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EPA REGION 5*Via FedEx*

June 9, 2006

Rebecca Harvey, Chief
Water Division
Underground Injection Control Branch
U.S. Environmental Protection Agency Region 5
77 West Jackson Boulevard
Mail Code: WN-16J
Chicago, IL 60604-3590

**Re: *Kennecott Eagle Minerals Company;
Marquette County, Michigan;
Proposed Underground Injection Wells***

Dear Ms. Harvey:

We are attorneys for and are writing on behalf of our client, the Keweenaw Bay Indian Community (the "Community"). The Community has numerous concerns about the environmental impacts that will result from the mine proposed by Kennecott Eagle Minerals Company ("Kennecott") in Kennecott's application for a Nonferrous Metallic Minerals Mining Permit (the "Mining Permit Application") under Part 632 (Nonferrous Metallic Mineral Mining) of the Michigan Natural Resources and Environmental Protection Act ("NREPA"), MCL § 324.63201 *et seq.*, and the administrative rules promulgated thereunder, MAC R 425.101 *et seq.*, that is currently pending before the Michigan Department of Environmental Quality ("MDEQ").

Your March 31, 2006 letter to Jonathan C. Cherry of Kennecott, states that Kennecott's "proposed project will include at least three kinds of underground discharge systems which are considered Class V wells" under the Underground Injection Control ("UIC") program administered by the U.S. Environmental Protection Agency ("EPA") in Michigan¹ pursuant to the federal Safe Drinking Water Act ("SDWA"), 42 USC § 300f *et seq.* Your March 31 letter also states that "[n]ew Class V wells are at a minimum, required to be inventoried with the UIC Director before construction of the well can occur." As explained below, based upon information contained in, or missing from, Kennecott's Mining Permit Application and Kennecott's application to MDEQ for a groundwater discharge permit under Part 31 (Water

¹ Michigan does not have an approved UIC program. 40 CFR § 147.1151.

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Resources Protection) of the Michigan Natural Resources and Environmental Protection Act, MCL § 324.3101 *et seq.* (the "Groundwater Discharge Application"), U.S. EPA should exercise its authority under the UIC program to require that Kennecott obtain a permit for the three proposed injection wells.

As noted in your March 31, 2006 letter, Kennecott proposes to install and operate at its proposed mining site in Marquette County, Michigan (the "Site") the following three Class V injection well systems that are regulated under the UIC program:

- Treated Water Infiltration System ("TWIS").²
- Mine backfill well.
- Septic system for sanitary wastewater.

While the UIC regulations provide that Class V wells are generally authorized by rule³ (subject to compliance with the inventory requirement mentioned in your March 31 letter and compliance with applicable UIC regulations), an individual permit is required if one of the exceptions in 40 CFR § 144.84(b) applies to a proposed discharge. 40 CFR §§ 144.24(a); 144.84(a), (b). Section 144.84(b)(1) provides that an individual permit is required if the proposed injection well fails "to comply with the prohibition of fluid movement standard in § 144.12(a) and described in § 144.82(a)," which respectively provide:

No owner or operator shall construct, operate, maintain, convert, plug, abandon, or conduct any other injection activity in a manner that allows the movement of fluid containing any contaminant into underground sources of drinking water, if the presence of that contaminant may cause a violation of any primary drinking water regulation under 40 CFR part 142 or may otherwise adversely affect the health of persons. The applicant for a permit shall have the burden of showing that the requirements of this paragraph are met.

40 CFR § 141.12(a) (emphasis added).

Prohibition of fluid movement. (1) As described in § 144.12(a), your injection activity cannot allow the movement of fluid containing any contaminant into USDWs, if the presence of that contaminant may cause a violation of the primary drinking water standards under 40 CFR part 141, other health based standards,

² Kennecott submitted the Groundwater Discharge Application to MDEQ on February 20, 2006, for this proposed discharge.

³ 40 CFR § 144.24(a).

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or may otherwise adversely affect the health of persons. This prohibition applies to your well construction, operation, maintenance, conversion, plugging, closure, or any other injection activity.

(2) If the Director of the UIC Program in your State or EPA Region learns that your injection activity *may endanger USDWs*, he or she may require you to close your well, require you to get a permit, or require other actions listed in § 144.12(c), (d), or (e).

40 CFR § 144.82(a) (emphasis added).

The aquifers into which Kennecott proposes to discharge are undeniably underground sources of drinking water (“USDWs”) under the UIC program definition:

Underground source of drinking water (USDW) means an aquifer or its portion:

- (a)(1) Which supplies any public water system; or
- (2) Which contains a sufficient quantity of ground water to supply a public water system; and
 - (i) Currently supplies drinking water for human consumption; or
 - (ii) Contains fewer than 10,000 mg/l total dissolved solids; and
- (b) Which is not an exempted aquifer.

40 CFR § 144.3.

The aquifers that will be impacted by Kennecott’s discharges are protected USDWs because they: (i) contain a sufficient quantity of groundwater to supply a public water system;⁴ (ii) contain fewer than 10,000 mg/l total dissolved solids;⁵ and (iii) have not been declared exempted aquifers under the UIC program.⁶ In addition to the USDW definition that is intended to protect aquifers that are not currently being used as drinking water sources, both the bedrock

⁴ For example, § 4.3.11.4 of the Mining Permit Application indicates that Kennecott plans on converting a monitoring well in the upper aquifer (QAL011D) into “a potable well for the project and will apply for a Type II Non-Transient Non-Community [Public] Water Supply permit from the Marquette County Health Department.”

⁵ See, e.g., Table 3-1 and Appendices B, D and F-1 of the Groundwater Discharge Application.

⁶ No aquifer exemptions are listed for Michigan at 40 CFR § 147.1152.

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and alluvial aquifers fall within the definition of USDW under 40 CFR § 144.3(a)(2)(i) for sources currently supplying drinking water. In fact, as noted in footnote 4, Kennecott itself will be utilizing the upper, alluvial aquifer as the source of drinking water for its operations – the same aquifer into which Kennecott proposes to discharge wastewater through the TWIS and the septic system for sanitary wastewater. Also, both the bedrock aquifer and the alluvial aquifer are actually utilized as USDWs in the region of Kennecott's proposed discharges.⁷

While, as indicated in your March 31 letter, Kennecott's three proposed injection wells are subject to the UIC program's inventory requirement, U.S. EPA also is authorized to require Kennecott to apply for a UIC permit for its proposed injection wells:

The Director^[8] may require the owner or operator of any Class I, II, III or V injection well which is authorized by rule under this subpart to apply for and obtain an individual or area UIC permit. Cases where individual or area UIC permits may be required include:

(1) The injection well is not in compliance with any requirement of the rule;

...

(2) The injection well is not or no longer is within the category of wells and types of well operations authorized in the rule;

(3) The protection of USDWs requires that the injection operation be regulated by requirements, such as for corrective action, monitoring and reporting, or operation, which are not contained in the rule.

...

40 CFR § 144.25(a).

⁷ See, e.g., Appendix C of the Groundwater Discharge Application, which identifies both alluvial and bedrock water wells within the area surveyed by Kennecott for that application. In addition, an independent well survey performed by the Community's hydrology consultant, Wittman Hydro Planning Associates, Inc. ("WHPA"), has identified a number of wells completed in both the bedrock and alluvial aquifers just outside of the area surveyed by Kennecott.

⁸ The term "Director" by definition includes the Regional Administrator in the case of a U.S. EPA-administered program. 40 CFR § 144.3.

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Moreover, “a Region’s decision to require the owner or operator of a Class V well to apply for a permit is a matter committed to the sound discretion of the Region.” *In Re Puna Geothermal Venture*, 9 EAD 243, 249 (2000) (U.S. EPA Region 9 did not abuse its discretion in requiring authorized by rule Class V geothermal reinjection well to obtain permit.). *See also In The Matter Of Pontiki Coal Corp.*, 3 EAD 572 (1991) (U.S. EPA Region 4 reasonably exercised its discretion to require a permit for a Class V coal slurry injection well.)

For the reasons explained below, U.S. EPA should require Kennecott to obtain permits under the UIC program for each of the injection wells it proposes to install and operate in connection with Kennecott’s proposed mining project.

Treated Water Infiltration System

Kennecott proposes to inject treated wastewater into the groundwater on the Site through the TWIS. As indicated above, Kennecott has submitted the Groundwater Discharge Application seeking authorization for this discharge of wastewater.⁹ Kennecott’s Groundwater Discharge Application indicates that the TWIS will inject after treatment over a half-million gallons a day of water from the following sources:

- Mine drainage water.
- Contact water from the temporary development rock storage area.
- Truck wash contact water.
- Ore crusher contact water.
- Contact water from the covered coarse ore storage area.
- Main operations area storm water runoff.
- Shop wastewater.
- Possibly, laboratory wastewater.

The TWIS is appropriately characterized as an industrial waste disposal well. *See* “Fact Sheet – Industrial Waste Disposal Wells” EPA 816-F-01-041. According to the Groundwater Discharge Application, Kennecott proposes to discharge groundwater containing numerous metals well in excess of the background concentrations of such metals in the receiving groundwater, which will result in the degradation of groundwater quality in the vicinity of the TWIS discharge. *See, e.g.*, Application, Tables 3-1, 6-1, App. D. In addition, the Community’s hydrology consultant, WHPA, believes that the concentration of contaminants expected by Kennecott in the discharge from the treatment system is overly optimistic due to unrealistic assumptions about the concentration of contaminants that will be contained in the untreated

⁹ Notably, on March 22, 2006, MDEQ notified Kennecott that the TWIS Groundwater Discharge Application was administratively incomplete. In a May 11, 2006 email to Mr. Cherry of Kennecott, after reviewing additional information submitted by Kennecott in response to the March 22 incompleteness determination, MDEQ again stated that additional information was still required in order for the application to be complete.

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wastewater sources. WHPA also believes that Kennecott has underestimated the volume of water that will need treatment, and thus will be discharged by the TWIS.

Moreover, MDEQ has identified the proposed discharge of mercury from the TWIS as a significant issue, particularly with respect to the ultimate venting of the discharge to a tributary of the Salmon Trout River. *See* Attachment 1, letter, dated September 14, 2005, from William Creal, Chief, Permits Section, MDEQ Water Bureau to Mr. Cherry of Kennecott.

In light of the industrial nature of, and the numerous metals that will be contained in, Kennecott's proposed discharge from the TWIS and the uncertainty about their concentration, U.S. EPA should exercise its authority under 40 CFR § 144.25 to require Kennecott to apply for a UIC permit and demonstrate that the proposed discharge will comply with the requirements of the UIC program and to impose permit conditions, including requirements for monitoring, reporting and operation, as well as for corrective action, to ensure such compliance and implementation of appropriate remedial measures if compliance is not maintained or one or more of the aquifers are is contaminated. As provided in 40 CFR § 141.12(a), Kennecott has the burden of showing that the contaminants which will be contained in its proposed discharge will not cause a violation of any primary drinking water regulation and that the proposed discharge will not adversely affect public health.

Mine Backfill Well

As indicated in your March 31 letter and the UIC program regulations, the proposed mine backfill well is, by definition, regulated as a Class V well. 40 CFR § 144.81(8).

Based on the limited information provided by Kennecott in its Mining Permit Application, the backfill materials may be comprised of any or all of the following:

- Development rock, amended with limestone in an attempt to reduce acid formation.
- Aggregate.
- Fly ash.
- Wastewater treatment sludge.¹⁰
- Wastewater treatment evaporator/crystallizer solids.
- Wastewater treatment concentrate.
- Solids from the contact water basins.
- Gob (development rock that is not taken above ground).
- Cement.

¹⁰ Of course, any of the three wastewater treatment residues that may be injected through the mine backfill well will contain greatly increased concentrations of the numerous contaminants removed from the wastewater by the treatment processes.

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Although Kennecott has asserted in its Mining Permit Application¹¹ that there is no communication between the bedrock and alluvial aquifers, this assertion is based upon Kennecott's reliance on only selected data and a review of all the data collected by Kennecott indicates that there is a connection and any contaminants injected into the bedrock aquifer are likely to migrate into the alluvial aquifer.¹² Moreover, the enhancement of the capacity of the partially backfilled mine workings to transmit water has not been adequately assessed by Kennecott in the Mining Permit Application nor is there any assessment of the enhanced communication between the aquifers that is likely to result from mining activities due to decompression, blasting, resultant fracturing and open areas of the mine.

Kennecott's Mining Permit Application provides very little information on the backfill well and absolutely no information on why the numerous contaminants contained in the backfill materials will not migrate into the USDW into which the mine will be excavated. For example, there is not indication in the Mining Permit Application whether the reactive gob will be amended. In addition, although the backfill well will be lined with exposed reactive materials on the floors, walls and tops of the backfilled stopes, there is no assessment of the effects of this in the Mining Permit Application. Kennecott should be required to fully document the contaminants that will be injected by the mine backfill well and demonstrate why those contaminants will not migrate into either the bedrock or alluvial aquifer by submitting an application for a UIC permit.

In summary, Kennecott does not: (i) adequately characterize the material that will be injected by the backfill well; (ii) acknowledge that the bedrock aquifer is an USDW; (iii) address the communication between the bedrock and alluvial aquifers; and (iv) address the changes in the communication between the bedrock and alluvial aquifers that will result from the proposed mining activities. Thus, U.S. EPA should exercise its authority to require Kennecott to apply for a UIC permit for the mine backfill well in light of Kennecott's failure to provide any demonstration that the contaminants contained in the various materials and wastes to be injected into the bedrock aquifer through the mine backfill injection well will not migrate into either the bedrock or alluvial aquifers, both of which are USDWs.

Septic System

Kennecott's Mining Permit Application similarly provides little information on the proposed sanitary wastewater septic system, in particular, how Kennecott will prevent untreated industrial and laboratory wastes from being discharged into the system. As indicated in

¹¹ See § 3.4.2.2.3 of the Environmental Impact Assessment ("EIA").

¹² See EIA Appendix B-3 § 9.2.3 (Water chemistry (anion-cation signatures) indicates that groundwater in the alluvial aquifer "may influence or dilute the [total dissolved solids] concentrations" in the bedrock aquifer in at least certain locations.).

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Kennecott's Mining Permit Application, it will be applying to the Marquette County Health Department for a commercial septic system permit for a system sized to serve 110 persons. A septic system of this size is clearly classified as a Class V well under 40 CFR § 144.81(9). Due to the industrial nature of the operations associated with the septic system, and the potential for untreated contaminants to be discharged into the system, U.S. EPA should require Kennecott to obtain a UIC permit for the septic system.

Conclusion

As discussed above, neither Kennecott's Mining Permit Application nor Groundwater Discharge Application explains how the three injection wells will not contaminate USDWs in violation of the UIC program administered by U.S. EPA under the SDWA. Under the UIC program, Kennecott has the burden of showing that the contaminants which will be contained in its proposed discharges will not cause a violation of any primary drinking water regulation and that the proposed discharges will not adversely affect the health of persons. 40 CFR § 141.12(a). Therefore, in order to ensure the protection of the USDWs into which Kennecott proposes to discharge contaminants, U.S. EPA should require Kennecott to obtain UIC permits for the three injection wells as it is authorized to require under 40 CFR § 144.25, instead of simply requiring Kennecott to provide only the inventory information requested in your March 31 letter. The permits should include stringent terms and conditions to ensure compliance through monitoring, reporting, operation, corrective action and the implementation of appropriate remedial measures if compliance is not maintained or one or more of the aquifers are contaminated.

We would appreciate being apprised of your decision in this regard.

Very truly yours,

HONIGMAN MILLER SCHWARTZ AND COHN LLP


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JENNIFER M. GRANHOLM
GOVERNOR

STATE OF MICHIGAN
DEPARTMENT OF ENVIRONMENTAL QUALITY
LANSING



STEVEN E. CHESTER
DIRECTOR

September 14, 2005

Mr. Jon Cherry
Kennecott Minerals Company
1004 Harbor Hill Drive
Suite 103
Marquette, Michigan 49855

Dear Mr. Cherry:

We are responding to your requests made at our August 31, 2005, meeting regarding your proposed activities on the Eagle mineral deposit. In this meeting, you requested that we determine if Rule 323.1098 would apply to the mercury situation and, if so, how Subsection (4)(b) of the Rule would be applied.

At the meeting, the situation you described was for a groundwater discharge of 430,000 gallons per day to rapid infiltration beds. This discharge would be treated with hydroxide precipitation, ion resin (for boron), neutralization, and reverse osmosis prior to discharge. The primary source of wastewater was from the mine dewatering, with a limited amount coming from onsite runoff. Any process piles onsite would be covered to prevent contact with storm water. The estimated mercury discharge concentration from this treatment system was at or less than 1 ng/l.

The groundwater situation described was that the mine dewatering water originates from an aquifer that is deeper than, and isolated from, the shallow aquifer receiving the discharge. The shallow aquifer moves in a northeast direction and will vent to an eastern tributary of the Salmon Trout River about 5000 feet from the discharge area. The average groundwater flow rate in the shallow aquifer is presently estimated at about 100 to 200 feet per year, with travel times to the eastern tributary of the Salmon Trout River estimated to be 10 to 30 years. The mercury concentration in the surface aquifer is about 0.5 ng/l and the mercury concentrations found in the Salmon Trout River vary between 1 and 4 ng/l, with the higher concentrations found generally in the spring time. We have determined that the Salmon Trout River has a low flow of about 1.2 cubic feet per second (cfs) and a harmonic mean flow of 2.1 cfs near the crossing point with the Triple A Road.

Based on this information, we have the following preliminary determinations:

1. This is an activity pursuant to Part 31 of the Natural Resources and Environmental Protection Act, 1994 PA 451, as amended, that is anticipated to result in a new loading of pollutants, specifically mercury, to the surface waters of the state. This activity also requires compliance with Water Quality Standards. Therefore, based on the information presented to date, we believe that Rule 323.1098 applies to this activity.
2. Regarding the application of Rule 323.1098(4) (b), this subrule will apply for the mercury anticipated in the discharge. Specifically, (b) (i) and (b) (iii) of the subrule will be the applicable portions of this subrule. Kennecott must evaluate both of these portions and propose to the Department of Environmental Quality (DEQ) how these requirements will be fulfilled. For (b) (i), the demonstration needs to address how Kennecott will minimize the new loading of mercury by implementation of cost-effective pollution prevention

Mr. Jon Cherry
Kennecott Minerals Company
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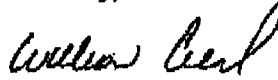
techniques. For (b) (iii), Kennecott must provide an evaluation of the most advanced treatment techniques which have been adequately demonstrated and are reasonably available. Kennecott may also propose innovative or experimental technology for consideration.

3. Please note that the Antidegradation Demonstration must address all nine of the Lake Superior basin-bioaccumulative substances of immediate concern (LSB-BSIC), as listed in Rule 323.1043(pp).
4. It also appears that a mercury limit of 1.3 ng/l will be applied to this discharge. Using the assumption that the treated discharge will be at or less than 1 ng/l before the Rapid Infiltration Beds, this discharge will meet the water quality requirements.

We also understand that Kennecott is planning on collecting additional data pertaining to the shallow aquifer, including a shallow aquifer test. Please note that we need a final determination on the hydrogeological studies to be submitted as part of the groundwater discharge permit application.

These preliminary determinations are based on the information we received at the meeting, and are subject to change as more information becomes available. If you have any questions, please contact Eric Chatterson, at 517-241-1358, or you may contact me.

Sincerely,



William Creal, Chief
Permits Section
Water Bureau
517-355-4114

wc/sea

cc: Eric Chatterson
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