p. 12, that "the HTDF may theoretically mix completely" and that it is "unlikely" that it will mix completely. However, without complete mixing being ruled out, the mining plan, particularly the WWTP, must be able to handle a complete mixing situation and complete mixing must be analyzed in the EIA.

Additionally, groundwater from the Quaternary system flows into the lake (App B-1 and I). Depending on how much water and where it enters the lake, this may induce turnover and the oxidation of additional acid-generating tailings, but these potential impacts are not fully considered in the EIA as they must be.

**Response:** The MDEQ requested the applicant to provide additional information regarding limnology and water chemistry.

65. **Comment:** Storm water run-off enters the Black River via wetlands. All surface-collecting water except water from the pit is classified as non-contact, would not be treated and would be discharged directly through sedimentation ponds into the ground water or wetlands south-west of the facility that drain into the Black River. The storm water management plan is to "minimize the time storm water run-off is on site and its contact with historic pyretic material." This plan in no way addresses the certainty that "storm water" will in some instances be contact water and must be collected and treated. Contaminated soil, fugitive dust and air deposition will contaminate water and snow in the area. Simply allowing contaminated water to seep into ground water and surface water is unacceptable.

Only 2 surface water monitoring sites are planned at the project site. Kennecott claims that these meet R.203(g) and 406(5)(b) requirements. They do not. The fact is that there are numerous "mining activities" at this site that must be monitored. Two sites at one far end of the facility are inadequate. At a minimum, surface water should be monitored regularly at every point where it leaves the site and as close as practicable to each potential source of pollutant escape.

**Response:** The applicant will be required to meet standards set in Part 632, Nonferrous Metallic Mineral Mining, and Part 31, Water Resources Protection, of the NREPA for water quality which are protective of human health and the environment. The DEQ requested the applicant to provide additional information with regards to the proposed sampling program and NPDES storm water permit requirements.

66. **Comment:** The application does not include controls for fugitive dust nor is air quality adequately addressed in the EIA. Planned dust control is spotty and inadequate.  
**Response:** As a part of the air permit application, the applicant has included a fugitive dust plan to address continuous fugitive emissions control for all facility roadways, the plant yard, and all material handling operations. MDEQ has yet to complete its review of this fugitive dust plan. If the air use permit is approved, the fugitive dust plan will be included as a part of it; and the company will be required to comply with it on an on-going basis.
67. **Comment:** The MPA fails to consider the hydrologic system in the bedrock surrounding the proposed tailings disposal facility and infers there is no bedrock aquifer.  
**Response:** The MDEQ requested the applicant to provide additional information regarding several aspects of the hydrogeology around the pit. In addition, the MDEQ does not agree with the applicants conclusion the bedrock is not an aquifer.
68. **Comment:** The permit applicant has not compiled structural geology maps, logs of bedrock borings or cross sections based on borings and field mapping.  
**Response:** As part of its Part 632 application, the applicant provided geologic maps, cross sections, and boring logs. We refer the commentor to Volume Iii, Humboldt Mill Basin Integrity and Vertical Stability of the Humboldt Tailings Disposal Facility and Volume IIJ, Appendix A, Bedrock Hydrogeological Characterization Report and Appendix B, Lithologic Logs and Petrographic Description of Coreholes.
69. **Comment:** There is no discussion of the geologic maps, cross sections or records for the former Humboldt Iron Mine.  
**Response:** The MDEQ requested the applicant provide an evaluation of the status of historical mine records.
70. **Comment:** All geologic information, including the US Geological Survey report and mapping of the many rock exposures around the pit by Kennecott geologists, must be compiled and presented.  
**Response:** As part of its Part 632 application, the applicant included pertinent information from the USGS Republic Quadrangle and field mapping of the bedrock exposures in and around the HTDF. We refer the commentor to Volume Iii, Humboldt Mill Basin Integrity and Vertical Stability of the Humboldt Tailings Disposal Facility.
71. **Comment:** In conjunction with structural geology of the Humboldt site area, the permit applicant needs to submit regional groundwater gradients with flow directions and travel times down gradient of the Humboldt waste disposal facility as required by the Administrative Rules of Part 632.  
**Response:** The MDEQ requested the applicant to provide a regional bedrock aquifer water elevation contour diagram and a determination of travel direction and travel time.
72. **Comment:** The monitoring wells PW-2 and KMW-5 are upgradient of the Humboldt pit lake but can not represent background water quality due to the prevalent groundwater and soil impacts in this area from past mill operations.

**Response:** The review team has not completed the application review; however, the applicant is required to identify and describe the conditions or features as they currently exist within the mining area and affected area. The data presented for PW-2 and KMW-5 in the application characterizes existing baseline conditions for the mining area. In addition, the MDEQ requested the applicant to collect additional data to establish natural baseline conditions for the affected area.

73. **Comment:** According to the MPA, the WWTP is scheduled to be available for water treatment for five years after operations cease and then be decommissioned. This time period seems arbitrary and there is no explanation why five years was chosen.

**Response:** The MDEQ requested the applicant to provide rationale for the maintaining the WWTP for five years after operations.

74. **Comment:** Although section 5.1 describes monitoring for the Humboldt pit lake (page 29) there is no groundwater compliance monitoring described for the mill facilities.

R425.406(5)(b) specifically state that “Compliance monitoring wells shall be located as close as physically practicable but not more than 150 feet from the mining activity being monitored.”

**Response:** The reference to R425.406(5)(b) is incomplete. The rule also states, “However, the Department may approve an alternate water monitoring location if the operator demonstrates the location is protective of the environment and public health and safety, and a closer location is not feasible or affective”. However, compliance monitoring wells will be thoroughly evaluated before making a proposed decision.

75. **Comment:** The state of Michigan DNR fisheries division and MDEQ Water Bureau needs to verify the submitted wetland, lake, and stream ecology, along with hydrological data and current site conditions (when weather allows) at the least. Since this has been declared a 201 facility and brown field site; why should there not be some current site review by independent divisions from the MDNR or MDEQ. It would be acceptable for the divisional department personal to evaluate, not directly connected to the mining review process.

**Response:** The applicant has the burden of identifying and describing baseline conditions as they currently exist within the mining area and affected area. The MDEQ requested the applicant to provide additional information regarding several aspects of the application regarding hydrogeology, hydrology, and aquatic biology. The MDEQ Remediation and Redevelopment Division is addressing issues of existing contamination with the applicant separately but in coordination with other MDEQ environmental permit reviews.

76. **Comment:** In the contingency plan, power outage relies on a 100 KW generator and does not mention the WWTP operation during outage.

**Response:** The applicant indicates in its contingency plan, if the WWTP shuts down as a result of physical or mechanical problems, the HTDF has the capacity to store up to approximately 600 days of displaced water from tailings loading and precipitation. This is sufficient time to correct power outages.

77. **Comment:** In the water monitoring tables, conductance is listed as not applicable; obviously it is as much of the data collected by the applicant in previous permit applications was applicable to determining baseline data in the EIA and hydrology reports.

**Response:** The applicant provides for quarterly monitoring of specific conductance in the application. The target detection limit for specific conductance was listed as NA in the water monitoring tables because there is no threshold level of detection.

78. **Comment:** The application is too large for a thorough review by an agency already short on funding, especially considering the very short deadline.

**Response:** The MDEQ is required to review and process an application submitted to the department for a Mining Permit under the time lines dictated in Part 632. However, the MDEQ is committed to take the necessary time to conduct a thorough, accurate, and comprehensive review of the application. To address the complexity and length of the application, the MDEQ established a multi-disciplinary Mining Team comprised of technical specialists to review the application.

79. **Comment:** Contrary to the requirements of Part 632 [R425.201 (3) and (4)(c)], several documents appear to be missing from the MDEQ web site. This includes all of Volume 2B and portions of Volume 2I. The lack of availability makes it impossible to fully evaluate the Mine Permit Application.

**Response:** One segment of the application was initially missing from the website posting; the MDEQ has since remedied that and has provided a DVD with all of the application documents to interested parties upon request. The application is also available at various locations in Marquette County and the MDEQ Office of Geological Survey in Lansing.

80. **Comment:** Kennecott proposes adding a wall on the north end of the pit to prevent leaching from the pit. At the February 18, 2009, MDEQ public information session it was revealed that Kennecott had not yet released the design of this wall. Will the wall extend all the way to bedrock? What will the wall be made of? This wall would seem to be a primary difference between the Callahan operation and the Kennecott plan. How could the MDEQ find the Kennecott plan to be administratively complete even though this critical information was absent from the plan?

**Response:** As part of its Part 632 application, the applicant is proposing to construct a bentonite or a cement-bentonite “cut-off” wall on the north end of the pit. However, the MDEQ requested the applicant to provide a detailed design that shows how the wall will be constructed including plans for monitoring the effectiveness and integrity of the cut-off wall in terms of hydraulic containment.

Even though the information included in the application for the cut-off wall was not adequate, the determination of administratively complete is not a finding concerning the adequacy or accuracy of the information submitted. In addition, a determination of administratively complete does not preclude the MDEQ from requiring additional information from the applicant.

81. **Comment:** The Kennecott reclamation plans do not call for final conditions at the Humboldt site to even remotely resemble pre-mining conditions.

**Response:** Part 632 requires only that the affected area (an area outside of the mining area that may be affected by mining operations) be returned to premining conditions; the actual mining area (in this case the mill site and pit lake) may be used for any legal

purpose. The MDEQ has requested additional information regarding final land use and the final site reclamation plan.

82. **Comment:** Since no material will be mined at the site, it would appear that the MDEQ will be limited to collecting the minimum surveillance fee of five thousand dollars per year. This amount seems to be very inadequate to cover the costs of monitoring a major industrial site.

**Response:** The Humboldt processing facility would be developed to process ore mined from the Eagle Project. Therefore, surveillance fees assessed at the Eagle Mine would also be utilized to include fees for monitoring and inspections at the Humboldt processing facility.

83. **Comment:** There does not seem to be any data available to determine if the reported disappearance of the trout population in the Escanaba River resulted from contaminants that are documented to have been leaking from the north shore of the Humboldt pit. Such studies should be conducted in order to help predict how future operations at the mill site will impact the surrounding surface waters. Are the species of fish that remain, in the Escanaba River below the mill site and the Greenwood reservoir just down stream, contaminated with heavy metals?

**Response:** The MDEQ requested the applicant to provide additional information regarding baseline fisheries data and analysis of fish tissue for contaminants.

In 1990, the Michigan Department of Natural Resources (MDNR) Surface Water Quality Division (now MDEQ) conducted a survey of the wetlands, water quality, sediments, and biota in the immediate vicinity of the Humboldt Pit outfall and the Middle Branch of the Escanaba River. The objectives of this study were to evaluate whether the Humboldt Pit discharge had adversely affected the fish and aquatic macroinvertebrate communities, physical habitat, water quality, or sediments. The results of this study may be found in Appendix D-1, Attachment 2, of the Part 632 permit application.

Additionally, any observed change in trout numbers may be a result of MDNR stocking practices. For example, between 1979 and 1999, thousands of brook trout, brown trout, and rainbow trout were stocked in different locations on the Middle Branch of the Escanaba River.

84. **Comment:** The impact of climate change on the temperature and chemical stratification of the mine pit must be considered.

**Response:** The MDEQ requested the applicant to provide additional information regarding water chemistry and limnology.

85. **Comment:** The addition of more tailings to the pit will reduce the depth of the pit, which may impact future temperature stratification and hence chemical stratification in the pit.

**Response:** The MDEQ requested the applicant to provide additional information regarding water chemistry and limnology.

86. **Comment:** Testing should be done to determine if the existing contaminates in the mine pit from the Callahan operations are moving horizontally from the site.

**Response:** The MDEQ requested the applicant to provide additional information regarding several aspects of the hydrogeology around the HTDF, including a more detailed assessment of the likely chemistry of water leaving the HTDF via secondary porosity features.

87. **Comment:** There has been very limited and inadequate groundwater testing and there has been no testing of the water below the level of the bedrock. If water can be pumped out of the bedrock for decades from household wells drilled into bedrock, obviously there must be some movement of the water through the bedrock.

**Response:** The MDEQ requested the applicant to provide additional information regarding several aspects of the hydrogeology around the HTDF.

88. **Comment:** Was there a study done for the noise pollution that the road would generate to the residents living within hundreds of feet of this or would this not be considered until the mill was up and running and the road installed?

**Response:** A study was done to establish baseline noise levels (as they currently exist) in the vicinity of the mill (Volume IIF, Appendix G). In the EIA (Volume II), vehicular traffic was listed as one of the activities that could impact noise levels. The Mining Plan proposes that 50 covered trucks will haul ore to the mill daily. Local units of government may enact reasonable ordinances regulating hours of operation and routes used by vehicles in connection with mining operations.

89. **Comment:** Most of Kennecott's attention has been given to the freshwater cap and the treatment of that cap as it flows out of the pit and into the downstream wetlands. The same attention should be given to the stability of the settling pond and underlying aquifer. The addition of finely milled tailings, I'm assuming, will remain in suspension throughout the pond, creating difficulty in effective treatment.

**Response:** The MDEQ requested the applicant to provide additional information regarding water chemistry and the WWTP.

90. **Comment:** The permit specifically states that Kennecott will not exacerbate the contamination problems at the site. This gray area between existing and potential contamination is disturbing to me and the MDEQ is willing to accept "legal levels" of pollution.

**Response:** The MDEQ Remediation and Redevelopment Division is addressing issues of existing contamination with the applicant separately but in coordination with other MDEQ environmental permit reviews. Additionally, Part 632 of NREPA does not preclude permit application or issuance due to a property being a facility as described in Part 201.

91. **Comment:** The Financial Assurance proposed by Kennecott is inadequate at \$4,649,750. The Financial Assurance ignores glaring potential for immense clean up costs including HTDF berm failure (which is not accounted for in this Financial Assurance figure because it was not included in the contingency plans.) Further, the MPA (Vol. I, App. D, p. viii) acknowledges that there is the potential for at least 7 years (no upper limit on treatment time is provided) of post-closure treatment of the HTDF. That figure, perhaps because it is currently unknown, is not included in the Financial Assurance.

According to Part 632's Rules:

A permittee shall thereafter maintain financial assurance that is approved by the department during mining operations and during the post-closure monitoring period, until the department releases the permittee from its obligation to maintain financial assurance upon termination of the mining permit or upon transfer of the mining permit to another operator. R425.301(1).

MDEQ cannot terminate a permit, until it determines "that there is no significant potential for water contamination resulting from the mining operation. R425.407(1). Therefore, no standard, other than that which allows MDEQ to terminate the permit, can dictate the release of Financial Assurance. Kennecott attempts to substitute its own proposed triggers for the release of Financial Assurance for that of Part 632's. MDEQ does not have the authority to substitute Kennecott's proposed standard for the legal standard, and must reject it.

**Response:** The MDEQ requested the applicant to provide more information regarding financial assurance and for several other aspects of the application that may affect the amount. However if a permit is issued, the applicant must maintain financial assurance to cover any necessary reclamation and remediation from the effective date of the permit through the end of post-closure monitoring. In the event of a violation of any NREPA permit, the MDEQ may utilize the financial assurance instrument to mitigate if necessary. In addition, the MDEQ may increase the amount of financial assurance at any time if necessary. Financial assurance would remain in place until the MDEQ is satisfied the reclamation is successful. Furthermore, a permittee must apply to the MDEQ for partial or complete release of financial assurance.