Attachment 2. EC's comments on Appendix C5 Aquatic Effects Management Program – Receiving Environment Monitoring 2008

AEMP Section/Topic	EC's Comment
General	The plan should include a summary table of the current core monitoring program, to give the reviewer a good overview. How do the stations in the water licence link to the AEMP? The AEMP is lacking explicit linkage to adaptive management planning (acknowledging AEM's highly proactive track record).
Benthic	AEM is collecting 5 samples per station, using two subsample grabs per sample. As noted in Section 5.11.5 of the EEM GD[1], the minimum number of field subsamples should be 3, and many programs are using 5 subsamples. The EEM guidance document Chapter 5, page 5-55 provides details on calculating the appropriate number of subsamples for a given site.
	Supporting water quality variables should include turbidity.
	It would be prudent to think along the lines of reporting the benthic metrics in a way that can be taken forward to the EEM. To that end, the descriptive statistics for the benthic community variables must include mean, median, standard deviation, standard error and minimum and maximum values; the metrics should include evenness and similarity indices, in addition to those reported.
	Table 3-14 shows a 5 m difference in depth for sample sites for the BPJ station, and this appears to affect the counts observed. Depth effects should be held constant, so that project effects aren't confounded or masked.
Periphyton	EC concurs with the limitations of periphyton data and not doing further sampling. That said, has a sufficient range of variability been identified to use for comparisons with respect to habitat compensation features, or will concurrent sampling be done for that?
Water quality	Is a single water sample taken from 4 m depth representative of the entire near-field (or far-field, or reference) area? Currently there may or may not be full mixing in the lake, and this will change in the near-field once effluent is released. We will then want to look for density gradients, and AEM will need to monitor in the hypolimnion, as well as for changes in all directions around the diffuser. It is critical to ensure the sampling being done prior to effluent release is comprehensive enough to identify the full range of natural variability, so we will be able to distinguish mine-related changes from natural fluctuations in water quality.
Sediments	To measure productivity changes, it would be useful to do TP in sediments, notably in the outfall areas. This will

	not only give a measure of changes to sediment concentrations, but provide an indication of what TP may be available for release potentially.
Sediment quality	Figure 3-11 shows box and whisker plots with median values marked, but the text refers to mean values; please clarify. Section 3.3.2.1 references that there is an AEMP design review currently in preparation. EC would be pleased to discuss the draft design.
Sediment coring	Were the particle sizes consistent for samples from each area?
	Will the sediment collection protocol in future be cores with the top 1cm? That would provide a more sensitive way to measure changes in the sediments, although both methods may be required for a time to define comparability to baseline data.

[1] Metal Mining Effluent Regulations Environmental Effects Monitoring Guidance Document