Still in plans, the seep survey plan should be submitted for approval under the license, and we look forward to seeing annual reporting of those results with interpretation.

We also recommend that the waste management plan include provision for a contaminated snow containment facility.

And it would be helpful to reviewers if the annual report for the Jericho Diamond Mine includes tabular summaries of all the data they gather, which includes graphs, so that over time, we can see trends in the data for all the monitored parameters. It is funny, you can look at a column of numbers and really think there is no problem, but if you put them on a graph and see, holy smokes, that is going up. It really made a difference with the other files when we did that, so that would be helpful.

Annual reporting should include an updated site water balance each year, along with the results of the site water management plan, and this is just so that we can learn as we go how the predictions line up with the reality of what we are seeing on the site.

And, lastly, just a few comments on some wording for the license. Just under the

definitions, there is a few new ones for this license. If we can have what's normally ARD, is normally acid rock drainage. In this case, it should be acid or alkaline rock drainage here. Define AEMP as aquatic effects monitoring plan, include ground ice. ICP metal scan is a term commonly used to describe the group of 24 metals that run off that lab instrument. Define what a land farm is, the group of major ions, the nutrients, the physical parameters that will be monitored and what seepage is.

That concludes the recommendations from Environment Canada. I would like to thank the Board for this opportunity to present our submission, and I will try to answer any questions that come up.

CHAIRMAN: Thank you. Are there any questions from the applicant?

GREG MISSAL: Mr. Chair, Greg Missal from Tahera. If I could ask just for five or ten minutes for us to collect our thoughts after Environment Canada's presentation, that would be appreciated.

CHAIRMAN: We will take ten minutes, please.

(BRIEF ADJOURNMENT)

LICENSEE QUESTIONS ENVIRONMENT CANADA:

CHAIRMAN: Welcome back. Is the applicant going to have some questions to the intervenor, Environment Canada?

GREG MISSAL: Mr. Chair, Greg Missal with Tahera Diamond Corporation. We do have a series of questions. I would just ask, Bruce, can I start with you? I would just like to ask Bruce Ott when he is just ready to go here, I would like to ask him to start, please.

Q BRUCE OTT: Bruce Ott, AMEC. Just a number of things that we would like a bit of clarification on. Our site monitoring includes a number of the items that Anne Wilson has indicated should be monitored. Specifically water quality under ice in the PKCA, we see that as an internal monitoring and would be in the internal monitoring plan but not as a regulatory requirement.

Monitoring ammonia levels and sources in the receiving environment, and identifying target thresholds, again, the monitoring we see as an internal monitoring. And the setting of targets would be something that we would have to deal with in the plan with regulatory approval. But we wouldn't see that as a regulatory requirement, rather an internal monitoring requirement as part

of the plan.

Again, where we are talking about thresholds and triggers for adaptive management and assessing risk and effects, again, we see that in a plan that would be submitted as a draft for discussion, and then acceptable triggers set based on discussion, on site-specific criteria.

The items that Environment Canada has added to the discharge limits which are regulated, specifically total petroleum hydrocarbon, BOD and -- sorry and faecal coliform, Environment Canada indicated that those could be measured on a reduced frequency. Is that something that Environment Canada envisages also being negotiated, or do you have some specific ideas of what those should be at this point in time?

VICE-CHAIRMAN: If I may, Mr. Chairman. You are asking her quite a few questions, and I think Anne really wants to answer some of them now.

BRUCE OTT: All right. I will just stop right there.

A ANNE WILSON: Anne Wilson, Environment Canada. Thank you. I will start with your last question first. The reduced frequency we see in other licenses where it is secondary or

tertiary treated effluent being discharged to the environment via a tailings containment will be an annual measurement, so it is very infrequent compared to the frequency of monitoring of the effluent itself.

Just to go back to your comments on the internal monitoring for winter PKCA supernatant quality and ammonia within the mine site components, that's fine for that to be internal. It doesn't need to be under the SNP or the AEMP. Our certain is just that we learn from other mine experiences here to help with this project.

Q BRUCE OTT: Bruce Ott, AMEC. Yeah, my apologies for going on there. The next item was with respect to triggers that Environment Canada discussed, with specific reference to the AEMP. We feel fairly strongly that, again, that's something that needs negotiation, because it is not a particularly simple process to set trigger levels that are going to work for both the regulators and work for the proponent who has to collect the information.

A ANNE WILSON: Anne Wilson, Environment Canada. I recently, just over the supper break, saw the modified document on the site monitoring plan, and in that I noticed that under

the aquatic effects section there is an addition saying that the metal mine effluent regulation guidance document protocols will be followed if an effect is seen. And I would just like to note that that is an Environment Canada document, not a DFO document, for the record.

But my concern with the applicability of doing that is that those protocols are based on very specific study designs. For example, with benthic invertebrates, the guidance document lists three different ways you can look at the benthic invertebrate, and you have to start out by using one of their study designs in order to apply the subsequent actions that are recommended by that document. And at this point, I don't have a sense that we know what test is going to be used.

I was quite frustrated reading some of the SNP proposals in the revised document. For example, there are a few lakes that preconstruction will only have some water quality sampling done once in winter. I hope that means that you have already got enough baseline on those lakes, because otherwise you would be ruled out from doing it before -- after control impact study design, and that might be the best design to detect changes in this case.

I don't have confidence yet that we know where we are going with the study designs so that we can say that the right data are going to be gathered. So I think that's one thing I would like to see under a draft AEMP submitted for approval, is a study design so we can be sure of that.

Sorry, I carried on a bit there myself.

Q BRUCE OTT: Bruce Ott, AMEC. I think we agree that we are a little way apart in terms of the nuts and bolts in aquatic effects monitoring program, and we duly note what you have to say there.

I guess my -- where I want a clarification was that if -- it seems to me we are on the same page, but that study design and triggers, which is part of study design, would be something that would be negotiated as final terms for a plan, but that that would be in the plan and that it wouldn't directly be a regulatory condition of the water license as provided by the Nunavut Water Board.

A ANNE WILSON: Anne Wilson. No, I agree that can be submitted for review and approval and developed under the water license, certainly.

Q BRUCE OTT: Bruce Ott, AMEC. The next point that certainly is of a concern to us is using microtox as a regulated standard. We feel --

I stated our position earlier, I don't think I need to restate it. We don't agree that microtox -- microtox was put forward as a screening tool. We felt it would improve the ability of the mine to manage discharge and toxicity. We really have a concern that using microtox will -- could cause the mine to be -- to shut down discharge during critical periods too frequently, and that we would rather fall back to the standard tests that are used for mines, which is rainbow trout and Daphnia and not introduce this additional regulatory control, which admittedly is used in Alberta but for totally different sorts of discharge, Mr. Chair.

A ANNE WILSON: Anne Wilson, Environment Canada. I would agree that the use of microtox could be difficult, unless you had established the relationship of microtox results to rainbow trout results, and that way you could know that a pass with the microtox would have been a pass with the fish test. With other effluents it isn't so much of a concern, we don't have the ammonia and the nitrate. But we are all too likely to get a false pass with nutrient -- with nutrients in the effluent.

So my inclination would also be to stick with

a tried and true rainbow trout and Daphnia tests. Although, if you were able to establish a screening tool by correlating the tests, it could be useful for management.

Q BRUCE OTT: Bruce Ott, AMEC. We totally agree with Environment Canada on that point. And certainly for the microtox test to be useful to the mine for management, there would have to be a calibration. I see that as a discrete issue from making it a regulatory instrument, i.e., if the microtox fails, then the mine has to cease discharge.

A ANNE WILSON: It is Anne Wilson, Environment Canada. I can only comment that from the point of view of our enforcement folks at Environment Canada, a fail on a microtox test would be cause for an investigation of wherever that led, and that is because it is a protocol which Environment Canada has developed for toxicity testing, and could conceivably be used as establishing deleteriousness. So that's about all I can say on that as a comment.

Q BRUCE OTT: Bruce Ott, AMEC. Mr. Chair, Environment Canada has indicated that the 100 milligrams per litre grab and 50 milligrams per litre TSS during construction is not

satisfactory for the discharge from dewatering of the PKCA area or Long Lake. I wonder if Environment Canada is prepared, at this point, to suggest what a limit might be or if they would want to default to the -- what we are considering as a suggested TSS limit for regular discharge?

A ANNE WILSON: Anne Wilson, Environment Canada. I would certainly suggest staying with the 15 and 25 as proposed with the site limits. The reasons for that are that if you are increasing suspended solids and turbidity in the stream during the most productive season, that is when it is going to do the most harm.

The other mines, for the dewatering of their inland lakes and their pits -- their pit lakes and their tailings lakes, were all limited by their site limits, and at that time they were 25 and 50. And some of them have since come down to the 15 and 25 or 15 and 30 milligrams per litre.

Q BRUCE OTT: Bruce Ott, AMEC. I think the Board should note that it is certainly possible, or we feel it is possible to discharge or dewater the lake to a fairly great extent by sticking to those limits. A bit more flexibility, we feel, would be desirable, but it is not a show stopper in our opinion, because it just means we

need to manage dewatering somewhat differently, Mr. Chairman.

Mr. Chair, that's all that I had to comment on myself. I believe Mr. Missal may direct other questions to others.

Q KELLY SEXSMITH: Mr. Chair, Kelly Sexsmith. I have a question about the discharge limits that have been recommended by Environment Canada. They have recommended a pH of 8.5 as an upper limit on pH in the water license on the basis that some testing showed pH 8.8 was a level where there was difficulty meeting acute toxicity tests, that's correct?

A ANNE WILSON: Anne Wilson, Environment Canada. The kimberlite toxicity testing done by Ekati was for acute toxicity, and I don't believe that it was a 50 percent pass rate. They saw full mortality above 8.8.

Q KELLY SEXSMITH: The kimberlite at Jericho may have different properties, and so we are not certain that that data would be applicable at our site. We expect, based on our water quality predictions, that the pH would be closer to 8.2, based on a well-known geochemical process which is an equilibrium with a carbonate mineral.

However, measurement of pH has many

difficulties, and I think Anne might be able to acknowledge that calibration of pH metres is not always a straightforward process, and that measurement of pH at slightly alkaline pH ranges can take some patience in the field. And we believe we need some flexibility in the pH limits so that we don't have erroneous exceedances of our values, and that the 6 to 9 ranges is worthwhile. So I guess if Anne could just clarify that there are some difficulties in measuring pH.

A ANNE WILSON: Anne Wilson, Environment Canada. I certainly will acknowledge that with field metres, and that's why we always like to have a backup with the lab taking the measurements as well, although they do change a little in transit.

But can you just clarify for me what the pH is expected to be at the edge of the initial mixing zone?

Q KELLY SEXSMITH: Yes. This is another factor, in fact, so thank you, Anne. The pH in the discharge is expected to be 8.2. In the receiving water, we expect it to be closer to 6.7. That was done using another modelling process that's a fairly well understood one and has a reasonable amount of certainty. At that much lower pH, we

should be right in the middle of the recommended range.

A ANNE WILSON: Anne Wilson, Environment Canada. That does alleviate concerns for environmental protection. The only thing that might be problematic was if you had higher aluminium and ammonia levels would be to meet your non-toxic and end of pipe with the bioassay test at the high pHs, if it was high. Certainly I would not hold to the 8.5 firmly. If you do expect to be that close to it, within .3 of a pH is certainly within some of the instrumental error in the field for sure.

It is a recommendation for end of pipe toxicity testing to ensure that you are more likely to pass that.

Q KELLY SEXSMITH: Okay. Thank you, that's very helpful. Mr. Chair, Kelly Sexsmith. My second question relates to the nitrite values -- oops, I have trouble with that. The nitrite values that were proposed were based on an aquatic threshold of .25 milligrams per litre, and there was some confusion regarding the units that were used in that.

My understanding from the aquatic toxicologist, because we were able to check this

point with him, was that the .25 milligrams per litre nitrite was in units of N, which meant that that higher number, rather than that number divided by 3, was what the toxicity testing showed was safe at that chloride level of I think it was 48 milligrams per litre. So I wondered if you had information that showed that there was other toxicity testing data at that chloride level that was different. Was it at, say, .25 milligrams per litre as NO_3?

A ANNE WILSON: Anne Wilson, Environment Canada. James Elfric had provided his clarification on the nitrite, and that was very helpful, to some extent. However, I'm thinking that at 20 milligrams per litre chloride, .25 may or may not be correct. BC was suggesting .20. And within the text of his memo, there were interchangeable references to NO_2N and NO_2 that -- well, at the very least they confused me, and certainly I wasn't entirely confident that we had the right number, that the higher end would not have changed over the course of re-evaluating it. So I would be a little happier at the lower end. Rather than at .25, I had thought to divide that by 3 to .075.

And the other thing was that it isn't

strictly speaking correct to take the protective nitrite level at the highest chloride levels, because you are going to take a while to get up to those chloride levels. So, conceivably, we could be having higher nitrite right away, and the chloride isn't going to be increasing as quickly, and we should be protecting the water quality objectives at the lower chlorides levels, which we would expect to see initially.

Q KELLY SEXSMITH: Kelly Sexsmith. Just a comment on that. The chloride level that the threshold was based on was actually quite a bit lower than the predicted chloride value in the environment, so we did consider that, differences in arrival time of chloride and nitrate in this.

The other factor is we don't expect nitrite would reach these values on a regular basis at all. We have -- we expect concentrations would be quite a bit lower than the limit we are proposing, but we still feel the limit we are proposing is safe.

The confusion over the units, it is something that I wish Anne and I had had an opportunity to sort out ahead of time. I did have a chance to resolve that with the toxicologist and it was confusing. In fact, I have to confess it confused me. But I can assure you that it was in units of

N, and so the higher value of .25 as the aquatic threshold was appropriate. So I think I will leave it at that.

A ANNE WILSON: Anne Wilson, Environment Canada. Thanks, Kelly. I think that the consistency with the other licenses is important in this, as well. And my final comment would be that I really don't expect to see high NO_2 levels. Just based on other sites, they are very low because it flips so quickly to NO_3. So it isn't a parameter that is of huge concern, but I think it is important to be aware of it and be consistent with the other licences.

Q KELLY SEXSMITH: Mr. Chair, my next question is regarding aluminum. A concern was raised that there would be a pulse of aluminum released during spring freshet when the tundra water was a little bit more acidic, I guess. Is that correct, Anne?

A ANNE WILSON: Anne Wilson, Environment Canada. A lot of the work that has been done on aluminum toxicity in the shield lakes really focuses on the mobilization in spring when the acidity of the snow melt mobilizes it and makes it available to the biota, and so it is more toxic. So I appreciate that your predictions are that it

will be at a higher level for a very short time, but it is also a time when it would be most available and most mobile.

Q KELLY SEXSMITH: The information we have for monitoring the development pile seep that is currently at the site includes analysis of both total and dissolved forms of aluminum. And what we have found in that work was that the vast majority of the aluminum did occur as a particulate or total aluminium value, rather than a dissolved value. So we still feel that the estimates that we base this on were reasonable, because the aluminum is bound up in silicate minerals.

With the experience we have had at Ekati, aluminum values have been -- higher aluminum values have been recorded in acidic tundra seeps.

Another factor at Jericho, I don't know if you recall the details, but we did a baseline seep survey where the waste-rock piles were going to be located in 2003, and we found that the tundra seeps at Jericho were generally a lot less acidic than at Ekati, and I wondered if you had a chance to look at that when you were coming up with these recommendations?

A ANNE WILSON: Anne Wilson, Environment Canada. No, but my view of this

recommendation is largely for the PKCA discharge, so that is where you see the acidification within the waters, as the runoff enters the lake waters and the stream waters, and that's where the form of the aluminium speciation is going to change. So it is separate from the seep survey or the land results.

I do note, though, that your upper balance predicated are .9, so that is still below the MAC that we are proposing.

Q KELLY SEXSMITH: Mr. Chair, Kelly Sexsmith. The PKCA contains carbonate minerals. I guess I can't quite understand how acidic water entering the PKCA would have any opportunity to dissolve aluminum minerals before it will be neutralized by those carbonate minerals.

A ANNE WILSON: Anne Wilson. I'm thinking after it is released in the downstream waters, that's where you are going to get the surface runoff into the streams which are receiving the higher levels of aluminum.

So if we keep the released levels lower, then this is less in the receiving waters.

Q KELLY SEXSMITH: Do you agree that some monitoring data in the Stream C3 water early on in operations could be used as a basis for revisiting

any discharge criteria that are used, applied at this site at a later date?

A ANNE WILSON: Anne Wilson, Environment Canada. I certainly know that we will learn from experience as the project develops and monitoring data and environmental data are gathered. I think we have to go into the license with the right numbers to start with, because the next opportunity to revisit regulated limits will be upon your next renewal, so that's where we are trying to be careful with this.

Q KELLY SEXSMITH: Mr. Chair, my last point is very minor, it relates to two of the definitions that were suggested by Environment Canada. One of those definitions was a request to include the abbreviation ARD to include alkaline drainage, as well as the traditional definition of ARD which is acid rock drainage. Acid rock drainage is a common terminology applied to metal mines which have sulphide minerals, which oxidize to produce acidic drainage.

Alkaline drainage is a very different type of drainage, and we believe it should be given a separate definition, which would just be alkaline drainage, without an abbreviation. We find some of -- that's a precedent what was used in some of the

Northwest Territories water licenses, and we don't think that it is an appropriate definition to apply at this site.

The second definition is -- now I am actually reading this, I'm not sure. I guess, could you clarify? Did you suggest that ICP-MS should be defined as ICP metal scan?

A ANNE WILSON: Anne Wilson, Environment Canada. On your first point with the alkaline drainage, that's an excellent idea for clarity. I know the other two diamond mines, I think all three of the diamond mines so far do use it interchangeably as ARD for acid/alkaline drainage, so that would be clearer to just say alkaline drainage.

The intent of defining the ICP scan is just to list the metals which we would like to see in the SNP monitoring. It is a loosely used term in other licenses, and they tend to use a reference method to determine the suite, which isn't strictly correct either.

Q KELLY SEXSMITH: Okay. I had wanted to just clarify that you didn't mean IPC mass spec., which is a specific type of ICP methodology. Thank you.

Q PETER McCREATH: Mr. Chair, Peter

McCreath, Clearwater Consultants. Anne, again, just a very minor one under your definitions, miscellaneous recommendations for definitions. I am wondering what you meant by having to define seepage.

A ANNE WILSON: Anne Wilson, Environment Canada. That's simply a definition which we don't find in most of the metal mines, which we have had come up in the diamond mines, and just to be clear that it is normally referring to seepage from waste-rock piles or toe berms or stockpiles, which is the context it is used in in most of these licenses.

Q PETER McCREATH: Peter McCreath, Clearwater Consultants. I accept those definitions, but seepage is also used for seepage through dams. And so I would be a little concerned to put too narrow a definition on it in this setting, just from a straight technical perspective.

A ANNE WILSON: Anne Wilson, Environment Canada. That's exactly why we need to define it. In most licenses it would refer also to seepage for dams, which would have to be contained or pumped back, as opposed to the seepage which is the subject of surveys associated with mobilization