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The Honourable Jim Bradley
Minister of Environment
77 Wellesley Street West
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Toronto, Ontario
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Re: Wabagishik Rapids Proposed Waterpower Project

Dear Minister Bradley,

This letter is in response to the proposed Modified run-of-river hydroelectric station to be built at the Wabagishik Rapids on the Vermilion River. I feel there are major shortcomings in the Environmental Report (ER) provided by Xeneca that I will outline below.

The ER refers to the natural fluctuation in water levels and flow rates above and below the dam, and states that because it would operate within these levels there would be no additional erosion or dewatering of essential habitat (App. C, p. II), outside of that produced by normal seasonal fluctuations. However, natural variation occurring across seasons is quite different than daily peak events. Daily changes in flow (the response letter states 43 m^3/s) are far more likely to cause severe erosion of sediment than occasional storm events and seasonal changes in flow. Xeneca issued a response to this concern (see attached letter) and states that erosion studies have been carried out, but many areas were left out in this study "due to time constraints and access issues…" (Annex 1, p 5). There are also inconsistencies in their response. They state that "the lake itself will not be used as a headpond" but in Annex 2 part I it states "Wabagishik Lake will function as part of the headpond" and "once operational, any modification of flow that affects the headpond also affects the lake".

The MNR pointed out that off-peak hours will result in daily dewatering of critical habitat below the dam. Daily dewatering of habitat would also have a more severe effect than seasonal low-flows. Most invertebrates are reproducing and are in highest diversity in the spring and fall, and have emerged as terrestrial forms in the summer (when levels are *naturally* low)[1]. Thus, daily dewatering during fall and some portions of the spring will be far more damaging than "natural" fluctuation and low levels (eg: in August and September). It is stated in Table 3 of Annex 1 that the dam will be run-of-river for only 21% of the time in the fall, and 68 % of the time in the spring. This is of particular concern for this system because, as regulators have pointed out, this benthic invertebrate habitat is unique in the area and these are spawning grounds for Walleye and habitat for the sensitive Lake Sturgeon. It is clear that

1. Huryn et al. 2009. Chapter 5 in: An introduction to the aquatic insects of North America, 4th Edition.

peaking (“modified run-of-river”) operations in this area will be quite damaging. This seems an obvious problem, but Xeneca refers to this only as “unexpected effects” in their response letter and simply states that “an adaptive management plan is in place”.

My main concern, however, is the complete lack of mention of water level fluctuations in the affected river and lake, and the interaction with elevated metal and sulphur content of sediments and soils. Any changes in water levels that can result in periodic drying and rewetting of soils or sediments creates a potential of acidification (via sulphur oxidation and sulphuric acid formation) and release of stored metals from sediments into solution as highly toxic and mobile free-ion forms. This sulphate release has been documented in wetland soils[2] and riparian sediments[3] in the Sudbury area and elsewhere[4], and can result in metal release with even small changes in moisture content[2,5]. There is no inventory or mention of wetlands associated with Wabagishik Lake and the upper portion of the Vermilion, but it is apparent in the inundation area maps in Annex 1 that there are several wetland areas that will be affected downstream of the dam. It is stated in App. C, p. I that affected substrates vary from gravel and fine sediments to silt and clay, and in Annex 1 area W4 is described as a sediment sink. Many of these areas are likely holding historically deposited heavy metals. An MOE 1986 sediment analysis on Wabagishik Lake has shown elevated levels of several metals including Ni, Mn, Co, and Cu, all of which are susceptible to sulphate-mediated release. Furthermore, Annex IV (p. III) reports that metal levels exceed provincial standards and DOC concentrations are elevated because of wetland influence, suggesting the potential for this effect.

The ER states that an average daily water table fluctuation of ± 5 cm will occur within this inundation area, and ± 15 cm within the downstream area. I will be the first to admit that we do not know what the effects of these water level fluctuations will be and there may or may-not be a severe release of metals. However, these fluctuations are more than enough to cause concern based on the previous studies I have referenced and this should be directly addressed in any ER in the Sudbury area or wherever sulphur and metal contamination exists. The only way to know for sure is to carry out studies specific to this region, which has not been done in this ER. The only response from Xeneca is to say that they are working with Dr. Charles Ramcharan to study drought-driven release of metals and acidification as a major component of an NSERC Collaborative Research Development project. A main component of the proposed study is “drought / rewetting of wetlands” in a before & after impact study. They clearly acknowledge the potential negative effects (thus the need for an NSERC study), and I do not agree that an “after impact” comparison is the best approach. I would suggest that assessments must be carried out to determine the potential magnitude of these likely effects prior to approval of this project, rather than to investigate them after they happen.

It is also stated in the response letter from Xeneca that “There's very little wetland that's to be flooded, and not much of that is on metal-contaminated land (former Inco property)”. The aforementioned studies show that even small wetlands can display dramatic release, and in response to minimal drying. I would imagine this is the reason for the proposed NSERC CRD project. I would also point out that there are countless studies in the Sudbury area that show the contamination extends well beyond the limits of “Inco property”, and that none of the sites in those referenced studies are on “Inco property”. I am concerned that this displays a lack of understanding of the contamination issue in the region.

2. Szkokan-Emilson et al. (2013) Drought-induced release of metals from peatlands in watersheds recovering from historical metal and sulphur deposition. *Biogeochemistry DOI:* 10.1007/s10533-013-9919-0.
3. Yan et al. (1996) Increased UV-B penetration in a lake owing to drought- induced acidification. *Letters to Nature* 318: 141-143.
4. Eimers et al. (2003) The effects of drying and re-wetting and increased temperature on sulphate release from upland and wetland material. *Soil Biology and Biochemistry* 35: 1663-1673.
5. Juckers, M., and Watmough, S.A. (2013) Impacts of simulated drought on pre water chemistry of peatlands. *Environmental Pollution* 184: 73-80

Please understand that I am not fundamentally opposed to the construction of hydroelectric stations, nor is this a personal vendetta of any kind. I have nothing to personally gain from this. It is my opinion that there are important issues that have been overlooked, and that this Class ER does not meet the requirements of the Class EA for Waterpower. I do appreciate that Xeneca has hired several highly reputable consultants that are known to do very good work, but this is a sensitive area because of the historical metal and sulphur deposition and there are some very specific issues that are not addressed. I feel that the true risks of this modified run-of-river project in this area have not been addressed or conveyed to the public or stakeholders.

After having carefully reviewed the proposed Wabagishik Rapids Environmental Report and supporting documentation, and in consideration of my concerns noted above, I request that the Minister exercise your powers under the Environmental Assessment Act, and issue a Part II Order to elevate this proposal to an Individual Environmental Assessment. Please note that I am scheduled to discuss this matter further with Xeneca via phone on Thursday, November 7th. If at that time I am confident that my concerns have been met, I will respectfully withdraw this letter and my support of a Part II Order.

Yours truly,

Erik Szkokan-Emilson

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